

**WSR 09-16-039**  
**PROPOSED RULES**  
**DEPARTMENT OF**  
**SOCIAL AND HEALTH SERVICES**  
(Health and Recovery Services Administration)

[Filed July 28, 2009, 9:36 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-05-057.

Title of Rule and Other Identifying Information: The department is amending WAC 388-543-1150 Limits and limitation extensions, 388-543-1300 Equipment, related supplies, or other nonmedical supplies, and devices that are not covered, 388-543-1600 Items and services which require authorization, and 388-543-2300 Bathroom/shower equipment.

Hearing Location(s): Blake Office Park East, Rose Room, 4500 10th Avenue S.E., Lacey, WA 98503 (one block north of the intersection of Pacific Avenue S.E. and Alhadeff Lane. A map or directions are available at <http://www.dshs.wa.gov/msa/rpau/docket.html> or by calling (360) 664-6094), on September 22, 2009, at 10:00 a.m.

Date of Intended Adoption: Not sooner than September 23, 2009.

Submit Written Comments to: DSHS Rules Coordinator, P.O. Box 45850, Olympia, WA 98504-5850, delivery 4500 10th Avenue S.E., Lacey, WA 98503, e-mail DSHS RPAURulesCoordinator@dshs.wa.gov, fax (360) 664-6185, by 5 p.m. on September 22, 2009.

Assistance for Persons with Disabilities: Contact Jenisha Johnson, DSHS rules consultant, by September 8, 2009, TTY (360) 664-6178 or (360) 664-6094 or by e-mail at [johnsj14@dshs.wa.gov](mailto:johnsj14@dshs.wa.gov).

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The department is: (1) Eliminating the coverage of the following items for adults: Bathroom and shower equipment, disinfectant sprays, surgical stockings, custom vascular supports, graduated compression stockings, and blood pressure monitoring equipment; (2) reducing coverage of the following items for adults and children: Nonsterile and sterile gloves, incontinent supplies, and diabetes test supplies (lancets and test strips); and (3) adding light boxes, bumper pads, surgical masks, and handheld showers to the noncovered list.

Reasons Supporting Proposal: These amendments are necessary for the department to fully meet the legislatively-mandated appropriation reduction in section 1109, chapter 564, Laws of 2009 (ESHB 1244) for durable medical equipment for fiscal years 2010-2011 and to further clarify the department's coverage policy.

Statutory Authority for Adoption: Section 1109, chapter 564, Laws of 2009 (ESHB 1244), RCW 74.04.050, 74.04.057 [74.04.057], 74.08.090.

Statute Being Implemented: Section 1109, chapter 564, Laws of 2009 (ESHB 1244).

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of social and health services, governmental.

Name of Agency Personnel Responsible for Drafting: Wendy Boedigheimer, P.O. Box 45504, Olympia, WA 98504-5504, (360) 725-1306; Implementation and Enforcement: Erin Mayo, P.O. Box 45560, Olympia, WA 98504-5560, (360) 725-1729.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The department analyzed the proposed rule amendments and concludes that they will impose no new costs on small businesses. The preparation of a comprehensive small business economic impact statement is not required.

A cost-benefit analysis is required under RCW 34.05.328. A preliminary cost-benefit analysis may be obtained by contacting Erin Mayo, DME Program Manager, P.O. Box 45560, Olympia, WA 98504-5560, phone (360) 725-1729, fax (360) 586-9727, e-mail [mayoe@dshs.wa.gov](mailto:mayoe@dshs.wa.gov).

July 29, 2009

Stephanie E. Schiller  
Rules Coordinator

AMENDATORY SECTION (Amending WSR 07-17-062, filed 8/13/07, effective 9/13/07)

**WAC 388-543-1150 Limits and limitation extensions.**

The department covers non-DME (MSE), DME, and related supplies, prosthetics, orthotics, medical supplies, and related services as described in WAC 388-543-1100(1). The department limits the amount, frequency, or duration of certain covered MSE, DME, and related supplies, prosthetics, orthotics, medical supplies, and related services, and reimburses up to the stated limit without requiring prior authorization. These limits are designed to avoid the need for prior authorization for items normally considered medically necessary and for quantities sufficient for a thirty-day supply for one client. In order to exceed the stated limits, the provider must request a limitation extension (LE), which is a form of prior authorization (PA). The department evaluates such requests for LE under the provisions of WAC 388-501-0169. Procedures for LE are found in department billing instructions. The following items and quantities do not require prior authorization; requests to exceed the stated quantities require LE:

(1) Antiseptics and germicides:

(a) Alcohol (isopropyl) or peroxide (hydrogen) - one pint per month;

(b) Alcohol wipes (box of two hundred) - one box per month;

(c) Betadine or pHisoHex solution - one pint per month;

(d) Betadine or iodine swabs/wipes (box of one hundred)

- one box per month; or

(e) ~~((Disinfectant spray — one twelve ounce bottle or can per six-month period; or~~

(f)) Periwash (when soap and water are medically contraindicated) - one five-ounce bottle of concentrate solution per six-month period.

(2) Blood monitoring/testing supplies:

(a) Replacement battery of any type, used with a client-owned, medically necessary home or specialized blood glucose monitor - one in a three-month period; ~~((and))~~

(b) Spring-powered device for lancet - one in a six-month period.

(c) Test strips and lancets for an insulin dependent diabetic - one hundred of each, per month; and

(d) Test strips and lancets for a noninsulin dependent diabetic - one hundred of each, per three-month period.

(3) Braces, belts and supportive devices:

~~(a) ((Custom vascular supports (CVS) - two pair per six-month period. CVS fitting fee - two per six-month period;~~

~~(b) Surgical stockings (below the knee, above the knee, thigh-high, or full-length) - two pair per six-month period;~~

~~(c) Graduated compression stockings for pregnancy support (pantyhose style) - two per twelve-month period;~~

~~(d)) Knee brace (neoprene, nylon, elastic, or with a hinged bar) - two per twelve-month period;~~

~~((e)) (b) Ankle, elbow, or wrist brace - two per twelve-month period;~~

~~((f)) (c) Lumbosacral brace, rib belt, or hernia belt - one per twelve-month period;~~

~~((g)) (d) Cervical head harness/halter, cervical pillow, pelvic belt/harness/boot, or extremity belt/harness - one per twelve-month period.~~

(4) Decubitus care products:

(a) Cushion (gel, sacroiliac, or accuback) and cushion cover (any size) - one per twelve-month period;

(b) Synthetic or lambs wool sheepskin pad - one per twelve-month period;

(c) Heel or elbow protectors - four per twelve-month period.

(5) Ostomy supplies:

(a) Adhesive for ostomy or catheter: Cement; powder; liquid (e.g., spray or brush); or paste (any composition, e.g., silicone or latex) - four total ounces per month.

(b) Adhesive or nonadhesive disc or foam pad for ostomy pouches - ten per month.

(c) Adhesive remover or solvent - three ounces per month.

(d) Adhesive remover wipes, fifty per box - one box per month.

(e) Closed pouch, with or without attached barrier, with a one- or two-piece flange, or for use on a faceplate - sixty per month.

(f) Closed ostomy pouch with attached standard wear barrier, with built-in one-piece convexity - ten per month.

(g) Continent plug for continent stoma - thirty per month.

(h) Continent device for continent stoma - one per month.

(i) Drainable ostomy pouch, with or without attached barrier, or with one- or two-piece flange - twenty per month.

(j) Drainable ostomy pouch with attached standard or extended wear barrier, with or without built-in one-piece convexity - twenty per month.

(k) Drainable ostomy pouch for use on a plastic or rubber faceplate (only one type of faceplate allowed) - ten per month.

(l) Drainable urinary pouch for use on a plastic, heavy plastic, or rubber faceplate (only one type of faceplate allowed) - ten per month.

(m) Irrigation bag - two every six months.

(n) Irrigation cone and catheter, including brush - two every six months.

(o) Irrigation supply, sleeve - one per month.

(p) Ostomy belt (adjustable) for appliance - two every six months.

(q) Ostomy convex insert - ten per month.

(r) Ostomy ring - ten per month.

(s) Stoma cap - thirty per month.

(t) Ostomy faceplate - ten per month. The department does not allow the following to be used on a faceplate in combination with drainable pouches (refer to the billing instructions for further details):

(i) Drainable pouches with plastic face plate attached; or

(ii) Drainable pouches with rubber face plate.

(6) Supplies associated with client-owned transcutaneous electrical nerve stimulators (TENS):

(a) For a four-lead TENS unit - two kits per month. (A kit contains two leads, conductive paste or gel, adhesive, adhesive remover, skin preparation material, batteries, and a battery charger for rechargeable batteries.)

(b) For a two-lead TENS unit - one kit per month.

(c) TENS tape patches (for use with carbon rubber electrodes only) are allowed when they are not used in combination with a kit(s).

(d) A TENS stand alone replacement battery charger is allowed when it is not used in combination with a kit(s).

(7) Urological supplies - diapers and related supplies:

(a) The standards and specifications in this subsection apply to all disposable incontinent products (e.g., briefs, diapers, pull-up pants, underpads for beds, liners, shields, guards, pads, and undergarments). See subsections (b), (c), (d), and (e) of this section for additional standards for specific products. All of the following apply to all disposable incontinent products:

(i) All materials used in the construction of the product must be safe for the client's skin and harmless if ingested;

(ii) Adhesives and glues used in the construction of the product must not be water-soluble and must form continuous seals at the edges of the absorbent core to minimize leakage;

(iii) The padding must provide uniform protection;

(iv) The product must be hypoallergenic;

(v) The product must meet the flammability requirements of both federal law and industry standards; and

(vi) All products are covered for client personal use only.

(b) In addition to the standards in subsection (a) of this section, diapers must meet all the following specifications. They must:

(i) Be hourglass shaped with formed leg contours;

(ii) Have an absorbent filler core that is at least one-half inch from the elastic leg gathers;

(iii) Have leg gathers that consist of at least three strands of elasticized materials;

(iv) Have an absorbent core that consists of cellulose fibers mixed with absorbent gelling materials;

(v) Have a backsheet that is moisture impervious and is at least 1.00 mm thick, designed to protect clothing and linens;

(vi) Have a topsheet that resists moisture returning to the skin;

(vii) Have an inner lining that is made of soft, absorbent material; and

(viii) Have either a continuous waistband, or side panels with a tear-away feature, or refastenable tapes, as follows:

(A) For child diapers, at least two tapes, one on each side.

(B) The tape adhesive must release from the backsheet without tearing it, and permit a minimum of three fastening/unfastening cycles.

(c) In addition to the standards in subsection (a) of this section, pull-up pants and briefs must meet the following specifications. They must:

(i) Be made like regular underwear with an elastic waist or have at least four tapes, two on each side or two large tapes, one on each side;

(ii) Have an absorbent core filler that is at least one-half inch from the elastic leg gathers;

(iii) Have an absorbent core that consists of cellulose fibers mixed with absorbent gelling;

(iv) Have leg gathers that consist of at least three strands of elasticized materials;

(v) Have a backsheet that is moisture impervious, is at least 1.00 mm thick, and is designed to protect clothing and linens;

(vi) Have an inner lining made of soft, absorbent material; and

(vii) Have a top sheet that resists moisture returning to the skin.

(d) In addition to the standards in subsection (a) of this section, underpads are covered only for incontinent purposes in a client's bed and must meet the following specifications:

(i) Have an absorbent layer that is at least one and one-half inches from the edge of the underpad;

(ii) Be manufactured with a waterproof backing material;

(iii) Be able to withstand temperatures not to exceed one hundred-forty degrees Fahrenheit;

(iv) Have a covering or facing sheet that is made of non-woven, porous materials that have a high degree of permeability, allowing fluids to pass through and into the absorbent filler. The patient contact surface must be soft and durable;

(v) Have filler material that is highly absorbent. It must be heavy weight fluff filler or the equivalent; and

(vi) Have four-ply, nonwoven facing, sealed on all four sides.

(e) In addition to the standards in subsection (a) of this section, liners, shields, guards, pads, and undergarments are covered for incontinence only and must meet the following specifications:

(i) Have channels to direct fluid throughout the absorbent area, and leg gathers to assist in controlling leakage, and/or be contoured to permit a more comfortable fit;

(ii) Have a waterproof backing designed to protect clothing and linens;

(iii) Have an inner liner that resists moisture returning to the skin;

(iv) Have an absorbent core that consists of cellulose fibers mixed with absorbent gelling materials;

(v) Have pressure-sensitive tapes on the reverse side to fasten to underwear; and

(vi) For undergarments only, be contoured for good fit, have at least three elastic leg gathers, and may be belted or unbelted.

(f) The department covers the products in this subsection only when they are used alone; they cannot be used in combination with each other. The department approves a client's use of a combination of products only when the client uses different products for daytime and nighttime use (see department billing instructions for how to specify this when billing). The total quantity of all products in this section used in combination cannot exceed the monthly limitation for the product with the highest limit (see subsections (g), (h), (i), (j), (k), (l), and (m) of this section for product limitations). The following products cannot be used together:

(i) Disposable diapers;

(ii) Disposable pull-up pants and briefs;

(iii) Disposable liners, shields, guards, pads, and undergarments;

(iv) Rented reusable diapers (e.g., from a diaper service); and

(v) Rented reusable briefs (e.g., from a diaper service), or pull-up pants.

(g) Purchased disposable diapers (any size) are limited to:

(i) ~~(Three)~~ Two hundred per month for a child three to eighteen years of age; and

(ii) Two hundred ~~(forty)~~ per month for an adult nineteen years of age and older.

(h) Reusable cloth diapers (any size) are limited to:

(i) Purchased - thirty-six per year; and

(ii) Rented - two hundred ~~(forty)~~ per month.

(i) Disposable briefs and pull-up pants (any size) are limited to:

(i) ~~(Three)~~ Two hundred per month for a child age three to eighteen years of age; and

(ii) One hundred fifty per month for an adult nineteen years of age and older.

(j) Reusable briefs, washable protective underwear, or pull-up pants (any size) are limited to:

(i) Purchased - four per year.

(ii) Rented - one hundred fifty per month.

(k) Disposable pant liners, shields, guards, pads, and undergarments are limited to two hundred ~~(forty)~~ per month.

(l) Underpads for beds are limited to:

(i) Disposable (any size) - one hundred eighty per month.

(ii) Purchased, reusable (large) - forty-two per year.

(iii) Rented, reusable (large) - ninety per month.

(8) Urological supplies - urinary retention:

(a) Bedside drainage bag, day or night, with or without anti-reflux device, with or without tube - two per month. This cannot be billed in combination with any of the following:

(i) With extension drainage tubing for use with urinary leg bag or urostomy pouch (any type, any length), with connector/adapter; and/or

(ii) With an insertion tray with drainage bag, and with or without catheter.

(b) Bedside drainage bottle, with or without tubing - two per six month period.

(c) Extension drainage tubing (any type, any length), with connector/adaptor, for use with urinary leg bag or urostomy pouch. This cannot be billed in combination with a vinyl urinary leg bag, with or without tube.

(d) External urethral clamp or compression device (not be used for catheter clamp) - two per twelve-month period.

(e) Indwelling catheters (any type) - three per month.

(f) Insertion trays:

(i) Without drainage bag and catheter - one hundred and twenty per month. These cannot be billed in combination with other insertion trays that include drainage bag, catheters, and/or individual lubricant packets.

(ii) With indwelling catheters - three per month. These cannot be billed in combination with: Other insertion trays without drainage bag and/or indwelling catheter; individual indwelling catheters; and/or individual lubricant packets.

(g) Intermittent urinary catheter - one hundred twenty per month. These cannot be billed in combination with: An insertion tray with or without drainage bag and catheter; or other individual intermittent urinary catheters.

(h) Irrigation syringe (bulb or piston) - cannot be billed in combination with irrigation tray or tubing.

(i) Irrigation tray with syringe (bulb or piston) - thirty per month. These cannot be billed in combination with irrigation syringe (bulb or piston), or irrigation tubing set.

(j) Irrigation tubing set - thirty per month. These cannot be billed in combination with an irrigation tray or irrigation syringe (bulb or piston).

(k) Leg straps (latex foam and fabric). Allowed as replacement only.

(l) Male external catheter, specialty type, or with adhesive coating or adhesive strip - sixty per month.

(m) Urinary suspensory with leg bag, with or without tube - two per month. This cannot be billed in combination with: a latex urinary leg bag; urinary suspensory without leg bag; extension drainage tubing; or a leg strap.

(n) Urinary suspensory without leg bag, with or without tube - two per month.

(o) Urinary leg bag, vinyl, with or without tube - two per month. This cannot be billed in combination with: A leg strap; or an insertion tray with drainage bag and without catheter.

(p) Urinary leg bag, latex - one per month. This cannot be billed in combination with an insertion tray with drainage bag and with or without catheter.

(9) Miscellaneous supplies:

(a) Bilirubin light therapy supplies - five days' supply. The department reimburses only when these are provided with a prior authorized bilirubin light.

(b) Continuous passive motion (CPM) softgoods kit - one, with rental of CPM machine.

(c) Eye patch with elastic, tied band, or adhesive, to be attached to an eyeglass lens - one box of twenty.

(d) Eye patch (adhesive wound cover) - one box of twenty.

(e) Nontoxic gel (e.g., LiceOut TM) for use with lice combs - one bottle per twelve month period.

(f) ~~((Syringes and needles ("sharps") disposal container for home use, up to one gallon size - two per month))~~ Non-sterile gloves - one hundred per box, two box per month.

(g) Sterile gloves - thirty pair, per month.

(10) Miscellaneous DME:

(a) Bilirubin light or light pad - five days rental per twelve-month period.

(b) Blood glucose monitor (specialized or home) - one in a three-year period.

(c) Continuous passive motion (CPM) machine - up to ten days rental and requires prior authorization.

(d) Lightweight protective helmet/soft shell (including adjustable chin/mouth strap) - two per twelve-month period.

(e) Lightweight ventilated hard-shell helmet (including unbreakable face bar, woven chin strap w/adjustable buckle and snap fastener, and one set of cushion pads for adjusting fit to head circumference) - two per twelve-month period.

(f) Pneumatic compressor - one in a five-year period.

(g) Positioning car seat - one in a five-year period.

(11) Prosthetics and orthotics:

(a) Thoracic-hip-knee-ankle orthosis (THKAO) standing frame - one every five years.

(b) Preparatory, above knee "PTB" type socket, non-alignable system, pylon, no cover, SACH foot plaster socket, molded to model - one per lifetime, per limb.

(c) Preparatory, below knee "PTB" type socket, non-alignable system, pylon, no cover, SACH foot thermoplastic or equal, direct formed - one per lifetime, per limb.

(d) Socket replacement, below the knee, molded to patient model - one per twelve-month period.

(e) Socket replacement, above the knee/knee disarticulation, including attachment plate, molded to patient model - one per twelve-month period.

(f) All other prosthetics and orthotics are limited to one per twelve-month period per limb.

(12) Positioning devices:

(a) Positioning system/supine boards (small or large), including padding, straps adjustable armrests, footboard, and support blocks - one in a five-year period.

(b) Prone stander (child, youth, infant or adult size) - one in a five-year period.

(c) Adjustable standing frame (for child/adult thirty - sixty-eight inches tall), including two padded back support blocks, a chest strap, a pelvic strap, a pair of knee blocks, an abductor, and a pair of foot blocks - one in a five-year period.

(13) Beds, mattresses, and related equipment:

(a) Pressure pad, alternating with pump - one in a five-year period.

(b) Dry pressure mattress - one in a five-year period.

(c) Gel or gel-like pressure pad for mattress - one in a five-year period.

(d) Gel pressure mattress - one in a five-year period.

(e) Water pressure pad for mattress - one in a five-year period.

(f) Dry pressure pad for mattress - one in a five-year period.

(g) Mattress, inner spring - one in a five-year period.

(h) Mattress, foam rubber - one in a five-year period.

(i) Hospital bed, semi-electric - one in a ten-year period.

(j) Bedside rails - one in a ten-year period.

(14) Other patient room equipment:

(a) Patient lift, hydraulic, with seat or sling - one in a five-year period.

- (b) Traction equipment - one in a five year period.
- (c) Trapeze bars - one in a five-year period.
- (d) Fracture frames - one in a five-year period.
- (e) Transfer board or devices - one in a five-year period.
- (15) Noninvasive bone growth/nerve stimulators:
  - (a) Transcutaneous electrical nerve stimulation device (TNS) - one in a five-year period.
  - (b) Osteogenesis stimulators - one in a five-year period.
- (16) Communication devices - artificial larynx, any type - one in a five-year period.
- (17) Ambulatory aids:
  - (a) Canes - one in a five-year period.
  - (b) Crutches - one in a five-year period.
  - (c) Walkers - one in a five-year period.
- ~~((18) Bathroom equipment:~~
  - ~~(a) Commode chairs - one in a five-year period.~~
  - ~~(b) Tub stool or bench - one in a five-year period.~~
  - ~~(c) Transfer bench for tub or toilet - one in a five-year period.~~
  - ~~(d) Bed pans - one in a five-year period.~~
  - ~~(e) Urinals - one in a five-year period.~~
  - ~~(f) Shower/commode chairs - one in a five-year period.~~
  - ~~(g) Bath seats/chairs - one in a five-year period.~~
  - ~~(h) Potty chairs - one in a five-year period.~~
- ~~(19) Blood monitoring:~~
  - ~~(a) Sphygmomanometer/blood pressure apparatus - one in a five-year period.~~
  - ~~(b) Automatic blood pressure monitor - one in a five-year period.~~

**AMENDATORY SECTION** (Amending WSR 07-04-036, filed 1/29/07, effective 3/1/07)

**WAC 388-543-1300 Equipment, related supplies, or other nonmedical supplies, and devices that are not covered.**

(1) The department pays only for DME and related supplies, medical supplies and related services that are medically necessary, listed as covered in this chapter, and meet the definition of DME and medical supplies as defined in WAC 388-543-1000 and prescribed per WAC 388-543-1100 and 388-543-1200.

(2) The department pays only for prosthetics or orthotics that are listed as such by the Centers for Medicare and Medicaid Services (CMS) ~~((, formerly known as HCFA,))~~ that meet the definition of prosthetic and orthotic as defined in WAC 388-543-1000 and are prescribed per WAC 388-543-1100 and 388-543-1200.

(3) The department considers all requests for covered DME, related supplies and services, medical supplies, prosthetics, orthotics, and related services under the provisions of WAC 388-501-0165.

(4) The department evaluates a request for any DME item listed as noncovered in this chapter under the provisions of WAC 388-501-0160. When early and periodic screening, diagnosis and treatment (EPSDT) applies, the department evaluates a noncovered service, equipment, or supply according to the process in WAC 388-501-0165 to determine if it is medically necessary, safe, effective, and not experimental (see WAC 388-543-0100 for EPSDT rules).

(5) The department specifically excludes services and equipment in this chapter from fee-for-service (FFS) scope of coverage when the services and equipment do not meet the definition for a covered item, or the services are not typically medically necessary. This exclusion does not apply if the services and equipment are:

- (a) Included as part of a managed care plan service package;
- (b) Included in a waived program;
- (c) Part of one of the medicare programs for qualified medicare beneficiaries; or
- (d) Requested for a child who is eligible for services under the EPSDT program. The department reviews these requests according to the provisions of chapter 388-534 WAC.

(6) Excluded services and equipment include, but are not limited to:

- (a) Services, procedures, treatment, devices, drugs, or the application of associated services that the Food and Drug Administration (FDA) and/or the Centers for Medicare and Medicaid Services (CMS) consider investigative or experimental on the date the services are provided;
- (b) Any service specifically excluded by statute;
- (c) A client's utility bills, even if the operation or maintenance of medical equipment purchased or rented by the department for the client contributes to an increased utility bill (refer to the aging and disability services administration's (ADSA) COPES program for potential coverage);
- (d) Hairpieces or wigs;
- (e) Material or services covered under manufacturers' warranties;
- (f) Shoe lifts less than one inch, arch supports for flat feet, and nonorthopedic shoes;
- (g) Outpatient office visit supplies, such as tongue depressors and surgical gloves;
- (h) Prosthetic devices dispensed solely for cosmetic reasons ~~((refer to WAC 388-531-0150 (1)(d)))~~;
- (i) Home improvements and structural modifications, including but not limited to the following:
  - (i) Automatic door openers for the house or garage;
  - (ii) Saunas;
  - (iii) Security systems, burglar alarms, call buttons, lights, light dimmers, motion detectors, and similar devices;
  - (iv) Swimming pools;
  - (v) Whirlpool systems, such as jacuzzies, hot tubs, or spas; or
  - (vi) Electrical rewiring for any reason;
  - (vii) Elevator systems and elevators; and
  - (viii) Lifts or ramps for the home; or
  - (ix) Installation of bathtubs or shower stalls.
- (j) Nonmedical equipment, supplies, and related services, including but not limited to, the following:
  - (i) Back-packs, pouches, bags, baskets, or other carrying containers;
  - (ii) Bed boards/conversion kits, and blanket lifters (e.g., for feet);
  - (iii) Car seats for children under five, except for positioning car seats that are prior authorized. Refer to WAC 388-543-1700(13) for car seats;

(iv) Cleaning brushes and supplies, except for ostomy-related cleaners/supplies;

(v) Diathermy machines used to produce heat by high frequency current, ultrasonic waves, or microwave radiation;

(vi) Electronic communication equipment, installation services, or service rates, including but not limited to, the following:

(A) Devices intended for amplifying voices (e.g., microphones);

(B) Interactive communications computer programs used between patients and healthcare providers (e.g., hospitals, physicians), for self care home monitoring, or emergency response systems and services (refer to ADSA COPEs or outpatient hospital programs for emergency response systems and services);

(C) Two-way radios; and

(D) Rental of related equipment or services;

(vii) Environmental control devices, such as air conditioners, air cleaners/purifiers, dehumidifiers, portable room heaters or fans (including ceiling fans), heating or cooling pads, and light boxes;

(viii) Ergonomic equipment;

(ix) Exercise classes or equipment such as exercise mats, bicycles, tricycles, stair steppers, weights, trampolines;

(x) Generators;

(xi) Computer software other than speech generating, printers, and computer accessories (such as anti-glare shields, backup memory cards);

(xii) Computer utility bills, telephone bills, internet service, or technical support for computers or electronic notebooks;

(xiii) Any communication device that is useful to someone without severe speech impairment (e.g., cellular telephone, walkie-talkie, pager, or electronic notebook);

(xiv) Racing strollers/wheelchairs and purely recreational equipment;

(xv) Room fresheners/deodorizers;

(xvi) Bidet or hygiene systems, sharp containers, paraffin bath units, and shampoo rings;

(xvii) Timers or electronic devices to turn things on or off, which are not an integral part of the equipment;

(xviii) Vacuum cleaners, carpet cleaners/deodorizers, and/or pesticides/insecticides; or

(xix) Wheeled reclining chairs, lounge and/or lift chairs (e.g., geri-chair, posture guard, or lazy boy).

(k) Blood monitoring;

(i) Sphygmomanometer/blood pressure apparatus with cuff and stethoscope;

(ii) Blood pressure cuff only; and

(iii) Automatic blood pressure monitor.

(l) Bathroom equipment;

(i) Bath stools;

(ii) Bathtub wall rail (grab bars);

(iii) Bed pans;

(iv) Control unit for electronic bowel irrigation/evacuation system;

(v) Disposable pack for use with electronic bowel system;

(vi) Potty chairs;

(vii) Raised toilet seat;

(viii) Safety equipment (e.g. belt, harness or vest);

(ix) Shower/commode chairs;

(x) Sitz type bath or equipment;

(xi) Standard and heavy duty bath chairs;

(xii) Toilet rail;

(xiii) Transfer bench tub or toilet;

(xiv) Urinal male/female;

(m) Disinfectant spray - one twelve-ounce bottle or can per six-month period;

(n) Personal and comfort items (~~that do not meet the DME definition,~~) including but not limited to the following:

(i) Bathroom items, such as antiperspirant, astringent, bath gel, conditioner, deodorant, moisturizer, mouthwash, powder, shampoo, shaving cream, shower cap, shower curtains, soap (including antibacterial soap), toothpaste, towels, and weight scales;

(ii) Bedding items, such as bed pads, blankets, mattress covers/bags, pillows, pillow cases/covers (~~and~~), sheets, and bumper pads;

(iii) Bedside items, such as bed trays, carafes, and over-the-bed tables;

(iv) Clothing and accessories, such as coats, gloves (including wheelchair gloves), hats, scarves, slippers, (~~and~~) socks, custom vascular supports (CVS), surgical stockings, gradient compression stockings, and graduated compression stockings for pregnancy support (pantyhose style);

(v) Clothing protectors, surgical masks, and other protective cloth furniture coverings;

(vi) Cosmetics, including corrective formulations, hair depilatories, and products for skin bleaching, commercial sun screens, and tanning;

(vii) Diverter valves and handheld showers for bathtub;

(viii) Eating/feeding utensils;

(ix) Emesis basins, enema bags, and diaper wipes;

(x) Health club memberships;

(xi) Hot or cold temperature food and drink containers/holders;

(xii) Hot water bottles and cold/hot packs or pads not otherwise covered by specialized therapy programs;

(xiii) Impotence devices;

(xiv) Insect repellants;

(xv) Massage equipment;

(xvi) Medication dispensers, such as med-collators and count-a-dose, except as obtained under the compliance packaging program. See chapter 388-530 WAC;

(xvii) Medicine cabinet and first-aid items, such as adhesive bandages (e.g., Band-Aids, Curads), cotton balls, cotton-tipped swabs, medicine cups, thermometers, and tongue depressors;

(xviii) Page turners;

(xix) Radio and television;

(xx) Telephones, telephone arms, cellular phones, electronic beepers, and other telephone messaging services; and

(xxi) Toothettes and toothbrushes, waterpics, and peridental devices whether manual, battery-operated, or electric.

~~((H))~~ (o) Certain wheelchair features and options are not considered by the department to be medically necessary or essential for wheelchair use. This includes, but is not limited to, the following:

(i) Attendant controls (remote control devices);

- (ii) Canopies, including those for strollers and other equipment;
- (iii) Clothing guards to protect clothing from dirt, mud, or water thrown up by the wheels (similar to mud flaps for cars);
- (iv) Identification devices (such as labels, license plates, name plates);
- (v) Lighting systems;
- (vi) Speed conversion kits; and
- (vii) Tie-down restraints, except where medically necessary for client-owned vehicles.

**Reviser's note:** The spelling error in the above section occurred in the copy filed by the agency and appears in the Register pursuant to the requirements of RCW 34.08.040.

**AMENDATORY SECTION** (Amending WSR 07-17-062, filed 8/13/07, effective 9/13/07)

**WAC 388-543-1600 Items and services which require prior authorization.** (1) The department bases its determination about which DME and related supplies, prosthetics, orthotics, medical supplies and related services require **prior authorization (PA)** or **expedited prior authorization (EPA)** on utilization criteria. (See WAC 388-543-1000 for PA and WAC 388-543-1800 for EPA.) The department considers all of the following when establishing utilization criteria:

- (a) High cost;
  - (b) Potential for utilization abuse;
  - (c) Narrow therapeutic indication; and
  - (d) Safety.
- (2) The department requires providers to obtain prior authorization for certain items and services, except for dual-eligible medicare/medicaid clients when medicare is the primary payer. This includes, but is not limited to, the following:
- (a) Augmentative communication devices (ACDs);
  - (b) Certain by report (BR) DME and supplies as specified in the department's published issuances, including billing instructions and numbered memoranda;
  - (c) Blood glucose monitors requiring special features;
  - (d) Certain equipment rentals and certain prosthetic limbs, as specified in the department's published issuances, including billing instructions and numbered memoranda;
  - (e) Decubitus care products and supplies;
  - (f) Decubitus care mattresses, including flotation or gel mattress, if the provider fails to meet the criteria in WAC 388-543-1900;
  - (g) Equipment parts and labor charges for repairs or modifications and related services;
  - (h) Hospital beds, if the provider fails to meet the requirements in WAC 388-543-1900;
  - (i) Low air loss flotation system, if the provider fails to meet the requirements in WAC 388-543-1900;
  - (j) Orthopedic shoes and selected orthotics;
  - (k) Osteogenic stimulator, noninvasive, if the provider fails to meet the requirements in WAC 388-543-1900;
  - (l) Positioning car seats for children under five years of age;

- (m) Transcutaneous electrical nerve stimulators, if the provider fails to meet the requirements in WAC 388-543-1900;
- (n) Wheelchairs, wheelchair accessories, wheelchair modifications, air, foam, and gel cushions, and repairs;
- (o) ~~((Wheelchair style shower/commode chairs;~~
- ~~((p)))~~ Other DME not specifically listed in the department's published issuances, including billing instructions and numbered memoranda, and submitted as a miscellaneous procedure code; and
- ~~((p)))~~ (p) Limitation extensions.

#### **REPEALER**

The following section of the Washington Administrative Code is repealed:

WAC 388-543-2300 Bathroom/shower equipment.

**WSR 09-16-137**  
**PROPOSED RULES**  
**PROFESSIONAL EDUCATOR**  
**STANDARDS BOARD**

[Filed August 5, 2009, 10:00 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-11-081.

Title of Rule and Other Identifying Information: ESHB 2261 states that after January 1, 2010, the professional educator standards board (PESB) may no longer require a college preparation program completion for teachers seeking professional certification. WAC 181-78A-010, 181-78A-500, 181-78A-505, 181-78A-515, 181-78A-520, 181-78A-530, 181-78A-535 and 181-78A-540, are each amended to remove requirements for attending and completing a college preparation program for professional certification. Requirements for teachers to achieve professional certification will be added to those candidate equipments [requirements] articulated in chapter 181-79A WAC.

Hearing Location(s): Red Lion at the Park, 201 West North River Drive, Spokane, WA 99201, on September 23, 2009, at 8:30 a.m.

Date of Intended Adoption: September 23, 2009.

Submit Written Comments to: David Brenna, Legislative and Policy Coordinator, P.O. Box 47236, Olympia, WA 98504, e-mail david.brenna@k12.wa.us, fax (360) 586-4548, by September 16, 2009.

Assistance for Persons with Disabilities: Contact David Brenna, by September 16, 2009, TTY (360) 664-3631 or (360) 725-6238.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Legislative requirement to remove preparation program completion for professional certification. Rule will amend those sections of chapter 181-78A WAC pertaining to professional certification. New rules will be proposed to amend chapter 181-79A

WAC that defines and regulates teacher requirements without college requirements.

Reasons Supporting Proposal: Legislature is reducing the expectations for teachers to attend higher education institutions in order to advance in their career.

Statutory Authority for Adoption: RCW 28A.410.210.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Professional educators standards board, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: David Brenna, P.O. Box 42736 [47236], Olympia, WA 98504, (360) 725-6238.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The proposed amendment does not have an impact on small business and therefore does not meet the requirements for a statement under RCW 19.85.030 (1) or (2).

A cost-benefit analysis is required under RCW 34.05.328. A preliminary cost-benefit analysis may be obtained by contacting David Brenna, P.O. Box 47236, Olympia, WA 98504, phone (360) 725-6238, fax (360) 586-3631, e-mail david.brenna@k12.wa.us.

August 5, 2009  
David Brenna  
Legislative and  
Policy Coordinator

AMENDATORY SECTION (Amending WSR 07-19-056, filed 9/14/07, effective 10/15/07)

**WAC 181-78A-010 Definition of terms.** The following definitions shall be used in this chapter:

(1) "College or university" means any regionally accredited baccalaureate degree granting Washington institution of higher learning or cooperative group of such institutions which has or develops programs of preparation in education which are submitted to the professional educator standards board for approval.

(2) "Endorsement" means a specification placed on a certificate to indicate the subject area, grade level, and/or specialization for which the individual is prepared to teach.

(3) "Interstate compact" means the contractual agreement among several states authorized by RCW 28A.690.010 and 28A.690.020 which facilitates interstate reciprocity.

(4) "Program approval" means the approval by the professional educator standards board of an educator preparation program within Washington state.

(5) "Field experience" means a sequence of learning experiences which occur in actual school settings or clinical or laboratory settings. Such learning experiences are related to specific program outcomes and are designed to integrate educational theory, knowledge, and skills in actual practice under the direction of a qualified supervisor.

(6) "Regionally accredited institution of higher education" means a community college, college, or university which is a candidate for accreditation or is accredited by one of the following regional accrediting bodies:

- (a) Middle States, Association of Colleges and Schools;
- (b) New England Association of Schools and Colleges;

(c) North Central Association of Colleges and Schools;

(d) Northwest Association of Schools and of Colleges and Universities;

(e) Southern Association of Colleges and Schools;

(f) Western Association of Schools and Colleges: Accrediting Commission for Junior and Senior Colleges.

(7) "An approved performance-based educator preparation program" means a program that requires the candidate to demonstrate in multiple ways, over time, specific professional educator standards board required standards, criteria, knowledge and skills, including, where appropriate, evidence related to positive impact on student learning.

(8) "A positive impact on student learning" means that a teacher through instruction and assessment has been able to document students' increased knowledge and/or demonstration of a skill or skills related to the state goals and/or essential academic learning requirements: Provided, That teachers employed by private schools who are candidates for the professional teaching certificate shall document students' increased knowledge and/or demonstration of a skill or skills related to either:

(a) The state goals or essential academic learning requirements; or

(b) Such alternative learning goals as the private school has established.

(9) "Collaboration" (as used in WAC 181-78A-500 through 181-78A-540) means ongoing communication among the professional growth team members using a variety of formats (e.g., conferences, electronic mail, conference calls, etc.) to reach consensus regarding the content - course work, experiences, competencies, knowledges and skills - of the candidate's professional growth plan.

(10) "Professional growth team."

~~((a) Teacher "professional growth team" means a team comprised of the candidate for professional certification, a colleague specified by the candidate, a college or university advisor appointed by the college or university, and a representative from the school district in which the candidate teaches.~~

~~(b))~~ (a) Principal/program administrator "professional growth team," for the purpose of professional certification, means a team comprised of the candidate for the professional certificate, a district representative or designee, a professional association representative, and a college or university advisor. "Professional growth team," for the purpose of renewal of the professional certificate, means a team comprised of the individual renewing the certificate and the superintendent, or superintendent designee or appointed representative.

~~((a))~~ (b) School counselor, school psychologist, and school social worker "professional growth team" for the purpose of professional certification, means a team comprised of the candidate for the professional certificate, a college/university program administrator/designee, and a colleague/peer from the same professional role specified by the candidate. A district representative is also required to serve on the professional growth team. Provided that, a candidate may petition the university to have membership of a district representative waived.



(11) "Individual professional growth plan" means the document which identifies the specific competencies, knowledges, skills and experiences needed to meet the standards set forth in WAC 181-78A-540. ~~((The individual professional growth plan shall meet requirements set forth in WAC 181-78A-535 (4)(a)).~~

~~(12) "Preassessment seminar" means that component of the approved professional certificate program in which the candidate for a professional certificate, in collaboration with members of his/her professional growth team, identifies specific competencies, knowledges, skills and/or experiences needed to meet standards for the certificate as required by WAC 181-78A-540. The preassessment seminar shall meet requirements set forth in WAC 181-78A-535 (4)(a).~~

~~(13))~~ (12) "Culminating seminar" means that component of the approved professional certificate program in which the candidate for a professional certificate presents his/her final documentation and evidence of professional certificate level knowledge, skill and performance, and positive impact on student learning. The culminating seminar shall meet requirements set forth in WAC 181-78A-535 ~~((4)(e))~~ (2).

**Reviser's note:** RCW 34.05.395 requires the use of underlining and deletion marks to indicate amendments to existing rules. The rule published above varies from its predecessor in certain respects not indicated by the use of these markings.

AMENDATORY SECTION (Amending WSR 07-04-004, filed 1/24/07, effective 2/24/07)

**WAC 181-78A-500 Professional certificate program approval.** All professional certificate programs for ~~((teachers,))~~ principals/program administrators, and school counselors, school psychologists, and school social workers shall be approved pursuant to the requirements in WAC 181-78A-520 through 181-78A-540. Only colleges/universities with professional educator standards board-approved residency certificate ~~((teacher,))~~ principals/program administrator~~((s))~~ and school counselor, school psychologist, and school social worker preparation programs~~((s))~~, and educational service districts are eligible to apply for approval to offer ~~((teacher))~~ professional certificate programs. Educational service districts ~~((are encouraged to))~~ may partner with institutions of higher education, local school districts or consortia of school districts to provide ~~((teacher))~~ professional certificate programs.

AMENDATORY SECTION (Amending WSR 07-04-004, filed 1/24/07, effective 2/24/07)

**WAC 181-78A-515 Program approval standards for professional certificate approved programs.** The program approval standards for approved programs ~~((for teachers))~~ are as follows:

(1) **Professional education advisory boards.** The college, university or educational service district, in compliance with the provisions of WAC 181-78A-250 and 181-78A-520, has established and maintained a professional education advisory board to participate in decisions related to the development, implementation, and revision of the professional certificate program ~~((for teachers)).~~

(2) **Accountability.** Each college, university or educational service district, in compliance with the provision of WAC 181-78A-525, has established a performance-based program.

(3) **Resources.** The college, university or educational service district, in compliance with the provision of WAC 181-78A-530, is responsible for providing the resources needed to develop and maintain quality professional programs.

(4) **Program design.** Each college, university or educational service district, in compliance with the provision of WAC 181-78A-535, is responsible for establishing an approved professional certificate program which accommodates the individual professional growth needs of each candidate as set forth in his/her professional growth plan.

(5) **Knowledge and skills.** Each college, university or educational service district, in compliance with the provision of WAC 181-78A-540, has established policies requiring that all candidates for certification demonstrate the standards and criteria for the professional certificate set forth in WAC 181-78A-540.

AMENDATORY SECTION (Amending WSR 07-04-004, filed 1/24/07, effective 2/24/07)

**WAC 181-78A-520 Approval standard—Professional education advisory board.** The following evidence shall be evaluated to determine whether each professional certificate program is in compliance with the program approval standards of WAC 181-78A-515(1).

(1) College or university.

(a) The professional education advisory board established for the preservice program in accordance with WAC 181-78A-209 shall also serve as the professional advisory board for the professional certificate program.

(b) The professional education advisory board has participated in the development of the professional certificate program and has recommended approval of the proposed program prior to its submission to the professional educator standards board for approval.

(c) The professional education advisory board has reviewed the annual summary on the status of all candidates in the program required by WAC 181-78A-525(7).

(d) The professional education advisory board has made recommendation(s), as appropriate, for program changes to the professional certificate administrator who shall implement or respond to the recommendation(s) in a timely manner.

~~((2) Educational service district.~~

~~The educational service district electing to seek approval to offer a teacher professional certificate program has established and maintained a professional education advisory board to participate in decisions related to the development, implementation, and revision of the professional certificate program for teachers.~~

~~(a) Membership. The professional education advisory board shall consist of the following:~~

~~(i) Educational service district teacher assistance program coordinator;~~

~~(ii) One college or university representative, from the educational service district region, appointed by the Washington association of colleges for teacher education;~~

~~(iii) One superintendent appointed by the Washington association of school administrators from the educational service district region;~~

~~(iv) One district human resource representative;~~

~~(v) One teacher with national board certification, from the educational service district region, appointed by the Washington Education Association;~~

~~(vi) One teacher with professional certification, from the educational service district region, appointed by the Washington Education Association;~~

~~(vii) One educational service district representative with responsibility for inservice/professional development; and~~

~~(viii) One principal, from the educational service district region, appointed by the Washington Association of School Principals.~~

~~(b) The professional education advisory board has participated in the development of the professional certificate program and has recommended approval of the proposed program prior to its submission to the professional educator standards board for approval.~~

~~(c) The professional education advisory board has reviewed the annual summary on the status of all candidates in the program required by WAC 181-78A-525(7).~~

~~(d) The professional education advisory board has made recommendation(s), as appropriate, for program changes to the professional certificate administrator who shall implement or respond to the recommendation(s) in a timely manner.~~

~~(e) Annual report. The professional education advisory board shall submit an executive summary to the professional educator standards board no later than July 31 of each year that includes the following:~~

~~(i) Evidence to demonstrate links between ongoing educational service district professional development opportunities/learning improvement initiatives and the professional certificate program;~~

~~(ii) A summary of the status of all candidates in the program; and~~

~~(iii) A description of formal and informal partnerships with school districts or consortia of school districts.)~~

AMENDATORY SECTION (Amending WSR 07-15-053, filed 7/13/07, effective 8/13/07)

**WAC 181-78A-525 Approval standard—Accountability.** The following evidence shall be evaluated to determine whether each professional certificate program is in compliance with the program approval standards of WAC 181-78A-515(2). Each college, university or educational service district shall:

(1) Submit for initial approval to the professional educator standards board a performance-based professional certificate program (~~for teachers~~) which shall include the (~~five~~) program components specified in WAC 181-78A-535(~~(4)~~).

(2) Provide documentation that the respective professional education advisory board has participated in the development of and has approved the proposal.

(3) Identify the professional certificate administrator who shall be responsible for the administration of the professional certificate program.

(4) Delegate to the professional certificate administrator responsibility for reviewing or overseeing the following: Application for the professional certificate program; advising candidates once accepted; developing and implementing the individualized professional growth plan, the instruction and assistance components, and the assessment seminar; maintaining current records on the status of all candidates accepted into the professional certificate program; and serving as the liaison with the superintendent of public instruction certification office to facilitate the issuance of the professional certificates when candidates have met the required standards.

(5) Establish the admission criteria that candidates for the professional certificate shall meet to be accepted into the professional certificate program.

(6) Describe the procedures that the approved program will use to determine that a candidate has successfully demonstrated the standards and criteria for the professional certificate set forth in WAC 181-78A-540.

(7) Prepare an annual summary of the status of all candidates in the program and submit the summary to the respective professional education advisory board.

(8) Submit any additional information required to the respective professional education advisory board that it requests.

(9) Submit an annual report to the professional educator standards board as part of a less intensive evaluation cycle which will include the following:

(a) A summary of course work program requirements (~~for the preassessment and culminating seminars~~), linkages of the program to individual ~~teacher~~ professional growth plans, linkages to school district and school improvement plans, and, to the extent possible, linkages to school district professional development programs where such programs are in place in school districts.

(b) A summary of program design, assessment procedures and program revisions in the previous year.

(c) The number of candidates completing the program during the period between September 1 and August 31.

(d) The number of candidates enrolled in the program.

(e) Other information related to the professional certificate program requested by the professional educator standards board.

(10) Facilitate an on-site review of the program when requested by the professional educator standards board to ensure that the program meets the state's program approval standards and to provide assessment data relative to the performance standards.

Provided, That the on-site reviews shall be scheduled on a five-year cycle unless the professional educator standards board approves a variation in the schedule.

~~(Provided further, That colleges and universities seeking National Council for the Accreditation of Teacher Education (NCATE) accreditation may request from the professional educator standards board approval for concurrent site visits which shall utilize the same documentation whenever possible.)~~

**Reviser's note:** The typographical error in the above section occurred in the copy filed by the agency and appears in the Register pursuant to the requirements of RCW 34.08.040.

AMENDATORY SECTION (Amending WSR 07-04-004, filed 1/24/07, effective 2/24/07)

**WAC 181-78A-530 Approval standard—Resources.**

The following evidence shall be evaluated to determine whether each professional certificate program is in compliance with the resources program approval standard of WAC 181-78A-515(3):

(1) Administrators, faculty, and ~~((teachers))~~ facilitators implementing the college, university or educational service district professional certificate program have appropriate qualifications (academic, experience, or both) for the roles to which they are assigned. Such responsibilities may be shared, when appropriate, among the collaborating agencies.

(2) The college, university or educational service district shall have responsibility for maintaining fiscal records and ensuring adequate financial support for the professional certificate program.

(3) Instructional, technological, and other needed resources shall be sufficient in scope, breadth, and recency to support the professional certificate program.

AMENDATORY SECTION (Amending WSR 07-04-004 [07-19-056], filed 1/24/07 [9/14/07], effective 2/24/07 [10/15/07])

**WAC 181-78A-535 Approval standard—Program design.** The following requirements shall govern the design of the professional certificate program:

~~((1))~~ **Teacher:**

~~(a) To be eligible to apply for admission to a professional certificate program, a candidate shall hold a contract as a teacher in a public or a professional educator standards board approved private school or state agency providing educational services for students and shall have completed provisional status with a school district under RCW 28A.405.220 or the equivalent with a professional educator standards board approved private school or state agency providing educational services for students or the candidate provides to the program a letter from the candidate's employing district, professional educator standards board approved private school, or state agency providing educational services for students, documenting the employer's support for the candidate's full admission to the professional certificate program. Provided, That a candidate for the professional teacher's certificate may enroll in and complete the preassessment seminar described in subsection (4)(a) of this section prior to admission to a professional certificate program.~~

~~(b) The professional certificate program must be available to all qualified candidates.~~

~~(c) Using the descriptions of practice related to the criteria for the professional certificate, as approved by the professional educator standards board and published by the office of the superintendent of public instruction, which may not be changed without prior professional educator standards board approval, the professional certificate program shall be developed by a college, university and its professional education~~

~~advisory board. Additional agencies may participate in the development of the program if the college, university and professional education advisory board so choose.~~

~~(d) Each program shall consist of:~~

~~(i) A preassessment seminar which considers input from the candidate's "professional growth team" (WAC 181-78A-505), the candidate's past experience, the context in which he/she teaches, information from past annual evaluations if the individual chooses, the candidate's personal and professional goals, his/her self-evaluation, and evidences of the candidate's impact on student learning.~~

~~The seminar will culminate in preparation and approval of the candidate's individual professional growth plan designed to provide the candidate with the knowledge and skills needed to demonstrate successfully the standards and criteria required by WAC 181-78A-540.~~

~~A representative of the college/university and the candidate shall develop the professional growth plan to be reviewed and agreed upon after input from and consultation and "collaboration" (WAC 181-78A-010(9)) with his/her "professional growth team" (WAC 181-78A-010(10)).~~

~~The individual professional growth plan shall be based on:~~

~~(A) An analysis of the instructional context and teaching assignment(s) to determine strategies which the teacher should use to achieve a positive impact on student learning.~~

~~(B) An assessment of the candidate's ability to demonstrate successfully the professional certificate standards and criteria.~~

~~(C) Specifications of assistance and instructional components needed and any required course work.~~

~~(ii) Course work, past and current experience, inservice, continuing education and other activities directed at developing and verifying that the candidate has achieved acceptable knowledge, skill and performance on all criteria required statewide as essential to "effective teaching" as defined in WAC 181-78A-540(1).~~

~~(iii) Course work, past and current experience, inservice, continuing education and other activities directed at developing and verifying that the candidate has achieved acceptable knowledge, skill and performance on all criteria required statewide as essential to "professional development" as defined in WAC 181-78A-540(2).~~

~~(iv) Course work, past and current experience, inservice, continuing education and other activities directed at developing and verifying that the candidate has achieved acceptable knowledge, skill and performance on all criteria required statewide as essential to professional contributions as defined in WAC 181-78A-540(3).~~

~~(v) A culminating seminar in which the candidate presents his/her final documentation and evidence of professional certificate level knowledge, skill and performance; positive impact on student learning; identification of future goals and professional/career interests; and specification of areas for continuing education and development. The candidate must provide multiple forms of evidence which shall include, but are not limited to, the descriptions of practice related to the criteria for the professional certificate as approved by the professional educator standards board and published by the office of the superintendent of public~~

instruction, which may not be changed without prior professional educator standards board approval.

~~(vi) Candidates who do not successfully complete a culminating seminar shall receive an individualized analysis of strengths and weaknesses and a plan for appropriate assistance and instruction.~~

~~(vii) No limits shall be placed on the number of times a candidate with a valid residency certificate may participate in the culminating seminar.~~

~~(2))~~ **(1) Principal/program administrator.**

(a) To be eligible to apply for enrollment in a professional certificate program, a candidate shall hold a contract as a principal, assistant principal, or program administrator in a public school or professional educator standards board-approved private school.

(b) The professional certificate program must be available to all qualified candidates.

(c) Using the six knowledge and skills standards, and the standards-based benchmarks as approved by the professional educator standards board and published by the office of the superintendent of public instruction, which may not be changed without professional educator standards board approval, the professional certificate program shall be developed by a college or university and its professional education advisory board. Additional agencies may participate in the development of the program if the college or university and professional education advisory board so choose.

(d) Each program shall consist of:

(i) An entry seminar during which the professional growth plan shall be developed. The plan shall be based on an assessment of the candidate's ability to demonstrate six standards at the professional certificate benchmark level (WAC 181-78A-270 (2)(b)), performance evaluation data, and an analysis of the administrative context and assignment.

(ii) Formalized learning opportunities, past and current experience, professional development opportunities, and other activities directed at developing and verifying that the candidate has achieved acceptable knowledge, skill, and performance at the professional certificate benchmark level, or above, on all standards as defined in WAC 181-78A-270 (2)(b).

(iii) A final presentation to a panel that includes experienced administrators, during which the candidate provides evidence of professional certificate level knowledge, skill and performance; positive impact on student learning; and a professional growth plan that includes the identification of future goals and professional/career interests as well as a five-year plan for professional development designed to meet the requirements for certificate renewal.

(e) Candidates who do not successfully complete a final presentation shall receive an individualized analysis of strengths and weaknesses and a plan for assistance, and shall be allowed additional opportunities to present evidence pertaining to benchmarks not previously met.

~~((3))~~ **(2) Educational staff associate (ESA) - school counselor, school psychologist, school social worker.**

(a) To be eligible for enrollment in a professional certificate program, a candidate shall be employed in his/her ESA role in a public school, a professional educator standards

board-approved private school, or state agency providing educational services for students.

(b) The professional certificate must be available to all qualified candidates.

(c) Using the knowledge and skills standards in WAC 181-78A-270 (5), (7), and (9), and the standards-based benchmarks as approved by the professional educator standards board and published by the office of the superintendent of public instruction, which may not be changed without professional educator standards board approval, the professional certificate program shall be developed by a college or university and its professional education advisory board. Additional agencies may participate in the development of the program if the college or university and professional education advisory board so choose.

(d) Each program shall consist of:

(i) An entry seminar during which the professional growth plan shall be developed. The plan will be agreed upon after input from and consultation with the ESA candidate's professional growth team (WAC 181-78A-010 (10)(c)) or the professional education advisory board (PEAB). The individual's professional growth plan shall be based on an assessment of the candidate's ability to demonstrate the standards at the professional certificate benchmark level in the specific ESA role pursuant to WAC 181-78A-270 (5), (7), or (9).

(ii) Formalized learning opportunities, and other activities directed at developing and verifying that the candidate has achieved acceptable knowledge, skill, and performance at the professional certificate benchmark level, or above, on all standards in the specific ESA role as defined in WAC 181-78A-270 (5), (7), or (9).

(iii) A culminating seminar in which the candidate presents his/her final documentation and evidence of professional certificate level knowledge, skill, and performance; positive impact on student learning; and specification of areas for continuing education and development.

(e) The candidate will present his/her portfolio to the professional education advisory board (PEAB) or the professional growth team (PGT) who will make a recommendation to the university program administrator/designee regarding the extent to which the candidate meets the professional certificate standards.

(f) Candidates who demonstrate they meet all standards and certification requirements pursuant to WAC 181-79A-150 will be recommended by the university program administrator/designee for the professional certificate.

(g) Candidates who do not successfully complete a culminating seminar shall receive an individualized analysis of strengths and weaknesses and a plan for assistance.

(h) No limit shall be placed on the number of times a candidate with a valid residency certificate may enroll in the culminating seminar.

**Reviser's note:** The bracketed material preceding the section above was supplied by the code reviser's office.

**AMENDATORY SECTION** (Amending WSR 06-14-010, filed 6/22/06, effective 7/23/06)

**WAC 181-78A-540 Approval standard—Knowledge and skills.** (1) ~~((Teacher. A successful candidate for the teacher professional certificate shall demonstrate:~~

**WSR 09-17-027  
PROPOSED RULES  
HORSE RACING COMMISSION**

[Filed August 7, 2009, 1:25 p.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-11-120.

Title of Rule and Other Identifying Information: WAC 260-36-085 License and fingerprint fees.

Hearing Location(s): Auburn City Council Chambers, 25 West Main, Auburn, WA 98002, on October 8, 2009, at 9:30 a.m.

Date of Intended Adoption: October 8, 2009.

Submit Written Comments to: Robert J. Lopez, 6326 Martin Way, Suite 209, Olympia, WA 98516-5578, e-mail [lopez@whrc.state.wa.us](mailto:lopez@whrc.state.wa.us), fax (360) 459-6461, by October 1, 2009.

Assistance for Persons with Disabilities: Contact Patty Sorby by October 1, 2009, TTY (360) 459-6462.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The purpose of the proposal is to increase license and fingerprint fees to cover the cost to administer the licensing program.

Reasons Supporting Proposal: The Washington horse racing commission (WHRC) is required to collect license fees sufficient to cover the cost of the licensing program (RCW 67.16.020(1)). License fees were last increased in January 2008. In 2009 the legislature passed WSHB [ESHB] 1244 which authorized the WHRC to increase license and fingerprint fees as necessary to support the agency's appropriation.

Statutory Authority for Adoption: RCW 67.16.020.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Washington horse racing commission, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Robert J. Lopez, 6326 Martin Way, Suite 209, Olympia, WA 98516-5578, (360) 459-6462.

No small business economic impact statement has been prepared under chapter 19.85 RCW. Not applicable.

A cost-benefit analysis is not required under RCW 34.05.328. Not applicable.

August 7, 2009

R. J. Lopez

Executive Secretary

**AMENDATORY SECTION** (Amending WSR 08-05-087, filed 2/15/08, effective 3/17/08)

**WAC 260-36-085 License and fingerprint fees.** The following are the license fees for any person actively participating in racing activities:

|                   |                             |
|-------------------|-----------------------------|
| Apprentice jockey | \$((76.00))<br><u>80.00</u> |
| Assistant trainer | \$((36.00))<br><u>38.00</u> |

~~(a) The knowledge and skills for effective teaching which ensure student learning by:~~

~~(i) Using instructional strategies that make learning meaningful and show positive impact on student learning;~~

~~(ii) Using a variety of assessment strategies and data to monitor and improve instruction;~~

~~(iii) Using appropriate classroom management principles, processes and practices to foster a safe positive, student-focused learning environment;~~

~~(iv) Designing and/or adapting challenging curriculum that is based on the diverse needs of each student;~~

~~(v) Demonstrating cultural sensitivity in teaching and in relationships with students, families, and community members;~~

~~(vi) Integrating technology into instruction and assessment; and~~

~~(vii) Informing, involving, and collaborating with families and community members as partners in each student's educational process including using information about student achievement and performance.~~

~~(b) A successful candidate for the professional certificate shall demonstrate the knowledge and skills for professional development by:~~

~~(i) Evaluating the effects of his/her teaching through feedback and reflection;~~

~~(ii) Using professional standards and district criteria to assess professional performance, and plan and implement appropriate growth activities; and~~

~~(iii) Remaining current in subject area(s), theories, practice, research and ethical practice.~~

~~(c) A successful candidate for the professional certificate shall demonstrate professional contributions to the improvement of the school, community, and the profession by:~~

~~(i) Advocating for curriculum, instruction, and learning environments that meet the diverse needs of each student;~~

~~(ii) Participating collaboratively in school improvement activities and contributing to collegial decision-making.~~

~~(2)) **Principal/program administrator.** A successful candidate for the principal/program administrator professional certificate shall demonstrate the knowledge and skills at the professional certificate benchmark levels for the six standards pursuant to WAC 181-78A-270 (2)(b).~~

~~((3)) **(2) Educational staff associate - school counselor, school psychologist, or school social worker.** A successful candidate for the ESA professional certificate shall demonstrate the knowledge and skills at the professional certificate benchmark levels for the standards in the specific ESA role pursuant to WAC 181-78A-270 (5), (7), or (9).~~

**REPEALER**

The following section of the Washington Administrative Code is repealed:

|                 |  |
|-----------------|--|
| WAC 181-78A-505 | Overview—Teacher professional certificate program. |
|-----------------|--|

|                                      |  |
|--------------------------------------|--|
| Association employee—management      | <del>\$(25.00)</del><br><u>26.00</u>   |
| Association employee—hourly/seasonal | <del>\$(15.00)</del><br><u>16.00</u>   |
| Association volunteer nonpaid        | No fee                                 |
| Authorized agent                     | <del>\$(25.00)</del><br><u>26.00</u>   |
| Clocker                              | <del>\$(25.00)</del><br><u>26.00</u>   |
| Exercise rider                       | <del>\$(76.00)</del><br><u>80.00</u>   |
| Groom                                | <del>\$(25.00)</del><br><u>26.00</u>   |
| Honorary licensee                    | <del>\$(15.00)</del><br><u>16.00</u>   |
| Jockey agent                         | <del>\$(76.00)</del><br><u>80.00</u>   |
| Jockey                               | <del>\$(76.00)</del><br><u>80.00</u>   |
| Other                                | <del>\$(25.00)</del><br><u>26.00</u>   |
| Owner                                | <del>\$(76.00)</del><br><u>80.00</u>   |
| Pony rider                           | <del>\$(76.00)</del><br><u>80.00</u>   |
| Service employee                     | <del>\$(25.00)</del><br><u>26.00</u>   |
| Spouse groom                         | <del>\$(25.00)</del><br><u>26.00</u>   |
| Stable license                       | <del>\$(47.00)</del><br><u>49.00</u>   |
| Trainer                              | <del>\$(76.00)</del><br><u>80.00</u>   |
| Vendor                               | <del>\$(116.00)</del><br><u>122.00</u> |
| Veterinarian                         | <del>\$(116.00)</del><br><u>122.00</u> |

The license fee for multiple licenses may not exceed ~~\$(116.00)~~ 122.00, except persons applying for owner, veterinarian or vendor license must pay the license fee established for each of these licenses.

The following are examples of how this section applies:

Example one - A person applies for the following licenses: Trainer (~~\$(76.00)~~ 80.00), exercise rider (~~\$(76.00)~~ 80.00), and pony rider (~~\$(76.00)~~ 80.00). The total license fee for these multiple licenses would only be ~~\$(116.00)~~ 122.00.

Example two - A person applies for the following licenses: Owner (~~\$(76.00)~~ 80.00), trainer (~~\$(76.00)~~ 80.00) and exercise rider (~~\$(76.00)~~ 80.00). The total cost of the trainer and exercise rider license would be ~~\$(116.00)~~ 122.00. The cost of the owner license (~~\$(76.00)~~ 80.00) would be added to the maximum cost of multiple licenses

~~\$(116.00)~~ 122.00 for a total license fee of ~~\$(192.00)~~ 202.00.

Example three - A person applies for the following licenses: Owner (~~\$(76.00)~~ 80.00), vendor (~~\$(116.00)~~ 122.00), and exercise rider (~~\$(76.00)~~ 80.00). The license fees for owner (~~\$(76.00)~~ 80.00) and vendor (~~\$(116.00)~~ 122.00) are both added to the license fee for exercise rider (~~\$(76.00)~~ 80.00) for a total license fee of ~~\$(268.00)~~ 282.00.

In addition to the above fees, except for association volunteers (nonpaid) at Class C race meets, a ~~\$(10.00)~~ 11.00 fee will be added to cover the costs of conducting a fingerprint-based background check. The background check fee will be assessed only once annually per person regardless of whether the person applies for more than one type of license in that year.

The commission will review license and fingerprint fees annually to determine if they need to be adjusted to comply with RCW 67.16.020.

**WSR 09-17-068**  
**PROPOSED RULES**  
**HORSE RACING COMMISSION**

[Filed August 13, 2009, 4:49 p.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-09-084.

Title of Rule and Other Identifying Information: WAC 260-49-070 Distribution of source market fee.

Hearing Location(s): Auburn City Council Chambers, 25 West Main, Auburn, WA 98002, on October 8, 2009, at 9:30 a.m.

Date of Intended Adoption: October 8, 2009.

Submit Written Comments to: Robert J. Lopez, 6326 Martin Way, Suite 209, Olympia, WA 98516-5578, e-mail rlopez@whrc.state.wa.us, fax (360) 459-6461, by October 1, 2009.

Assistance for Persons with Disabilities: Contact Patty Sorby by October 1, 2009, TTY (360) 459-6462.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: In 2009 the Washington state legislature passed SB 5125 amending RCW 43.79A.040 to rename the Washington-bred owners' bonus fund account to the Washington-bred owners' bonus fund and breeder awards account (*emphasis added*). WAC 260-49-070 is being amended to reflect the change to the title of the account.

Reasons Supporting Proposal: Consistent with legislative action.

Statutory Authority for Adoption: RCW 67.16.020.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Washington horse racing commission, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Robert J. Lopez, 6326 Martin Way, Suite 209, Olympia, WA 98516-5578, (360) 459-6462.

No small business economic impact statement has been prepared under chapter 19.85 RCW. Not applicable.

A cost-benefit analysis is not required under RCW 34.05.328. Not applicable.

August 13, 2009  
R. J. Lopez  
Executive Secretary

**AMENDATORY SECTION** (Amending WSR 05-19-015, filed 9/9/05, effective 10/10/05)

**WAC 260-49-070 Distribution of source market fee.**

(1) A source market fee shall be paid monthly, unless otherwise directed by the commission, for the source market fee area on all accounts that have Washington as the principal residence address.

(2) The authorized advance deposit wagering service provider shall, at least monthly, unless otherwise directed by the commission, distribute the total source market fee as follows:

(a) Ninety percent of the total source market fee directly to the class 1 racing association and the remaining ten percent directly to the commission.

(b) The class 1 racing association shall distribute two and one-half percent of the total source market fee to the (~~breeders' award fund~~) Washington bred owners' bonus fund and breeder award account as provided in RCW 67.16.175.

(c) The class 1 racing association and the recognized horsemen's organization shall negotiate a separate agreement for contributions to the purse account from the source market fee and submit the agreement for review and approval by the commission. The class 1 racing association shall distribute the horsemen's share of the source market fee in accordance with the horseman's agreement.

(d) The commission shall distribute two and one-half percent of the total source market fee to the Washington bred owners' bonus fund and breeder award account and one-half of one percent of the total source market fee to the class C purse fund account and seven percent of the total source market fee to the commission's operating account.

(3) The commission shall annually review the distribution of the source market fee. Any changes to the distribution shall be adopted by rule.

**WSR 09-17-069**  
**PROPOSED RULES**  
**HORSE RACING COMMISSION**

[Filed August 13, 2009, 5:11 p.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 08-20-063.

Title of Rule and Other Identifying Information: New section WAC 260-60-405 Claiming—Declaring a horse to be ineligible to be claimed at time of entry.

Hearing Location(s): Auburn City Council Chambers, 25 West Main, Auburn, WA 98002, on October 8, 2009, at 9:30 a.m.

Date of Intended Adoption: October 8, 2009.

Submit Written Comments to: Robert J. Lopez, 6326 Martin Way, Suite 209, Olympia, WA 98516-5578, e-mail rlopez@whrc.state.wa.us, fax (360) 459-6461, by October 1, 2009.

Assistance for Persons with Disabilities: Contact Patty Sorby by October 1, 2009, TTY (360) 459-6462.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Adopt a new rule allowing a trainer, at the time of entry to make a horse ineligible for claiming whenever a horse has been laid off for a period of eighty days or more, and the horse is being entered for a claiming price equal to or greater than the price at which the horse last started.

Reasons Supporting Proposal: This allows a trainer or owner to start a horse after a long lay-off in a race without risking the horse being claimed.

Statutory Authority for Adoption: RCW 67.16.020.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Washington horse racing commission, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Robert J. Lopez, 6326 Martin Way, Suite 209, Olympia, WA 98516-5578, (360) 459-6462.

No small business economic impact statement has been prepared under chapter 19.85 RCW. Not applicable.

A cost-benefit analysis is not required under RCW 34.05.328. Not applicable.

August 13, 2009  
R. J. Lopez  
Deputy Secretary

**NEW SECTION**

**WAC 260-60-405 Claiming—Declaring a horse ineligible to be claimed at time of entry.** (1) At the time of entry, the owner, trainer, or if designated, the jockey agent, may opt to declare a horse ineligible to be claimed provided:

(a) The horse has been laid off and has not started in a race for a minimum of one hundred eighty days; and

(b) The horse is entered for a claiming price equal to or greater than the price at which the horse last started.

(2) Failure to declare the horse ineligible to be claimed at the time of entry may not be remedied.

(3) The provisions of this rule will only apply to the first start following each layoff.

**WSR 09-17-070**  
**PROPOSED RULES**  
**PROFESSIONAL EDUCATOR**  
**STANDARDS BOARD**

[Filed August 14, 2009, 8:56 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-14-003.

Title of Rule and Other Identifying Information: Revises WAC 181-78A-261, amends governance standard for college and university educator preparation programs.

Hearing Location(s): Red Lion at the Park, 201 West North River Drive, Spokane, WA 99201, on September 23, 2009, at 8:30 a.m.

Date of Intended Adoption: September 23, 2009.

Submit Written Comments to: David Brenna, Legislative and Policy Coordinator, P.O. Box 47236, Olympia, WA 98504, e-mail david.brenna@k12.wa.us, fax (360) 586-4548, by September 15, 2009.

Assistance for Persons with Disabilities: Contact David Brenna, by September 15, 2009, TTY (360) 664-3631 or (360) 725-6238.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Standards for college educator preparation programs are amended to reflect improvements in program evaluation. WAC 181-78A-261 regarding Standard III includes the governance and resource requirements for approved educator preparation programs (teacher, administrator, and ESA). The revised language deletes two areas: (1) Collaboration and (2) interactions with diverse populations. The other changes are minor such as reordering and rewording for clarity.

Reasons Supporting Proposal: Stakeholder recommendations.

Statutory Authority for Adoption: RCW 28A.410.210.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Professional educator standards board, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: David Brenna, P.O. Box 47236 [47236], Olympia, WA 98504, (360) 725-6238.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The proposed amendment does not have an impact on small business and therefore does not meet the requirements for a statement under RCW 19.85.030 (1) or (2).

A cost-benefit analysis is required under RCW 34.05.328. A preliminary cost-benefit analysis may be obtained by contacting David Brenna, P.O. Box 47236, Olympia, WA 98504, phone (360) 725-6238, fax (360) 586-3631, e-mail david.brenna@k12.wa.us.

August 14, 2009

David Brenna  
Legislative and  
Policy Coordinator

AMENDATORY SECTION (Amending WSR 06-14-010, filed 6/22/06, effective 7/23/06)

**WAC 181-78A-261 Approval standard—Unit governance and resources.** Building on the mission to prepare educators who demonstrate a positive impact on student learning, the unit has the leadership, authority, budget, personnel, facilities, and resources, including information technology resources, for the preparation of candidates to meet state standards. The following evidence shall be evaluated to determine whether each preparation program is in compli-

ance with the resources program approval standard of WAC 181-78A-220(3):

Unit leadership, authority and budget

~~(1) (A separate administrative unit supports the preparation program whose composition and organization are clearly described in writing.~~

~~(2) An officially designated administrator is responsible for the management of operations and resources for the preparation program.~~

~~(3) Faculty are qualified and model best professional practices in scholarship, service, and teaching including the assessment of their own effectiveness as related to candidate performance.~~

~~(4) The institution has and implements an explicit plan to ensure that candidates interact with higher education faculty, school faculty, other candidates and P-12 students representing diverse populations.~~

~~(5) The unit provides a mechanism and facilitates collaboration between unit faculty and faculty in other units of the institution involved in the preparation of educators.~~

~~(6) The unit receives sufficient budgetary allocations at least proportional to other institutional units.~~

~~(7) Workload policies allow faculty members to be actively engaged in teaching, scholarship, assessment, advisement, collaborative work with P-12 schools, and service.~~

~~(8) Specific staff and/or faculty members in the unit are assigned the responsibility of advising applicants for certification and endorsements and for maintaining certification records.~~

~~(9) The unit has adequate facilities to support candidates in meeting standards.~~

~~(10) The unit has adequate information technology resources, library, and curricular resources, and electronic information to support faculty and candidates.~~

~~(11) The unit systematically evaluates faculty performance and facilitates professional development.~~

~~(12) Faculty regularly and systematically collaborate with colleagues in P-12 settings, faculty in other college or university units, and members of the broader professional community to improve teaching, candidate learning, and the preparation of educators.)~~

A separate administrative unit is responsible for the composition and organization of the preparation program.

(a) An officially designated administrator is responsible for the management of operations and resources for the preparation program.

(b) The unit receives sufficient budgetary allocations at least proportional to other institutional units.

Personnel

(2) The unit has adequate personnel to promote teaching and learning.

(a) Workload policies allow faculty to be actively engaged in teaching, scholarship, assessment, advisement, service, and collaborative work with P-12 schools.

(b) Specific staff and/or faculty in the unit are assigned the responsibility of advising applicants for certification and endorsements and for maintaining certification records.



(c) The unit has adequate clinical faculty, site supervisors, support personnel, part-time faculty, and/or graduate teaching assistants.

Faculty qualifications and professional practices

(3) Faculty are qualified and exemplify professional practices.

(a) Faculty are qualified for their assignments.

(b) Faculty exemplify professional practices in teaching.

(c) Faculty exemplify professional practices in scholarship.

(d) Faculty exemplify professional practices in service.

Faculty performance and professional development

(4) The unit systematically and comprehensively evaluates faculty performance and supports professional development.

(a) The faculty evaluate their own effectiveness in teaching, scholarship, and service.

(b) The unit evaluates faculty effectiveness in teaching and learning.

(c) The unit provides opportunity for faculty to engage in professional development.

Unit facilities and resources

(5) The unit is provided adequate facilities and resources to promote teaching and learning.

(a) The unit is provided classrooms, lab space, office space, and/or other facilities.

(b) The unit is provided technology, library, curricular, and electronic information resources.

(c) The facilities support faculty and candidate use of technology.

**WSR 09-17-071**

**PROPOSED RULES**

**PROFESSIONAL EDUCATOR  
STANDARDS BOARD**

[Filed August 14, 2009, 8:59 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-14-002.

Title of Rule and Other Identifying Information: Revises WAC 181-78A-325, changing the number of hours of internship for preparation programs to provide to administrators to receive their certification. Change is required in response to budget constraints.

Hearing Location(s): Red Lion at the Park, 201 West North River Drive, Spokane, WA 99201, on September 23, 2009, at 8:30 a.m.

Date of Intended Adoption: September 23, 2009.

Submit Written Comments to: David Brenna, Legislative and Policy Coordinator, P.O. Box 47236, Olympia, WA 98504, e-mail david.brenna@k12.wa.us, fax (360) 586-4548, by September 15, 2009.

Assistance for Persons with Disabilities: Contact David Brenna by September 15, 2009, TTY (360) 664-3631 or (360) 725-6238.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Reduces internship hours required for professional certification of school administrators in response to budget reductions.

Reasons Supporting Proposal: 2009 operating budget.

Statutory Authority for Adoption: RCW 28A.410.210.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: Fiscal reduction in the state's operating budget reduces support by over 50%.

Name of Proponent: Professional educator standards board, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: David Brenna, P.O. Box 47236 [47236], Olympia, WA 98504, (360) 725-6238.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The proposed amendment does not have an impact on small business and therefore does not meet the requirements for a statement under RCW 19.85.030 (1) or (2).

A cost-benefit analysis is required under RCW 34.05.328. A preliminary cost-benefit analysis may be obtained by contacting David Brenna, P.O. Box 47236, Olympia, WA 98504, phone (360) 725-6238, fax (360) 586-3631, e-mail david.brenna@k12.wa.us.

August 14, 2009

David Brenna

Legislative and  
Policy Coordinator

AMENDATORY SECTION (Amending WSR 06-14-010, filed 6/22/06, effective 7/23/06)

**WAC 181-78A-325 Program approval requirement—Field experience for all administrators.** The internship shall take place in an education setting serving under the general supervision of a certificated practitioner who is performing in the role for which certification is sought. Components of the required internship shall include demonstration by the candidate that he or she has the appropriate, specific relevant skills pursuant to WAC 181-78A-270. An approved preparation program for administrators and, prior to August 31, 1998, for principals, shall require an internship of at least three hundred sixty hours: Provided, That an approved preparation program for principals shall require for those persons entering the program August 31, 1998, and after, an internship which requires practice as an intern during a full school year. A "full school year" shall mean seven hundred twenty hours of which at least one-half shall be during school hours, when students and/or staff are present and include the principal performance domains as stated in WAC 181-78A-270 (2)(a) or (b): Provided, That an approved preparation program for principals shall require for those persons beginning their internship August 1, 2009, and after, an internship which requires practice as an intern during the full school

year. A "full school year" shall mean five hundred forty hours of which at least one-half shall be during school hours, when students and/or staff are present: Provided further, That an approved preparation program for principals shall require for those individuals entering the program on or after September 1, 2004, an internship that shall include demonstration by the candidate that she or he has the appropriate, specific skills pursuant to the standards identified in WAC 181-78A-270 (2)(b) and meets, at minimum, the standards-based benchmarks approved by the professional educator standards board and published by the office of the superintendent of public instruction. The benchmarks may not be changed without prior professional educator standards board approval.

Jean Soliz-Conklin, Executive Director, 4565 7th Avenue S.E., Lacey, WA 98503, (360) 407-1056.

No small business economic impact statement has been prepared under chapter 19.85 RCW. This rule relates only to internal governmental operations that are not subject to violation by a nongovernment party.

A cost-benefit analysis is not required under RCW 34.05.328. This rule relates only to internal governmental operations that are not subject to violation by a nongovernment party.

August 17, 2009  
Jean Soliz-Conklin  
Executive Director

**WSR 09-17-082**  
**PROPOSED RULES**  
**SENTENCING GUIDELINES COMMISSION**

[Filed August 17, 2009, 7:38 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-14-079.

Title of Rule and Other Identifying Information: Community custody ranges, WAC 437-20-010. Updating the WAC to reflect passage of ESSB 5288, chapter 375, Laws of 2009.

Hearing Location(s): Holiday Inn, 17338 International Boulevard, SeaTac, WA 98188, (206) 428-2123, on October 9, 2009, at 9:00 a.m.

Date of Intended Adoption: October 9, 2009.

Submit Written Comments to: Jennifer Jones, Rules Coordinator, Sentencing Guidelines Commission, P.O. Box 40927, Olympia, WA 98504, e-mail JenniferJ@sgc.wa.gov, fax (360) 407-1043, by October 2, 2009.

Assistance for Persons with Disabilities: Contact Jennifer Jones, (360) 407-1043.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The intent of the proposal is to update WAC 437-20-010 to show that this section has been superseded by the passage of ESSB 5288 (chapter 375, Laws of 2009) in which community custody ranges have been changed to a fixed period of time with other conditions.

Reasons Supporting Proposal: Previously, the commission was given authority to set and recommend community custody ranges. Passage of ESSB 5288 (chapter 375, Laws of 2009) has replaced the commission's authority to set community custody ranges.

Statutory Authority for Adoption: RCW 9.94A.850, and the commission's rule-making authority under chapter 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Sentencing guidelines commission, governmental.

Name of Agency Personnel Responsible for Drafting: Shannon Hinchcliffe, 4565 7th Avenue S.E., Lacey, WA 98503, (360) 407-1050; Implementation and Enforcement:

AMENDATORY SECTION (Amending WSR 00-11-052, filed 5/12/00, effective 7/1/00)

**WAC 437-20-010 Community custody ranges.\***

| COMMUNITY CUSTODY RANGES   |                         |
|--|-------------------------|
| Offense Type   | Community Custody Range |
| Sex Offenses (Not sentenced under RCW 9.94A.120(8))                              | 36 to 48 months         |
| Serious Violent Offenses   | 24 to 48 months         |
| Violent Offenses   | 18 to 36 months         |
| Crimes Against Persons (As defined in RCW 9.94A.440(2))                          | 9 to 18 months          |
| Offenses under chapter 69.50 or 69.52 RCW (Not sentenced under RCW 9.94A.120(6)) | 9 to 12 months          |

The ranges specified in this section are not intended to affect or limit the authority to impose exceptional community custody ranges, either above or below the standard community custody range as authorized by RCW 9.94A.120(2) and pursuant to guidelines specified in RCW 9.94A.390. The community custody range for offenders with multiple convictions must be based on the offense that dictates the longest term of community custody. The community custody range for offenders convicted of an offense that falls into more than one of the five categories of offense types listed in this section must be based on the offense type that dictates the longest term of community custody.

\*This section has been superseded by section 5, chapter 235, Laws of 2009. Community custody ranges have been changed to a fixed period of time with other conditions. Please refer to RCW 9.94A.701.

**WSR 09-17-083**  
**PROPOSED RULES**  
**SENTENCING GUIDELINES COMMISSION**

[Filed August 17, 2009, 7:39 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-14-080.

Title of Rule and Other Identifying Information: Clarifying and simplifying the agency's public disclosure process, currently located within chapter 437-06 WAC. Updating WAC references to current law.

Hearing Location(s): Holiday Inn, 17338 International Boulevard, SeaTac, WA 98188, (206) 428-2123, on October 9, 2009, at 9:00 a.m.

Date of Intended Adoption: October 9, 2009.

Submit Written Comments to: Jennifer Jones, Rules Coordinator, Sentencing Guidelines Commission, P.O. Box 40927, Olympia, WA 98504, e-mail JenniferJ@sgc.wa.gov, fax (360) 407-1043, by October 2, 2009.

Assistance for Persons with Disabilities: Contact Jennifer Jones, (360) 407-1043.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The purpose of the proposal is to simplify the agency's public records rules and make them more reader-friendly. Changes include reorganizing the layout of the chapter and the rules within the chapter. The change is also intended to update references to the Public Records Act (instead of the [Public] Disclosure Act) and to refer to the current and correct title, chapter and sections within.

Reasons Supporting Proposal: The commission strives to make its rules easy to follow and to refer to current law. By reorganizing the rules and layout and striking language that is redundant it is easier to follow the public records request procedure. Without the change, the rules will contain a reference to an invalid law (Public Disclosure Act, RCW 42.17.250 through 42.17.340).

Statutory Authority for Adoption: RCW 9.94A.850, commission's rule-making authority under chapter 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Sentencing guidelines commission, governmental.

Name of Agency Personnel Responsible for Drafting: Shannon Hinchcliffe, 4565 7th Avenue S.E., Lacey, WA 98503, (360) 407-1050; Implementation and Enforcement: Jean Soliz-Conklin, Executive Director, 4565 7th Avenue S.E., Lacey, WA 98503, (360) 407-1056.

No small business economic impact statement has been prepared under chapter 19.85 RCW. This rule relates only to internal governmental operations that are not subject to violation by a nongovernment party.

A cost-benefit analysis is not required under RCW 34.05.328. This rule relates only to internal governmental operations that are not subject to violation by a nongovernment party.

August 17, 2009  
Jean Soliz-Conklin  
Executive Director

AMENDATORY SECTION (Amending Order 84-01, filed 11/19/84)

**WAC 437-06-010 Purpose.** The purpose of this chapter shall be to ensure compliance by the Washington state sentencing guidelines commission with the provisions of the Public (~~(Disclosure)~~) Records Act, ((RCW 42.17.250 through 42.17.340)) chapter 42.56 RCW, in conjunction with the Criminal Records Privacy Act, chapter 10.97 RCW, as well as chapter 9.94A RCW.

AMENDATORY SECTION (Amending Order 84-01, filed 11/19/84)

**WAC 437-06-020 ((Definitions.)) Times for inspection and copying records.** ~~((1) "Public record" includes any writing containing information relating to the conduct of government or the performance of any governmental or proprietary function prepared, owned, used or retained by the commission regardless of physical form or characteristics.~~

~~(2) "Writing" means handwriting, typewriting, printing, photostating, photographings, and every other means of recording any form of communication or representation, including letters, words, pictures, sounds, or symbols, or combination thereof; and all papers, maps, magnetic or paper tapes, photographic films and prints, magnetic or punched cards, discs, drums, and other documents.~~

~~(3) "Commission" means the Washington state sentencing guidelines commission.~~

~~(4) "Disclosure" means inspection and/or copying.~~

~~(5) "Denial of disclosure" denotes any exempting from disclosure of any public record.)~~ All public records are available for inspection and copying at the commission office during normal business hours (8:00 a.m. - 12:00 p.m. and 1:00 p.m. - 5:00 p.m.). However, if these activities would interfere with essential agency functions, the agency reserves the right to require advance notice and to limit the amount of time spent on inspection of documents.

AMENDATORY SECTION (Amending Order 84-01, filed 11/19/84)

**WAC 437-06-030 Public records ((available)) officer.** ~~((Requests for any identifiable public record may be initiated at the commission office during normal business hours (8:00 a.m. - 12 and 1:00 p.m. - 5:00 p.m.))~~ The commission shall ((at all times take the most timely possible action on requests for disclosure, and shall be required to respond in writing within ten working days of receipt of the request for disclosure. The commission's failure to respond shall entitle the person seeking disclosure to petition the public records officer pursuant to WAC 437-06-090.)) designate a public records officer, located in the commission office, who shall be responsible for implementing the commission's rules regarding disclosure of public records, coordinating staff in this regard, and generally ensuring compliance by the staff with public records disclosure requirements.

AMENDATORY SECTION (Amending Order 84-01, filed 11/19/84)

**WAC 437-06-040 Request for public records** ~~((officer)).~~ ~~((The commission shall designate a public record officer, located in the commission office, who shall be responsible for implementing the commission's rules regarding disclosure of public records, coordinating staff in this regard, and generally ensuring compliance by the staff with public records disclosure requirements.))~~ According to chapter 42.56 RCW, members of the public may inspect, copy, or get copies of public records if they comply with the following procedures:

(1) Make a request in writing which includes:

(a) The name of the person requesting the record;

(b) The time of day and calendar date on which the request is made; and

(c) The name or description of the records requested.

(2) A request for disclosure shall be made during the customary business hours or by mail.

(3) This chapter shall not be construed as giving authority to any agency to give, sell or provide access to lists of individuals requested for commercial purposes, and agencies shall not do so unless specifically authorized or directed by law.

(4) When a person's identity is relevant to an exemption, that person may be required to provide personal identification, including photographic identification and/or fingerprints.

AMENDATORY SECTION (Amending Order 84-01, filed 11/19/84)

**WAC 437-06-050 ~~((Request for public records.))~~** ~~**Fees—Inspection and copying.**~~ ~~((1) The written request may include:~~

~~(a) The name of the person requesting the record;~~

~~(b) The time of day and calendar date on which the request is made; and~~

~~(c) The nature of the request.~~

~~(2) A request for disclosure shall be made during the customary business hours or by mail. Public records shall be made available for inspection and copying during office hours. However, if these activities would interfere with essential agency functions, the agency reserves the right to require advance notice and to limit the amount of time spent on inspection of documents.~~

~~(3) This chapter shall not be construed as giving authority to any agency to give, sell or provide access to lists of individuals requested for commercial purposes, and agencies shall not do so unless specifically authorized or directed by law.~~

~~(4) If the public record contains material exempt from disclosure pursuant to law, including those laws cited in WAC 437-06-100, the commission must provide the person requesting disclosure with a written explanation for the non-disclosure, pursuant to WAC 437-06-080.~~

~~(5) Any person continuing to seek disclosure, after having received a written explanation for nondisclosure, pursuant to WAC 437-06-080, may request a review under the provisions of WAC 437-06-090.~~

~~(6) When a person's identity is relevant to an exemption, that person may be required to provide personal identification, including photographic identification and/or fingerprints.)~~ (1) No fee shall be charged for the inspection of public records.

(2) The commission shall collect fees, plus postage, to reimburse itself for actual costs incident to providing copies of public records.

(a) Copies produced on copying and duplicating equipment are fifteen cents per page.

(b) Copies of other items such as magnetic tapes and records or other formats will be the cost of the services required to copy them.

(3) Nothing contained in this section shall preclude the commission from agreeing to exchange or provide copies of manuals or other public records with other state or federal agencies. One copy of the implementation manual will be issued to public agencies upon request.

(4) Prepayment of copying costs and postage shall be a prerequisite to copying and/or mailing of public records. However, the public records officer may waive the costs of copying or postage.

AMENDATORY SECTION (Amending Order 84-01, filed 11/19/84)

**WAC 437-06-060 ~~((Fees—Inspection and copying.))~~** ~~**Protection of public records.**~~ ~~((1) No fee shall be charged for the inspection of public records.~~

~~(2) The commission shall collect fees, plus postage, to reimburse itself for actual costs incident to providing copies of public records.~~

~~(3) Nothing contained in this section shall preclude the commission from agreeing to exchange or provide copies of manuals or other public records with other state or federal agencies. One copy of the implementation manual will be issued to public agencies upon request.~~

~~(4) Prepayment of copying costs and postage shall be a prerequisite to copying and/or mailing of public records. However, the public records officer may waive the costs of copying or postage.)~~ Public records shall be disclosed only in the presence of a public records officer or his or her designee, who shall withdraw the records if the person requesting disclosure acts in a manner which will damage or substantially disorganize the records or interfere excessively with other essential functions of the commission. This section shall not be construed to prevent the commission from accommodating a client by use of mail in the disclosure process.

AMENDATORY SECTION (Amending Order 84-01, filed 11/19/84)

**WAC 437-06-070 ~~((Protection of public records.))~~** ~~**Disclosure procedure.**~~ ~~((Public records shall be disclosed only in the presence of a public records officer or his or her designee, who shall withdraw the records if the person requesting disclosure acts in a manner which will damage or substantially disorganize the records or interfere excessively with other essential functions of the commission. This section shall not be construed to prevent the commission from~~

accommodating a client by use of mails in the disclosure process.) (1) The public records officer shall acknowledge receipt of request within five business days. The public records officer or designee will do one or more of the following:

- (a) Make the records available for inspection or copying;
- (b) If copies are requested and payment of a deposit for the copies, if any, is made or terms of payment are agreed upon, send the copies to the requestor;
- (c) Provide a reasonable estimate of when records will be available; or
- (d) If the request is unclear or does not sufficiently identify the requested records, request clarification from the requestor. Such clarification may be requested and provided by telephone. The public records officer or designee may revise the estimate of when records will be available; or

(e) Deny the request.

(2) The public records officer shall review file materials prior to disclosure.

(3) If the file does not contain materials exempt from disclosure, the public records officer shall ensure full disclosure.

(4) If the file does contain materials exempt from disclosure, the public records officer shall deny disclosure of those exempt portions of the file and will provide a written statement explaining the reason for denial. The remaining nonexempt materials shall be fully disclosed pursuant to WAC 437-06-050.

(5) The statement of denial shall include:

(a) The specific exemption that authorizes the commission to withhold the record; and

(b) A brief explanation of how the exemption applies to the record the commission withheld.

(6) Any person continuing to seek disclosure, after having received a written explanation for nondisclosure, may request a review under the provisions of WAC 437-06-080.

AMENDATORY SECTION (Amending Order 84-01, filed 11/19/84)

**WAC 437-06-080 Remedy for review of denial of disclosure ((~~procedure~~)).** ((~~(1) The public records officer shall review file materials prior to disclosure.~~

~~(2) If the file does not contain materials exempt from disclosure, the public records officer shall ensure full disclosure.~~

~~(3) If the file does contain materials exempt from disclosure, the public records officer shall deny disclosure of those exempt portions of the file, and shall, at the time of the denial, in writing, clearly specify the reasons for the denial of disclosure, including a statement of the specific exemptions or reasons authorizing the withholding of the record and a brief explanation of how the exemption applies. The remaining nonexempt materials shall be fully disclosed pursuant to WAC 437-06-050.)~~ (1) If the person requesting disclosure disagrees with the decision of a public records officer denying disclosure of a public record, this person may within twenty days petition the commission's public records officer for review of the decision denying disclosure. The form used to deny disclosure of a public record shall clearly indicate this right of review.

(2) The public records officer shall review decisions denying disclosure in the most prompt fashion possible, and such review shall be deemed completed at the end of the second business day following receipt by the commission of the petition for review. This shall constitute final agency action for the purposes of judicial review, pursuant to RCW 42.56.520.

AMENDATORY SECTION (Amending Order 84-01, filed 11/19/84)

**WAC 437-06-090 ((~~Remedy for review of denial of~~) Exemptions to public records disclosure.** ((~~(1) If the person requesting disclosure disagrees with the decision of a public records officer denying disclosure of a public record, this person may within twenty days petition the commission's public records officer for review of the decision denying disclosure. The form used to deny disclosure of a public record shall clearly indicate this right of review.~~

~~(2) The public records officer shall review decisions denying disclosure in the most prompt fashion possible, and such review shall be deemed completed at the end of the second business day following receipt by the commission of the petition for review. This shall constitute final agency action for the purposes of judicial review, pursuant to RCW 42.17.320.)~~ The commission reserves the right to determine if a public record requested in accordance with the procedures outlined herein is exempt or nondisclosable under RCW 42.56.040 through 42.56.550. Nondisclosable records include, but are not limited to:

(1) All exemptions as set forth in chapter 42.56 RCW.

(2) Records which are relevant to a controversy to which the commission is a party but which records would not be available to another party under the rules of a pretrial discovery for causes pending in the superior courts, including records involving attorney-client communications between the commission and the office of the attorney general privileged under RCW 5.60.060(2).

(3) Nonconviction data, as defined in RCW 10.97.030 (2), shall be disclosed to the subject of the record in person in the central office of the commission, but may not be copied except for the purpose of challenge or correction when the person who is the subject of the record asserts the belief in writing that the information regarding such person is inaccurate or incomplete (RCW 10.97.080). Persons who are incarcerated, or their attorneys, shall receive a copy of nonconviction data upon asserting the belief in writing that the information regarding such person is inaccurate or incomplete.

AMENDATORY SECTION (Amending Order 84-01, filed 11/19/84)

**WAC 437-06-100 ((~~Exemptions to public records~~) Interagency disclosure.** ((~~The commission reserves the right to determine if a public record requested in accordance with the procedures outlined herein is exempt or nondisclosable under RCW 42.17.250 through 42.17.340. Nondisclosable records include, but are not limited to:~~

(1) All exemptions as set forth in RCW 42.17.310(1).

(2) Records which are relevant to a controversy to which the commission is a party but which records would not be

available to another party under the rules of a pretrial discovery for causes pending in the superior courts, including records involving attorney-client communications between the commission and the office of the attorney general privileged under RCW 5.60.060(2).

~~(3) Nonconviction data, as defined in RCW 10.97.030(2), shall be disclosed to the subject of the record in person in the central office of the commission, but may not be copied except for the purpose of challenge or correction when the person who is the subject of the record asserts the belief in writing that the information regarding such person is inaccurate or incomplete (RCW 10.97.080). Persons who are incarcerated, or their attorneys, shall receive a copy of non-conviction data upon asserting the belief in writing that the information regarding such person is inaccurate or incomplete.) (1) Unless prohibited by law, information may be disclosed by the commission to outside agencies, including other state of Washington agencies, or other state agencies.~~

(2) Outside agencies receiving information pursuant to subsection (1) of this section shall be thereby subject to the same standards of disclosure as are required of the commission.

**REPEALER**

The following sections of the Washington Administrative Code are repealed:

- WAC 437-06-110                      Qualifications on nondisclosure.
- WAC 437-06-120                      Interagency disclosure.

**WSR 09-17-084**

**PROPOSED RULES**

**SENTENCING GUIDELINES COMMISSION**

[Filed August 17, 2009, 7:39 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-14-081.

Title of Rule and Other Identifying Information: Repealing chapter 437-10 WAC, Bylaws. Removing bylaws from the Washington Administrative Code.

Hearing Location(s): Holiday Inn, 17338 International Boulevard, SeaTac, WA 98188, (206) 428-2123, on October 9, 2009, at 9:00 a.m.

Date of Intended Adoption: October 9, 2009.

Submit Written Comments to: Jennifer Jones, Rules Coordinator, Sentencing Guidelines Commission, P.O. Box 40927, Olympia, WA 98504, e-mail JenniferJ@sgc.wa.gov, fax (360) 407-1043, by October 2, 2009.

Assistance for Persons with Disabilities: Contact Jennifer Jones, (360) 407-1043.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: To repeal chapter 437-10 WAC, from the administrative code. The purpose is to make changes to the bylaws more expedient by removing them from the rule-making process. The sentencing guide-

lines commission (SGC) will continue to operate under bylaws, but by removing them from the administrative code, the body will be able to respond to changing circumstances immediately. For example, the current bylaws according to WAC 437-10-080 allow the commission to change the bylaws by a simple majority. However, this change may not take effect for at least four months under the rule-making process. The anticipated effects are to allow the commission to respond more quickly to emerging issues. There are no anticipated effects for the public since the bylaws already allow changes to be made by the members' vote, notice of meetings are given on the SGC web site, and time for public comment is given at meetings. The bylaws will also be published on the SGC web site.

Reasons Supporting Proposal: To allow the agency to adapt to and respond more quickly to emerging issues. Bylaws are not required to be codified.

Statutory Authority for Adoption: RCW 9.94A.850, commission's rule-making authority under chapter 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Sentencing guidelines commission, governmental.

Name of Agency Personnel Responsible for Drafting: Shannon Hinchcliffe, 4565 7th Avenue S.E., Lacey, WA 98503, (360) 407-1050; Implementation and Enforcement: Jean Soliz-Conklin, Executive Director, 4565 7th Avenue S.E., Lacey, WA 98503, (360) 407-1056.

No small business economic impact statement has been prepared under chapter 19.85 RCW. This rule relates only to internal governmental operations that are not subject to violation by a nongovernment party.

A cost-benefit analysis is not required under RCW 34.05.328. This rule relates only to internal governmental operations that are not subject to violation by a nongovernment party.

August 17, 2009  
Jean Soliz-Conklin  
Executive Director

**REPEALER**

The following chapter of the Washington Administrative Code is repealed:

- WAC 437-10-010                      Officers of the sentencing guidelines commission.
- WAC 437-10-020                      Meetings of the sentencing guidelines commission.
- WAC 437-10-030                      Absences of members from meetings.
- WAC 437-10-040                      Quorum.
- WAC 437-10-050                      Participation and discussion during sentencing guidelines commission meetings, rules of order, and forms of action.
- WAC 437-10-060                      Voting procedures.

WAC 437-10-070 Minutes.  
WAC 437-10-080 Change in bylaws.

**WSR 09-17-086**  
**PROPOSED RULES**  
**PUBLIC DISCLOSURE COMMISSION**

[Filed August 17, 2009, 9:26 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-13-032.

Title of Rule and Other Identifying Information: WAC 390-28-100 Reporting modifications—Possible qualifications. The rule provides guidance on possible qualifications to persons seeking reporting modifications of information required to be on statements of personal financial affairs.

Hearing Location(s): Commission Hearing Room, 711 Capitol Way, Room 206, Olympia, WA 98504, on September 24, 2009, at 9:30 a.m.

Date of Intended Adoption: September 24, 2009.

Submit Written Comments to: Doug Ellis, Public Disclosure Commission, P.O. Box 40908, Olympia, WA 98504-0908, e-mail dellis@pdc.wa.gov, fax (360) 753-1112, by September 22, 2009.

Assistance for Persons with Disabilities: Contact Nicole Stauffer by phone (360) 753-1111 or (360) 586-0544.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The reporting modification rule needs to be amended to modernize the rule language, reference statutory standards for modifications, describe real property disclosures, define bona fide separate property agreements and bona fide separate status and refer files to modification examples.

Reasons Supporting Proposal: To provide guidance and clarification in public disclosure reporting by out-of-state political committees.

Statutory Authority for Adoption: RCW 42.17.370(1).

Statute Being Implemented: RCW 42.17.241 and 42.17.370(10).

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: The amended rule clarifies and provides guidance to persons seeking reporting modifications to personal financial affairs statements.

Name of Proponent: [Public disclosure commission (PDC)], governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Doug Ellis, 711 Capitol Way, Room 206, Olympia, WA 98504, (360) 664-2735; and Enforcement: Phil Stutzman, 711 Capitol Way, Room 206, Olympia, WA 98504, (360) 664-8853.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The implementation of the rule amendment has minimal impact on small businesses.

A cost-benefit analysis is not required under RCW 34.05.328. The PDC is not an agency listed in subsection

(5)(a)(i) of section 201. Further, the PDC does not voluntarily make section 201 applicable to the adoption of these rules pursuant to subsection (5)(a)(i) of section 201, and, to date, JARRC has not made section 201 application [applicable] to the adoption of these rules.

August 7, 2009  
Douglas J. Ellis  
Assistant Director

AMENDATORY SECTION (Amending Order 85-04, filed 10/31/85)

**WAC 390-28-100 Reporting modifications—Possible qualifications—Statement of financial affairs.** (1) One or more of the following~~((, or any of them,))~~ may be considered by the commission as possible qualifications for a reporting modification with respect to the statement of financial affairs, when it is in the public interest:

(a) **Banks, savings accounts, insurance policies - Financial interests.** A candidate or official may be exempted from reporting any financial interest, otherwise required to be reported by RCW 42.17.241 (1)(b) ~~((of said act,))~~ if:

(i) The financial institution or other entity in which the candidate or official ~~((having such))~~ held an interest does not engage in business in the state of Washington, or is not regulated in whole or in part by the office sought or held by such candidate or ~~((elected))~~ official ~~((, and provided that));~~

(ii) Such reporting would present ~~((actual difficulties))~~ a manifestly unreasonable hardship to the candidate or official; and

(iii) The interest ~~((in question))~~ would present no actual or potential conflict with the proper performance of the duties of the office sought or held ~~((, in the public interest)).~~

(b) **Income and ownership interests.** A candidate or official may be exempted from reporting ~~((any of))~~ the information otherwise required by RCW 42.17.241 (1)(f) and (g), if:

(i) Public disclosure would violate any legally ~~((recognizable))~~ recognized confidential relationship ~~((, Provided,));~~

(ii) The information ~~((in question))~~ does not relate to a business entity which would be subject to the regulatory authority of the office sought or held by ~~((such))~~ the candidate or ~~((elected))~~ official in whole or in part ~~((, And provided further, That));~~

(iii) Such reporting would present ~~((actual difficulties))~~ a manifestly unreasonable hardship to the candidate or official including but not limited to adversely affecting the competitive position of an entity in which the filer had an interest of ten percent or more as described in RCW 42.17.370(10); and

(iv) The interest in question would present no actual or potential conflict with the performance of the duties of the office sought or held ~~((, in the public interest)).~~

(c) **Immediate family members' interests.** A candidate or official may be exempted from reporting ~~((any of))~~ the information otherwise required by RCW 42.17.241 for members of the immediate family of a candidate or ~~((elected))~~ official, if:

(i) Such information relates to a financial interest held by such member under a bona fide separate property agreement,

or other bona fide separate status; and, such financial interest does not constitute a present or prospective source of income to such candidate or (~~electee~~) official or to any other person who is dependent upon such candidate or (~~electee~~) official for support in whole or in part; or

(ii) Reporting the name of an entity in which the immediate family holds an interest of ten percent or more would be likely to adversely affect the competitive position of the entity, under RCW 42.17.370(10).

(d) **Personal residence - Real property.** Regarding reporting the information otherwise required by RCW 42.17.-241 (1)(h) through (k):

(i) Under WAC 390-24-200, the filer shall list the street address of each parcel, the assessor's parcel number, the abbreviated legal description appearing on property tax statements, or the complete legal description. Each property description shall be followed by the name of the county in which the property is located.

(ii) No modification will be necessary if the filer describes the real property using one of the alternatives in WAC 390-24-200, plus the name of the county.

(iii) A modification will be required if the filer seeks some other means to describe reportable real property including the personal residence of the filer. The commission may consider a modification, for example, when the filer or his or her immediate family member has received a threat, has a no contact order, or presents a similar personal safety situation.

(e) **Other.** A candidate or official may be exempted from reporting (~~any other matter~~) information otherwise required under RCW 42.17.241 which would constitute (~~an~~) manifestly unreasonable hardship in a (~~given~~) particular case, when the (~~matter reported~~) circumstances presented would not indicate any actual or potential conflict with the proper performance of the duties of the office sought or held (~~in the public interest~~). Examples of members of professions often seeking modifications, and examples of other frequent situations that may result in modification requests, are described in commission interpretive statements.

(2) "Bona fide separate property agreement" means an agreement or court order describing separate property in a valid:

(a) Prenuptial agreement;

(b) Separate property contract under chapter 26.09 RCW;

(c) Separate property court decree under chapter 26.09 RCW;

(d) Domestic partnership agreement under chapter 26.60 RCW;

(e) Domestic partnership agreement as part of a notice of termination under chapter 26.60 RCW; or

(f) Postnuptial agreement.

(3) "Other bona fide separate status" means a valid written agreement or court decree recognizing the separate status of the parties under state law, including their individual property that is separate under state law.

## WSR 09-17-094

### PROPOSED RULES

## PROFESSIONAL EDUCATOR STANDARDS BOARD

[Filed August 17, 2009, 2:50 p.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-12-077 [09-11-077].

Title of Rule and Other Identifying Information: Revises WAC 181-79A-030 and 181-79A-206 and new section WAC 181-79A-207. Amends definitions for teacher professional certification. Amends requirements for professional certification for teachers. Add new section with teacher standards and criteria related to certification. Statutory requirement that professional certification for teacher[s] be met through external assessment process.

Hearing Location(s): Red Lion at the Park, 201 West North River Drive, Spokane, WA 99201, on September 23, 2009, at 8:30 a.m.

Date of Intended Adoption: September 23, 2009.

Submit Written Comments to: David Brenna, Legislative and Policy Coordinator, P.O. Box 47236, Olympia, WA 98504, e-mail david.brenna@k12.wa.us, fax (360) 586-4548, by September 15, 2009.

Assistance for Persons with Disabilities: Contact David Brenna by September 15, 2009, TTY (360) 664-3631 or (360) 725-6238.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Amendments and new section attaches requirements for teacher professional certification to candidate participation is external assessment.

Reasons Supporting Proposal: Legislative requirement in ESHB 2261 (402), 2009.

Statutory Authority for Adoption: RCW 28A.410.210.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Professional educator standards board, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: David Brenna, P.O. Box 47236 [47236], Olympia, WA 98504, (360) 725-6238.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The proposed amendment does not have an impact on small business and therefore does not meet the requirements for a statement under RCW 19.85.030 (1) or (2).

A cost-benefit analysis is required under RCW 34.05.328. A preliminary cost-benefit analysis may be obtained by contacting David Brenna, P.O. Box 47236, Olympia, WA 98504, phone (360) 725-6238, fax (360) 586-3631, e-mail david.brenna@k12.wa.us

August 17, 2009

David Brenna

Legislative and  
Policy Coordinator



AMENDATORY SECTION (Amending WSR 06-14-010, filed 6/22/06, effective 7/23/06)

**WAC 181-79A-030 Definitions.** The following definitions shall apply to terms used in this chapter:

(1) The terms, "program approval," "endorsement," "interstate compact," "college or university," and "regionally accredited institution of higher education," as defined in WAC 180-78-010 and 181-78A-010 shall apply to the provisions of this chapter.

(2) "Certificate" means the license issued by the superintendent of public instruction to teachers, administrators, and educational staff associates verifying that the individual has met the requirements set forth in this chapter.

(3) "Certificate renewal" means the process whereby the validity of a certificate, subject to expiration, is extended or regained.

(4) "Classroom teaching" means instructing pupils in an instructional setting.

(5) "Approved baccalaureate degree" for the purpose of this chapter, means a baccalaureate from a regionally accredited college or university in any of the subject areas of the endorsement listed in chapter 181-82 WAC as now or hereafter amended: Provided, That if a candidate is accepted into a program in Washington state on or before August 31, 2000, and completes the program on or before August 31, 2003, in accordance with WAC 181-79A-299, the candidate may hold a baccalaureate degree in any of the subject areas of the endorsements listed in WAC 181-79A-302. Such degrees shall require the completion of at least forty-five quarter hours (thirty semester hours) of course work in the subject area: Provided, That a candidate who holds a baccalaureate degree in another academic field will not be required to obtain a second baccalaureate degree if the candidate provides evidence to the superintendent of public instruction that he or she has completed the required forty-five quarter or thirty semester hours of course work in one of the subject areas of the endorsements listed in chapter 181-82 WAC: Provided further, That a candidate who holds a baccalaureate degree in early childhood education, elementary education, or special education will not be required to obtain a second baccalaureate degree if the candidate provides evidence to the superintendent of public instruction that he or she has completed thirty quarter or twenty semester credit hours in one academic field in an approved endorsement area pursuant to WAC 181-82A-202.

(6) "Issues of abuse course work requirement" means completion of course work or an in-service program on issues of abuse. The content shall discuss the identification of physical, emotional, sexual, and substance abuse, information on the impact of abuse on the behavior and learning abilities of students, discussion of the responsibilities of a teacher to report abuse or provide assistance to students who are victims of abuse, and methods for teaching students about abuse of all types and their prevention.

(7) "Approved master's degree" for the purpose of this chapter, means a master's or doctorate degree from a regionally accredited college or university.

(8) "Credit hour(s)" means credit (normally 100 level or above) awarded by a regionally accredited institution of higher education.

(9) "Previous standards" means a certification system in place prior to a revision in rules that results in changed names and/or validity periods for the certificates issued.

(10) "Application for certification" means an application for a certificate or endorsement that includes a signed affidavit (as specified in WAC 181-79A-157) by the applicant. Such application shall be considered valid for two years from the date of receipt by the superintendent of public instruction, or its designee.

(11) Teacher "professional growth team" means a team comprised of the candidate for professional certification, a colleague specified by the candidate, a provider of support to the candidate, if the candidate chooses to employ a support provider, and a representative from the school district or state-approved private, state agency providing education for children in which the candidate teaches or has taught.

(12) "Individual professional growth plan" means the document which identifies the specific competencies, knowledge, skills and experiences needed to meet the standards set forth in WAC 181-79A-207.

(13) "A positive impact on student learning" means that a teacher through instruction and assessment has been able to document students' increased knowledge and/or demonstration of a skill or skills related to the state goals and/or essential academic learning requirements: Provided, That teachers employed by private schools who are candidates for the professional teaching certificate shall document students' increased knowledge and/or demonstration of a skill or skills related to either:

(a) The state goals or essential academic learning requirements; or

(b) Such alternative learning goals as the private school has established.

(14) "Professional certificate support provider" means any organization or institution operating training or consulting services as a public entity or private company holding an appropriate business license.

AMENDATORY SECTION (Amending WSR 09-12-129, filed 6/3/09, effective 7/4/09)

**WAC 181-79A-206 Academic and experience requirements for certification—Teachers.** Candidates for teachers' certificates shall complete the following requirements in addition to those set forth in WAC 181-79A-150.

(1) Initial/residency.

Candidates for the initial or residency certificate shall hold an approved baccalaureate degree from a regionally accredited college or university pursuant to WAC 181-79A-030(5).

(2) Continuing.

(a) Candidates who apply for a continuing certificate shall have at least forty-five quarter hours (thirty semester hours) of upper division and/or graduate work completed from a regionally accredited institution of higher education subsequent to the conferral of the baccalaureate degree: Provided, That if the individual is pursuing study in a new subject matter area or specialization, lower division (freshmen or sophomore level) credit hours in that subject area or specialization shall be accepted toward continuing certification upon

completion of the requirements for an endorsement in that subject area or specialization.

(b) Candidates applying for a continuing certificate prior to September 1, 2000, shall have been granted at least two subject area endorsements.

(c) Candidates who apply for a continuing certificate who have not successfully completed course work or an in-service program on issues of abuse, must complete the abuse course work requirement as defined in WAC 181-79A-030(6).

(d) Candidates for continuing teachers' certificates shall provide documentation of one hundred eighty days or full-time equivalent or more satisfactory teaching experience with an authorized employer—i.e., school district, state agency, college or university, private school, or private school system—and at least thirty days of such employment with the same employer.

(3) Professional.

(a) Beginning January 1, 2010 and pursuant to WAC 181-79A-206 (3)(f) candidates for the professional certificate shall have successfully completed a professional educator standards board-approved, professional certificate program, ((pursuant to WAC 181-78A-500 through 181-78A-540:)) or submit to the external portfolio of evidence assessment as directed by RCW 28A.410.220(2). The professional certificate requires successful demonstration of the three standards (effective teaching, professional development, and professional contributions) and twelve criteria, pursuant to WAC 181-79A-207.

(i) ((Provided, That an)) Individuals who hold((s)) a teaching certificate issued by the National Board for Professional Teaching Standards (NBPTS) shall be deemed to have met the requirement ((for completion of a))s of the professional certificate ((program)), in recognition that NBPTS certification is issued only to individuals who have demonstrated highly advanced skills as a teacher.

(ii) A candidate may submit a portfolio of evidence to the external assessment for evaluation as per RCW 28A.410.220(2) following two years of successful teaching in a state-approved public, private or state operated education program for children as defined in Title 28A RCW: Provided, the candidate was employed at least three-quarters time each year or a total of one and one-half full-time equivalent over a minimum of two years as defined in WAC 392-121-212. The portfolio assessment elements shall be determined by the professional educator standards board and include requirements for the candidates to prepare and submit a professional growth plan approved and supported by a professional growth team.

(b) A professional growth plan identifying the specific competencies, knowledge, skills and experiences needed to meet the standards set forth in WAC 181-79A-207 is prepared by the candidate for a professional certificate, in collaboration with members of the professional growth team. The candidate will identify a professional growth team as defined in WAC 181-79A-030(11).

(((b)) Candidates who apply for a professional certificate who have not successfully completed course work or an in-service program on issues of abuse, must complete the abuse

course work requirement as defined in WAC 181-79A-030(6:))

(c) Teacher professional certificate portfolio evidence of assessment pilot participants who have not attended a program but received a "met criteria" on all entries submitted to the pilot assessment would receive the professional certificate and not be required to attend a program.

(d) Candidates who apply for a professional certificate who have not successfully completed course work or an in-service program on issues of abuse, must complete the abuse course work requirement as defined in WAC 181-79A-030(6).

(((d))) (e) Prior to January 1, 2010, candidates pursuing the professional certificate will submit a portfolio to the professional educator standards board approved professional certificate program.

(((e))) (f) Between January 1, 2010, and September 1, 2011, candidates pursuing the professional certificate will have two options:

(i) Submit a portfolio for evaluation to the college or university professional certificate program. The college or university has until December 31, 2011, to verify completion.

(ii) Submit a portfolio for evaluation to the uniform and external portfolio of evidence assessment as administered by the professional educator standards board.

(((f))) (g) After September 1, 2011, candidates pursuing the professional certificate must submit a portfolio for evaluation to the uniform and external portfolio of evidence assessment as administered by the professional educator standards board.

## NEW SECTION

**WAC 181-79A-207 Standards for teachers with professional certification.** (1) A successful candidate for the teacher professional certificate shall demonstrate:

(a) The knowledge and skills for effective teaching which ensure student learning by:

(i) Using instructional strategies that make learning meaningful and show positive impact on student learning;

(ii) Using a variety of assessment strategies and data to monitor and improve instruction;

(iii) Using appropriate classroom management principles, processes and practices to foster a safe, positive, student-focused learning environment;

(iv) Designing and/or adapting challenging curriculum that is based on the diverse needs of each student;

(v) Demonstrating cultural sensitivity in teaching and in relationships with students, families, and community members;

(vi) Integrating technology into instruction and assessment; and

(vii) Informing, involving, and collaborating with families and community members as partners in each student's educational process including using information about student achievement and performance.

(b) A successful candidate for the professional certificate shall demonstrate the knowledge and skills for professional development by:

(i) Evaluating the effects of his/her teaching through feedback and reflection;

(ii) Using professional standards and district criteria to assess professional performance, and plan and implement appropriate growth activities; and

(iii) Remaining current in subject area(s), theories, practice, research and ethical practice.

(c) A successful candidate for the professional certificate shall demonstrate professional contributions to the improvement of the school, community, and the profession by:

(i) Advocating for curriculum, instruction, and learning environments that meet the diverse needs of each student; and

(ii) Participating collaboratively in school improvement activities and contributing to collegial decision making.

**WSR 09-17-097**  
**PROPOSED RULES**  
**DEPARTMENT OF**  
**SOCIAL AND HEALTH SERVICES**

(Economic Services Administration)

[Filed August 18, 2009, 8:40 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-11-103.

Title of Rule and Other Identifying Information: The department is amending WAC 388-424-0020 How does my alien status impact my eligibility for the federally funded Washington Basic Food program benefits?, 388-466-0120 Refugee cash assistance, and 388-466-0130 Refugee medical assistance.

Hearing Location(s): Blake Office Park East, Rose Room, 4500 10th Avenue S.E., Lacey, WA 98503 (one block north of the intersection of Pacific Avenue S.E. and Alhadeff Lane. A map or directions are available at <http://www1.dshs.wa.gov/msa/rpau/docket.html> or by calling (360) 664-6094, on September 22, 2009, at 10:00 a.m.

Date of Intended Adoption: Not earlier than September 23, 2009.

Submit Written Comments to: DSHS Rules Coordinator, P.O. Box 45850, Olympia, WA 98504-5850, delivery 4500 10th Avenue S.E., Lacey, WA 98503, e-mail DSHS RPAURulesCoordinator@dshs.wa.gov, fax (360) 664-6185, by 5 p.m. on September 22, 2009.

Assistance for Persons with Disabilities: Contact Jenisha Johnson, DSHS rules consultant, by September 8, 2009, TTY (360) 664-6178 or (360) 664-6094 or by e-mail at [johnsj14@dshs.wa.gov](mailto:johnsj14@dshs.wa.gov).

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The department is proposing changes to the WACs listed above to allow special immigrants from Afghanistan to be eligible for refugee cash assistance (RCA), refugee medical assistance (RMA), and federally funded Washington Basic Food benefits for up to eight months as allowed under federal law.

Reasons Supporting Proposal: The proposed rule changes are in response to the Pub. L. No. 111-08, the Omni-

bus Appropriations Act of 2009, Division F, Title VI, Section 602, which was signed into law on March 11, 2009, the Office of Refugee Resettlement (ORR) State Letter 09-17 from April 9, 2009, and a new federal guidance issued on May 15, 2009, by the Food and Nutrition Service, United States Department of Agriculture. Rules related to Afghan special immigrants' eligibility were implemented by emergency rule filing on April 15, 2009, for refugee cash assistance and refugee medical [medical] assistance, and on July 7, 2009, for Washington Basic Food.

Statutory Authority for Adoption: RCW 74.04.050, 74.04.055, 74.04.057, 74.08.090, and 74.08A.320.

Statute Being Implemented: RCW 74.04.050, 74.04.-055, 74.04.057, 74.08.090, and 74.08A.320.

Rule is necessary because of federal law, P.L. 110-161, Sec. 525; P.L. 110-181, Sec. 1244; USDA Food and Nutrition Service Administrative Notice 08-17; ORR SL 04-12.

Name of Proponent: Department of social and health services, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Olga Walker, 712 Pear Street S.E., Olympia, WA 98501, (360) 725-4641.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The proposed changes do not have an economic impact on small businesses. The proposed amendments only affect DSHS clients by extending eligibility for special immigrants from Afghanistan to eight months.

A cost-benefit analysis is not required under RCW 34.05.328. These amendments are exempt as allowed under RCW 34.05.328 (5)(b)(vii) which states in-part, "[t]his section does not apply to ... rules of the department of social and health services relating only to client medical or financial eligibility and rules concerning liability for care of dependents."

August 13, 2009

Don Goldsby, Manager

Rules and Polices Assistance Unit

AMENDATORY SECTION (Amending WSR 08-14-116, filed 6/30/08, effective 8/1/08)

**WAC 388-424-0020 How does my alien status impact my eligibility for the federally funded Washington Basic Food program benefits?** (1) If you are a U.S. citizen or U.S. national as defined in WAC 388-424-0001 and meet all other eligibility requirements, you may receive federal Basic Food benefits.

(2) If you are not a U.S. citizen or U.S. national, you must fall within (a), (b), or (c) (~~or (d)~~) of this subsection, and meet all other eligibility requirements, in order to receive federal Basic Food benefits:

(a) You are a member of one of the following groups of "qualified aliens" or similarly defined lawful immigrants as defined in WAC 388-424-0001:

- (i) Amerasian;
- (ii) Asylee;
- (iii) Cuban or Haitian entrant;
- (iv) Deportation or removal withheld;
- (v) Refugee;
- (vi) Victim of trafficking;

- (vii) Noncitizen American Indian; or
- (viii) Hmong or Highland Lao tribal member.
- (b)(i) You are a member of one of the following groups of qualified aliens as defined in WAC 388-424-0001:
  - (A) Conditional entrant;
  - (B) Lawful permanent resident (LPR);
  - (C) Paroled for one year or more; or
  - (D) Victim of domestic violence or parent or child of a victim.
- (ii) And, one of the following also applies to you:
  - (A) You have worked or can get credit for forty Social Security Administration (SSA) work quarters - as described in WAC 388-424-0008;
  - (B) You are an active duty personnel or honorably discharged veteran of the U.S. military or you are the spouse, unmarried surviving spouse, or unmarried dependent child of someone who meets this requirement, as described in WAC 388-424-0007(1);
  - (C) You receive cash or medical benefits based on Supplemental Security Income (SSI) criteria for blindness or disability;
  - (D) You have lived in the U.S. as a "qualified alien" as described in WAC 388-424-0001 for at least five years;
  - (E) You are under age eighteen; or
  - (F) You were lawfully residing in the U.S. on August 22, 1996 and were born on or before August 22, 1931.
- (c) You are a special immigrant from Iraq or Afghanistan eligible for eight months of federally funded assistance from the date of your entry into the United States or from the date you received special immigrant status if this occurred after your U.S. entry.
- ~~((d) You are a special immigrant from Afghanistan eligible for six months of federally funded assistance from the date of your entry into the United States or from the date you received special immigrant status if this occurred after your U.S. entry.))~~
- (3) If you are ineligible for federal Basic Food benefits due to your alien status, you may be eligible for state Basic Food benefits (see WAC 388-424-0025).

**AMENDATORY SECTION** (Amending WSR 08-14-116, filed 6/30/08, effective 8/1/08)

**WAC 388-466-0120 Refugee cash assistance (RCA).**

**(1) Who can apply for refugee cash assistance (RCA)?**

Anyone can apply to the department of social and health services (DSHS) for refugee cash assistance and have their eligibility determined within thirty days.

**(2) ~~((How do I know if I qualify for RCA))~~ Who is eligible for refugee cash assistance?**

You may be eligible for RCA if you meet all of the following conditions:

- (a) You have resided in the United States for less than eight months;
- (b) You meet the immigration status requirements of WAC 388-466-0005;
- (c) You meet the income and resource requirements under chapters 388-450 and 388-470 WAC;
- (d) You meet the work and training requirements of WAC 388-466-0150; and

(e) You provide the name of the voluntary agency (VOLAG) which helped bring you to this country.

**(3) ~~((What are the other reasons for not being))~~ Who is not eligible for RCA?**

You may not get RCA if you:

- (a) Are eligible for temporary assistance for needy families (TANF) or Supplemental Security Income (SSI); or
- (b) Have been denied TANF due to your refusal to meet TANF eligibility requirements; or
- (c) Are employable and have voluntarily quit or refused to accept a bona fide offer of employment within thirty consecutive days immediately prior to your application for RCA; or
- (d) Are a full-time student in a college or university.

**(4) If I am an asylee, what date will be used as an entry date?**

If you are an asylee, your entry date will be the date that your asylum status is granted. For example: You entered the United States on December 1, 1999 as a tourist, then applied for asylum on April 1, 2000, interviewed with the asylum office on July 1, 2000 and were granted asylum on September 1, 2000. Your entry date is September 1, 2000. On September 1, 2000, you may be eligible for refugee cash assistance.

**(5) If I am a victim of human trafficking, what kind of documentation do I need to provide to be eligible for RCA?**

You are eligible for RCA to the same extent as a refugee if you are:

- (a) An adult victim, eighteen years of age or older, you provide the original certification letter from the U.S. Department of Health and Human Services (DHHS), and you meet eligibility requirements in subsections (2)(c) and (d) of this section. You do not have to provide any other documentation of your immigration status. Your entry date will be the date on your certification letter;
- (b) A child victim under the age of eighteen, in which case you do not need to be certified. DHHS issues a special letter for children. Children also have to meet income eligibility requirement;
- (c) A family member of a certified victim of human trafficking, you have a T-2, T-3, T-4, or T-5 Visa (Derivative T-Visas), and you meet the eligibility requirements in subsections (2)(c) and (d) of this section.

**(6) Does getting a ~~((one-time))~~ onetime cash grant from a voluntary agency (VOLAG) affect my eligibility for RCA?**

No. In determining your eligibility for RCA DSHS does not count a onetime resettlement cash grant provided to you by your VOLAG.

**(7) What is the effective date of my eligibility for RCA?**

The date DSHS has sufficient information to make eligibility decision is the date your RCA begins.

**(8) When does my RCA end?**

(a) Your RCA ends on the last day of the eighth month starting with the month of your arrival to the United States. Count the eight months from the first day of the month of your entry into the United States. For example, if you entered the United States on May 28, 2000, May is your first month and December 2000 is your last month of RCA.

~~(b) ((If you are from Afghanistan and were granted special immigrant status under section 101 (a)(27) of the Immigration and Nationality Act (INA), your RCA ends on the last day of the sixth month starting from the month of your arrival to the United States or from the month you received special immigrant status if this occurred after your entry.~~

~~(e)) If you get a job, your income will affect your RCA based on the TANF rules (chapter 388-450 WAC). If you earn more than is allowed by WAC 388-478-0035, you are no longer eligible for RCA. Your medical coverage may continue for up to eight months from your month of arrival in the United States (WAC 388-466-0130).~~

**(9) Are there other reasons why RCA may end?**

Your RCA also ends if:

- (a) You move out of Washington state;
- (b) Your unearned income and/or resources go over the maximum limit (WAC 388-466-0140); or
- (c) You, without good cause, refuse to meet refugee employment and training requirements (WAC 388-466-0150).

**(10) Will my spouse be eligible for RCA, if he/she arrives in the U.S. after me?**

When your spouse arrives in the United States, DSHS determines his/her eligibility for RCA and/or other income assistance programs.

~~(a) Your spouse may be eligible for up to eight months of RCA based on his/her date of arrival into the United States. ((Spouses from Afghanistan who have been granted special immigrant status under section 101 (a)(27) of the INA, are eligible for RCA for up to six months from the date of their entry into the United States or from the month they received special immigrant status if this occurred after their U.S. entry.))~~

(b) If you live together, you and your spouse are part of the same assistance unit and your spouse's eligibility for RCA is determined based on your and your spouse's combined income and resources (WAC 388-466-0140).

**(11) Can I get additional money in an emergency?**

If you have an emergency and need a cash payment to get or keep your housing or utilities, you may apply for the DSHS program called additional requirements for emergent needs (AREN). To receive AREN, you must meet the requirements in WAC 388-436-0002.

**(12) What can I do if I disagree with a decision or action that has been taken by DSHS on my case?**

If you disagree with a decision or action taken on your case by the department, you have the right to request a review of your case or ~~((a fair))~~ an administrative hearing (WAC 388-02-0090). Your request must be made within ninety days of the date of the decision or action.

AMENDATORY SECTION (Amending WSR 08-14-116, filed 6/30/08, effective 8/1/08)

**WAC 388-466-0130 Refugee medical assistance (RMA). (1) Who can apply for refugee medical assistance?**

Anyone can apply for refugee medical assistance (RMA) and have eligibility determined by the department of social and health services (DSHS).

**(2) Who is eligible for refugee medical assistance?**

(a) You are eligible for RMA if you meet all of the following conditions:

- (i) Immigration status requirements of WAC 388-466-0005;
- (ii) Income and resource requirements of WAC 388-466-0140;
- (iii) Monthly income standards up to two hundred percent of the federal poverty level (FPL). Spenddown is available for applicants whose income exceeds two hundred percent of FPL (see WAC 388-519-0110); and
- (iv) Provide the name of the voluntary agency (VOLAG) which helped bring you to this country, so that DSHS can promptly notify the agency (or sponsor) about your application for RMA.

(b) You are eligible for RMA if you:

- (i) Receive refugee cash assistance (RCA) and are not eligible for medicaid or children's healthcare programs as described in WAC 388-505-0210; or
- (ii) Choose not to apply for or receive RCA and are not eligible for medicaid or children's healthcare programs as described in WAC 388-505-0210, but still meet RMA eligibility requirements.

**(3) Who is not eligible for refugee medical assistance?**

You are not eligible to receive RMA if you are:

- (a) Already eligible for medicaid or children's healthcare programs as described in WAC 388-505-0210;
- (b) A full-time student in an institution of higher education unless the educational activity is part of a department-approved individual responsibility plan (IRP);
- (c) A nonrefugee spouse of a refugee.

**(4) If I have already received a cash assistance grant from voluntary agency (VOLAG), will it affect my eligibility for RMA?**

No. A cash assistance payment provided to you by your VOLAG is not counted in determining eligibility for RMA.

**(5) If I get a job after I have applied but before I have been approved for RMA, will my new income be counted in determining my eligibility?**

No. Your RMA eligibility is determined on the basis of your income and resources on the date of the application.

**(6) Will my sponsor's income and resources be considered in determining my eligibility for RMA?**

Your sponsor's income and resources are not considered in determining your eligibility for RMA unless your sponsor is a member of your assistance unit.

**(7) How do I find out if I am eligible for RMA?**

DSHS will send you a letter in both English and your primary language informing you about your eligibility. DSHS will also let you know in writing every time there are any changes or actions taken on your case.

**(8) Will RMA cover my medical expenses that occurred after I arrived in the U.S. but before I applied for RMA?**

You may be eligible for RMA coverage of your medical expenses for three months prior to the first day of the month of your application. Eligibility determination will be made according to medicaid rules.

**(9) If I am a victim of human trafficking, what kind of documentation do I need to provide to be eligible for RMA?**

You are eligible for RMA to the same extent as a refugee, if you are:

(a) An adult victim, eighteen years of age or older, and you provide the original certification letter from the U.S. Department of Health and Human Services (DHHS). You also have to meet eligibility requirements in subsections (2)(a) and (b) of this section. You do not have to provide any other documentation of your immigration status. Your entry date will be the date on your certification letter.

(b) A child victim under the age of eighteen, in which case you do not need to be certified. DHHS issues a special letter for children. Children also have to meet income eligibility requirements.

(c) A family member of a certified victim of human trafficking, you have a T-2, T-3, T-4, or T-5 Visa (Derivative T-Visas), and you meet eligibility requirements in subsections (2)(a) and (b) of this section.

**(10) If I am an asylee, what date will be used as an entry date?**

If you are an asylee, your entry date will be the date that your asylum status is granted. For example, if you entered the United States on December 1, 1999 as a tourist, then applied for asylum on April 1, 2000, interviewed with the asylum office on July 1, 2000 and granted asylum on September 1, 2000, your date of entry is September 1, 2000. On September 1, 2000 you may be eligible for refugee medical assistance.

**(11) When does my RMA end?**

~~((a))~~ Your refugee medical assistance will end on the last day of the eighth month from the month of your entry into the United States. Start counting the eight months with the first day of the month of your entry into the U.S. For example, if you entered the U.S. on May 28, 2000, your last month is December 2000.

~~((b) If you are from Afghanistan and were granted Special Immigrant status under section 101 (a)(27) of the Immigration and Nationality Act (INA), your RMA ends on the last day of the sixth month starting with the month of your arrival to the United States or from the month you received Special Immigrant status if this occurred after your U.S. entry.)~~

**(12) What happens if my earned income goes above the income standards?**

(a) If you are getting RMA, your medical eligibility will not be affected by the amount of your earnings;

(b) If you were getting medicaid and it was terminated because of your earnings, we will transfer you to RMA for the rest of your RMA eligibility period. You will not need to apply.

**(13) Will my spouse also be eligible for RMA, if he/she arrives into the U.S. after me?**

When your spouse arrives in the U.S., we will determine his/her eligibility for medicaid and other medical programs.

(a) If your spouse (may be) is eligible for RCA, he/she is automatically eligible for RMA~~((; if so, he/she would have a maximum of eight months of RMA starting on the first day of the month of his/her arrival))~~.

~~(b) ((Spouses from Afghanistan who have been granted special immigrant status under section 101 (a)(27) of the Immigration and Nationality Act (INA), are eligible for RMA for a maximum of six months from the date of entry into the United States or from the month they received special immigrant status if this occurred after their U.S. entry)) If your spouse is not eligible for RCA because your household's countable income exceeds the TANF income and resource standards described in chapter 388-450 and 388-470 WAC, he/she is eligible for RMA as long as the countable household income is below two hundred percent of Federal Poverty Level (FPL) per WAC 388-466-0140(2).~~

(c) If your spouse is approved for RMA, he/she would have a maximum of eight months of RMA starting on the first day of the month of his/her arrival.

**(14) What do I do if I disagree with a decision or action that has been taken by DSHS on my case?**

If you disagree with the decision or action taken on your case by department you have the right to request a review of your case or request ~~((a fair))~~ an administrative hearing (see WAC 388-02-0090). Your request must be made within ninety days of the date of the decision or action~~((s))~~.

**(15) What happens to my medical coverage after my eligibility period is over?**

We will determine your eligibility for other medical programs. You may have to complete an application for another program.

**WSR 09-17-098**

**PROPOSED RULES**

**DEPARTMENT OF**

**SOCIAL AND HEALTH SERVICES**

(Economic Services Administration)

[Filed August 18, 2009, 8:44 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-13-096.

Title of Rule and Other Identifying Information: The department is amending WAC 388-412-0025 How do I get my benefits?

Hearing Location(s): Blake Office Park East, Rose Room, 4500 10th Avenue S.E., Lacey, WA 98503 (one block north of the intersection of Pacific Avenue S.E. and Alhadeff Lane. A map or directions are available at <http://www.dshs.wa.gov/msa/rpau/docket.html> or by calling (360) 664-6094, on September 22, 2009, at 10:00 a.m.

Date of Intended Adoption: Not earlier than September 23, 2009.

Submit Written Comments to: DSHS Rules Coordinator, P.O. Box 45850, Olympia, WA 98504-5850, delivery 4500 10th Avenue S.E., Lacey, WA 98503, e-mail DSHS RPAURulesCoordinator@dshs.wa.gov, fax (360) 664-6185, by 5 p.m. on September 22, 2009.

Assistance for Persons with Disabilities: Contact Jenisha Johnson, DSHS rules consultant, by September 8, 2009, TTY (360) 664-6178 or (360) 664-6094 or by e-mail at [johnsj14@dshs.wa.gov](mailto:johnsj14@dshs.wa.gov).

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The purpose of this proposed rule change is to provide rules for making Basic Food and cash benefits electronic benefit transfer (EBT) transaction adjustments consistent with regulations under 7 C.F.R. 274.12 and Quest operating rules related to Basic Food and cash EBT benefits.

Reasons Supporting Proposal: Federal regulations related to the supplemental nutrition assistance program (SNAP aka: Basic Food in Washington state) and Quest operating rules require a process for making adjustments to household EBT accounts to correct transaction. The department is proposing to adopt rules to reflect the adjustment of Basic Food and cash benefit client debit transactions. Creating rules to support the FNS process will inform households on when the department will make adjustments for Basic Food and cash benefits.

Statutory Authority for Adoption: RCW 74.04.050, 74.04.055, 74.04.057, 74.04.500, 74.04.510, 74.04.005, 74.08.090, and 74.08A.020.

Statute Being Implemented: RCW 74.04.050, 74.04.055, 74.04.057, 74.04.500, 74.04.510, 74.04.005, 74.08.090, and 74.08A.020.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of social and health services, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Holly St. John, P.O. Box 45470, Olympia, WA 98504, (360) 725-4895.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The proposed rules do not have an economic impact on small businesses. The proposed rules make Basic Food and cash benefits electronic benefit transfer (EBT) transaction adjustments consistent with regulations under 7 C.F.R. 274.12 and Quest operating rules related to Basic Food and cash EBT benefits.

A cost-benefit analysis is not required under RCW 34.05.328. The proposed rules are exempt as allowed under RCW 34.05.328 (5)(b)(vii) which states in-part, "this section does not apply to ... rules of the department of social and health services relating only to client medical or financial eligibility and rules concerning liability for care of dependents."

August 13, 2009

Don Goldsby, Manager  
Rules and Policies Assistance Unit

AMENDATORY SECTION (Amending WSR 07-04-029, filed 1/29/07, effective 3/1/07)

**WAC 388-412-0025 How do I get my benefits?** (1) We send your cash benefits to you by either:

(a) Electronic benefit transfer (EBT), which is a direct deposit into a DSHS account that you access with a debit card called the Washington EBT Quest card;

(b) Electronic funds transfer (EFT), which is a direct deposit into your own bank account;

(c) A warrant (check) to a payee who is not approved for direct deposit; or

(d) A warrant (check) to you if you get:

(i) Diversion cash assistance (DCA) that cannot be paid directly to a vendor;

(ii) Additional requirements for emergent needs (AREN) that cannot be paid directly to a vendor;

(iii) Ongoing additional requirements (OAR) that cannot be paid directly to a vendor;

(iv) Clothing and personal incidentals (CPI) payments; or

(v) State supplemental payment (SSP) and you do not receive your benefit through EFT.

(2) We send your **Basic Food** benefits to you by EBT.

(3) We set up an EBT account for the head of household of each AU that receives benefits by EBT.

(4) You use a Quest debit card to access your benefits in your EBT account. You select a personal identification number (PIN) that you must enter when using this card.

(5) You must use your cash and Basic Food benefits from your EBT account. We do not convert cash or Basic Food benefits to checks.

(6) We deposit your Basic Food benefits into your EBT account by the tenth day of the month based on your Basic Food assistance unit number as described in WAC 388-412-0020.

(7) **Unused EBT benefits:** If you do not use your EBT account for three hundred sixty-five days, we cancel the cash and Basic Food benefits on your account.

(a) **Replacing Basic Food benefits:**

(i) We **can replace** cancelled benefits we deposited **less than three hundred sixty-five days** from the date you ask for us to replace your benefits.

(ii) We **cannot replace** cancelled benefits deposited **three hundred sixty-five or more days** from the date you ask us to replace your benefits.

(b) **Replacing cash benefits:** We **can replace** cancelled cash benefits for you or another member of your assistance unit. Cash benefits are not transferable to someone outside of your assistance unit.

(8) **Replacing cash warrants:** If we issued you cash benefits as a warrant we can replace these benefits for you or a member of your assistance unit. Cash benefits are not transferable to someone outside of your assistance unit.

(a) If we issued the benefits as a warrant one hundred sixty or fewer days ago, your local office can replace the warrant.

(b) If we issued the benefits as a warrant more than one hundred sixty days ago, the Office of Accounting Services can replace the warrant.

(9) Correcting your EBT balance: When you make a purchase with your EBT card a system error can occur where the purchase amount is not deducted from your EBT account. When the error is discovered the following will happen:

(a) You will be notified in writing of the system error before the money is removed from your account; and

(b) You will have ninety days to request an administrative hearing. If you ask for an administrative hearing within ten calendar days, the money will not be removed from your EBT account unless:

(i) You withdraw your administrative hearing request in writing;

(ii) You do not follow through with the administrative hearing process; or

(iii) The administrative law judge tells us in writing to remove the money.

**WSR 09-17-100**  
**PROPOSED RULES**  
**DEPARTMENT OF**  
**SOCIAL AND HEALTH SERVICES**  
(Economic Services Administration)

[Filed August 18, 2009, 8:47 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-01-059.

Title of Rule and Other Identifying Information: The department is proposing to amend WAC 388-412-0040 Can I get my benefits replaced?

Hearing Location(s): Blake Office Park East, Rose Room, 4500 10th Avenue S.E., Lacey, WA 98503 (one block north of the intersection of Pacific Avenue S.E. and Alhadeff Lane. A map or directions are available at <http://www.dshs.wa.gov/msa/rpau/docket.html> or by calling (360) 664-6094), on September 22, 2009, at 10:00 a.m.

Date of Intended Adoption: Not earlier than September 23, 2009.

Submit Written Comments to: DSHS Rules Coordinator, P.O. Box 45850, Olympia, WA 98504-5850, delivery 4500 10th Avenue S.E., Lacey, WA 98503, e-mail DSHS RPAURulesCoordinator@dshs.wa.gov, fax (360) 664-6185, by 5:00 p.m. on September 22, 2009.

Assistance for Persons with Disabilities: Contact Jenisha Johnson, DSHS rules consultant, by September 8, 2009, TTY (360) 664-6178 or (360) 664-6094 or by e-mail at [johnsj14@dshs.wa.gov](mailto:johnsj14@dshs.wa.gov).

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: This proposed rule change removes the requirement for clients to provide a signed affidavit when requesting replacement of benefits.

Reasons Supporting Proposal: The current rule requires a signed affidavit from clients who report that their benefits were lost or destroyed in a disaster in order for the benefits to be replaced. For Basic Food benefits, the Code of Federal Regulations imposes no such requirement on the states. Furthermore, the current process can be time-consuming and frustrating for clients. We are proposing to streamline and expedite the benefits replacement process for clients.

Statutory Authority for Adoption: RCW 74.04.050, 74.04.055, 74.04.057, 74.04.510, and 74.08.090.

Statute Being Implemented: RCW 74.04.050, 74.04.-055, 74.04.057, 74.04.510, and 74.08.090.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of social and health services, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Don Winslow, 712 Pear Street S.E., Olympia, WA 98504, (360) 725-4580.

No small business economic impact statement has been prepared under chapter 19.85 RCW. This proposed rule change does not have an economic impact on small businesses. The proposed amendments only affect DSHS clients by removing the requirement that a client provide a signed affidavit when requesting their benefits to be replaced.

A cost-benefit analysis is not required under RCW 34.05.328. These amendments are exempt as allowed under RCW 34.05.328 (5)(b)(vii) which states in-part, "[t]his section does not apply to ... rules of the department of social and health services relating only to client medical or financial eligibility and rules concerning liability for care of dependents." The proposed rules affect DSHS clients by removing the requirement that a client provide a signed affidavit when requesting their benefits to be replaced.

August 13, 2009

Don Goldsby, Manager

Rules and Polices Assistance Unit

AMENDATORY SECTION (Amending WSR 08-14-047, filed 6/24/08, effective 7/25/08)

**WAC 388-412-0040 Can I get my benefits replaced?**

Under certain conditions, we may replace your benefits.

(1) You may get your EBT benefits replaced if:

- (a) We make a mistake that causes you to lose benefits;
- (b) Both your EBT card and personal identification number (PIN) are stolen from the mail; you never had the ability to use the benefits; and you lost benefits;
- (c) You left a drug or alcohol treatment on or before the fifteenth of the month and the facility does not have enough Basic Food benefits in their EBT account for one-half of the allotment that they owe you;
- (d) Your EBT benefits that were recently deposited into an inactive EBT account were canceled by mistake along with your state benefits; or
- (e) Your food that was purchased with Basic Food benefits was destroyed in a disaster.

(2) If you want a replacement, you must ~~((~~ ~~report the loss to your local office within ten days from the date of the loss~~ ~~(; and~~

~~(b) Sign a department affidavit form stating you had a loss of benefits~~)).

(3) For Basic Food, we replace the loss up to a one-month benefit amount.

(4) We will not replace your benefits if your loss is for a reason other than those listed in subsection (1) above or:

- (a) We decided that your request is fraudulent;
- (b) Your Basic Food benefits were lost, stolen or misplaced after you received them;
- (c) You already got two countable replacements of Basic Food benefits within the last five months; or
- (d) You got disaster food stamp benefits for the same month you requested a replacement for Basic Food.
- (5) Your replacement does not count if:

- (a) Your benefits are returned to us; or
- (b) We replaced your benefits because we made an error.



**WSR 09-17-101**  
**PROPOSED RULES**  
**DEPARTMENT OF**  
**SOCIAL AND HEALTH SERVICES**  
(Economic Services Administration)

[Filed August 18, 2009, 8:52 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-14-072.

Title of Rule and Other Identifying Information: The department is proposing to amend WAC 388-406-0055 When do my benefits start?

Hearing Location(s): Blake Office Park East, Rose Room, 4500 10th Avenue S.E., Lacey, WA 98503 (one block north of the intersection of Pacific Avenue S.E. and Alhadeff Lane. A map or directions are available at <http://www1.dshs.wa.gov/msa/rpau/docket.html> or by calling (360) 664-6094), on September 22, 2009, at 10:00 a.m.

Date of Intended Adoption: Not earlier than September 23, 2009.

Submit Written Comments to: DSHS Rules Coordinator, P.O. Box 45850, Olympia, WA 98504, delivery 4500 10th Avenue S.E., Lacey, WA 98503, e-mail DSHSRPAURulesCoordinator@dshs.wa.gov, fax (360) 664-6185, by 5 p.m. on September 22, 2009.

Assistance for Persons with Disabilities: Contact Jenisha Johnson, DSHS rules consultant, by September 8, 2009, TTY (360) 664-6178 or (360) 664-6094 or by e-mail at johnsjl4@dshs.wa.gov.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The purpose of the proposed rule change is to eliminate the forty-five day processing timeframe for general assistance applications filed by a person in confinement in a correctional facility or institution.

In addition, there is a typographical error that the department is proposing to fix. In subsection (2)(d) the text reads "your applied" and should read "you applied" which is from a rule filing in 2003 (WSR 03-22-039).

Reasons Supporting Proposal: The proposed amendments are needed to comply with the statutory changes made to RCW 74.08.060 by the enactment of SSB 6024 (chapter 198, Laws of 2009). The governor signed the law on April 23, 2009, which goes into effect on November 1, 2009.

Statutory Authority for Adoption: RCW 74.08.060, 74.04.050, 74.04.055, 74.04.057, and 74.08.090.

Statute Being Implemented: RCW 74.08.060, 74.04.050, 74.04.055, 74.04.057, and 74.08.090.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of social and health services, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Melissa Mathson, P.O. Box 45470, Olympia, WA 98504-5470, (360) 725-4563.

No small business economic impact statement has been prepared under chapter 19.85 RCW. These proposed rules do not have an economic impact on small businesses. The proposed amendments only affect DSHS clients by defining

when applications are accepted and when they will be processed.

A cost-benefit analysis is not required under RCW 34.05.328. These amendments are exempt as allowed under RCW 34.05.328 (5)(b)(vii) which states in-part, "[t]his section does not apply to ... rules of the department of social and health services relating only to client medical or financial eligibility and rules concerning liability for care of dependents." These rules affect client applications for benefits.

August 13, 2009

Don Goldsby, Manager

Rules and Policies Assistance Unit

AMENDATORY SECTION (Amending WSR 05-19-060, filed 9/16/05, effective 11/1/05)

**WAC 388-406-0055 When do my benefits start?** The date we approve your application affects the amount of benefits you get. If you are eligible for:

(1) Cash assistance, your benefits start:

(a) The date we have enough information to make an eligibility decision; or

(b) No later than the thirtieth day for TANF, SFA, or RCA; or

(c) No later than the forty-fifth day for general assistance ~~((GAU))~~ (GA) unless you are confined in a Washington State public institution as defined in WAC 388-406-0005 (6)(a) on the forty-fifth day, in which case your benefits will start on the date you are released from confinement.

(2) Basic Food, your benefits start from the date you applied unless:

(a) You are recertified for Basic Food. If you are recertified for Basic Food, we determine the date your benefits start under WAC 388-434-0010;

(b) You applied for Basic Food while living in an institution. If you apply for Basic Food while living in an institution, the date you are released from the institution determines your start date as follows. If you are expected to leave the institution:

(i) Within thirty days of the date we receive your application, your benefits start on the date you leave the institution; or

(ii) More than thirty days from the date we receive your application, we deny your application for Basic Food. You may apply for Basic Food again when your date of release from the institution is closer.

(c) We were unable to process your application within thirty days because of a delay on your part. If you caused the delay, but submit required verification by the end of the second thirty-day period, we approve your benefits starting the first day of the month following the month you applied for benefits. We start your benefits from this date even if we denied your application for Basic Food.

(d) We initially denied your application for Basic Food and your assistance unit (AU) becomes categorically eligible (CE) within sixty days from the date ~~((your))~~ you applied. If your AU becoming CE under WAC 388-414-0001 makes you eligible for Basic Food, the date we approve Basic Food is the date your AU became CE.

(e) You are approved for transitional food assistance under chapter 388-489 WAC. We determine the date transitional benefits start as described under WAC 388-489-0015.

(f) You receive transitional food assistance with people you used to live with, and are now approved to receive Basic Food in a different assistance unit:

(i) We must give the other assistance unit ten days notice as described under WAC 388-458-0025 before we remove you from the transitional food assistance benefits.

(ii) Your Basic Food benefits start the first of the month after we remove you from the transitional benefits. For example, if we remove you from transitional benefits on November 30th, you are eligible for Basic Food on December 1st.

(3) Medical assistance, the date your benefits start is stated in chapter 388-416 WAC.

**WSR 09-17-102**  
**PROPOSED RULES**  
**DEPARTMENT OF**  
**SOCIAL AND HEALTH SERVICES**  
(Aging and Disability Services Administration)  
[Filed August 18, 2009, 8:55 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-11-100.

Title of Rule and Other Identifying Information: The department is amending WAC 388-105-0005 The daily medicaid payment rates for clients assessed using the comprehensive assessment reporting evaluation (CARE) tool and that reside in adult family homes (AFH) and boarding homes contracted to provide assisted living (AL), adult residential care (ARC), and enhanced adult residential care (EARC) services and 388-105-0045 Bed or unit hold—Medicaid resident discharged for a hospital or nursing home stay from an adult family home (AFH) or a boarding home contracted to provide adult residential care (ARC), enhanced adult residential care (EARC), or assisted living services (AL).

Hearing Location(s): Blake Office Park East, Rose Room, 4500 10th Avenue S.E., Lacey, WA 98503 (one block north of the intersection of Pacific Avenue S.E. and Alhadeff Lane. A map or directions are available at <http://www1.dshs.wa.gov/msa/rpau/docket.html> or by calling (360) 664-6094, on September 22, 2009, at 10:00 a.m.

Date of Intended Adoption: Not earlier than September 23, 2009.

Submit Written Comments to: DSHS Rules Coordinator, P.O. Box 45850, Olympia, WA 98504-5850, delivery 4500 10th Avenue S.E., Lacey, WA 98503, e-mail DSHS RPAURulesCoordinator@dshs.wa.gov, fax (360) 664-6185, by 5 p.m. on September 22, 2009 [2009].

Assistance for Persons with Disabilities: Contact Jenisha Johnson, DSHS rules consultant, by September 8, 2009, TTY (360) 664-6178 or (360) 664-6094 or by e-mail at [johnsj14@dshs.wa.gov](mailto:johnsj14@dshs.wa.gov).

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The purpose of amending WAC 388-105-0005 is to adopt permanently the approximate 4% reduction of the daily medicaid payment

rates for clients assessed using the CARE tool and that reside in AFHs and licensed boarding homes contracted to provide AL, ARC, and EARC services. Previously, the department filed in WSR 09-14-094 the emergency adoption of the 4% reduction effective July 1, 2009.

The purpose of amending WAC 388-105-0045 is to require notice within twenty-fours [twenty-four hours] when a resident is discharged on medical leave to a nursing home or hospital from the AFH, ARC, EARC, or AL facility.

Statutory Authority for Adoption: RCW 74.39A.030(3) and 18.20.290, section 206(4), chapter 564, Laws of 2009.

Statute Being Implemented: RCW 74.39A.030 and 18.20.290.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of social and health services, governmental.

Name of Agency Personnel Responsible for Drafting: Patricia Hague, Mailstop 45600, Olympia, WA 98504, (360) 725-2447; Implementation and Enforcement: Ken Callaghan, Mailstop 45600, Olympia, WA 98504, (360) 725-2499.

No small business economic impact statement has been prepared under chapter 19.85 RCW. Under RCW 19.85.025 (3) and [19.85.]030 (1)(a), 34.05.310 (4)(f), the department is exempt from preparing a small business economic impact statement (SBEIS).

RCW 19.85.025(3), this chapter does not apply to the adoption of a rule described in RCW 34.05.310(4).

RCW 34.05.310(4), this section does not apply to:

(f) Rules that set or adjust fees or rates pursuant to legislative standards;

The adoption of rules to set or adjust fees is cost neutral. RCW 19.85.030 (1)(a), in the adoption of a rule under chapter 34.05 RCW, an agency shall prepare an SBEIS:

(a) If the proposed rule will impose more than minor costs on businesses in an industry.

A cost-benefit analysis is not required under RCW 34.05.328. Under RCW 34.05.328 (5)(b)(vi), the department is exempt from preparing a cost-benefit analysis for these rules. The rules set or adjust fees or rates pursuant to legislative standards.

RCW 34.05.328 (5)(b) This section does not apply to:

(vi) Rules that set or adjust fees or rates pursuant to legislative standards.

August 6, 2009

Don Goldsby, Manager  
Rules and Policies Assistance Unit

AMENDATORY SECTION (Amending WSR 09-11-053, filed 5/13/09, effective 6/13/09)

**WAC 388-105-0005 The daily medicaid payment rates for clients assessed using the comprehensive assessment reporting evaluation (CARE) tool and that reside in adult family homes (AFH) and boarding homes contracted to provide assisted living (AL), adult residential care (ARC), and enhanced adult residential care (EARC) services.** For contracted AFH and boarding homes contracted to provide AL, ARC, and EARC services, the department pays the following daily rates for care of a medicaid resident:

| COMMUNITY RESIDENTIAL DAILY RATES FOR CLIENTS ASSESSED USING CARE |                               |                               |                               |                               |                               |
|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| KING COUNTY   |                               |                               |                               |                               |                               |
| CARE CLASSIFICATION   | AL Without Capital            | AL With Capital               | ARC                           | EARC                          | AFH                           |
|   | Add-on                        | Add-on                        |                               |                               |                               |
| A Low   | \$((69.22))<br><u>66.45</u>   | \$((74.64))<br><u>71.87</u>   | \$((48.95))<br><u>46.99</u>   | \$((48.95))<br><u>46.99</u>   | \$((48.32))<br><u>46.39</u>   |
| A Med   | \$((74.95))<br><u>71.95</u>   | \$((80.37))<br><u>77.37</u>   | \$((55.54))<br><u>53.32</u>   | \$((55.54))<br><u>53.32</u>   | \$((54.83))<br><u>52.64</u>   |
| A High  | \$((84.10))<br><u>80.74</u>   | \$((89.52))<br><u>86.16</u>   | \$((61.00))<br><u>58.56</u>   | \$((61.00))<br><u>58.56</u>   | \$((61.35))<br><u>58.90</u>   |
| B Low   | \$((69.22))<br><u>66.45</u>   | \$((74.64))<br><u>71.87</u>   | \$((48.95))<br><u>46.99</u>   | \$((48.95))<br><u>46.99</u>   | \$((48.56))<br><u>46.62</u>   |
| B Med   | \$((77.24))<br><u>74.15</u>   | \$((82.66))<br><u>79.57</u>   | \$((62.14))<br><u>59.65</u>   | \$((62.14))<br><u>59.65</u>   | \$((61.66))<br><u>59.19</u>   |
| B Med-High  | \$((87.48))<br><u>83.98</u>   | \$((92.90))<br><u>89.40</u>   | \$((66.07))<br><u>63.43</u>   | \$((66.07))<br><u>63.43</u>   | \$((66.06))<br><u>63.42</u>   |
| B High  | \$((92.09))<br><u>88.41</u>   | \$((97.51))<br><u>93.83</u>   | \$((75.53))<br><u>72.51</u>   | \$((75.53))<br><u>72.51</u>   | \$((75.53))<br><u>72.51</u>   |
| C Low   | \$((74.95))<br><u>71.95</u>   | \$((80.37))<br><u>77.37</u>   | \$((55.54))<br><u>53.32</u>   | \$((55.54))<br><u>53.32</u>   | \$((54.83))<br><u>52.64</u>   |
| C Med   | \$((84.10))<br><u>80.74</u>   | \$((89.52))<br><u>86.16</u>   | \$((69.72))<br><u>66.93</u>   | \$((69.72))<br><u>66.93</u>   | \$((70.02))<br><u>67.22</u>   |
| C Med-High  | \$((104.70))<br><u>100.51</u> | \$((110.12))<br><u>105.93</u> | \$((92.94))<br><u>89.22</u>   | \$((92.94))<br><u>89.22</u>   | \$((91.73))<br><u>88.06</u>   |
| C High  | \$((105.74))<br><u>101.51</u> | \$((111.16))<br><u>106.93</u> | \$((93.82))<br><u>90.07</u>   | \$((93.82))<br><u>90.07</u>   | \$((93.01))<br><u>89.29</u>   |
| D Low   | \$((77.24))<br><u>74.15</u>   | \$((82.66))<br><u>79.57</u>   | \$((75.07))<br><u>72.07</u>   | \$((75.07))<br><u>72.07</u>   | \$((71.38))<br><u>68.52</u>   |
| D Med   | \$((85.82))<br><u>82.39</u>   | \$((91.24))<br><u>87.81</u>   | \$((86.98))<br><u>83.50</u>   | \$((86.98))<br><u>83.50</u>   | \$((87.36))<br><u>83.87</u>   |
| D Med-High  | \$((110.98))<br><u>106.54</u> | \$((116.40))<br><u>111.96</u> | \$((110.61))<br><u>106.19</u> | \$((110.61))<br><u>106.19</u> | \$((105.12))<br><u>100.92</u> |
| D High  | \$((119.59))<br><u>114.81</u> | \$((125.01))<br><u>120.23</u> | \$((119.59))<br><u>114.81</u> | \$((119.59))<br><u>114.81</u> | \$((119.69))<br><u>114.90</u> |
| E Med   | \$((144.53))<br><u>138.75</u> | \$((149.95))<br><u>144.17</u> | \$((144.53))<br><u>138.75</u> | \$((144.53))<br><u>138.75</u> | \$((144.63))<br><u>138.84</u> |
| E High  | \$((169.47))<br><u>162.69</u> | \$((174.89))<br><u>168.11</u> | \$((169.47))<br><u>162.69</u> | \$((169.47))<br><u>162.69</u> | \$((169.57))<br><u>162.79</u> |

| COMMUNITY RESIDENTIAL DAILY RATES FOR CLIENTS ASSESSED USING CARE |                             |                             |                             |                             |                             |
|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| METROPOLITAN COUNTIES*  |                             |                             |                             |                             |                             |
| CARE CLASSIFICATION   | AL Without Capital          | AL With Capital             | ARC                         | EARC                        | AFH                         |
|   | Add-on                      | Add-on                      |                             |                             |                             |
| A Low   | \$((63.49))<br><u>60.95</u> | \$((68.41))<br><u>65.87</u> | \$((48.95))<br><u>46.99</u> | \$((48.95))<br><u>46.99</u> | \$((48.32))<br><u>46.39</u> |
| A Med   | \$((66.94))<br><u>64.26</u> | \$((71.86))<br><u>69.18</u> | \$((53.34))<br><u>51.21</u> | \$((53.34))<br><u>51.21</u> | \$((52.66))<br><u>50.55</u> |

| CARE CLASSIFICATION | AL Without Capital            | AL With Capital               | ARC                           | EARC                          | AFH                           |
|---------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                     | Add-on                        | Add-on                        |                               |                               |                               |
| A High              | \$((81.81))<br><u>78.54</u>   | \$((86.73))<br><u>83.46</u>   | \$((58.17))<br><u>55.84</u>   | \$((58.17))<br><u>55.84</u>   | \$((58.08))<br><u>55.76</u>   |
| B Low               | \$((63.49))<br><u>60.95</u>   | \$((68.41))<br><u>65.87</u>   | \$((48.95))<br><u>46.99</u>   | \$((48.95))<br><u>46.99</u>   | \$((48.56))<br><u>46.62</u>   |
| B Med               | \$((72.65))<br><u>69.74</u>   | \$((77.57))<br><u>74.66</u>   | \$((58.84))<br><u>56.49</u>   | \$((58.84))<br><u>56.49</u>   | \$((58.37))<br><u>56.04</u>   |
| B Med-High          | \$((82.29))<br><u>79.00</u>   | \$((87.21))<br><u>83.92</u>   | \$((62.57))<br><u>60.07</u>   | \$((62.57))<br><u>60.07</u>   | \$((62.60))<br><u>60.10</u>   |
| B High              | \$((89.84))<br><u>86.22</u>   | \$((94.73))<br><u>91.14</u>   | \$((73.40))<br><u>70.46</u>   | \$((73.40))<br><u>70.46</u>   | \$((73.40))<br><u>70.46</u>   |
| C Low               | \$((66.94))<br><u>64.26</u>   | \$((71.86))<br><u>69.18</u>   | \$((53.56))<br><u>51.42</u>   | \$((53.56))<br><u>51.42</u>   | \$((53.05))<br><u>50.93</u>   |
| C Med               | \$((81.84))<br><u>78.54</u>   | \$((86.73))<br><u>83.46</u>   | \$((68.82))<br><u>66.07</u>   | \$((68.82))<br><u>66.07</u>   | \$((68.31))<br><u>65.58</u>   |
| C Med-High          | \$((101.25))<br><u>97.20</u>  | \$((106.17))<br><u>102.12</u> | \$((86.34))<br><u>82.89</u>   | \$((86.34))<br><u>82.89</u>   | \$((85.23))<br><u>81.82</u>   |
| C High              | \$((102.26))<br><u>98.17</u>  | \$((107.18))<br><u>103.09</u> | \$((91.84))<br><u>88.17</u>   | \$((91.84))<br><u>88.17</u>   | \$((90.43))<br><u>86.81</u>   |
| D Low               | \$((72.65))<br><u>69.74</u>   | \$((77.57))<br><u>74.66</u>   | \$((74.04))<br><u>71.08</u>   | \$((74.04))<br><u>71.08</u>   | \$((69.80))<br><u>67.01</u>   |
| D Med               | \$((83.48))<br><u>80.14</u>   | \$((88.40))<br><u>85.06</u>   | \$((85.24))<br><u>81.83</u>   | \$((85.24))<br><u>81.83</u>   | \$((85.01))<br><u>81.61</u>   |
| D Med-High          | \$((107.33))<br><u>103.04</u> | \$((112.25))<br><u>107.96</u> | \$((107.87))<br><u>103.56</u> | \$((107.87))<br><u>103.56</u> | \$((101.92))<br><u>97.84</u>  |
| D High              | \$((116.30))<br><u>111.65</u> | \$((121.22))<br><u>116.57</u> | \$((116.30))<br><u>111.65</u> | \$((116.30))<br><u>111.65</u> | \$((115.79))<br><u>111.16</u> |
| E Med               | \$((140.04))<br><u>134.44</u> | \$((144.96))<br><u>139.36</u> | \$((140.04))<br><u>134.44</u> | \$((140.04))<br><u>134.44</u> | \$((139.53))<br><u>133.95</u> |
| E High              | \$((163.78))<br><u>157.23</u> | \$((168.70))<br><u>162.15</u> | \$((163.78))<br><u>157.23</u> | \$((163.78))<br><u>157.23</u> | \$((163.27))<br><u>156.74</u> |

\*Benton, Clark, Franklin, Island, Kitsap, Pierce, Snohomish, Spokane, Thurston, Whatcom, and Yakima counties.

| COMMUNITY RESIDENTIAL DAILY RATES FOR CLIENTS ASSESSED USING CARE<br>NONMETROPOLITAN COUNTIES** |                             |                             |                             |                             |                             |
|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| CARE CLASSIFICATION   | AL Without Capital          | AL With Capital             | ARC                         | EARC                        | AFH                         |
|   | Add-on                      | Add-on                      |                             |                             |                             |
| A Low   | \$((62.36))<br><u>59.87</u> | \$((67.60))<br><u>65.11</u> | \$((48.95))<br><u>46.99</u> | \$((48.95))<br><u>46.99</u> | \$((48.32))<br><u>46.39</u> |
| A Med   | \$((66.94))<br><u>64.26</u> | \$((72.18))<br><u>69.50</u> | \$((52.25))<br><u>50.16</u> | \$((52.25))<br><u>50.16</u> | \$((51.58))<br><u>49.52</u> |
| A High  | \$((81.81))<br><u>78.54</u> | \$((87.05))<br><u>83.78</u> | \$((57.23))<br><u>54.94</u> | \$((57.23))<br><u>54.94</u> | \$((57.01))<br><u>54.73</u> |
| B Low   | \$((62.36))<br><u>59.87</u> | \$((67.60))<br><u>65.11</u> | \$((48.95))<br><u>46.99</u> | \$((48.95))<br><u>46.99</u> | \$((48.56))<br><u>46.62</u> |

| CARE CLASSIFICATION | AL Without Capital            | AL With Capital               | ARC                           | EARC                          | AFH                           |
|---------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                     | Add-on                        | Add-on                        |                               |                               |                               |
| B Med               | \$((72.65))<br><u>69.74</u>   | \$((77.89))<br><u>74.98</u>   | \$((57.75))<br><u>55.44</u>   | \$((57.75))<br><u>55.44</u>   | \$((57.29))<br><u>55.00</u>   |
| B Med-High          | \$((82.29))<br><u>79.00</u>   | \$((87.53))<br><u>84.24</u>   | \$((61.40))<br><u>58.94</u>   | \$((61.40))<br><u>58.94</u>   | \$((61.38))<br><u>58.92</u>   |
| B High              | \$((89.81))<br><u>86.22</u>   | \$((95.05))<br><u>91.46</u>   | \$((69.42))<br><u>66.64</u>   | \$((69.42))<br><u>66.64</u>   | \$((69.42))<br><u>66.64</u>   |
| C Low               | \$((66.94))<br><u>64.26</u>   | \$((72.18))<br><u>69.50</u>   | \$((52.25))<br><u>50.16</u>   | \$((52.25))<br><u>50.16</u>   | \$((51.58))<br><u>49.52</u>   |
| C Med               | \$((81.81))<br><u>78.54</u>   | \$((87.05))<br><u>83.78</u>   | \$((65.05))<br><u>62.45</u>   | \$((65.05))<br><u>62.45</u>   | \$((65.70))<br><u>63.07</u>   |
| C Med-High          | \$((101.25))<br><u>97.20</u>  | \$((106.49))<br><u>102.44</u> | \$((83.04))<br><u>79.72</u>   | \$((83.04))<br><u>79.72</u>   | \$((81.98))<br><u>78.70</u>   |
| C High              | \$((102.26))<br><u>98.17</u>  | \$((107.50))<br><u>103.41</u> | \$((86.81))<br><u>83.34</u>   | \$((86.81))<br><u>83.34</u>   | \$((85.52))<br><u>82.10</u>   |
| D Low               | \$((72.65))<br><u>69.74</u>   | \$((77.89))<br><u>74.98</u>   | \$((69.99))<br><u>67.19</u>   | \$((69.99))<br><u>67.19</u>   | \$((66.01))<br><u>63.37</u>   |
| D Med               | \$((83.48))<br><u>80.14</u>   | \$((88.72))<br><u>85.38</u>   | \$((80.57))<br><u>77.35</u>   | \$((80.57))<br><u>77.35</u>   | \$((80.39))<br><u>77.17</u>   |
| D Med-High          | \$((107.33))<br><u>103.04</u> | \$((112.57))<br><u>108.28</u> | \$((101.96))<br><u>97.88</u>  | \$((101.96))<br><u>97.88</u>  | \$((96.37))<br><u>92.52</u>   |
| D High              | \$((109.93))<br><u>105.53</u> | \$((115.17))<br><u>110.77</u> | \$((109.93))<br><u>105.53</u> | \$((109.93))<br><u>105.53</u> | \$((109.48))<br><u>105.10</u> |
| E Med               | \$((132.36))<br><u>127.07</u> | \$((137.60))<br><u>132.31</u> | \$((132.36))<br><u>127.07</u> | \$((132.36))<br><u>127.07</u> | \$((131.92))<br><u>126.64</u> |
| E High              | \$((154.80))<br><u>148.61</u> | \$((160.04))<br><u>153.85</u> | \$((154.80))<br><u>148.61</u> | \$((154.80))<br><u>148.61</u> | \$((154.36))<br><u>148.19</u> |

\*\* Nonmetropolitan counties: Adams, Asotin, Chelan, Clallam, Columbia, Cowlitz, Douglas, Ferry, Garfield, Grant, Grays Harbor, Jefferson, Kittitas, Klickitat, Lewis, Lincoln, Mason, Okanogan, Pacific, Pend Orielle, San Juan, Skagit, Skamania, Stevens, Wahkiakum, Walla Walla and Whitman.

AMENDATORY SECTION (Amending WSR 09-11-053, filed 5/13/09, effective 6/13/09)

**WAC 388-105-0045 Bed or unit hold—Medicaid resident discharged for a hospital or nursing home stay from an adult family home (AFH) or a boarding home contracted to provide adult residential care (ARC), enhanced adult residential care (EARC), or assisted living services (AL).** (1) When an AFH, ARC, EARC, or AL contracts to provide services under chapter 74.39A RCW, the AFH, ARC, EARC, and AL contractor must hold a medicaid eligible resident's bed or unit when:

- (a) Short-term care is needed in a nursing home or hospital;
- (b) The resident is likely to return to the AFH, ARC, EARC, or AL; and
- (c) Payment is made under subsection (3) of this section.

(2)(a) When the department pays the contractor to hold the medicaid resident's bed or unit during the resident's short-term nursing home or hospital stay, the contractor must hold the bed or unit for up to twenty days. If during the twenty day bed hold period, a department case manager determines that the medicaid resident's hospital or nursing home stay is not short term and the medicaid resident is unlikely to return to the AFH, ARC, EARC or AL facility, the department will cease paying for the bed hold the day the case manager notifies the contractor of his/her decision.

(b) A medicaid resident's discharge from an AFH, ARC, EARC, or an AL facility for a short term stay in a nursing home or hospital must be longer than twenty-four hours before subsection (3) of WAC 388-105-0045 applies.

(c) When a medicaid resident on bed hold leave returns to an AFH, ARC, EARC, or an AL facility but remains less than twenty-four hours, the bed hold leave on which the resident returned applies after the resident's discharge. A new

bed hold leave will begin only when the returned resident has resided in the facility for more than twenty-four hours before the resident's next discharge.

(d) When an AFH, ARC, EARC, or AL facility discharges a resident to a nursing home or hospital and the resident is out of the facility for more than twenty-four hours, then by using e-mail, fax or telephone, the facility must notify the department of the resident's discharge within twenty-four hours after the initial twenty-four hours has passed. When the end of the initial twenty-four hours falls on a weekend or state holiday, then the facility must notify the department of the discharge within twenty-four hours after the weekend or holiday.

(3) The department will compensate the contractor for holding the bed or unit for the:

(a) First through seventh day at seventy percent of the medicaid daily rate paid for care of the resident before the hospital or nursing home stay; and

(b) Eighth through the twentieth day, at eleven dollars a day.

(4) The AFH, ARC, EARC, or AL facility may seek third-party payment to hold a bed or unit for twenty-one days or longer. The third-party payment shall not exceed the medicaid daily rate paid to the facility for the resident. If third-party payment is not available and the returning medicaid resident continues to meet the admission criteria under chapter 388-71 and/or 388-106 WAC, then the medicaid resident may return to the first available and appropriate bed or unit.

(5) The department's social worker or case manager determines whether the:

(a) Stay in a nursing home or hospital will be short-term; and

(b) Resident is likely to return to the AFH, ARC, EARC, or AL facility.

(6) When the resident's stay in the hospital or nursing home exceeds twenty days or the department's social worker or case manager determines that the medicaid resident's stay in the nursing home or hospital is not short-term and the resident is unlikely to return to the AFH, ARC, EARC, or AL facility, then only subsection (4) of this section applies to any private contractual arrangements that the contractor may make with a third party in regard to the discharged resident's unit or bed.

Hearing Location(s): Blake Office Park East, Rose Room, 4500 10th Avenue S.E., Lacey, WA 98503 (one block north of the intersection of Pacific Avenue S.E. and Alhadeff Lane. A map or directions are available at <http://www.dshs.wa.gov/msa/rpau/docket.html> or by calling (360) 664-6094, on September 22, 2009, at 10:00 a.m.

Date of Intended Adoption: Not sooner than September 23, 2009.

Submit Written Comments to: DSHS Rules Coordinator, P.O. Box 45850, Olympia, WA 98504-5850, delivery 4500 10th Avenue S.E., Lacey, WA 98503, e-mail DSHS RPAURulesCoordinator@dshs.wa.gov, fax (360) 664-6185, by 5 p.m. on September 22, 2009.

Assistance for Persons with Disabilities: Contact Jenisha Johnson, DSHS rules consultant, by September 8, 2009, TTY (360) 664-6178 or (360) 664-6094 or by e-mail at johnsjl4@dshs.wa.gov.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The rule implements new policy pertaining to payment or denial of payment for hospital claims that involve serious adverse events, hospital-acquired conditions, and/or present on admission indicators, and tells hospital providers the conditions under which the department will not pay for, or only make partial payments for, claims involving serious adverse events, hospital-acquired conditions, and/or present on admission indicators.

Reasons Supporting Proposal: The new section is consistent with the guidelines set by the Centers for Medicare and Medicaid Services (CMS) for medicare payment reforms that support adjusting payments to hospitals based on quality and efficiency of care. The rule provides a strong incentive for hospitals to make a correct diagnosis of symptoms upon admission (or as soon thereafter), exercise precautions to avoid unnecessary surgical procedures, reduce hospital-acquired conditions, and improve the quality of care that medical assistance clients receive in hospitals.

Statutory Authority for Adoption: RCW 74.08.090 and 74.09.500.

Statute Being Implemented: RCW 74.08.090 and 74.09.500.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of social and health services, governmental.

Name of Agency Personnel Responsible for Drafting: Kathy Sayre, P.O. Box 45505, Olympia, WA 98504-5504, (360) 725-1342; Implementation and Enforcement: Carolyn Adams, P.O. Box 45510, Olympia, WA 98504-5510, (360) 725-1854.

No small business economic impact statement has been prepared under chapter 19.85 RCW. These rules do not impact small businesses.

A cost-benefit analysis is required under RCW 34.05.328. A preliminary cost-benefit analysis may be obtained by contacting Carolyn Adams, Health and Recovery Services Administration, P.O. Box 45510, Olympia, WA

### WSR 09-17-103

#### PROPOSED RULES

#### DEPARTMENT OF

#### SOCIAL AND HEALTH SERVICES

(Health and Recovery Services Administration)

[Filed August 18, 2009, 9:00 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-04-071.

Title of Rule and Other Identifying Information: The department is creating WAC 388-550-1650 Serious adverse events, hospital-acquired conditions, and present on admission indicators.

98504-5510, phone (360) 725-1854, fax (360) 753-9152, e-mail adamsr@dshs.wa.gov.

August 10, 2009  
Don Goldsby, Manager  
Rules and Policies Assistance Unit

#### NEW SECTION

#### **WAC 388-550-1650 Serious adverse events, hospital-acquired conditions, and present on admission indicators.**

(1) The rules in this section apply to:

(a) Inpatient hospital claims with dates of admission on and after November 1, 2009;

(b) Payment or denial of payment for any inpatient hospital claims identified in (a) of this subsection, including medicaid supplemental or enhanced payments and medicaid disproportionate share hospital (DSH) payments or denial of payment;

(c) Serious adverse events, hospital-acquired conditions (HACs), and present on admission (POA) indicators (defined in subsection (2) of this section);

(d) Hospital requirements to report serious adverse events and HACs to the department (see subsection (4)(a) of this section);

(e) Hospital requests for retrospective utilization reviews and the related requirements to provide root cause analysis of events to the department (see subsection (4)(d) through (f) of this section); and

(f) Hospital requirements to use POA indicator codes on claims (see subsection (4)(g) of this section).

(2) The following definitions apply to this section:

(a) **"Serious adverse events"** (also known as "adverse health events," "adverse events," or "never events") are the events that must be reported to the department of health (DOH) under WAC 246-320-146. These events are clearly identifiable, preventable, and serious in their consequences for patients, and of a nature such that the risk of occurrence is significantly influenced by the policies and procedures of the healthcare organization. Some "hospital-acquired conditions (HACs)" can become a serious adverse event if the:

(i) Patient dies or is seriously disabled; or

(ii) Level of severity is great, such as the patient develops level 3 or 4 pressure ulcers.

(b) **"Hospital-acquired condition (HAC)"** is a condition that is reasonably preventable and was not present or identifiable at hospital admission but is either present at discharge or documented after admission. HACs are identified by the U.S. Secretary of Health and Human Services per Section 5001(c) of the Deficit Reduction Act (DRA) of 2005 (42 U.S.C. § 1395ww (d)(4)(D)) and the medicare hospital-acquired condition policy ([http://www.cms.hhs.gov/HospitalAcqCond/06\\_Hospital-Acquired\\_Conditions.asp#TopOfPage](http://www.cms.hhs.gov/HospitalAcqCond/06_Hospital-Acquired_Conditions.asp#TopOfPage)) HACs are conditions that:

(i) Are high cost or high volume or both;

(ii) Result in the assignment of a case to a diagnosis related group (DRG) that has a higher payment when present as a secondary diagnosis; and

(iii) Could reasonably have been prevented through the application of evidence-based guidelines.

(c) **"Serious disability"** means a physical or mental impairment that substantially limits the major life activities of a patient.

(d) **"Present on admission (POA) indicator"** is a status code the hospital uses on an inpatient hospital claim that indicates if a condition was present or incubating at the time the order for inpatient admission occurs. A POA indicator can also identify a condition that develops during an outpatient encounter. (Outpatient encounters include, but are not limited to, emergency department visits, diagnosis testing, observation, and outpatient surgery.)

(e) **"Root cause analysis"** is a class of problem-solving methods aimed at identifying the root causes of events instead of addressing the immediate, obvious symptoms.

(3) **Medicare crossover inpatient hospital claims.** The department applies the following rules for these claims:

(a) If medicare denies payment for a claim at a higher rate for the increased costs of care under its HAC and/or POA indicator policies:

(i) The department limits payment to the maximum allowed by medicare;

(ii) The department does not pay for care considered nonallowable by medicare; and

(iii) The client cannot be held liable for payment.

(b) If medicare denies payment for a claim under its National Coverage Determination authority from Section 1862 (a)(1)(A) of the Social Security Act (42 U.S.C. 1395) for a serious adverse health event:

(i) The department does not pay the claim, any medicare deductible, and/or any co-insurance related to the inpatient hospital services; and

(ii) The client cannot be held liable for payment.

(4) **Inpatient hospital claims (excludes medicare crossover inpatient hospital claims discussed in subsection (3) of this section).** The department applies the following rules for these claims:

(a) When the department requests information from a hospital regarding serious adverse events that the hospital reported to DOH, the hospital must provide the information requested for any affected medical assistance client (this includes both fee-for-service clients and clients enrolled in a managed care organization (MCO) contracted with the department). If no medical assistance client was affected by a serious adverse event, the hospital must provide a written response to the department with an assurance that no medical assistance clients were affected.

(b) The department does not pay for serious adverse events reported to DOH by the hospital or identified through the department's retrospective utilization review process (see (a) of this subsection).

(c) The client cannot be held liable for payment.

(d) A hospital may request a retrospective utilization review by the department, as described in WAC 388-550-1700 (6)(a) and (b) (iii), from the department or its designee to determine if the payment of a serious adverse event should be only partially denied.

(e) A hospital that requests a department retrospective utilization review of a serious adverse event must provide the department with the hospital's root cause analysis, as

described in WAC 246-320-146 (3) and (4), of the serious adverse event claim.

(f) The healthcare information that is part of the retrospective utilization review, including the root cause analysis of the serious adverse event claim, is exempt from public disclosure under RCW 42.56.360 (1)(c).

(g) All hospitals that have signed a core provider agreement with the department must provide information to the department by using POA indicator codes on each claim (refer to the table in this subsection). These POA indicator codes must designate which procedures or complications were present on admission, and which occurred during, or as a result of, hospital care. POA indicator codes are to be assigned to principal and secondary diagnosis (as defined in Section II of the Official Guidelines for Coding and Reporting), and the external cause of injury codes.

| POA Indicator Codes |   |
|---------------------|---|
| Code                | Reason for Code   |
| Y                   | Diagnosis was present at time of inpatient admission.   |
| N                   | Diagnosis was not present at time of inpatient admission.   |
| U                   | Documentation insufficient to determine if condition was present at the time of inpatient admission.  |
| W                   | Clinically undetermined. Provider unable to clinically determine whether or not the condition was present at the time of inpatient admission. |

(5) The department:

(i) Does not make additional payments for complications and comorbidities (CC) and major complications and comorbidities (MCC) that are coded with POA indicator codes "N" or "U" if the claim meets the definition of an HAC.

(ii) Denies payment for any HAC that results in death or serious disability.

(6) A hospital that disagrees with a department decision to deny payment or partial payment of a serious adverse event or hospital-acquired condition may follow the administrative appeal process in WAC 388-502-0220.

**WSR 09-17-104**  
**PROPOSED RULES**  
**DEPARTMENT OF**  
**SOCIAL AND HEALTH SERVICES**  
 (Health and Recovery Services Administration)  
 [Filed August 18, 2009, 9:04 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-12-090.

Title of Rule and Other Identifying Information: The department is amending WAC 388-517-0310 Eligibility for federal medicare savings and state-funded medicare buy-in programs.

Hearing Location(s): Blake Office Park East, Rose Room, 4500 10th Avenue S.E., Lacey, WA 98503 (one block north of the intersection of Pacific Avenue S.E. and Alhadeff Lane. A map or directions are available at <http://www.dshs.wa.gov/msa/rpau/docket.html> or by calling (360) 664-6094), on September 22, 2009, at 10:00 a.m.

Date of Intended Adoption: Not sooner than September 23, 2009.

Submit Written Comments to: DSHS Rules Coordinator, P.O. Box 45850, Olympia, WA 98504-5850, delivery 4500 10th Avenue S.E., Lacey, WA 98503, e-mail DSHS RPAURulesCoordinator@dshs.wa.gov, fax (360) 664-6185, by 5 p.m. on September 22, 2009.

Assistance for Persons with Disabilities: Contact Jenisha Johnson, DSHS rules consultant, by September 8, 2009, TTY (360) 664-6178 or (360) 664-6094 or by e-mail at johnsjl4@dshs.wa.gov.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Per federal statute, effective January 1, 2010 the resource standards for medicare savings programs change to match the resource standards for the medicare Part D low-income subsidy. The resource standards will be adjusted yearly after that.

Reasons Supporting Proposal: Federal funding depends on the state's compliance with federal regulations.

Statutory Authority for Adoption: Public Law 110-275, Section 113 (Medicare Improvements for Patients and Providers Act); RCW 74.04.050, 74.04.057, 74.08.090, and 74.09.500.

Statute Being Implemented: Public Law 110-275, Section 113 (Medicare Improvements for Patients and Providers Act); RCW 74.04.050, 74.04.057, 74.08.090, and 74.09.500.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of social and health services, governmental.

Name of Agency Personnel Responsible for Drafting: Kevin Sullivan, P.O. Box 45504, (360) 725-1344; Implementation and Enforcement: Carole McRae, P.O. Box 45534, (360) 725-1250.

No small business economic impact statement has been prepared under chapter 19.85 RCW. This rule does not impact small businesses.

A cost-benefit analysis is not required under RCW 34.05.328. Per RCW 34.05.328 (5)(b)(vii), client eligibility rules for medical assistance are exempt from this provision.

August 12, 2009  
 Don Goldsby, Manager  
 Rules and Policies Assistance Unit

AMENDATORY SECTION (Amending WSR 07-15-032, filed 7/12/07, effective 8/12/07)

**WAC 388-517-0310 Eligibility for federal medicare savings and state-funded medicare buy-in programs.** (1) Persons eligible for any medicare savings programs (MSP) must:

(a) Be entitled to or receiving medicare Part A. Qualified disabled working individuals (QDWI) clients must be under age sixty-five;



(b) Meet program income standards, see WAC 388-478-0085; and

(c) Have resources ~~((at or below twice the resource standards for SSI and SSI related programs, see WAC 388-478-0080(4))~~ equal to or less than the medicare Part D low-income subsidy resource standard found at: <http://hrsa.dshs.wa.gov/Eligibility/images/Standards%20Chart%20July%202008%20Final.pdf>.

(2) MSP follow categorically needy program rules for SSI related persons in chapter 388-475 WAC.

(3) MSP clients are entitled to a fair hearing when the department takes an adverse action such as denying or terminating MSP benefits.

(4) The department subtracts the allocations and deductions described under WAC 388-513-1380 from a long-term care client's countable income and resources when determining MSP eligibility:

(a) Allocations to a spouse and/or dependent family member; and

(b) Client participation in cost of care.

(5) Medicaid eligibility may affect MSP eligibility, as follows:

(a) Qualified medicare beneficiaries (QMB) and specified low income beneficiaries (SLMB) clients can receive medicare and still be eligible to receive QMB or SLMB benefits.

(b) Qualified individuals (QI-1) and qualified disabled working individuals (QDWI) clients who begin to receive medicare are no longer eligible for QI-1 or QDWI benefits.

(6) Every year, when the federal poverty level changes:

(a) The department adjusts income standards for MSP and state funded medicare buy-in programs, see WAC 388-478-0085.

(b) The department begins to count the annual Social Security cost-of-living (COLA) increase on April 1st each year when determining eligibility for MSP and state funded medicare buy-in programs.

(7) There is no income limit for the state-funded medicare buy-in program. The state-funded medicare buy-in program is for clients who receive medicare but do not qualify for the federal MSP.

### WSR 09-17-106

#### WITHDRAWAL OF PROPOSED RULES GAMBLING COMMISSION

(By the Code Reviser's Office)

[Filed August 18, 2009, 9:14 a.m.]

WAC 230-15-030 and 230-16-157, proposed by the gambling commission in WSR 09-04-032 appearing in issue 09-04 of the State Register, which was distributed on February 18, 2009, is withdrawn by the code reviser's office under RCW 34.05.335(3), since the proposal was not adopted within the one hundred eighty day period allowed by the statute.

Kerry S. Radcliff, Editor  
Washington State Register

### WSR 09-17-107

#### WITHDRAWAL OF PROPOSED RULES STATE BOARD OF HEALTH

(By the Code Reviser's Office)

[Filed August 18, 2009, 9:14 a.m.]

WAC 246-366-001, 246-366-010, 246-366-020, 246-366-030, 246-366-040, 246-366-050, 246-366-060, 246-366-070, 246-366-080, 246-366-090, 246-366-100, 246-366-110, 246-366-120, 246-366-130, 246-366-140 and 246-366-150, proposed by the state board of health in WSR 09-04-049 appearing in issue 09-04 of the State Register, which was distributed on February 18, 2009, is withdrawn by the code reviser's office under RCW 34.05.335(3), since the proposal was not adopted within the one hundred eighty day period allowed by the statute.

Kerry S. Radcliff, Editor  
Washington State Register

### WSR 09-17-111

#### PROPOSED RULES DEPARTMENT OF LICENSING

[Filed August 18, 2009, 12:45 p.m.]

Original Notice.

Exempt from preproposal statement of inquiry under RCW 34.05.310(4).

Title of Rule and Other Identifying Information: WAC 308-100-031 Skill and training requirements for commercial driver's license.

Hearing Location(s): Highways-Licenses Building, Conference Room 413, 1125 Washington Street S.E., Olympia, WA (check in at counter on first floor), on September 22, 2009, at 3:00 p.m.

Date of Intended Adoption: September 23, 2009.

Submit Written Comments to: Clark J. Holloway, P.O. Box 9030, Olympia, WA 98507-9030, e-mail [cholloway@dol.wa.gov](mailto:cholloway@dol.wa.gov), fax (360) 586-8351, by August 25, 2009.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Amends WAC 308-100-031 to extend period in which the department may issue a CDL restricted to operation of a commercial motor vehicle for agribusiness purposes until June 30, 2011.

Reasons Supporting Proposal: Brings rule into conformance with recent legislation.

Statutory Authority for Adoption: RCW 46.25.140 and 46.01.110.

Statute Being Implemented: Section 1, chapter 339, Laws of 2009.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of licensing, governmental.

Name of Agency Personnel Responsible for Drafting: Clark J. Holloway, Highways-Licenses Building, Olympia, Washington, (360) 902-3846; Implementation and Enforcement: Doron Maniece, Highways-Licenses Building, Olympia, Washington, (360) 902-3850.

No small business economic impact statement has been prepared under chapter 19.85 RCW. A small business economic impact statement is not required pursuant to RCW 19.85.025(3).

A cost-benefit analysis is not required under RCW 34.05.328. RCW 34.05.328 does not apply to this proposed rule under the provisions of RCW 34.05.328 (5)(a)(i).

August 18, 2009  
Walt Fahrer  
Rules Coordinator

AMENDATORY SECTION (Amending WSR 08-16-017, filed 7/25/08)

**WAC 308-100-031 Skill and training requirements for commercial driver's license.** (~~On or after January 2, 2009,~~) An applicant for a commercial driver's license must complete the minimum training requirements specified under WAC 308-100-033, unless waived under RCW 46.25.060(3). The department also may issue a commercial driver's license to an applicant certified by an employer under WAC 308-100-035 as having the skills and training necessary to operate a commercial motor vehicle safely. Until ~~(January 2, 2010)~~ June 30, 2011, the department may issue a commercial driver's license that is restricted to the operation of a commercial motor vehicle for agribusiness purposes under WAC 308-100-038 to an applicant who does not otherwise meet the requirements of this section.

**WSR 09-17-112**  
**PROPOSED RULES**  
**PROFESSIONAL EDUCATOR**  
**STANDARDS BOARD**

[Filed August 18, 2009, 1:03 p.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-14-001.

Title of Rule and Other Identifying Information: Revises WAC 181-78A-205, 181-78A-207, 181-78A-209, and 181-78A-250. Revises Standard I for college/university educator preparation program per directions of the professional educator standards board (PESB).

Hearing Location(s): Red Lion at the Park, 201 West North River Drive, Spokane, WA 99201, on September 23, 2009, at 8:30 a.m.

Date of Intended Adoption: September 23, 2009.

Submit Written Comments to: David Brenna, Legislative and Policy Coordinator, P.O. Box 47236, Olympia, WA 98504, e-mail david.brenna@k12.wa.us, fax (360) 586-4548, by September 15, 2009.

Assistance for Persons with Disabilities: Contact David Brenna by September 15, 2009, TTY (360) 664-3631 or (360) 725-6238.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Stakeholder and board action on improving the standards for operating a college/university educator preparation program.

Reasons Supporting Proposal: Stakeholder recommendations approved by the PESB.

Statutory Authority for Adoption: RCW 28A.410.210.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Professional educator standards board, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: David Brenna, P.O. Box 47236 [47236], Olympia, WA 98504, (360) 725-6238.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The proposed amendment does not have an impact on small business and therefore does not meet the requirements for a statement under RCW 19.85.030 (1) or (2).

A cost-benefit analysis is required under RCW 34.05.328. A preliminary cost-benefit analysis may be obtained by contacting David Brenna, P.O. Box 47236, Olympia, WA 98504, phone (360) 725-6238, fax (360) 586-3631, e-mail david.brenna@k12.wa.us.

August 18, 2009

David Brenna

Legislative and  
Policy Coordinator

AMENDATORY SECTION (Amending WSR 06-14-010, filed 6/22/06, effective 7/23/06)

**WAC 181-78A-205 Required professional education advisory board.** Colleges and universities seeking approval by the professional educator standards board as an approved preparation program, and in order to maintain such approval status, shall establish a professional education advisory board (PEAB) in accordance with the following:

(1) The program areas for which a college or university may seek approval and maintain an approved preparation program are:

- (a) Teacher.
- (b) Administrator.
- (c) Educational staff associate (ESA), school counselor.
- (d) Educational staff associate, school psychologist.
- (e) Educational staff associate, school social worker.

(2) A college or university may combine educational staff associate professional education advisory boards as long as one-half or more of the voting members are appointed by the associations representing the ESA roles involved and are divided equally among those roles.

(3) A college or university may have separate administrator professional education advisory boards for each administrator role as long as one-half or more of the voting members are appointed by the association representing the administrator role involved: Provided, That each administrator PEAB shall include at least one member appointed by the association of Washington school principals (AWSP) ~~((and))~~, one appointed by the Washington association of school administrators (WASA), and one appointed by the Washington Federation of Independent Schools (WFIS).

(4) The failure of a designated organization, as specified in WAC 181-78A-209, to make appointments to the designated board, or to make such appointments in a timely man-

ner, shall not cause the preparation program to lose its approval status.

**AMENDATORY SECTION** (Amending WSR 07-04-004, filed 1/24/07, effective 2/24/07)

**WAC 181-78A-207 Qualification to be appointed to a college or university professional education advisory board.** (1) ~~((Appointees to service on professional education advisory boards from required agencies, other than the designee(s) of the college or university president, at the time of their appointment, must be employed in or reside in a school district with which the college or university has a current written agreement to provide field experiences for students involved in the preparation program for which the professional education advisory board has responsibility.~~

~~((2))~~ Professional education advisory boards may authorize the appointment of additional representatives from other school districts or other public and private agencies as long as one-half or more of the members of the professional education advisory board consist of representatives who meet the qualifications ~~((of subsection (1))~~ of this ~~((section))~~ subsection and who are from the role for which the professional education advisory board has responsibility.

~~((3))~~ (2) If any professional education advisory board receives a written request from other school districts or other public or private agencies for representation on such professional education advisory board, the current members of such professional education advisory board shall vote on such request at the next regular meeting of such board: Provided, That a college or university may elect to add private school representatives to a professional education advisory board without adding to the representation from the role for which the professional education advisory board has responsibility if the professional education advisory board authorizes such action by a majority vote.

**AMENDATORY SECTION** (Amending WSR 07-04-004, filed 1/24/07, effective 2/24/07)

**WAC 181-78A-209 College or university professional education advisory boards—Membership.** The professional education advisory boards shall at a minimum consist of the following:

(1) **TEACHER.**

(a) One-half or more of the voting members shall be classroom teachers. All, but one, will be appointed by the president of the Washington Education Association. ~~((One of these))~~ The remaining teacher~~((s))~~ shall be employed in a state-approved private school and appointed by the Washington Federation of Independent Schools.

(b) At least one principal appointed by the president of the Association of Washington School Principals.

(c) At least one school administrator appointed by the Washington Association of School Administrators.

(d) At least one educational staff associate (school counselor, school psychologist, school social worker, school nurse, school occupational therapist, school physical therapist, or school speech language pathologist or audiologist) appointed by the president of the individual's professional association.

~~((e))~~ (f) At least one college or university representative who may serve in a voting or nonvoting role.

~~((e))~~ (f) At colleges or universities where career and technical education programs are offered, one career and technical education director or career and technical education teacher, with expertise in one of the approved career and technical education programs at the college or university, appointed by the Washington Association of Vocational Administrators in cooperation with the college or university.

(2) **ADMINISTRATOR.**

(a) One-half or more of the voting members shall be administrators. One-half of these administrators ~~((at least one-fourth of the total voting membership))~~ shall be appointed by the president of the Washington Association of School Administrators. ~~((All but one of))~~ The remaining administrators shall be appointed by the president of the Association of Washington School Principals ~~((The remaining administrator))~~ except one who shall be employed in an approved private school and appointed by the Washington Federation of Independent Schools.

(b) At least one or more classroom teachers appointed by the president of the Washington Education Association.

(c) At least one educational staff associate (school counselor, school psychologist, school social worker, school nurse, school occupational therapist, school physical therapist, or school speech language pathologist or audiologist) appointed by the president of the individual's professional association.

~~((d))~~ At least one college or university representative who may serve in a voting or nonvoting role.

(3) **SCHOOL COUNSELOR.**

(a) At least one-half of the voting members shall be school counselors appointed by the president of the Washington School Counselors Association.

(b) At least one teacher appointed by the president of the Washington Education Association.

(c) At least one principal appointed by the Association of Washington School Principals.

(d) At least one administrator appointed by the Washington Association of School Administrators.

(e) At least one college or university representative who may serve in a voting or nonvoting role.

(4) **SCHOOL PSYCHOLOGIST.**

(a) At least one-half of the voting members shall be school psychologists appointed by the president of the Washington State Association of School Psychologists.

(b) At least one teacher appointed by the president of the Washington Education Association.

(c) At least one principal appointed by the Association of Washington School Principals.

(d) At least one administrator appointed by the Washington Association of School Administrators.

(e) At least one college or university representative who may serve in a voting or nonvoting role.

(5) **SCHOOL SOCIAL WORKER.**

(a) At least one-half of the voting members shall be school social workers appointed by the president of the Washington Association of School Social Workers.

(b) At least one teacher appointed by the president of the Washington Education Association.

(c) At least one principal appointed by the Association of Washington School Principals.

(d) At least one administrator appointed by the Washington Association of School Administrators.

(e) At least one college or university representative who may serve in a voting or nonvoting role.

**AMENDATORY SECTION** (Amending WSR 07-04-004, filed 1/24/07, effective 2/24/07)

**WAC 181-78A-250 Approval standards professional education advisory board.** Building on the mission to prepare educators who demonstrate a positive impact on student learning, the following evidence shall be evaluated to determine whether each preparation program is in compliance with the program approval standards of WAC 181-78A-220(1):

(1) The college or university professional education advisory board has been established in accordance with WAC 181-78A-209.

(2) The educational service district professional education advisory board for a teacher professional certification program has been established in accordance with WAC 181-78A-520.

(3) The professional education advisory board has adopted operating procedures and has met at least four times a year.

(4) The professional education advisory board has reviewed all program approval standards at least once every five years.

(5) The professional education advisory board annually has reviewed and analyzed data for the purposes of determining whether candidates have a positive impact on student learning and providing the institution with recommendations for programmatic change. This data may include, but not be limited to: Student surveys, follow-up studies, employment placement records, student performance portfolios, course evaluations, and summaries of performance on the pedagogy assessment for teacher candidates.

(6) The professional education advisory board has made recommendations when appropriate for program changes to the institution which must in turn consider and respond to the recommendations in writing in a timely fashion.

(7) The professional education advisory board annually has seen, reviewed and approved an executive summary of the activities of the professional education advisory board. The college, university or educational service district has submitted the approved executive summary to the professional educator standards board.

(8) The professional education advisory board for administrator preparation programs participated in the candidate selection process for principal preparation programs.

Preproposal statement of inquiry was filed as WSR 09-02-019.

Title of Rule and Other Identifying Information: Amend Title 222 WAC, Forest practices rules, related to northern spotted owl conservation.

Hearing Location(s): Natural Resources Building, 1111 Washington Street S.E., Olympia, WA 98504, on September 29, 2009, at 6 p.m.

Date of Intended Adoption: November 10, 2009.

Submit Written Comments to: Patricia Anderson, Forest Practices Board, Department of Natural Resources, Forest Practices Division, P.O. Box 47012, Olympia, WA 98504-7012, e-mail forest.practicesboard@dnr.wa.gov, fax (360) 902-1428, by 5 p.m. on September 30, 2009.

Assistance for Persons with Disabilities: Contact forest practices division at (360) 902-1400, by September 15, 2007 [2009], TTY (360) 902-1125.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The purpose of the rule is to assure that no habitat important to the northern spotted owl is altered through forest practices while the board determines a long-term strategy for spotted owl habitat conservation. It imposes additional analysis, by a "spotted owl conservation advisory group," of forest lands surveyed by forest landowners that indicate the absence of spotted owls. These surveys are reviewed by Washington department of fish and wildlife. With this rule proposal, the site may not be decertified (that is, the spotted owl site center status may not be changed) unless the advisory group reaches consensus that the site center need not be maintained while the board determines a long-term strategy. The duration of the advisory group's existence is from January 1, 2009, through December 31, 2009.

Reasons Supporting Proposal: The forest practices board established a policy working group on northern spotted owl conservation on December 16, 2008, to recommend measures that will result in strategic contributions from nonfederal lands in Washington to the broader goal of conservation of a viable population of the northern spotted owl. The board expects recommendations from this group late in 2009. The recommendations may result in changes to Title 222 WAC concerning conservation of this species' habitat on nonfederal lands.

In the meantime, this proposed rule making is an interim measure to assure that no habitat important to the northern spotted owl is altered through forest practices while the board determines a long-term strategy for spotted owl habitat conservation.

Statutory Authority for Adoption: RCW 76.09.040.

Statute Being Implemented: Not applicable.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Forest practices board, governmental.

Name of Agency Personnel Responsible for Drafting: Marc Engel, 1111 Washington Street S.E., Olympia, (360) 902-1390; Implementation and Enforcement: Mary McDonald, 1111 Washington Street S.E., Olympia, (360) 902-1415.

**WSR 09-17-113**  
**PROPOSED RULES**  
**FOREST PRACTICES BOARD**

[Filed August 18, 2009, 1:36 p.m.]

Original Notice.

A small business economic impact statement has been prepared under chapter 19.85 RCW.

#### Small Business Economic Impact Statement

**OBJECTIVES:** The forest practices board is considering a rule proposal to amend WAC 222-16-010 that could affect timber harvest in northern spotted owl circles within spotted owl special emphasis areas (SOSEAs) in Washington state. The objectives of this economic analysis are to analyze the costs and benefits of the proposal pursuant to RCW 34.05-328, and to determine whether the costs to comply with the proposal are likely to disproportionately impact the state's small businesses pursuant to RCW 19.85.040.

According to the Administrative Procedure Act (chapter 34.05 RCW) agencies must complete a cost-benefit analysis (CBA) to:

- Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented; and
- Determine, after considering alternative versions of the rule, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives of the statute that the rule implements.

A small business economic impact statement (SBEIS) is required by the Regulatory Fairness Act (chapter 19.85 RCW) to consider the impacts of administrative rules adopted by state agencies on small businesses. The statute defines small businesses as those with fifty or fewer employees. To determine whether the proposed rule will have a disproportionate cost impact on small businesses, the impact statement compares the cost of compliance for small business with the cost of compliance for the ten percent of businesses that are the largest businesses required to comply with the proposed rules.

**CONTEXT:** Since 2005, the board considered whether and how the forest practices rules should be changed to conserve habitat for the northern spotted owl. In November 2005, the forest practices board adopted rules that placed a temporary moratorium on the practice of decertifying spotted owl site centers to allow time to develop a long-term conservation strategy. This was due to reported declines in suitable habitat in the decade since the 1996 adoption of state rules to conserve spotted owl habitat<sup>1</sup>, and in Washington's spotted owl population since the species was listed as threatened in 1990 under the Endangered Species Act (ESA)<sup>2</sup>. The board maintained the moratorium, through a succession of emergency and permanent rules, through December 31, 2008.

Under current rules, with no moratorium on decertification, a landowner may, after having followed survey protocol for two consecutive years, petition the department of fish and wildlife (WDFW) to decertify the owl circle. If WDFW finds that the landowner has properly followed the survey protocol it may change the status of the site center and the restrictions on harvest within the circle are lifted.

To help develop a long-term conservation strategy for the spotted owl, on July 7, 2008, the board established a

multi-stakeholder policy working group on northern spotted owl conservation. This group is to recommend measures that result in strategic contribution from nonfederal lands in Washington to the conservation of a viable population of the northern spotted owl. The board expects recommendations from this group by the end of 2009.

On December 16, 2008, the board adopted an emergency rule that deleted language pertaining to the moratorium, and created a multi-stakeholder advisory group to review any surveys demonstrating the absence of spotted owls at spotted owl site centers. The board also directed staff to begin the permanent rule-making process with the same rule language. Because emergency rules are effective for only one hundred twenty days unless an agency is actively undertaking the appropriate procedures to adopt the rule as permanent, the board readopted the emergency rule twice while permanent rule making is in progress. Two steps in rule making are already completed, the CR-101 preproposal statement of inquiry pursuant to RCW 34.05.310 and the thirty day review pursuant to RCW 76.09.040(2). This economic analysis is part of the next step in evaluating the proposed permanent rule.

**PROPOSED RULE:** The proposed rule has three parts:

1. Removes language from WAC 222-16-010 Northern spotted owl site center, pertaining to the moratorium on the decertification of northern spotted owl site centers which expired on December 31, 2008;

2. Creates in WAC 222-16-010 the "spotted owl conservation advisory group"; and

3. Adds language to WAC 222-16-080 Critical habitats, which specifies that for the period from January 1, 2009, through December 31, 2009, the advisory group will determine if "the site need not be maintained while the board completes its evaluation of rules affecting the northern spotted owl," and indicates the advisory group's existence is limited to the above mentioned period.

**Purpose of the proposed rule change:** The primary purpose of the proposed rule change is to assure that no habitat important to the northern spotted owl is altered through forest practices while the board determines a long-term strategy for spotted owl habitat conservation.

The concept of the spotted owl conservation advisory group was a result of a stakeholder (state, forest industry, conservation community) agreement to have an interim process in place while the policy working group on northern spotted owl conservation develops recommendations for a long-term conservation strategy. The advisory group consists of three representatives, one from the Washington forest products industry, one from a Washington-based conservation organization actively involved with spotted owl conservation, and one from the forest practices program. Members of the group will have a detailed working knowledge of spotted owl relationships and factors affecting spotted owl conservation.

The advisory group's role is to evaluate whether historical habitat should be maintained after WDFW approves surveys demonstrating the absence of spotted owls as performed consistent with survey protocols. If the advisory group members reach consensus that the site center need not be maintained while the board completes its evaluation of rules

affecting the northern spotted owl, then and only then can the site center be decertified. In such case, the advisory group will communicate its findings to the department of natural resources (DNR) in writing within sixty days of WDFW's approval of the survey.

In short, the rule imposes additional analysis by experts on any survey submitted and approved by WDFW during the year 2009. The site may not be decertified unless the advisory group reaches consensus that the site center need not be maintained while the board determines a long-term conservation strategy. The duration of the advisory group's existence is from January 1, 2009 through December 31, 2009.

**COST-BENEFIT ANALYSIS:** To estimate the economic impacts of the proposed rule change, cost estimates are analyzed quantitatively and discussed in terms of probability of occurrence. The potential benefits are described only qualitatively. It is important to note that both costs and benefits are uncertain because it is unknown whether WDFW will receive and approve any surveys during the short timeframe of the advisory group's existence. To date no surveys have been approved.

**BENEFITS:** This rule is intended to benefit Washington state's northern spotted owl population. This species is designated "state endangered" and "federal threatened." As explained under "CONTEXT," for the past several years the board has been concerned about whether to increase spotted owl habitat protection on nonfederal lands. This is because suitable habitat has declined under the current rules, and also Washington's spotted owl population has declined since the species was listed as threatened in 1990 under the ESA. The board established the policy working group for northern spotted owl conservation to develop recommendations for a long-term conservation strategy, and is looking for the group's recommendations by the end of 2009.

As previously explained, the board desires additional analysis by experts on any survey submitted to and approved by WDFW, in which a landowner demonstrated the absence of spotted owls at a spotted owl site center (circle), for the year 2009. It is expected that this will add assurance that no potentially important habitat is lost through harvest while the board determines any appropriate changes to its rules related to spotted owl habitat conservation.

**COSTS:** The rule-complying community affected by the proposal is businesses that own or control the cutting rights on the above-described forest land or those with the right to dispose of the timber (all hereafter referred to as "landowners"). However, for landowners owning less than five hundred acres in a SOSEA, the effects of the proposed rules are limited to habitat within the inner 0.7-mile circle of a site center.

Part one of the proposed rule is the removal of language about a past moratorium on spotted owl site center decertification which is no longer relevant. As such, it has no economic impact<sup>3</sup>.

It is the other parts of the proposed rule that have potential to result in economic impact on those that must comply with the proposed rule. As explained above, the proposed rule creates the spotted owl conservation advisory group to evaluate any spotted owl site center that WDFW determines is no longer occupied. Under existing permanent rule, the

site would be decertified. Under the proposed rule, if the advisory group reaches consensus that the site need not be maintained while the board completes its evaluation of rules affecting the spotted owl, then the site will be decertified. If the advisory group cannot reach a consensus decision on this question, the site may retain its current status with restriction on harvest similar to other sites.

For the proposed rule, additional costs would accrue to the landowners of "suitable spotted owl habitat"<sup>4</sup> within particular site centers (circles) (see Step 1 below) only if all of the following activities have occurred:

- An owner of forest land within the site center (circle) completed two years of surveys according to current federal protocol, which demonstrated the absence of spotted owls.
- The landowner submitted the appropriate survey documentation to WDFW.
- WDFW reviewed and approved the surveys were performed appropriately.
- The advisory group evaluated the surveys and the location of the site center.
- The advisory group could not reach consensus that the site need not be maintained while the board completes its evaluation of the forest practices rules affecting the spotted owl.

In short, costs will only be imposed on owners of forest land within any spotted owl site center (circle) that the advisory group decides, by not being able to reach consensus to the contrary, should not be decertified until the board determines a long-term strategy for spotted owl conservation. However, it is not known exactly what length of time such a circle will not be allowed to be decertified, and therefore eligible for harvest. It is also unknown whether any landowners will submit, or would submit, in the absence of this rule, surveys to WDFW. To date, no complete surveys have been submitted to WDFW since the end of the moratorium on December 31, 2008. Therefore, we estimated timber volume and value calculations for individual circles to show possible impacts on forest landowners within each circle.

We took the following steps to estimate timber value in each circle:

- Step 1. Identified owl circles potentially affected by the rule change.
- Step 2. Determined forest land acreage within the owl circles identified in Step 1 that potentially could be affected by the rule change.
- Step 3. Estimated the timber volume on acres identified in Step 2 that potentially could be harvested.
- Step 4. Estimated the stumpage value of the timber volume identified in Step 3.

**Step 1. Identify owl circles potentially affected by the rule change.** Forest lands within twelve site centers (circles) were identified as potentially being affected by the rule. These circles are within SOSEA boundaries, excluding forest land owned by the federal government, or covered by an HCP or landowner option plan. The forest land potentially affected within those circles is "suitable spotted owl habitat" described in WAC 222-16-085(1), that is, "old forest," "submature," "mixed forest," and "young forest marginal."

**Step 2. Determine forest land acreage within the owl circles identified in Step 1 that potentially could be affected by the rule change.** This acreage was determined by analyzing DNR geographic information system data for each owl circle identified in Step 1. Each circle's acreage was calculated as an individual circle by suitable spotted owl habitat type. The results are summarized in column C-1 of Table 1.

**Step 3. Estimate the timber volume on acres identified in Step 2 above that potentially could be harvested.** Aerial stereo photos were used to estimate tree heights for each habitat type in each circle. Using the Log Scaling and Timber Cruising book (J.R. Dilworth, 1975, p.444), the average heights were used to find normal tree diameters at breast height (DBH) for trees of these heights. The average tree height and the DBH were used in conjunction with tariff table #40 to find the volume in board feet for each tree. The volume per tree was then multiplied by the trees per acre (TPA) requirements specified in WAC 222-16-085 to calculate the volume per acre. The ranges of TPA for each habitat type were averaged. To estimate the total board feet per habitat type for each circle, the board feet per acre total was multiplied by the number of acres of each habitat type for each circle. The results of this analysis are summarized in column C-2 of Table 1.

The estimated volume per acre was then multiplied by the number of acres per habitat type to determine the total volume affected by the rule; these volumes are shown in column C-3. This volume category was then reduced by a factor of 13% (shown in column C-4) to account for a timber volume in riparian zones that cannot be harvested under the Forest Practices rules.<sup>5</sup> The resulting estimated forgone volume is shown in column C-5.

**Step 4. Estimate the stumpage value of the timber volume identified in Step 3.** The price per thousand board feet of \$209/mbf was used to calculate stumpage value. This is based on the estimated stumpage price for Westside Douglas fir DNR stumpage over the last year. The price is based on the average composite DNR log price for Douglas fir during the twelve month period ending in June 2009 of \$359/mbf, less an estimated harvest and delivery cost of \$150 per million board feet.<sup>6</sup> Applying the estimated value of \$209/mbf resulted in the estimated stumpage value shown in column C-6.

**Cost Analysis:** In total, the twelve circles cover 23,452 acres of habitat that currently cannot be harvested that would be released for harvest should the circles be decertified. However, it is extremely unlikely that this rule will impact all of the circles, and in fact may not impact any of the circles. It is more reasonable to consider the cost of the rule based on individual circles. As can be observed on Table 1 and Figure 1, the current potential timber value within a given circle ranges from \$0.0 to over \$20 million. The averages for all twelve circles in volume and timber value are 50.1 million board feet and \$12.0 million. The three circles in the Mineral SOSEA have little or no habitat currently, therefore the cost of maintaining the habitat in these circles would be low. If we calculate the average cost after removing these three circles, the average increases to \$16 million.

It is important to stress that the foregone value of timber revenue (cost) estimated as a possible impact of the rule proposal (shown in column C-8 of Table 1) would accrue only to the landowners of "suitable spotted owl habitat" within particular site centers (circles). It bears repeating that landowners would be impacted only when all of the following activities have occurred:

- An owner of forest land within the site center completed two years of surveys according to current federal protocol which demonstrated the absence of spotted owls.
- The landowner submitted the appropriate survey documentation to WDFW.
- WDFW reviewed and approved the surveys were performed appropriately.
- The advisory group evaluated the surveys and the location of the site center.
- The advisory group could not reach consensus that the site need not be maintained while the Board completes its evaluation of the forest practices rules affecting the northern spotted owl.

Between January 1, 2009, and July 14, 2009, only one landowner submitted survey documentation to WDFW. In that case, WDFW found the documentation to be incomplete and returned it to the landowner as disapproved. DNR program staff are unaware of any other landowner who is conducting a survey during the period covered by this rule.

Based on this information, and after staff conversations with WDFW and DNR field staff, our professional opinion is that the probability that all of the above-listed events will occur even for [if] one owl circle is very low, and therefore the probable cost of the proposed rule change is considerably less than even the average cost of one owl circle of \$12.0 million, if not zero. The cost could be from \$0 to \$144.4 million, depending on whether no site centers, or any number of site centers (between 1 and 12), are affected by the advisory group's analysis during the group's one-year life span.

Table 1: Potentially Affected Acres and Volume, and Associated Values

| SOSEA                         | Site Center Designator | NSO_HABITAT CODE                              | Habitat Acres Including Core Areas | Volume/Acre Including Core Area* | Total Volume Including Core Area* | Estimated RMZ Volume* | Estimated Foregone Volume* | Estimated value of harvestable timber*** |
|-------------------------------|------------------------|---|------------------------------------|----------------------------------|-----------------------------------|-----------------------|----------------------------|--|
| L-00W                         | 1                      | Old Forest Habitat                            | 482                                | 17,050                           | 8,222,874                         | 1,070,002             | 7,152,872                  | \$ 1.5                                   |
|                               |                        | Sub-Mature Forest Habitat                     | 705                                | 43,340                           | 30,568,569                        | 3,977,738             | 26,590,831                 | \$ 6.4                                   |
|                               |                        | Mixed Forest Habitat                          | 319                                | 34,500                           | 11,098,605                        | 1,432,496             | 9,576,109                  | \$ 2.3                                   |
|                               |                        | Young Forest Marginal Habitat                 | 919                                | 37,430                           | 34,411,640                        | 4,477,919             | 29,933,720                 | \$ 7.2                                   |
|                               |                        | <b>Total</b>                                  | <b>2,425</b>                       | <b>34,718</b>                    | <b>84,211,683</b>                 | <b>10,958,955</b>     | <b>73,253,627</b>          | <b>\$ 17.6</b>                           |
|                               | 2                      | Old Forest Habitat                            | 602                                | 14,850                           | 12,847,003                        | 1,643,683             | 11,003,319                 | \$ 2.6                                   |
|                               |                        | Sub-Mature Forest Habitat                     | 709                                | 29,590                           | 20,951,541                        | 2,728,321             | 18,223,220                 | \$ 4.4                                   |
|                               |                        | Mixed Forest Habitat                          | 184                                | 13,790                           | 2,530,879                         | 329,331               | 2,201,548                  | \$ 0.5                                   |
|                               |                        | <b>Total</b>                                  | <b>1,744</b>                       | <b>29,714</b>                    | <b>36,129,422</b>                 | <b>4,701,345</b>      | <b>31,428,077</b>          | <b>\$ 7.6</b>                            |
|                               | Finney Block           | 3   | Old Forest Habitat                 | 1,264                            | 14,850                            | 18,775,746            | 2,443,196                  | 16,332,550                               |
| Sub-Mature Forest Habitat     |                        |   | 172                                | 45,310                           | 7,794,226                         | 1,014,225             | 6,780,002                  | \$ 1.6                                   |
| Mixed Forest Habitat          |                        |   | 1,461                              | 46,500                           | 67,913,715                        | 8,837,279             | 59,076,436                 | \$ 14.2                                  |
| Young Forest Marginal Habitat |                        |   | 109                                | 43,340                           | 4,743,130                         | 617,200               | 4,125,929                  | \$ 1.0                                   |
| <b>Total</b>                  |                        |   | <b>3,006</b>                       | <b>33,026</b>                    | <b>99,226,817</b>                 | <b>12,911,900</b>     | <b>86,314,917</b>          | <b>\$ 20.7</b>                           |
| Mineral                       | 4                      | Old Forest Habitat                            | 207                                | 14,850                           | 3,076,951                         | 400,636               | 2,676,315                  | \$ 0.6                                   |
|                               |                        | Mixed Forest Habitat                          | 17                                 | 33,000                           | 544,500                           | 70,853                | 473,647                    | \$ 0.1                                   |
|                               |                        | <b>Total</b>                                  | <b>224</b>                         | <b>16,188</b>                    | <b>3,621,451</b>                  | <b>471,489</b>        | <b>3,151,662</b>           | <b>\$ 0.8</b>                            |
|                               | 5                      | No Habitat                                    | 0                                  |                                  | 0                                 | 0                     | \$ -                       |  |
| 6                             | Old Forest Habitat     | 5   | 14,850                             | 74,993                           | 9,758                             | 65,234                | \$ 0.0                     |  |
| <b>Total</b>                  | <b>5</b>               | <b>14,850</b>                                 | <b>74,993</b>                      | <b>9,758</b>                     | <b>65,234</b>                     | <b>\$ 0.0</b>         |                            |  |
| White Salmon                  | 7                      | Young Forest Marginal Habitat - Closed Canopy | 1,928                              | 24,000                           | 46,266,480                        | 6,020,431             | 40,246,049                 | \$ 9.7                                   |
|                               |                        | Young Forest Marginal Habitat - Open Canopy   | 780                                | 24,000                           | 18,727,440                        | 2,436,910             | 16,290,530                 | \$ 3.9                                   |
|                               |                        | <b>Total</b>                                  | <b>2,708</b>                       | <b>34,000</b>                    | <b>64,993,920</b>                 | <b>8,457,341</b>      | <b>56,536,579</b>          | <b>\$ 13.6</b>                           |
| N. Blount                     | 8                      | Sub-Mature Forest Habitat                     | 61                                 | 35,200                           | 2,159,520                         | 281,908               | 1,878,512                  | \$ 0.5                                   |
|                               |                        | Young Forest Marginal Habitat - Closed Canopy | 1,856                              | 38,000                           | 70,540,540                        | 9,179,095             | 61,361,445                 | \$ 14.7                                  |
|                               |                        | Young Forest Marginal Habitat - Open Canopy   | 798                                | 38,000                           | 23,940,300                        | 3,115,234             | 20,825,066                 | \$ 5.0                                   |
|                               |                        | <b>Total</b>                                  | <b>2,715</b>                       | <b>35,588</b>                    | <b>96,640,360</b>                 | <b>12,576,337</b>     | <b>84,065,023</b>          | <b>\$ 20.2</b>                           |
| L-00E                         | 9                      | Sub-Mature Forest Habitat                     | 88                                 | 35,200                           | 3,086,136                         | 402,755               | 2,683,381                  | \$ 0.6                                   |
|                               |                        | Young Forest Marginal Habitat - Closed Canopy | 2,919                              | 30,000                           | 84,582,300                        | 11,006,261            | 73,576,039                 | \$ 17.7                                  |
|                               |                        | Young Forest Marginal Habitat - Open Canopy   | 10                                 | 24,000                           | 251,280                           | 32,698                | 218,582                    | \$ 0.1                                   |
|                               |                        | <b>Total</b>                                  | <b>2,918</b>                       | <b>35,135</b>                    | <b>87,928,716</b>                 | <b>11,441,723</b>     | <b>76,486,993</b>          | <b>\$ 18.4</b>                           |
|                               | 10                     | Sub-Mature Forest Habitat                     | 17                                 | 30,400                           | \$31,392                          | 69,147                | 462,245                    | \$ 0.1                                   |
|                               |                        | Young Forest Marginal Habitat - Closed Canopy | 2,922                              | 24,000                           | 60,038,400                        | 7,912,503             | 52,125,897                 | \$ 12.5                                  |
|                               |                        | Young Forest Marginal Habitat - Open Canopy   | 155                                | 24,000                           | 3,719,040                         | 483,940               | 3,235,100                  | \$ 0.8                                   |
|                               | <b>Total</b>           | <b>2,874</b>                                  | <b>24,042</b>                      | <b>64,288,832</b>                | <b>8,966,591</b>                  | <b>55,323,241</b>     | <b>\$ 13.4</b>             |  |
|                               | 11                     | Sub-Mature Forest Habitat                     | 42                                 | 24,000                           | 1,000,560                         | 130,198               | 870,362                    | \$ 0.2                                   |
|                               |                        | Young Forest Marginal Habitat - Closed Canopy | 2,185                              | 30,000                           | 65,543,100                        | 8,528,803             | 57,014,297                 | \$ 13.7                                  |
|                               |                        | Young Forest Marginal Habitat - Open Canopy   | 120                                | 24,000                           | 2,880,720                         | 374,654               | 2,506,066                  | \$ 0.6                                   |
|                               |                        | <b>Total</b>                                  | <b>2,347</b>                       | <b>29,588</b>                    | <b>69,424,380</b>                 | <b>9,033,655</b>      | <b>60,390,725</b>          | <b>\$ 14.5</b>                           |
| Entire Ridge**                | 12                     | Sub-Mature Forest Habitat                     | 60                                 | 30,400                           | 1,824,256                         | 190,344               | 1,633,912                  | \$ 0.3                                   |
|                               |                        | Young Forest Marginal Habitat - Closed Canopy | 2,157                              | 30,000                           | 64,703,400                        | 8,419,537             | 56,283,863                 | \$ 13.5                                  |
|                               |                        | Young Forest Marginal Habitat - Open Canopy   | 478                                | 38,000                           | 18,148,040                        | 2,381,516             | 15,766,524                 | \$ 3.8                                   |
|                               |                        | <b>Total</b>                                  | <b>2,695</b>                       | <b>31,431</b>                    | <b>84,375,696</b>                 | <b>10,979,396</b>     | <b>73,396,300</b>          | <b>\$ 17.6</b>                           |
| <b>Grand Totals</b>           |                        |   | <b>23,452</b>                      | <b>29,461</b>                    | <b>992,918,179</b>                | <b>89,905,801</b>     | <b>901,912,378</b>         | <b>\$ 144.4</b>                          |
| <b>Average per Circle</b>     |                        |   | <b>1,354</b>                       | <b>29,461</b>                    | <b>57,576,515</b>                 | <b>7,492,159</b>      | <b>50,084,355</b>          | <b>\$ 13.0</b>                           |

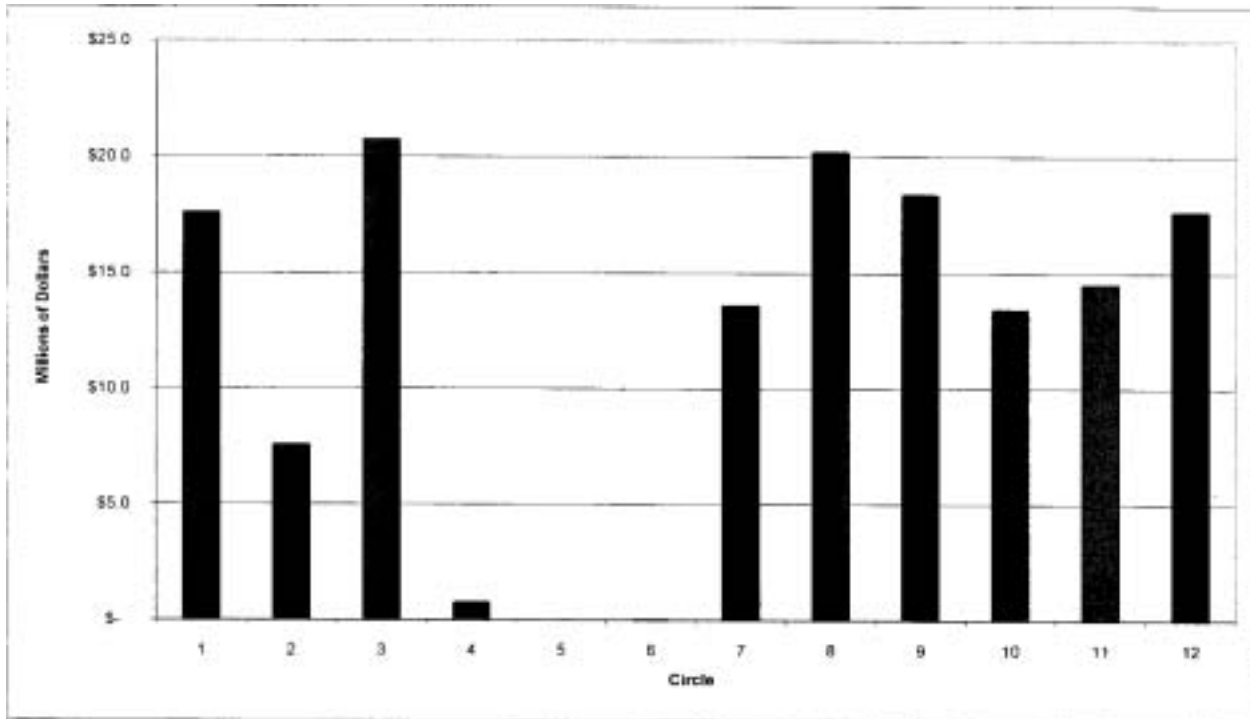
\* Volume in Board Feet

\*\* Habitat Layer Updated after initial analysis

\*\*\* Millions of Dollars assumes \$209/m3f



Figure 1: Estimated value of Harvestable Timber by Circle



**SMALL BUSINESS IMPACTS:** The proposal does not require any change in reporting, recordkeeping, and other compliance requirements, nor is it anticipated that there will be an increase in the professional services that a small business is likely to need in order to comply with the proposed rules.

The Regulatory Fairness Act definition of small business is one with fifty or fewer employees. RCW 19.85.040 directs that:

To determine whether the proposed rule will have a disproportionate cost impact on small businesses, the impact statement must compare the cost of compliance for small business with the cost of compliance for the 10% of businesses that are the largest businesses required to comply with the proposed rules...

To make the comparison required in this statute, we obtained employment information from the Washington State Department of Employment Security. There are forty-six separate businesses within the twelve subject circles classified as "resource production and extraction" lands per county records. Employment security records show that forty-three of those businesses employ fifty or fewer employees, which is the legal definition of "small business." However, in this case, five of the forty-six businesses are the "10% of businesses that are the largest businesses required to comply with the proposed rules." So, we must compare the costs for the five largest businesses with the costs for the forty-one smallest businesses that would be required to comply with the proposed rule.

**Small business analysis:** The largest businesses own 59% of the "resource production and extraction" lands in the twelve circles, while small businesses own 41%. Based on this information, we estimate the average value of harvest-

able timber for the largest businesses is \$1.4 million per firm ( $\$12.0 \text{ million} \times 59\% / 5 = \$1.4 \text{ million per large business}$ ) while the average value for the small businesses is \$120,000 per firm ( $\$12.0 \text{ million} \times 41\% / 41 = \$120,000 \text{ per small business}$ ).

This shows that the average value of timber owned by small business is about 8% ( $\$120,000 / \$1,400,000$ ) of that for the largest businesses. This comparison indicates that the proposed rule has no adverse disproportionate impact on small businesses when compared to the largest businesses.

**Estimated Number of Jobs Created or Lost.** RCW 19.85.040 (2)(d) requires that the economic analysis include "(a)n estimate of the number of jobs that will be created or lost as the result of compliance with the proposed rule." In 2005, the department of employment security showed 37,178 covered employments in the forest and logging, wood production, and paper manufacturing industries. This employment was supported by a harvest in Washington of 3.730 billion board feet, which results in approximately one primary job for every hundred thousand board feet harvested per year. Assuming a proportional relationship between timber volume and the timber related jobs, and given the total potential impact of 600 thousand board feet shown in column C-5 of Table 1, this rule could have an estimated maximum impact of six jobs for one year, if this rule impacted all of the site centers, which is highly unlikely. The average impact of one site center would be just one half of a job for one year.

**Reducing costs for small businesses.** RCW 19.85.030 and [19.85].040 address an agency's responsibility in rule making to consider how costs may be reduced for small businesses, based on the extent of disproportionate impact on the small businesses. We have found that this rule would not have a disproportionate impact on small businesses and therefore no mitigation is required by the law. However, the

existing forest practices rules do limit the restrictions for landowners owning less than 500 acres in a SOSEA to the area within the inner 0.7-mile circle of a site center, and this could be expected to reduce cost to small businesses.

**LEAST BURDENSOME ALTERNATIVE:** The Administrative Procedure Act states that agencies shall determine after considering alternative versions of the rule, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives of the statute that the rule implements.

The Forest Practices Act indicates that, coincident with maintenance of a viable forest products industry, it is important to afford protection to a variety of public resources including wildlife<sup>7</sup>. In addition, the board's rules include protection of critical habitats of threatened and endangered species, one of which is the northern spotted owl.

Because of the precarious circumstances of Washington's northern spotted owl habitat and population (as explained in the "CONTEXT" section), the board is considering a long-term conservation strategy for the conservation of spotted owl habitat. The rule currently under analysis is a temporary measure intended to ensure that habitat deemed to be currently unoccupied (as concluded from spotted owl protocol surveys) is not altered if it is determined to be potentially important to Washington's spotted owl population.

Adopting the proposed rule would be less burdensome overall than not adopting the rule largely because, from the cost perspective it is a temporary measure, and from the wildlife conservation perspective it may conserve potentially important habitat for the spotted owl.

**CONCLUSIONS:** This economic analysis estimates the cost of the proposed rule to those who are required to comply with the rule. The costs are the result of the potential loss of harvest opportunity on lands within twelve owl circles potentially affected by the proposed rule. The analysis estimates that a total of \$144.4 million or an average of \$12 million worth of timber per site potentially could be impacted by the rule. However, the probability of even one of the twelve sites being impacted by this rule are judged to be very low, if not zero, and therefore the expected value of the cost of this rule is only a fraction of the average value of timber per site of \$12 million. The cost could be from \$0 to \$144.4 million, depending on whether no site centers, or any number of site centers (between one and twelve), are affected by the advisory group's analysis during the group's one-year life span.

This rule is intended to benefit Washington state's northern spotted owl population. The forest practices board has expressed the desire for additional analysis of any survey submitted to and approved by WDFW, in which a landowner demonstrated the absence of spotted owls at a spotted owl site center (circle), for the year 2009. It is expected that the proposed rule will add assurance that no potentially important habitat is lost through harvest while the board determines any appropriate long-term changes to its rules related to spotted owl habitat conservation. The expected probability that even one of the twelve circles will be impacted by this rule is judged to be very low if not zero, and therefore the expected cost of the rule is proportionately low if not zero. Therefore, it is reasonable to conclude that the probable benefits of the rule are greater than [than] its probable costs, taking into

account both the qualitative and quantitative benefits and costs of the proposed rule.

A comparison of the estimated potential impact to small business, and the 10% of the largest businesses that are required to comply with the rule, shows that the impact on small businesses is likely to be less per firm than for large businesses, and therefore would not disproportionately impact small businesses. Furthermore, the existing five hundred acre rule may help to mitigate the impact on small businesses. Therefore, the proposed rule is not expected to impose more than minor costs on Washington's small businesses as a whole, although it is possible that individual landowners will be impacted. The analysis indicates that the rule will have only a minor, if any, impact on overall employment.

Adopting the proposed rule would be less burdensome overall than not adopting the rule, largely because from the cost perspective it is a temporary measure, and from the wildlife conservation perspective it may conserve potentially important habitat for the spotted owl.

**RESOURCES CITED:** J. R. Dilworth, *Scaling and Timber Cruising* (1975).

Washington Forest Practices Board, *New Proposed Forest Practices Rules Cost-Benefit Analysis* (February 21, 2001).

<sup>1</sup> See *An Assessment of Spotted Owl Habitat on Non-federal Lands in Washington Between 1996 and 2004*, John D. Pierce et al., August 2005 at [http://wdfw.wa.gov/wlm/research/papers/spotted\\_owl/index.htm](http://wdfw.wa.gov/wlm/research/papers/spotted_owl/index.htm).

<sup>2</sup> See *Final Briefing Report to the Washington State Forest Practices Board Regarding Spotted Owl Status and Forest Practices Rules*, Joseph B. Buchanan and Paula Swedeen, August 2005 at [http://wdfw.wa.gov/wlm/research/papers/spotted\\_owl/forest\\_practices.htm](http://wdfw.wa.gov/wlm/research/papers/spotted_owl/forest_practices.htm).

<sup>3</sup> The impacts of imposing the moratorium were analyzed as part of the rule making in 2006 and 2008.

<sup>4</sup> WAC 222-16-085(1).

<sup>5</sup> Based on the estimate from the 2001 cost-benefit analysis of the forests and fish rules; available upon request.

<sup>6</sup> Unpublished data on file with the author and available upon request.

<sup>7</sup> RCW 76.09.010.

A copy of the statement may be obtained by contacting Gretchen Robinson, Department of Natural Resources, P.O. Box 47012, Olympia, WA 98504-7012, phone (360) 902-1705, fax (360) 902-1428, e-mail [gretchen.robinson@dnr.wa.gov](mailto:gretchen.robinson@dnr.wa.gov).

A cost-benefit analysis is required under RCW 34.05.328. A preliminary cost-benefit analysis may be obtained by contacting Gretchen Robinson, Department of Natural Resources, P.O. Box 47012, Olympia, WA 98504-7012, phone (360) 902-1705, fax (360) 902-1428, e-mail [gretchen.robinson@dnr.wa.gov](mailto:gretchen.robinson@dnr.wa.gov). Please note: The preliminary CBA and SBEIS are combined in the draft economic analysis shown above.

August 13, 2009  
Peter Goldmark  
Chair

**AMENDATORY SECTION** (Amending WSR 08-17-092, filed 8/19/08, effective 9/19/08)

**WAC 222-16-010 \*General definitions.** Unless otherwise required by context, as used in these rules:

**"Act"** means the Forest Practices Act, chapter 76.09 RCW.

**"Affected Indian tribe"** means any federally recognized Indian tribe that requests in writing from the department information on forest practices applications and notification filed on specified areas.

**"Alluvial fan"** see "sensitive sites" definition.

**"Appeals board"** means the forest practices appeals board established in the act.

**"Aquatic resources"** means water quality, fish, the Columbia torrent salamander (*Rhyacotriton kezeri*), the Cascade torrent salamander (*Rhyacotriton cascadae*), the Olympic torrent salamander (*Rhyacotriton olympian*), the Dunn's salamander (*Plethodon dunni*), the Van Dyke's salamander (*Plethodon vandyke*), the tailed frog (*Ascaphus truei*) and their respective habitats.

**"Area of resource sensitivity"** means areas identified in accordance with WAC 222-22-050 (2)(d) or 222-22-060 (2).

**"Bankfull depth"** means the average vertical distance between the channel bed and the estimated water surface elevation required to completely fill the channel to a point above which water would enter the flood plain or intersect a terrace or hillslope. In cases where multiple channels exist, the bankfull depth is the average depth of all channels along the cross-section. (See board manual section 2.)

**"Bankfull width"** means:

(a) For streams - the measurement of the lateral extent of the water surface elevation perpendicular to the channel at bankfull depth. In cases where multiple channels exist, bankfull width is the sum of the individual channel widths along the cross-section (see board manual section 2).

(b) For lakes, ponds, and impoundments - line of mean high water.

(c) For tidal water - line of mean high tide.

(d) For periodically inundated areas of associated wetlands - line of periodic inundation, which will be found by examining the edge of inundation to ascertain where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland.

**"Basal area"** means the area in square feet of the cross section of a tree bole measured at 4 1/2 feet above the ground.

**"Bedrock hollows"** (colluvium-filled bedrock hollows, or hollows; also referred to as zero-order basins, swales, or bedrock depressions) means landforms that are commonly spoon-shaped areas of convergent topography within unchannelled valleys on hillslopes. (See board manual section 16 for identification criteria.)

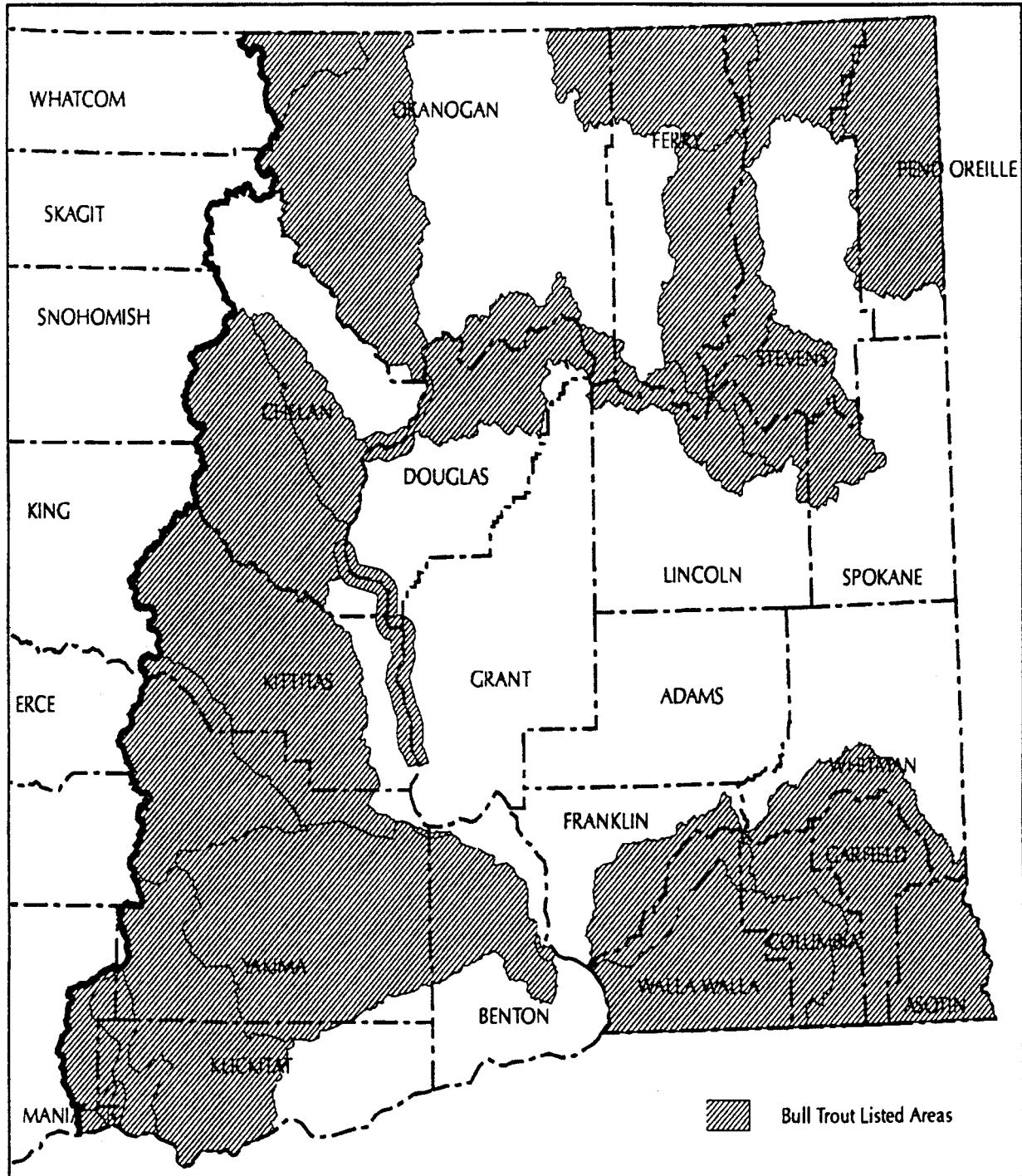
**"Board"** means the forest practices board established by the act.

**"Bog"** means wetlands which have the following characteristics: Hydric organic soils (peat and/or muck) typically 16 inches or more in depth (except over bedrock or hardpan); and vegetation such as sphagnum moss, Labrador tea, bog laurel, bog rosemary, sundews, and sedges; bogs may have an overstory of spruce, western hemlock, lodgepole pine, western red cedar, western white pine, Oregon crabapple, or quaking aspen, and may be associated with open water. This includes nutrient-poor fens. (See board manual section 8.)

**"Borrow pit"** means an excavation site outside the limits of construction to provide material necessary to that construction, such as fill material for the embankments.

**"Bull trout habitat overlay"** means those portions of Eastern Washington streams containing bull trout habitat as identified on the department of fish and wildlife's bull trout map. Prior to the development of a bull trout field protocol and the habitat-based predictive model, the "bull trout habitat overlay" map may be modified to allow for locally-based corrections using current data, field knowledge, and best professional judgment. A landowner may meet with the departments of natural resources, fish and wildlife and, in consultation with affected tribes and federal biologists, determine whether certain stream reaches have habitat conditions that are unsuitable for supporting bull trout. If such a determination is mutually agreed upon, documentation submitted to the department will result in the applicable stream reaches no longer being included within the definition of bull trout habitat overlay. Conversely, if suitable bull trout habitat is discovered outside the current mapped range, those waters will be included within the definition of "bull trout habitat overlay" by a similar process.

Bull Trout Overlay Map



"Channel migration zone (CMZ)" means the area where the active channel of a stream is prone to move and this results in a potential near-term loss of riparian function and associated habitat adjacent to the stream, except as modified by a permanent levee or dike. For this purpose, near-term means the time scale required to grow a mature forest. (See board manual section 2 for descriptions and illustrations of CMZs and delineation guidelines.)

"Chemicals" means substances applied to forest lands or timber including pesticides, fertilizers, and other forest chemicals.

"Clearcut" means a harvest method in which the entire stand of trees is removed in one timber harvesting operation. Except as provided in WAC 222-30-110, an area remains clearcut until:

It meets the minimum stocking requirements under WAC 222-34-010(2) or 222-34-020(2); and

The largest trees qualifying for the minimum stocking levels have survived on the area for five growing seasons or, if not, they have reached an average height of four feet.

**"Columbia River Gorge National Scenic Area or CRGNSA"** means the area established pursuant to the Columbia River Gorge National Scenic Area Act, 16 U.S.C. §544b(a).

**"CRGNSA special management area"** means the areas designated in the Columbia River Gorge National Scenic Area Act, 16 U.S.C. §544b(b) or revised pursuant to 16 U.S.C. §544b(c). For purposes of this rule, the special management area shall not include any parcels excluded by 16 U.S.C. §544f(o).

**"CRGNSA special management area guidelines"** means the guidelines and land use designations for forest practices developed pursuant to 16 U.S.C. §544f contained in the CRGNSA management plan developed pursuant to 15 U.S.C. §544d.

**"Commercial tree species"** means any species which is capable of producing a merchantable stand of timber on the particular site, or which is being grown as part of a Christmas tree or ornamental tree-growing operation.

**"Completion of harvest"** means the latest of:

Completion of removal of timber from the portions of forest lands harvested in the smallest logical unit that will not be disturbed by continued logging or an approved slash disposal plan for adjacent areas; or

Scheduled completion of any slash disposal operations where the department and the applicant agree within 6 months of completion of yarding that slash disposal is necessary or desirable to facilitate reforestation and agree to a time schedule for such slash disposal; or

Scheduled completion of any site preparation or rehabilitation of adjoining lands approved at the time of approval of the application or receipt of a notification: Provided, That delay of reforestation under this paragraph is permitted only to the extent reforestation would prevent or unreasonably hinder such site preparation or rehabilitation of adjoining lands.

**"Constructed wetlands"** means those wetlands voluntarily developed by the landowner. Constructed wetlands do not include wetlands created, restored, or enhanced as part of a mitigation procedure or wetlands inadvertently created as a result of current or past practices including, but not limited to: Road construction, landing construction, railroad construction, or surface mining.

**"Contamination"** means introducing into the atmosphere, soil, or water, sufficient quantities of substances as may be injurious to public health, safety or welfare, or to domestic, commercial, industrial, agriculture or recreational uses, or to livestock, wildlife, fish or other aquatic life.

**"Convergent headwalls"** (or headwalls) means tear-drop-shaped landforms, broad at the ridgetop and terminating where headwaters converge into a single channel; they are broadly concave both longitudinally and across the slope, but may contain sharp ridges separating the headwater channels. (See board manual section 16 for identification criteria.)

**"Conversion activities"** means activities associated with conversions of forest land to land uses other than commercial timber operation. These activities may be occurring during or after timber harvest on forest land. They may include but are not limited to the following:

- Preparation for, or installation of, utilities on the forest practices activity site. The development or maintenance of existing rights of way providing utilities exclusively for other ownerships shall not be considered conversions of forest land (see WAC 222-20-010(5)).

- Any of, or any combination of, the following activities in preparation for nonforestry use of the land: Grading, filling, or stump removal.

- Preparation for, or construction of, any structure requiring local government approval.

- Construction of, or improvement of, roads to a standard greater than needed to conduct forest practices activities.

- Clearing for, or expansion of, rock pits for nonforest practices uses or developing surface mines.

**"Conversion option harvest plan"** means a voluntary plan developed by the landowner and approved by the local governmental entity indicating the limits of harvest areas, road locations, and open space.

**"Conversion to a use other than commercial timber operation"** means a bona fide conversion to an active use which is incompatible with timber growing.

**"Cooperative habitat enhancement agreement (CHEA)"** see WAC 222-16-105.

**"Critical habitat (federal)"** means the habitat of any threatened or endangered species designated as critical habitat by the United States Secretary of the Interior or Commerce under Sections 3 (5)(A) and 4 (a)(3) of the Federal Endangered Species Act.

**"Critical nesting season"** means for marbled murrelets - April 1 to August 31.

**"Critical habitat (state)"** means those habitats designated by the board in accordance with WAC 222-16-080.

**"Cultural resources"** means archaeological and historic sites and artifacts, and traditional religious, ceremonial and social uses and activities of affected Indian tribes.

**"Cumulative effects"** means the changes to the environment caused by the interaction of natural ecosystem processes with the effects of two or more forest practices.

**"Daily peak activity"** means for marbled murrelets - one hour before official sunrise to two hours after official sunrise and one hour before official sunset to one hour after official sunset.

**"Debris"** means woody vegetative residue less than 3 cubic feet in size resulting from forest practices activities which would reasonably be expected to cause significant damage to a public resource.

**"Deep-seated landslides"** means landslides in which most of the area of the slide plane or zone lies below the maximum rooting depth of forest trees, to depths of tens to hundreds of feet. (See board manual section 16 for identification criteria.)

**"Demographic support"** means providing sufficient suitable spotted owl habitat within the SOSEA to maintain the viability of northern spotted owl sites identified as necessary to meet the SOSEA goals.

"Department" means the department of natural resources.

"Desired future condition (DFC)" is a reference point on a pathway and not an endpoint for stands. DFC means the stand conditions of a mature riparian forest at 140 years of age, the midpoint between 80 and 200 years. Where basal area is the only stand attribute used to describe 140-year old stands, these are referred to as the "Target Basal Area."

"Diameter at breast height (dbh)" means the diameter of a tree at 4 1/2 feet above the ground measured from the uphill side.

"Dispersal habitat" see WAC 222-16-085(2).

"Dispersal support" means providing sufficient dispersal habitat for the interchange of northern spotted owls within or across the SOSEA, as necessary to meet SOSEA goals. Dispersal support is provided by a landscape consisting of stands of dispersal habitat interspersed with areas of higher quality habitat, such as suitable spotted owl habitat

found within RMZs, WMZs or other required and voluntary leave areas.

"Drainage structure" means a construction technique or feature that is built to relieve surface runoff and/or intercepted ground water from roadside ditches to prevent excessive buildup in water volume and velocity. A drainage structure is not intended to carry any typed water. Drainage structures include structures such as: Cross drains, relief culverts, ditch diversions, water bars, or other such structures demonstrated to be equally effective.

"Eastern Washington" means the geographic area in Washington east of the crest of the Cascade Mountains from the international border to the top of Mt. Adams, then east of the ridge line dividing the White Salmon River drainage from the Lewis River drainage and east of the ridge line dividing the Little White Salmon River drainage from the Wind River drainage to the Washington-Oregon state line.

Eastern Washington Definition Map



"Eastern Washington timber habitat types" means elevation ranges associated with tree species assigned for the purpose of riparian management according to the following:

| Timber Habitat Types | Elevation Ranges |
|----------------------|------------------|
| ponderosa pine       | 0 - 2500 feet    |
| mixed conifer        | 2501 - 5000 feet |
| high elevation       | above 5000 feet  |

"Edge" of any water means the outer edge of the water's bankfull width or, where applicable, the outer edge of the associated channel migration zone.

"End hauling" means the removal and transportation of excavated material, pit or quarry overburden, or landing or road cut material from the excavation site to a deposit site not adjacent to the point of removal.

"Equipment limitation zone" means a 30-foot wide zone measured horizontally from the outer edge of the bankfull width of a Type Np or Ns Water. It applies to all perennial and seasonal nonfish bearing streams.

"Erodible soils" means those soils that, when exposed or displaced by a forest practices operation, would be readily moved by water.

**"Even-aged harvest methods"** means the following harvest methods:

Clearcuts;

Seed tree harvests in which twenty or fewer trees per acre remain after harvest;

Shelterwood regeneration harvests in which twenty or fewer trees per acre remain after harvest;

Group or strip shelterwood harvests creating openings wider than two tree heights, based on dominant trees;

Shelterwood removal harvests which leave fewer than one hundred fifty trees per acre which are at least five years old or four feet in average height;

Partial cutting in which fewer than fifty trees per acre remain after harvest;

Overstory removal when more than five thousand board feet per acre is removed and fewer than fifty trees per acre at least ten feet in height remain after harvest; and

Other harvesting methods designed to manage for multiple age classes in which six or fewer trees per acre remain after harvest.

Except as provided above for shelterwood removal harvests and overstory removal, trees counted as remaining after harvest shall be at least ten inches in diameter at breast height and have at least the top one-third of the stem supporting green, live crowns. Except as provided in WAC 222-30-110, an area remains harvested by even-aged methods until it meets the minimum stocking requirements under WAC 222-34-010(2) or 222-34-020(2) and the largest trees qualifying for the minimum stocking levels have survived on the area for five growing seasons or, if not, they have reached an average height of four feet.

**"Fen"** means wetlands which have the following characteristics: Peat soils 16 inches or more in depth (except over bedrock); and vegetation such as certain sedges, hardstem bulrush and cattails; fens may have an overstory of spruce and may be associated with open water.

**"Fertilizers"** means any substance or any combination or mixture of substances used principally as a source of plant food or soil amendment.

**"Fill"** means the placement of earth material or aggregate for road or landing construction or other similar activities.

**"Fish"** means for purposes of these rules, species of the vertebrate taxonomic groups of *Cephalospidomorphi* and *Osteichthyes*.

**"Fish habitat"** means habitat, which is used by fish at any life stage at any time of the year including potential habitat likely to be used by fish, which could be recovered by restoration or management and includes off-channel habitat.

**"Fish passage barrier"** means any artificial in-stream structure that impedes the free passage of fish.

**"Flood level - 100 year"** means a calculated flood event flow based on an engineering computation of flood magnitude that has a 1 percent chance of occurring in any given year. For purposes of field interpretation, landowners may use the following methods:

Flow information from gauging stations;

Field estimate of water level based on guidance for "Determining the 100-Year Flood Level" in the forest practices board manual section 2.

The 100-year flood level shall not include those lands that can reasonably be expected to be protected from flood waters by flood control devices maintained by or under license from the federal government, the state, or a political subdivision of the state.

**"Forest land"** means all land which is capable of supporting a merchantable stand of timber and is not being actively used for a use which is incompatible with timber growing. Forest land does not include agricultural land that is or was enrolled in the conservation reserve enhancement program by contract if such agricultural land was historically used for agricultural purposes and the landowner intends to continue to use the land for agricultural purposes in the future. For small forest landowner road maintenance and abandonment planning only, the term "forest land" excludes the following:

(a) Residential home sites. A residential home site may be up to five acres in size, and must have an existing structure in use as a residence;

(b) Cropfields, orchards, vineyards, pastures, feedlots, fish pens, and the land on which appurtenances necessary to the production, preparation, or sale of crops, fruit, dairy products, fish, and livestock exist.

**"Forest landowner"** means any person in actual control of forest land, whether such control is based either on legal or equitable title, or on any other interest entitling the holder to sell or otherwise dispose of any or all of the timber on such land in any manner. However, any lessee or other person in possession of forest land without legal or equitable title to such land shall be excluded from the definition of "forest landowner" unless such lessee or other person has the right to sell or otherwise dispose of any or all of the timber located on such forest land. The following definitions apply only to road maintenance and abandonment planning:

(1) **"Large forest landowner"** is a forest landowner who is not a small forest landowner.

(2) **"Small forest landowner"** is a forest landowner who at the time of submitting a forest practices application or notification meets all of the following conditions:

- Has an average annual timber harvest level of two million board feet or less from their own forest lands in Washington state;

- Did not exceed this annual average harvest level in the three year period before submitting a forest practices application or notification;

- Certifies to the department that they will not exceed this annual harvest level in the ten years after submitting the forest practices application or notification.

However, the department will agree that an applicant is a small forest landowner if the landowner can demonstrate that the harvest levels were exceeded in order to raise funds to pay estate taxes or to meet equally compelling and unexpected obligations such as court-ordered judgments and extraordinary medical expenses.

**"Forest practice"** means any activity conducted on or directly pertaining to forest land and relating to growing, harvesting, or processing timber, including but not limited to:

Road and trail construction;

Harvesting, final and intermediate;

Precommercial thinning;

- Reforestation;
- Fertilization;
- Prevention and suppression of diseases and insects;
- Salvage of trees; and
- Brush control.

"Forest practice" shall not include: Forest species seed orchard operations and intensive forest nursery operations; or preparatory work such as tree marking, surveying and road flagging; or removal or harvest of incidental vegetation from forest lands such as berries, ferns, greenery, mistletoe, herbs, mushrooms, and other products which cannot normally be expected to result in damage to forest soils, timber or public resources.

**"Forest road"** means ways, lanes, roads, or driveways on forest land used since 1974 for forest practices. "Forest road" does not include skid trails, highways, or local government roads except where the local governmental entity is a forest landowner. For road maintenance and abandonment planning purposes only, "forest road" does not include forest roads used exclusively for residential access located on a small forest landowner's forest land.

**"Forest trees"** does not include hardwood trees cultivated by agricultural methods in growing cycles shorter than 15 years if the trees were planted on land that was not in forest use immediately before the trees were planted and before the land was prepared for planting the trees. "Forest trees" includes Christmas trees but does not include Christmas trees that are cultivated by agricultural methods, as that term is defined in RCW 84.33.035.

**"Full bench road"** means a road constructed on a side hill without using any of the material removed from the hillside as a part of the road. This construction technique is usually used on steep or unstable slopes.

**"Green recruitment trees"** means those trees left after harvest for the purpose of becoming future wildlife reserve trees under WAC 222-30-020(11).

**"Ground water recharge areas for glacial deep-seated slides"** means the area upgradient that can contribute water to the landslide, assuming that there is an impermeable perching layer in or under a deep-seated landslide in glacial deposits. (See board manual section 16 for identification criteria.)

**"Headwater spring"** means a permanent spring at the head of a perennial channel. Where a headwater spring can be found, it will coincide with the uppermost extent of Type Np Water.

**"Herbicide"** means any substance or mixture of substances intended to prevent, destroy, repel, or mitigate any tree, bush, weed or algae and other aquatic weeds.

**"Horizontal distance"** means the distance between two points measured at a zero percent slope.

**"Hyporheic"** means an area adjacent to and below channels where interstitial water is exchanged with channel water and water movement is mainly in the downstream direction.

**"Identified watershed processes"** means the following components of natural ecological processes that may in some instances be altered by forest practices in a watershed:

- Mass wasting;
- Surface and road erosion;

- Seasonal flows including hydrologic peak and low flows and annual yields (volume and timing);
- Large organic debris;
- Shading; and
- Stream bank and bed stability.

**"Inner gorges"** means canyons created by a combination of the downcutting action of a stream and mass movement on the slope walls; they commonly show evidence of recent movement, such as obvious landslides, vertical tracks of disturbance vegetation, or areas that are concave in contour and/or profile. (See board manual section 16 for identification criteria.)

**"Insecticide"** means any substance or mixture of substances intended to prevent, destroy, repel, or mitigate any insect, other arthropods or mollusk pests.

**"Interdisciplinary team"** (ID Team) means a group of varying size comprised of individuals having specialized expertise, assembled by the department to respond to technical questions associated with a proposed forest practices activity.

**"Islands"** means any island surrounded by salt water in Kitsap, Mason, Jefferson, Pierce, King, Snohomish, Skagit, Whatcom, Island, or San Juan counties.

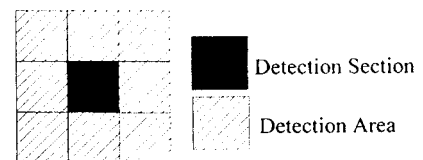
**"Limits of construction"** means the area occupied by the completed roadway or landing, including the cut bank, fill slope, and the area cleared for the purpose of constructing the roadway or landing.

**"Load bearing portion"** means that part of the road, landing, etc., which is supportive soil, earth, rock or other material directly below the working surface and only the associated earth structure necessary for support.

**"Local governmental entity"** means the governments of counties and the governments of cities and towns as defined in chapter 35.01 RCW.

**"Low impact harvest"** means use of any logging equipment, methods, or systems that minimize compaction or disturbance of soils and vegetation during the yarding process. The department shall determine such equipment, methods or systems in consultation with the department of ecology.

**"Marbled murrelet detection area"** means an area of land associated with a visual or audible detection of a marbled murrelet, made by a qualified surveyor which is documented and recorded in the department of fish and wildlife data base. The marbled murrelet detection area shall be comprised of the section of land in which the marbled murrelet detection was made and the eight sections of land immediately adjacent to that section.



**"Marbled murrelet nesting platform"** means any horizontal tree structure such as a limb, an area where a limb branches, a surface created by multiple leaders, a deformity, or a debris/moss platform or stick nest equal to or greater than 7 inches in diameter including associated moss if present, that



is 50 feet or more above the ground in trees 32 inches dbh and greater (generally over 90 years of age) and is capable of supporting nesting by marbled murrelets.

**"Median home range circle"** means a circle, with a specified radius, centered on a spotted owl site center. The radius for the median home range circle in the Hoh-Clearwater/Coastal Link SOSEA is 2.7 miles; for all other SOSEAs the radius is 1.8 miles.

**"Merchantable stand of timber"** means a stand of trees that will yield logs and/or fiber:

Suitable in size and quality for the production of lumber, plywood, pulp or other forest products;

Of sufficient value at least to cover all the costs of harvest and transportation to available markets.

**"Multiyear permit"** means a permit to conduct forest practices which is effective for longer than two years but no longer than five years.

**"Northern spotted owl site center"** means((:

~~(1) Until December 31, 2008, the location of northern spotted owls:~~

~~(a) Recorded by the department of fish and wildlife as status 1, 2 or 3 as of November 1, 2005; or~~

~~(b) Newly discovered, and recorded by the department of fish and wildlife as status 1, 2 or 3 after November 1, 2005.~~

(2) After December 31, 2008,)) the location of status 1, 2 or 3 northern spotted owls based on the following definitions:

Status 1: Pair or reproductive - a male and female heard and/or observed in close proximity to each other on the same visit, a female detected on a nest, or one or both adults observed with young.

Status 2: Two birds, pair status unknown - the presence or response of two birds of opposite sex where pair status cannot be determined and where at least one member meets the resident territorial single requirements.

Status 3: Resident territorial single - the presence or response of a single owl within the same general area on three or more occasions within a breeding season with no response by an owl of the opposite sex after a complete survey; or three or more responses over several years (i.e., two responses in year one and one response in year two, for the same general area).

In determining the existence, location, and status of northern spotted owl site centers, the department shall consult with the department of fish and wildlife and use only those sites documented in substantial compliance with guidelines or protocols and quality control methods established by and available from the department of fish and wildlife.

**"Notice to comply"** means a notice issued by the department pursuant to RCW 76.09.090 of the act and may require initiation and/or completion of action necessary to prevent, correct and/or compensate for material damage to public resources which resulted from forest practices.

**"Occupied marbled murrelet site"** means:

(1) A contiguous area of suitable marbled murrelet habitat where at least one of the following marbled murrelet behaviors or conditions occur:

(a) A nest is located; or

(b) Downy chicks or eggs or egg shells are found; or

(c) Marbled murrelets are detected flying below, through, into or out of the forest canopy; or

(d) Birds calling from a stationary location within the area; or

(e) Birds circling above a timber stand within one tree height of the top of the canopy; or

(2) A contiguous forested area, which does not meet the definition of suitable marbled murrelet habitat, in which any of the behaviors or conditions listed above has been documented by the department of fish and wildlife and which is distinguishable from the adjacent forest based on vegetative characteristics important to nesting marbled murrelets.

(3) For sites defined in (1) and (2) above, the sites will be presumed to be occupied based upon observation of circling described in (1)(e), unless a two-year survey following the 2003 Pacific Seabird Group (PSG) protocol has been completed and an additional third-year of survey following a method listed below is completed and none of the behaviors or conditions listed in (1)(a) through (d) of this definition are observed. The landowner may choose one of the following methods for the third-year survey:

(a) Conduct a third-year survey with a minimum of nine visits conducted in compliance with 2003 PSG protocol. If one or more marbled murrelets are detected during any of these nine visits, three additional visits conducted in compliance with the protocol of the first nine visits shall be added to the third-year survey. Department of fish and wildlife shall be consulted prior to initiating third-year surveys; or

(b) Conduct a third-year survey designed in consultation with the department of fish and wildlife to meet site specific conditions.

(4) For sites defined in (1) above, the outer perimeter of the occupied site shall be presumed to be the closer, measured from the point where the observed behaviors or conditions listed in (1) above occurred, of the following:

(a) 1.5 miles from the point where the observed behaviors or conditions listed in (1) above occurred; or

(b) The beginning of any gap greater than 300 feet wide lacking one or more of the vegetative characteristics listed under "suitable marbled murrelet habitat"; or

(c) The beginning of any narrow area of "suitable marbled murrelet habitat" less than 300 feet in width and more than 300 feet in length.

(5) For sites defined under (2) above, the outer perimeter of the occupied site shall be presumed to be the closer, measured from the point where the observed behaviors or conditions listed in (1) above occurred, of the following:

(a) 1.5 miles from the point where the observed behaviors or conditions listed in (1) above occurred; or

(b) The beginning of any gap greater than 300 feet wide lacking one or more of the distinguishing vegetative characteristics important to murrelets; or

(c) The beginning of any narrow area of suitable marbled murrelet habitat, comparable to the area where the observed behaviors or conditions listed in (1) above occurred, less than 300 feet in width and more than 300 feet in length.

(6) In determining the existence, location and status of occupied marbled murrelet sites, the department shall consult with the department of fish and wildlife and use only those

sites documented in substantial compliance with guidelines or protocols and quality control methods established by and available from the department of fish and wildlife.

"Old forest habitat" see WAC 222-16-085 (1)(a).

"Operator" means any person engaging in forest practices except an employee with wages as his/her sole compensation.

"Ordinary high-water mark" means the mark on the shores of all waters, which will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation: Provided, That in any area where the ordinary high-water mark cannot be found, the ordinary high-water mark adjoining saltwater shall be the line of mean high tide and the ordinary high-water mark adjoining freshwater shall be the line of mean high-water.

"Other forest chemicals" means fire retardants when used to control burning (other than water), nontoxic repellents, oil, dust-control agents (other than water), salt, and other chemicals used in forest management, except pesticides and fertilizers, that may present hazards to the environment.

"Park" means any park included on the parks register maintained by the department pursuant to WAC 222-20-100(2). Developed park recreation area means any park area developed for high density outdoor recreation use.

"Partial cutting" means the removal of a portion of the merchantable volume in a stand of timber so as to leave an uneven-aged stand of well-distributed residual, healthy trees that will reasonably utilize the productivity of the soil. Partial cutting does not include seedtree or shelterwood or other types of regeneration cutting.

"Pesticide" means any insecticide, herbicide, fungicide, or rodenticide, but does not include nontoxic repellents or other forest chemicals.

"Plantable area" is an area capable of supporting a commercial stand of timber excluding lands devoted to permanent roads, utility rights of way, that portion of riparian management zones where scarification is not permitted, and any other area devoted to a use incompatible with commercial timber growing.

"Power equipment" means all machinery operated with fuel burning or electrical motors, including heavy machinery, chain saws, portable generators, pumps, and powered backpack devices.

"Preferred tree species" means the following species listed in descending order of priority for each timber habitat type:

|                                    |                                   |
|------------------------------------|-----------------------------------|
| <b>Ponderosa pine habitat type</b> | <b>Mixed conifer habitat type</b> |
| all hardwoods                      | all hardwoods                     |
| ponderosa pine                     | western larch                     |
| western larch                      | ponderosa pine                    |
| Douglas-fir                        | western red cedar                 |
| western red cedar                  | western white pine                |
|                                    | Douglas-fir                       |
|                                    | lodgepole pine                    |

"Public resources" means water, fish, and wildlife and in addition means capital improvements of the state or its political subdivisions.

"Qualified surveyor" means an individual who has successfully completed the marbled murrelet field training course offered by the department of fish and wildlife or its equivalent.

"Rehabilitation" means the act of renewing, or making usable and reforesting forest land which was poorly stocked or previously nonstocked with commercial species.

"Resource characteristics" means the following specific measurable characteristics of fish, water, and capital improvements of the state or its political subdivisions:

For fish and water:

Physical fish habitat, including temperature and turbidity;

Turbidity in hatchery water supplies; and

Turbidity and volume for areas of water supply.

For capital improvements of the state or its political subdivisions:

Physical or structural integrity.

If the methodology is developed and added to the manual to analyze the cumulative effects of forest practices on other characteristics of fish, water, and capital improvements of the state or its subdivisions, the board shall amend this list to include these characteristics.

"Riparian function" includes bank stability, the recruitment of woody debris, leaf litter fall, nutrients, sediment filtering, shade, and other riparian features that are important to both riparian forest and aquatic system conditions.

"Riparian management zone (RMZ)" means:

(1) For Western Washington

(a) The area protected on each side of a Type S or F Water measured horizontally from the outer edge of the bankfull width or the outer edge of the CMZ, whichever is greater (see table below); and

| Site Class | Western Washington Total RMZ Width |
|------------|------------------------------------|
| I          | 200'                               |
| II         | 170'                               |
| III        | 140'                               |
| IV         | 110'                               |
| V          | 90'                                |

(b) The area protected on each side of Type Np Waters, measured horizontally from the outer edge of the bankfull width. (See WAC 222-30-021(2).)

(2) For Eastern Washington

(a) The area protected on each side of a Type S or F Water measured horizontally from the outer edge of the bankfull width or the outer edge of the CMZ, whichever is greater (see table below); and

| Site Class | Eastern Washington Total RMZ Width |
|------------|------------------------------------|
| I          | 130'                               |
| II         | 110'                               |

| Site Class | Eastern Washington Total<br>RMZ Width |
|------------|---------------------------------------|
| III        | 90' or 100'*                          |
| IV         | 75' or 100'*                          |
| V          | 75' or 100'*                          |

\* Dependent upon stream size. (See WAC 222-30-022.)

(b) The area protected on each side of Type Np Waters, measured horizontally from the outer edge of the bankfull width. (See WAC 222-30-022(2).)

(3) **For exempt 20 acre parcels**, a specified area alongside Type S and F Waters where specific measures are taken to protect water quality and fish and wildlife habitat.

**"RMZ core zone"** means:

(1) **For Western Washington**, the 50 foot buffer of a Type S or F Water, measured horizontally from the outer edge of the bankfull width or the outer edge of the channel migration zone, whichever is greater. (See WAC 222-30-021.)

(2) **For Eastern Washington**, the thirty foot buffer of a Type S or F Water, measured horizontally from the outer edge of the bankfull width or the outer edge of the channel migration zone, whichever is greater. (See WAC 222-30-022.)

**"RMZ inner zone"** means:

(1) **For Western Washington**, the area measured horizontally from the outer boundary of the core zone of a Type S or F Water to the outer limit of the inner zone. The outer limit of the inner zone is determined based on the width of the affected water, site class and the management option chosen for timber harvest within the inner zone. (See WAC 222-30-021.)

(2) **For Eastern Washington**, the area measured horizontally from the outer boundary of the core zone 45 feet (for streams less than 15 feet wide) or 70 feet (for streams more than 15 feet wide) from the outer boundary of the core zone. (See WAC 222-30-022.)

**"RMZ outer zone"** means the area measured horizontally between the outer boundary of the inner zone and the RMZ width as specified in the riparian management zone definition above. RMZ width is measured from the outer edge of the bankfull width or the outer edge of the channel migration zone, whichever is greater. (See WAC 222-30-021 and 222-30-022.)

**"Road construction"** means either of the following:

- (a) Establishing any new forest road;
- (b) Road work located outside an existing forest road prism, except for road maintenance.

**"Road maintenance"** means either of the following:

- (a) All road work located within an existing forest road prism;
- (b) Road work located outside an existing forest road prism specifically related to maintaining water control, road safety, or visibility, such as:
  - Maintaining, replacing, and installing drainage structures;
  - Controlling road-side vegetation;
  - Abandoning forest roads according to the process outlined in WAC 222-24-052(3).

**"Rodenticide"** means any substance or mixture of substances intended to prevent, destroy, repel, or mitigate rodents or any other vertebrate animal which the director of the state department of agriculture may declare by regulation to be a pest.

**"Salvage"** means the removal of snags, down logs, windthrow, or dead and dying material.

**"Scarification"** means loosening the topsoil and/or disrupting the forest floor in preparation for regeneration.

**"Sensitive sites"** are areas near or adjacent to Type Np Water and have one or more of the following:

(1) **Headwall seep** is a seep located at the toe of a cliff or other steep topographical feature and at the head of a Type Np Water which connects to the stream channel network via overland flow, and is characterized by loose substrate and/or fractured bedrock with perennial water at or near the surface throughout the year.

(2) **Side-slope seep** is a seep within 100 feet of a Type Np Water located on side-slopes which are greater than 20 percent, connected to the stream channel network via overland flow, and characterized by loose substrate and fractured bedrock, excluding muck with perennial water at or near the surface throughout the year. Water delivery to the Type Np channel is visible by someone standing in or near the stream.

(3) **Type Np intersection** is the intersection of two or more Type Np Waters.

(4) **Headwater spring** means a permanent spring at the head of a perennial channel. Where a headwater spring can be found, it will coincide with the uppermost extent of Type Np Water.

(5) **Alluvial fan** means a depositional land form consisting of cone-shaped deposit of water-borne, often coarse-sized sediments.

(a) The upstream end of the fan (cone apex) is typically characterized by a distinct increase in channel width where a stream emerges from a narrow valley;

(b) The downstream edge of the fan is defined as the sediment confluence with a higher order channel; and

(c) The lateral margins of a fan are characterized by distinct local changes in sediment elevation and often show disturbed vegetation.

Alluvial fan does not include features that were formed under climatic or geologic conditions which are not currently present or that are no longer dynamic.

**"Shorelines of the state"** shall have the same meaning as in RCW 90.58.030 (Shoreline Management Act).

**"Side casting"** means the act of moving excavated material to the side and depositing such material within the limits of construction or dumping over the side and outside the limits of construction.

**"Site class"** means a grouping of site indices that are used to determine the 50-year or 100-year site class. In order to determine site class, the landowner will obtain the site class index from the state soil survey, place it in the correct index range shown in the two tables provided in this definition, and select the corresponding site class. The site class will then drive the RMZ width. (See WAC 222-30-021 and 222-30-022.)

(1) For Western Washington

| Site class | 50-year site index range<br>(state soil survey) |
|------------|---|
| I          | 137+  |
| II         | 119-136   |
| III        | 97-118  |
| IV         | 76-96   |
| V          | <75   |

(2) For Eastern Washington

| Site class | 100-year site index range<br>(state soil survey) | 50-year site index range<br>(state soil survey) |
|------------|--|---|
| I          | 120+   | 86+   |
| II         | 101-120  | 72-85   |
| III        | 81-100   | 58-71   |
| IV         | 61-80  | 44-57   |
| V          | ≤60  | <44   |

(3) For purposes of this definition, the site index at any location will be the site index reported by the *Washington State Department of Natural Resources State Soil Survey*, (soil survey) and detailed in the associated forest soil summary sheets. If the soil survey does not report a site index for the location or indicates noncommercial or marginal forest land, or the major species table indicates red alder, the following apply:

(a) If the site index in the soil survey is for red alder, and the whole RMZ width is within that site index, then use site class V. If the red alder site index is only for a portion of the RMZ width, or there is on-site evidence that the site has historically supported conifer, then use the site class for conifer in the most physiographically similar adjacent soil polygon.

(b) In Western Washington, if no site index is reported in the soil survey, use the site class for conifer in the most physiographically similar adjacent soil polygon.

(c) In Eastern Washington, if no site index is reported in the soil survey, assume site class III, unless site specific information indicates otherwise.

(d) If the site index is noncommercial or marginally commercial, then use site class V.

See also section 7 of the board manual.

**"Site preparation"** means those activities associated with the removal of slash in preparing a site for planting and shall include scarification and/or slash burning.

**"Skid trail"** means a route used by tracked or wheeled skidders to move logs to a landing or road.

**"Slash"** means pieces of woody material containing more than 3 cubic feet resulting from forest practices activities.

**"Small forest landowner long-term application"** means a proposal from a small forest landowner to conduct forest practices activities for terms of three to fifteen years. Small forest landowners as defined in WAC 222-21-010(13) are eligible to submit long-term applications.

**"SOSEA goals"** means the goals specified for a spotted owl special emphasis area as identified on the SOSEA maps

(see WAC 222-16-086). SOSEA goals provide for demographic and/or dispersal support as necessary to complement the northern spotted owl protection strategies on federal land within or adjacent to the SOSEA.

**"Spoil"** means excess material removed as overburden or generated during road or landing construction which is not used within limits of construction.

**"Spotted owl conservation advisory group"** means a three-person advisory group designated by the board as follows: One person shall be a representative of Washington's forest products industry, one person shall be a representative of a Washington-based conservation organization actively involved with spotted owl conservation, and one person shall be a representative of the department's forest practices program. Members of the group shall have a detailed working knowledge of spotted owl habitat relationships and factors affecting northern spotted owl conservation.

**"Spotted owl dispersal habitat"** see WAC 222-16-085 (2).

**"Spotted owl special emphasis areas (SOSEA)"** means the geographic areas as mapped in WAC 222-16-086. Detailed maps of the SOSEAs indicating the boundaries and goals are available from the department at its regional offices.

**"Stop work order"** means the "stop work order" defined in RCW 76.09.080 of the act and may be issued by the department to stop violations of the forest practices chapter or to prevent damage and/or to correct and/or compensate for damages to public resources resulting from forest practices.

**"Stream-adjacent parallel roads"** means roads (including associated right of way clearing) in a riparian management zone on a property that have an alignment that is parallel to the general alignment of the stream, including roads used by others under easements or cooperative road agreements. Also included are stream crossings where the alignment of the road continues to parallel the stream for more than 250 feet on either side of the stream. Not included are federal, state, county or municipal roads that are not subject to forest practices rules, or roads of another adjacent landowner.

**"Sub-mature habitat"** see WAC 222-16-085 (1)(b).

**"Suitable marbled murrelet habitat"** means a contiguous forested area containing trees capable of providing nesting opportunities:

(1) With all of the following indicators unless the department, in consultation with the department of fish and wildlife, has determined that the habitat is not likely to be occupied by marbled murrelets:

(a) Within 50 miles of marine waters;

(b) At least forty percent of the dominant and codominant trees are Douglas-fir, western hemlock, western red cedar or sitka spruce;

(c) Two or more nesting platforms per acre;

(d) At least 7 acres in size, including the contiguous forested area within 300 feet of nesting platforms, with similar forest stand characteristics (age, species composition, forest structure) to the forested area in which the nesting platforms occur.

**"Suitable spotted owl habitat"** see WAC 222-16-085 (1).

**"Temporary road"** means a forest road that is constructed and intended for use during the life of an approved forest practices application/notification. All temporary roads must be abandoned in accordance to WAC 222-24-052(3).

**"Threaten public safety"** means to increase the risk to the public at large from snow avalanches, identified in consultation with the department of transportation or a local government, or landslides or debris torrents caused or triggered by forest practices.

**"Threatened or endangered species"** means all species of wildlife listed as "threatened" or "endangered" by the United States Secretary of the Interior or Commerce, and all species of wildlife designated as "threatened" or "endangered" by the Washington fish and wildlife commission.

**"Timber"** means forest trees, standing or down, of a commercial species, including Christmas trees. However, timber does not include Christmas trees that are cultivated by agricultural methods, as that term is defined in RCW 84.33-035.

**"Unconfined avulsing stream"** means generally fifth order or larger waters that experience abrupt shifts in channel location, creating a complex flood plain characterized by extensive gravel bars, disturbance species of vegetation of variable age, numerous side channels, wall-based channels, oxbow lakes, and wetland complexes. Many of these streams have dikes and levees that may temporarily or permanently restrict channel movement.

**"Validation,"** as used in WAC 222-20-016, means the department's agreement that a small forest landowner has correctly identified and classified resources, and satisfactorily completed a roads assessment for the geographic area described in Step 1 of a long-term application.

**"Water bar"** means a diversion ditch and/or hump in a trail or road for the purpose of carrying surface water runoff into the vegetation duff, ditch, or other dispersion area so that it does not gain the volume and velocity which causes soil movement and erosion.

**"Watershed administrative unit (WAU)"** means an area shown on the map specified in WAC 222-22-020(1).

**"Watershed analysis"** means, for a given WAU, the assessment completed under WAC 222-22-050 or 222-22-060 together with the prescriptions selected under WAC 222-22-070 and shall include assessments completed under WAC 222-22-050 where there are no areas of resource sensitivity.

**"Weed"** is any plant which tends to overgrow or choke out more desirable vegetation.

**"Western Washington"** means the geographic area of Washington west of the Cascade crest and the drainages defined in Eastern Washington.

**"Wetland"** means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, such as swamps, bogs, fens, and similar areas. This includes wetlands created, restored, or enhanced as part of a mitigation procedure. This does not include constructed wetlands or the following surface waters of the state intentionally constructed from wetland sites: Irrigation and drainage ditches, grass lined swales, canals, agri-

cultural detention facilities, farm ponds, and landscape amenities.

**"Wetland functions"** include the protection of water quality and quantity, providing fish and wildlife habitat, and the production of timber.

**"Wetland management zone"** means a specified area adjacent to Type A and B Wetlands where specific measures are taken to protect the wetland functions.

**"Wildlife"** means all species of the animal kingdom whose members exist in Washington in a wild state. The term "wildlife" includes, but is not limited to, any mammal, bird, reptile, amphibian, fish, or invertebrate, at any stage of development. The term "wildlife" does not include feral domestic mammals or the family Muridae of the order Rodentia (old world rats and mice).

**"Wildlife reserve trees"** means those defective, dead, damaged, or dying trees which provide or have the potential to provide habitat for those wildlife species dependent on standing trees. Wildlife reserve trees are categorized as follows:

Type 1 wildlife reserve trees are defective or deformed live trees that have observably sound tops, limbs, trunks, and roots. They may have part of the top broken out or have evidence of other severe defects that include: "Cat face," animal chewing, old logging wounds, weather injury, insect attack, or lightning strike. Unless approved by the landowner, only green trees with visible cavities, nests, or obvious severe defects capable of supporting cavity dependent species shall be considered as Type 1 wildlife reserve trees. These trees must be stable and pose the least hazard for workers.

Type 2 wildlife reserve trees are dead Type 1 trees with sound tops, limbs, trunks, and roots.

Type 3 wildlife reserve trees are live or dead trees with unstable tops or upper portions. Unless approved by the landowner, only green trees with visible cavities, nests, or obvious severe defects capable of supporting cavity dependent species shall be considered as Type 3 wildlife reserve trees. Although the roots and main portion of the trunk are sound, these reserve trees pose high hazard because of the defect in live or dead wood higher up in the tree.

Type 4 wildlife reserve trees are live or dead trees with unstable trunks or roots, with or without bark. This includes "soft snags" as well as live trees with unstable roots caused by root rot or fire. These trees are unstable and pose a high hazard to workers.

**"Windthrow"** means a natural process by which trees are uprooted or sustain severe trunk damage by the wind.

**"Yarding corridor"** means a narrow, linear path through a riparian management zone to allow suspended cables necessary to support cable logging methods or suspended or partially suspended logs to be transported through these areas by cable logging methods.

**"Young forest marginal habitat"** see WAC 222-16-085 (1)(b).

AMENDATORY SECTION (Amending WSR 05-12-119, filed 5/31/05, effective 7/1/05)

**WAC 222-16-080 Critical habitats (state) of threatened and endangered species.** (1) Critical habitats (state) of

threatened or endangered species and specific forest practices designated as Class IV-Special are as follows:

(a) Bald eagle (*Haliaeetus leucocephalus*) - harvesting, road construction, aerial application of pesticides, or site preparation within 0.5 mile of a known active nest site, documented by the department of fish and wildlife, between the dates of January 1 and August 15 or 0.25 mile at other times of the year; and within 0.25 mile of a communal roosting site. Communal roosting sites shall not include refuse or garbage dumping sites.

(b) Gray wolf (*Canis lupus*) - harvesting, road construction, or site preparation within 1 mile of a known active den site, documented by the department of fish and wildlife, between the dates of March 15 and July 30 or 0.25 mile from the den site at other times of the year.

(c) Grizzly bear (*Ursus arctos*) - harvesting, road construction, aerial application of pesticides, or site preparation within 1 mile of a known active den site, documented by the department of fish and wildlife, between the dates of October 1 and May 30 or 0.25 mile at other times of the year.

(d) Mountain (woodland) caribou (*Rangifera tarandus*) - harvesting, road construction, aerial application of pesticides, or site preparation within 0.25 mile of a known active breeding area, documented by the department of fish and wildlife.

(e) Oregon silverspot butterfly (*Speyeria zerene hippolyta*) - harvesting, road construction, aerial or ground application of pesticides, or site preparation within 0.25 mile of an individual occurrence, documented by the department of fish and wildlife.

(f) Peregrine falcon (*Falco peregrinus*) - harvesting, road construction, aerial application of pesticides, or site preparation within 0.5 mile of a known active nest site, documented by the department of fish and wildlife, between the dates of March 1 and July 30; or harvesting, road construction, or aerial application of pesticides within 0.25 mile of the nest site at other times of the year.

(g) Sandhill crane (*Grus canadensis*) - harvesting, road construction, aerial application of pesticides, or site preparation within 0.25 mile of a known active nesting area, documented by the department of fish and wildlife.

(h) Northern spotted owl (*Strix occidentalis caurina*)

(i) **Within a SOSEA boundary** (see maps in WAC 222-16-086), except as indicated in (h)(ii) of this subsection, harvesting, road construction, or aerial application of pesticides on suitable spotted owl habitat within a median home range circle that is centered within the SOSEA or on adjacent federal lands.

(ii) **Within the Entiat SOSEA**, harvesting, road construction, or aerial application of pesticides within the areas indicated for demographic support (see WAC 222-16-086(2)) on suitable spotted owl habitat located within a median home range circle that is centered within the demographic support area.

(iii) **Outside of a SOSEA**, harvesting, road construction, or aerial application of pesticides, between March 1 and August 31 on the seventy acres of highest quality suitable spotted owl habitat surrounding a northern spotted owl site center located outside a SOSEA. The highest quality suitable habitat shall be determined by the department in cooperation with the department of fish and wildlife. Consideration shall

be given to habitat quality, proximity to the activity center and contiguity.

(iv) **Small parcel northern spotted owl exemption.** Forest practices proposed on the lands owned or controlled by a landowner whose forest land ownership within the SOSEA is less than or equal to 500 acres and where the forest practice is not within 0.7 mile of a northern spotted owl site center shall not be considered to be on lands designated as critical habitat (state) for northern spotted owls.

(i) Western pond turtle (*Clemmys marmorata*) - harvesting, road construction, aerial application of pesticides, or site preparation within 0.25 mile of a known individual occurrence, documented by the department of wildlife.

(j) Marbled murrelet (*Brachyramphus marmoratus*)

(i) Harvesting, other than removal of down trees outside of the critical nesting season, or road construction within an occupied marbled murrelet site.

(ii) Harvesting, other than removal of down trees outside of the critical nesting season, or road construction within suitable marbled murrelet habitat within a marbled murrelet detection area.

(iii) Harvesting, other than removal of down trees outside of the critical nesting season, or road construction within suitable marbled murrelet habitat containing 7 platforms per acre outside a marbled murrelet detection area.

(iv) Harvesting, other than removal of down trees outside of the critical nesting season, or road construction outside a marbled murrelet detection area within a marbled murrelet special landscape and within suitable marbled murrelet habitat with 5 or more platforms per acre.

(v) Harvesting within a 300 foot managed buffer zone adjacent to an occupied marbled murrelet site that results in less than a residual stand stem density of 75 trees per acre greater than 6 inches in dbh; provided that 25 of which shall be greater than 12 inches dbh including 5 trees greater than 20 inches in dbh, where they exist. The primary consideration for the design of managed buffer zone widths and leave tree retention patterns shall be to mediate edge effects. The width of the buffer zone may be reduced in some areas to a minimum of 200 feet and extended to a maximum of 400 feet as long as the average of 300 feet is maintained.

(vi) Except that the following shall not be critical habitat (state):

(A) Where a landowner owns less than 500 acres of forest land within 50 miles of saltwater and the land does not contain an occupied marbled murrelet site; or

(B) Where a protocol survey (see WAC 222-12-090(14)) has been conducted and no murrelets were detected. The landowner is then relieved from further survey requirements. However, if an occupied marbled murrelet site is established, this exemption is void.

(2) The following critical habitats (federal) designated by the United States Secretary of the Interior or Commerce, or specific forest practices within those habitats, have been determined to have the potential for a substantial impact on the environment and therefore are designated as critical habitats (state) of threatened or endangered species.

(3) For the purpose of identifying forest practices which have the potential for a substantial impact on the environment with regard to threatened or endangered species newly listed

by the Washington fish and wildlife commission and/or the United States Secretary of the Interior or Commerce, the department shall after consultation with the department of fish and wildlife, prepare and submit to the board a proposed list of critical habitats (state) of threatened or endangered species. This list shall be submitted to the board within 30 days of the listing of the species. The department shall, at a minimum, consider potential impacts of forest practices on habitats essential to meeting the life requisites for each species listed as threatened or endangered. Those critical habitats (state) adopted by the board shall be added to the list in subsection (1) of this section. See WAC 222-16-050 (1)(b).

(4) For the purpose of identifying any areas and/or forest practices within critical habitats (federal) designated by the United States Secretary of the Interior or Commerce which have the potential for a substantial impact on the environment, the department shall, after consultation with the department of fish and wildlife, submit to the board a proposed list of any forest practices and/or areas proposed for inclusion in Class IV - Special forest practices. The department shall submit the list to the board within 30 days of the date the United States Secretary of the Interior or Commerce publishes a final rule designating critical habitat (federal) in the Federal Register. Those critical habitats included by the board in Class IV - Special shall be added to the list in subsection (2) of this section. See WAC 222-16-050 (1)(b).

(5)(a) Except for bald eagles under subsection (1)(a) of this section, the critical habitats (state) of threatened and endangered species and specific forest practices designated in subsections (1) and (2) of this section are intended to be interim. These interim designations shall expire for a given species on the earliest of:

(i) The effective date of a regulatory system for wildlife protection referred to in (b) of this subsection or of substantive rules on the species.

(ii) The delisting of a threatened or endangered species by the Washington fish and wildlife commission and by the United States Secretary of Interior or Commerce.

(b) The board shall examine current wildlife protection and department authority to protect wildlife and develop and recommend a regulatory system, including baseline rules for wildlife protection. To the extent possible, this system shall:

(i) Use the best science and management advice available;

(ii) Use a landscape approach to wildlife protection;

(iii) Be designed to avoid the potential for substantial impact to the environment;

(iv) Protect known populations of threatened and endangered species of wildlife from negative effects of forest practices consistent with RCW 76.09.010; and

(v) Consider and be consistent with recovery plans adopted by the department of fish and wildlife pursuant to RCW 77.12.020(6) or habitat conservation plans or 16 U.S.C. 1533(d) rule changes of the Endangered Species Act.

(6) Regardless of any other provision in this section, forest practices applications shall not be classified as Class IV-Special based on critical habitat (state) (WAC 222-16-080 WAC 222-16-050 (1)(b)) for a species, if the forest practices are consistent with one or more of the following:

(a) Documents addressing the needs of the affected species provided such documents have received environmental review with an opportunity for public comment under the National Environmental Policy Act, 42 U.S.C. section 4321 et seq.:

(i) A habitat conservation plan and incidental take permit; or an incidental take statement covering such species approved by the Secretary of the Interior or Commerce pursuant to 16 U.S.C. § 1536(b) or 1539(a); or

(ii) An "unlisted species agreement" covering such species approved by the U.S. Fish and Wildlife Service or National Marine Fisheries Service; or

(iii) Other conservation agreement entered into with a federal agency pursuant to its statutory authority for fish and wildlife protection that addresses the needs of the affected species; or

(iv) A rule adopted by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service for the conservation of an affected species pursuant to 16 U.S.C. section 1533(d); or

(b) Documents addressing the needs of the affected species so long as they have been reviewed under the State Environmental Policy Act;

(i) A landscape management plan; or

(ii) Another cooperative or conservation agreement entered into with a state resource agency pursuant to its statutory authority for fish and wildlife protection;

(c) A special wildlife management plan (SWMP) developed by the landowner and approved by the department in consultation with the department of fish and wildlife;

(d) A bald eagle management plan approved under WAC 232-12-292;

(e) A landowner option plan (LOP) for northern spotted owls developed pursuant to WAC 222-16-100(1);

(f) A cooperative habitat enhancement agreement (CHEA) developed pursuant to WAC 222-16-105; or

(g) A take avoidance plan issued by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service prior to March 20, 2000;

(h) From January 1, 2009, through December 31, 2009, surveys demonstrating the absence of northern spotted owls at a northern spotted owl site center have been reviewed and approved by the department of fish and wildlife and all three of the following criteria have been met:

(i) The site has been evaluated by the spotted owl conservation advisory group; and

(ii) As part of the spotted owl conservation advisory group's evaluation, the department's representative has consulted with the department of fish and wildlife; and

(iii) The spotted owl conservation advisory group has reached consensus that the site need not be maintained while the board completes its evaluation of rules affecting the northern spotted owl. The spotted owl conservation advisory group shall communicate its findings to the department in writing within sixty days of the department of fish and wildlife's approval of surveys demonstrating the absence of northern spotted owls.

In those situations where one of the options above has been used, forest practices applications may still be classified as Class IV-Special based upon the presence of one or more

of the factors listed in WAC 222-16-050(1), other than critical habitat (state) for the species covered by the existing plan.

(7) The department, in consultation with the department of fish and wildlife, shall review each SOSEA to determine whether the goals for that SOSEA are being met through approved plans, permits, statements, letters, or agreements referred to in subsection (6) of this section. Based on the consultation, the department shall recommend to the board the suspension, deletion, modification or reestablishment of the applicable SOSEA from the rules. The department shall conduct a review for a particular SOSEA upon approval of a landowner option plan, a petition from a landowner in the SOSEA, or under its own initiative.

(8) The department, in consultation with the department of fish and wildlife, shall report annually to the board on the status of the northern spotted owl to determine whether circumstances exist that substantially interfere with meeting the goals of the SOSEAs.

**WSR 09-17-114  
PROPOSED RULES**

**EMPLOYMENT SECURITY DEPARTMENT**

[Filed August 18, 2009, 1:43 p.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-08-067.

Title of Rule and Other Identifying Information: WAC 192-270-005 and 192-270-035 relating to training benefits for individuals receiving unemployment insurance benefits. WAC 192-270-020, 192-270-025, and 192-270-030 are repealed as obsolete.

Hearing Location(s): Employment Security Department, Maple Leaf Conference Room, 2nd Floor, 212 Maple Park, Olympia, WA, on September 22, 2009, at 1:00 p.m.

Date of Intended Adoption: October 2, 2009.

Submit Written Comments to: Pamela Ames, P.O. Box 9046, Olympia, WA 98507-9046, e-mail pames@esd.wa.gov, fax (360) 902-9799, by September 21, 2009.

Assistance for Persons with Disabilities: Contact Jeanette Nelson by September 21, 2009, TTY (360) 902-9569 or (360) 902-9602.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Amendments are made to chapter 192-270 WAC, Training benefits. The amendments implement those sections of chapter 3, Laws of 2009 (ESHB 1906) that were effective on April 5, 2009. The rules define terms, modify timeframes for filing applications for training benefits, and require that training be for a high demand occupation.

Reasons Supporting Proposal: The rules implement changes to the training benefits statute adopted by the 2009 legislature, chapter 3, Laws of 2009.

Statutory Authority for Adoption: RCW 50.12.010, 50.12.040, and 50.20.010.

Statute Being Implemented: Sections 4 and 5, chapter 3, Laws of 2009.

Name of Proponent: Employment security department, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Juanita Myers, 212 Maple Park, Olympia, (360) 902-9665; and Enforcement: Nan Thomas, 212 Maple Park, Olympia, (360) 902-9303.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The rules are technical in nature and modify existing rules consistent with statutory changes adopted by the 2009 legislature. Benefits paid under the training benefits program are not charged to the individual's previous employer(s).

A cost-benefit analysis is not required under RCW 34.05.328. Any costs imposed by the changes to the training benefits program result from legislative changes rather than the proposed rules. It is anticipated that these changes will not cause the training benefits program to exceed the \$20 million annual appropriation by the legislature.

August 12, 2009

Paul Trause

Deputy Commissioner

AMENDATORY SECTION (Amending WSR 01-11-085, filed 5/16/01, effective 6/16/01)

**WAC 192-270-005 Definitions.** The definitions below apply to this chapter, ~~((and))~~ RCW 50.22.150, and chapter 3, laws of 2009, § 4:

(1) "Labor market" means the geographic area in which workers in your particular occupation or with your particular set of skills have customarily found work. For the purpose of determining whether you are a dislocated worker, "labor market" is based on your place of residence at the time you separated from employment. You will not be considered a dislocated worker if, following your separation from work, you move from a labor market area where your skills are in demand to an area where they are declining.

~~((2)) ("NAICS" means the North American industry classification system code.~~

~~((3))~~ (3)) For claims with an effective date prior to April 5, 2009, "plurality of wages" means the largest proportion of wages earned within a particular occupation or skill set. These wages must be earned in:

(a) Your base year, and

(b) At least two of the four twelve-month periods preceding your base year.

~~((4)) "SIC" means the standard industrial classification code.~~

~~((5))~~ (3) "Skill set" means the work-related knowledge and abilities needed to produce a particular product or provide a particular service.

~~((6))~~ (4) "Training benefits" means the additional benefits paid under RCW 50.22.150 and chapter 3, laws of 2009, § 4 to eligible dislocated workers enrolled in and making satisfactory progress in a training program approved by the commissioner.

~~((7)) "Wages" means remuneration earned in employment as defined in Title 50 RCW or the comparable laws of another state. This means that only wages in covered employment can be considered in determining whether you have sufficient tenure in an occupation or in work with a particular skill set.)~~ For purposes of chapter 3, laws of 2009,



section 4, subsection (2)(b)(i) relating to low income workers, the term "total wages" means wages in employment covered under Title 50 RCW or comparable federal or state laws.

**Reviser's note:** The typographical error in the above section occurred in the copy filed by the agency and appears in the Register pursuant to the requirements of RCW 34.08.040.

**Reviser's note:** RCW 34.05.395 requires the use of underlining and deletion marks to indicate amendments to existing rules. The rule published above varies from its predecessor in certain respects not indicated by the use of these markings.

**AMENDATORY SECTION** (Amending WSR 01-11-085, filed 5/16/01, effective 6/16/01)

**WAC 192-270-035 Time frames.** Information about training benefits will be included in the claimant information booklet mailed to you at the time you file your application for unemployment benefits (see WAC 192-120-010). For purposes of this section, the claimant information booklet is considered your notification of the eligibility requirements for the training benefits program.

(1) Submitting a training plan.

(a) For claims with an effective date prior to April 5, 2009, you have 60 calendar days to submit a training plan to the department for approval, beginning on the date you are notified by the department about the eligibility requirements for training benefits. For new claims, the deadline will be 65 calendar days from the date your application for benefits is filed, which represents 60 days plus five days for the booklet to reach you by mail.

(b) For claims with an effective date on or after April 5, 2009, you have 90 calendar days to submit a training plan to the department for approval, beginning on the date you are notified by the department about the eligibility requirements for training benefits. For new claims, the deadline will be 95 calendar days from the date your application for benefits is filed, which represents 90 days plus five days for the booklet to reach you by mail.

(2) Enrollment in training.

(a) For claims with an effective date prior to April 5, 2009, you must be enrolled in training within 90 calendar days, beginning on the date you are notified by the department about the eligibility requirements for training benefits. For new claims, the deadline will be 95 calendar days from the date your application for benefits is filed, which represents 90 days plus five days for the booklet to reach you by mail.

(b) For claims with an effective date on or after April 5, 2009, you must be enrolled in training with 120 calendar days, beginning on the date you are notified about the eligibility requirements for training benefits. For new claims, the deadline will be 125 calendar days from the date your application for benefits is filed, which represents 120 days plus five days for the booklet to reach you by mail.

(3) For claims with an effective date on or after April 5, 2009, these timeframes may be waived for good cause. For purposes of this section, "good cause" includes but is not limited to situations where:

(a) You were employer attached, including being on standby or partially unemployed, when you filed your claim

for unemployment benefits but your attachment to your employer subsequently ended;

(b) You acted or failed to act on authoritative advice directly from department or partner staff upon which a reasonable person would normally rely;

(c) You were incapacitated due to illness or injury or other factors of similar gravity; or

(d) Other factors which would effectively prevent a reasonably prudent person, as defined in WAC 192-100-010, facing similar circumstances, from meeting the timelines established under this section.

(4) If you return to work, and subsequently become unemployed, the time frames described in subsections (1) and (2) begin with the date you file your additional claim for benefits.

**Reviser's note:** The typographical error in the above section occurred in the copy filed by the agency and appears in the Register pursuant to the requirements of RCW 34.08.040.

#### **REPEALER**

The following sections of the Washington Administrative Code are repealed:

|                 |   |
|-----------------|---|
| WAC 192-270-020 | Employment in the aerospace industry.       |
| WAC 192-270-025 | Employment in the forest products industry. |
| WAC 192-270-030 | Employment in the fishing industry.         |

#### **WSR 09-17-123**

#### **PROPOSED RULES**

#### **OFFICE OF**

#### **INSURANCE COMMISSIONER**

[Insurance Commissioner Matter No. R 2008-15—Filed August 19, 2009, 7:20 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 08-11-106.

Title of Rule and Other Identifying Information: Administrative supervision of insurers.

Hearing Location(s): OIC Tumwater Office, Training Room 120, 5000 Capitol Boulevard, Tumwater, WA, <http://www.insurance.wa.gov/about/directions.shtml>, on September 22, 2009, at 10:00 a.m.

Date of Intended Adoption: October 26, 2009.

Submit Written Comments to: Kacy Scott, P.O. Box 40258, Olympia, WA 98504-0258, e-mail [kacys@oic.wa.gov](mailto:kacys@oic.wa.gov), fax (360) 586-3109, by September 21, 2009.

Assistance for Persons with Disabilities: Contact Lorie Villaflores by September 21, 2009, TTY (360) 586-0241 or (360) 725-7087.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: In 2005, the legislature enacted HB 1034 authorizing the commissioner to

place an insurer under administrative supervision under specified circumstances. These proposed rules establish the:

- Process for the administrative supervision of an insurer or carrier,
- Requirements for the plan of correction an insurer or carrier must prepare and follow when it is subject to an administrative supervision order, and
- Procedures for the administrative supervisor authorized under the commissioner's order.

Reasons Supporting Proposal: These proposed rules implement RCW 48.31.400 through 48.31.900. Insurers and carriers will know how the commissioner will administer the company when it is under the administrative supervision of the commissioner.

Statutory Authority for Adoption: RCW 48.02.060, 48.31.435.

Statute Being Implemented: RCW 48.31.400, 48.31.-900.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Mike Kreidler, insurance commissioner, governmental.

Name of Agency Personnel Responsible for Drafting: Ron Pastuch, 5000 Capitol Boulevard, Tumwater, WA 98504-0255, (360) 725-7211; Implementation and Enforcement: Jim Odiorne, 5000 Capitol Boulevard, Tumwater, WA 98504-0255, (360) 725-7214.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The only domestic small businesses affected by this proposed rule are multiple employer welfare associations (MEWAs). In accordance with Washington law, MEWAs must be subject to the same examination standards and consequences as health care service contractors. Therefore, no small business economic impact statement is necessary because MEWAs must comply as a matter of law, regardless of their business size.

A cost-benefit analysis is required under RCW 34.05.328. A preliminary cost-benefit analysis may be obtained by contacting Kacy Scott, P.O. Box 4025, Olympia, WA 98504-0258, phone (360) 725-7041, fax (360) 586-3109, e-mail kacys@oic.wa.gov.

August 19, 2009

Mike Kreidler

Insurance Commissioner

## ADMINISTRATIVE SUPERVISION OF INSURERS

### NEW SECTION

**WAC 284-16-600 Purpose.** The purpose of this regulation, WAC 284-16-600 through 284-16-650, is to establish standards and procedures for the administrative supervision of insurers exceeding their powers or engaging in methods or practices that render the continuance of their business financially hazardous to their policyholders, creditors or the general public.

### NEW SECTION

**WAC 284-16-610 Definitions.** The following definitions apply throughout this regulation unless the context clearly requires otherwise:

(1) The term "exceeded its powers" has the meaning set forth at RCW 48.31.020 (2)(a).

(2) The term "financially hazardous" means the standards set forth at WAC 284-16-310.

(3) "Insurer" has the meaning set forth at RCW 48.31.020(1) and 48.31.021.

(4) "Plan of correction" is an insurer's written plan to address or correct the commissioner's requirements to abate the findings and determination in the commissioner's order for administrative supervision.

### NEW SECTION

**WAC 284-16-620 Process for establishing administrative supervision of an insurer.** (1) The commissioner may issue an order for administrative supervision and appoint an administrative supervisor if the commissioner makes a finding that:

(a) The insurer is in a condition which makes its continued operation financially hazardous to its policyholders, creditors or the general public; or

(b) The insurer has exceeded its powers.

(2) In making a determination in subsection (1) of this section, the commissioner will consider:

(a) The conditions in RCW 48.31.020 (2)(a) to determine whether an insurer has exceeded its powers; or

(b) The findings in RCW 48.31.400(1), standards in WAC 284-16-310, and authorized actions in WAC 284-16-320(1) to determine whether an insurer is in financially hazardous condition.

### NEW SECTION

**WAC 284-16-630 Plan of correction.** (1) This plan of correction must include one or more of the actions under WAC 284-16-320(2), and may include one or more prohibitions contained in the order.

(2) The contents of a plan of correction must address the specific facts and circumstances that led to the order. The plan of correction must include all of the following elements necessary to fully address the list of requirements contained in the administrative supervision order:

(a) An executive summary identifying the objective goals of the plan with key implementation dates and a projected date for full statutory compliance;

(b) A background description of the insurer describing its history, ownership structure, relationships with affiliates, management structure, key employees, and overall operating structure of its organization;

(c) The financial condition of the insurer summarizing its major categories of assets and liabilities, revenues and expenses, and debt and capital structure based on actual annual results for the previous two calendar years and monthly financial forecasts and assumptions for the next three year period to include any specific business plans by function from the date of the commissioner's order;

(d) The causes of the financially hazardous condition or exceeding its powers situation giving rise to supervision proceedings;

(e) The proposed corrective actions specifically identifying operational changes, contractual changes, management changes, and internal control structure changes;

(f) A proposal for monitoring and reporting systems to provide periodic reviews of progress and comparisons of actual results with the plan of correction objectives;

(g) An agreement that the insurer will provide a copy of any notice, request, or other communication from any other regulatory authority that is received by the insurer under administrative supervision to the administrative supervisor or designee within five business days after receipt by the insurer; and

(h) Any other element necessary to fully address a requirement contained in the administrative supervision order.

#### NEW SECTION

**WAC 284-16-640 Compliance with written requirements of commissioner—Noncompliance.** (1) Within fifteen days after receipt of the commissioner's order, the insurer under administrative supervision must submit its plan of correction to address or correct the stated requirements in writing to the commissioner. The commissioner may extend the fifteen-day time period for submission of the plan of correction if the commissioner finds the insurer establishes good cause for the extension.

(2) If the commissioner and the insurer agree on the plan of correction, the commissioner will issue a written order to carry out the plan of correction. The insurer must not implement its plan of correction prior to receiving written approval by the commissioner.

(3) If the insurer fails to timely submit or the commissioner and the insurer are unable to agree to a plan of correction, the commissioner may enter an order requiring the insurer to take such corrective actions as may be reasonably necessary to remove the causes and conditions giving rise to the need for administrative supervision.

(4) Failure of the insurer to timely submit a plan of correction is a violation of the applicable provisions of Title 48 RCW.

(5) A copy of the commissioner's order approving the plan of correction or the order requiring the insurer to take corrective actions will be provided to the insurer and to the administrative supervisor.

#### NEW SECTION

**WAC 284-16-650 Administrative supervisor duties.** (1) To the extent possible and consistent with the list of requirements referenced in RCW 48.31.400 (2)(b), the administrative supervisor will allow the insurer to continue its existing operations.

(2) The administrative supervisor will establish appropriate disbursement limits consistent with good internal control principles to facilitate prompt payment of claims and payables.

(3) Unless the processing of claims is an issue identified in the list of requirements referenced in RCW 48.31.400 (2)(b), the administrative supervisor will allow claims to be processed in the ordinary course of business.

(4) The administrative supervisor will promptly acknowledge every insurer's request for approval of actions identified in the administrative supervision order or plan of correction that requires approval. To the extent feasible, the administrative supervisor will act on an insurer's requests within five business days after receipt.

#### **WSR 09-17-124**

#### **PROPOSED RULES**

#### **OFFICE OF**

#### **INSURANCE COMMISSIONER**

[Insurance Commissioner Matter No. R 2008-13—Filed August 19, 2009, 7:25 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 08-11-106.

Title of Rule and Other Identifying Information: Personal injury protection (PIP) coverage on automobile liability insurance policies.

Hearing Location(s): OIC Tumwater Office, Training Room 120, 5000 Capitol Boulevard, Tumwater, WA, <http://www.insurance.wa.gov/about/directions.shtml>, on September 22, 2009, at 11:00 p.m.

Date of Intended Adoption: October 6, 2009.

Submit Written Comments to: Kacy Scott, P.O. Box 40258, Olympia, WA 98504-0258, e-mail [kacys@oic.wa.gov](mailto:kacys@oic.wa.gov), fax (360) 586-3109, by September 21, 2009.

Assistance for Persons with Disabilities: Contact Lorie Villaflores by September 21, 2009, TTY (360) 586-0241 or (360) 725-7087.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: RCW 48.22.085 through 48.22.100 provide for the mandatory offering of PIP with the issuance of automobile liability insurance policies. There are companies that do not demonstrate a clear understanding of the amounts and way[s] that PIP coverage must be offered to insureds, and when insurers must offer PIP coverage on commercial auto liability policies. These proposed rules are intended to clarify this confusion and assist insurers in issuing PIP coverage with automobile insurance policies.

Reasons Supporting Proposal: There are companies that do not demonstrate a clear understanding of the amounts and way[s] that PIP coverage must be offered to insureds, and when insurers must offer PIP coverage on commercial auto liability policies.

Statutory Authority for Adoption: RCW 48.02.060, 48.22.105.

Statute Being Implemented: RCW 48.18.300.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Mike Kreidler, insurance commissioner, governmental.

Name of Agency Personnel Responsible for Drafting: Chris Carlson, P.O. Box 40248, Olympia, WA 98504-0258,

(360) 725-7042; Implementation: John Hamje, P.O. Box 40245, Olympia, WA 98504-0255, (360) 725-7262; and Enforcement: Carol Sureau, P.O. Box 40255, Olympia, WA 98504-0255, (360) 725-7050.

No small business economic impact statement has been prepared under chapter 19.85 RCW. None of the domestic insurers actively offering coverage in Washington state meet the definition of small business under the law.

A cost-benefit analysis is required under RCW 34.05.328. A preliminary cost-benefit analysis may be obtained by contacting Kacy Scott, P.O. Box 4025, Olympia, WA 98504-0258, phone (360) 725-7041, fax (360) 586-3109, e-mail kacys@oic.wa.gov.

August 19, 2009

Mike Kreidler  
Insurance Commissioner

#### NEW SECTION

**WAC 284-20-300 Mandatory offering of personal injury protection.** (1) Insurers issuing an automobile liability insurance policy must offer personal injury protection coverage and must provide the minimum coverage described in RCW 48.22.095 unless the named insured:

(a) Rejects the personal injury protection coverage in writing; or

(b) Selects personal injury protection coverage at a higher limit as described in RCW 48.22.100.

(2) An insurer may not add personal injury protection coverage at limits greater than those described in RCW 48.22.095 unless the insured requests higher limits in writing.

(3) Under RCW 48.22.090, insurers may limit the personal injury protection coverage in specific circumstances. Insurers may not impose any exclusions, exceptions or limitations that are not expressly authorized by RCW 48.22.090.

(4) Insurers must explain the personal injury protection coverage options at the time the insured first applies for automobile liability insurance. Explanations must be in writing in a format that complies with subsection (6) of this section and clearly describe the:

(a) Available options for personal injury protection coverage;

(b) Named insured's right to reject the coverage or select higher limits of coverage;

(c) Method the named insured must use to reject the coverage;

(d) Length of time the named insured has to reject the coverage;

(e) Legal requirements under RCW 48.22.085; and

(f) Process by which the named insured may request personal injury protection coverage in the future if the coverage is rejected when the policy is first written and issued by the insurer.

(5) If the named insured rejects personal injury protection coverage, the insurer must promptly delete the coverage after the insurer receives the rejection notice from the named insured. The insurer must retain a copy of the rejection notice or request to delete coverage with the policy record.

(6) Insurers may use electronic forms and authenticated signatures to comply with this rule. If an insurer uses elec-

tronic forms and authenticated signatures, the insurer must maintain an auditable compliance record and provide this information to the commissioner upon request.

(7) This section does not apply to corporations, partnerships, or any other nonhuman entity named as the insured.

#### **WSR 09-17-126**

#### **PROPOSED RULES**

#### **DEPARTMENT OF AGRICULTURE**

[Filed August 19, 2009, 9:44 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-14-118.

Title of Rule and Other Identifying Information: Chapter 16-623 WAC, Commission Merchant Act—Licensing fees, proof of payment, cargo manifests and registration of acreage commitments. The department is proposing to increase the fees for licenses issued under chapter 20.01 RCW, which authorizes the commission merchants program.

Hearing Location(s): Washington State Department of Agriculture, 21 North First Avenue, Conference Room 238, Yakima, WA 98902, on September 24, 2009, at 1:00 p.m.

Date of Intended Adoption: October 1, 2009.

Submit Written Comments to: Henri Gonzales, P.O. Box 42560, Olympia, WA 98504-2560, e-mail hgonzales@agr.wa.gov, fax (360) 902-2094, by September 24, 2009.

Assistance for Persons with Disabilities: Contact Henri Gonzales by September 17, 2009, TTY (800) 833-6388.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The department is proposing to increase the licensing fees for commission merchants, dealers, limited dealers, brokers, cash buyers, and agents. During the 2009 legislative session, the Washington state legislature authorized (as required by Initiative 960) the Washington state department of agriculture to increase the commission merchant licensing fees as necessary to meet the actual costs of conducting business (see chapter 564, Laws of 2009).

Reasons Supporting Proposal: The commission merchants program enforces the Commission Merchants Act; licenses commission merchants, dealers, brokers, agents, and cash buyers; and investigates complaints. The program's revenue is largely derived from license fees. An increase in licensing fees is necessary to cover the costs of operating the program.

Statutory Authority for Adoption: RCW 20.01.020 and 20.01.040, chapter 34.05 RCW, and chapter 564, Laws of 2009.

Statute Being Implemented: RCW 20.01.020 and 20.01.040.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Washington state department of agriculture, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Kirk Robinson, 1111 Washington Street, Olympia, WA 98504-2560, (360) 902-1856.

A small business economic impact statement has been prepared under chapter 19.85 RCW.

Small Business Economic Impact Statement

**Proposal:** To increase the Washington state department of agriculture commission merchants program licensing fees.

**Rule Summary:** WAC 16-623-010 establishes fees for licenses for commission merchants, dealers, brokers, cash buyers, and agents, all of whom are buyers and sellers of agricultural products. As per the authorizing statute, RCW 20.01.010(3), agricultural product means any unprocessed horticultural, vermicultural and its byproducts, viticultural, berry, poultry, poultry product, grain, bee, or other agricultural product, as well as mint or mint oil, hay and straw baled or prepared for market, livestock, and agricultural or flower seed. These licenses are required of commission merchants, dealers, brokers, cash buyers, and agents as prescribed under chapter 20.01 RCW. The program issues between seven hundred and eight hundred licenses each year. Commission merchant and dealer licenses make up about 65% of the licensees and provide 87% of the program revenue. Brokers, limited dealers, cash buyers and agents make up the balance of program licensees. In addition to licensing buyers and sellers of agricultural products, the program carries out compliance activities; investigates producer complaints; and works with federal, state, and local law enforcement agencies. Staff annually investigate over one hundred cases involving between one and three million dollars in claimed damages.

The commission merchants program is a fee supported program. Over the last three years, the cost of administering the program has increased, mostly due to higher operation

costs, while revenues have remained consistent. For the program to continue to maintain the current level of staffing and services provided to the agricultural industry, the program is proposing to increase license fees. The program is proposing an approximate 18% license fee increase for licenses issued under the Commission Merchants Act, chapter 20.01 RCW, effective for licenses issued January 1, 2010. The increase in license fees is expected to allow the program to continue at its current staff and service levels through 2013.

No additional reporting, recordkeeping, or other compliance requirements would be put in place by the proposed rule, and no other professional services are likely to be needed in order for a small business to comply with the proposal. Other than the increased fee itself, there are no additional equipment, supplies, labor, professional services, or increased administrative costs associated with the proposal. No businesses should lose sales or revenue due to changes in this rule.

**Affected Groups and Costs:** Revising WAC 16-623-010 to increase license fees by approximately 18% will affect buyers and dealers of agricultural products required to be licensed under the Commission Merchants Act, chapter 20.01 RCW. Between seven hundred and eight hundred licenses are issued yearly, with dealers and commission merchants comprising the majority of licensees. Affected business sizes range from large fruit warehouses with greater than fifty employees to individuals licensed as cash buyers. The cost of the proposed changes would be identical within each license type, regardless of the size of the business that holds the license and therefore would appear to have a disproportionate effect on small business.

|                     | Licenses Issued 2009 | Current Fee | Annual Revenue   | Proposed Fee | Estimated Annual Revenue | Increase in Revenue | Increase Per License |
|---------------------|----------------------|-------------|------------------|--------------|--------------------------|---------------------|----------------------|
| Dealer              | 364                  | \$474       | \$172,536        | \$560        | \$203,840                | \$31,304            | \$86                 |
| Commission Merchant | 142                  | \$474       | 67,308           | \$560        | 79,520                   | 12,212              | \$86                 |
| Broker              | 30                   | \$316       | 9,480            | \$375        | 11,250                   | 1,770               | \$59                 |
| Limited Dealer      | 41                   | \$263       | 10,783           | \$310        | 12,710                   | 1,927               | \$47                 |
| Cash Buyer          | 78                   | \$105       | 8,190            | \$125        | 9,750                    | 1,560               | \$20                 |
| *Agent              | 150                  | \$ 52       | 7,800            | \$ 61        | 9,150                    | 1,350               | \$ 9                 |
|                     | <b>805</b>           |             | <b>\$276,097</b> |              | <b>\$326,220</b>         | <b>\$50,123</b>     |                      |

*\*Number of agent licenses issued each year will vary between 100 and 200.*

RCW 20.01.130 mandates that these fees be used solely for the purpose of carrying out the chapter and the rules adopted under this chapter. The proposed license fee increase would enable the program to maintain the current level of program services. The level of program services is not determined by the size of the licensed business. There is no feasible way to mitigate by means listed in RCW 19.85-030(2) the effects of this license fee increase on small business.

Since the maximum fee increase in this proposal is \$86 per year and other fees would increase less, it does not appear any jobs would be lost or created by this change.

**Industry Outreach:** The proposal to increase license fees by approximately 18% was discussed with businesses, growers, and associations, which represent many businesses varying in size from large to small. They include the commission merchants program advisory committee; the Washington State Hay Growers Association; the Yakima Valley Growers and Shippers Association; numerous fruit and vegetable packers, processors, and warehouses; and the livestock industry.

Each of these businesses, growers, and association representatives were given information on the proposal for a fee increase, and impacts it would have on industry. The program received positive feedback on the proposal to increase fees and on the value of the program to the affected industries

and growers. The program did not receive any comments against the proposal.

This proposal, as required by I-960, received legislative approval during the 2009 session (see chapter 564, Laws of 2009) to increase fees paid by individuals and businesses under the Commission Merchants Act, chapter 20.01 RCW, through the rule-making process.

**Alternatives:** The alternative to increasing the license fees is to leave the fees unchanged and reduce program staff and services. This is a very small, fee-supported program of four FTEs. Any reduction in staffing would reduce the ability of the program to perform compliance activities and investigations mandated by statute.

**Conclusions:** The Washington state agricultural industry generates over five hundred million dollars to our state's economy. The proposed license fee increase will allow the commission merchants program to continue to provide the same level of service and support to the agricultural commu-

nity as it has done for the last nine years. The role of the commission merchants program is important in facilitating the movement of Washington agricultural products in domestic and international markets. This proposal will allow the program to continue to protect agricultural producers from theft, fraud, and unfair business practices.

A copy of the statement may be obtained by contacting Henri Gonzales, P.O. Box 42560, Olympia, WA 98504-2560, phone (360) 902-2061, fax (360) 902-2094, e-mail hgonzales@agr.wa.gov.

A cost-benefit analysis is not required under RCW 34.05.328. The Washington state department of agriculture is not a listed agency under RCW 34.05.328 (5)(a)(i).

August 19, 2009

Mary A. Martin Toohey

Assistant Director

AMENDATORY SECTION (Amending WSR 07-13-097, filed 6/20/07, effective 7/21/07)

**WAC 16-623-010 What requirements apply to licenses for commission merchants, dealers, brokers, cash buyers and agents?** (1) The following table summarizes the license fee requirements for commission merchants, dealers, brokers, cash buyers, or agents:

| License Class                | License Fee                              | Annual Expiration Date | Annual Renewal Date | Penalty Amount for Not Renewing Before January 1                |
|------------------------------|--|------------------------|---------------------|---|
| Commission merchant          | <del>\$((474.00))</del><br><u>560.00</u> | December 31            | Before January 1    | A late renewal penalty of twenty-five percent of the total fees |
| Dealer                       | <del>\$((474.00))</del><br><u>560.00</u> | December 31            | Before January 1    | A late renewal penalty of twenty-five percent of the total fees |
| Limited dealer               | <del>\$((263.00))</del><br><u>310.00</u> | December 31            | Before January 1    | A late renewal penalty of twenty-five percent of the total fees |
| Broker                       | <del>\$((316.00))</del><br><u>375.00</u> | December 31            | Before January 1    | A late renewal penalty of twenty-five percent of the total fees |
| Cash buyer                   | <del>\$((105.00))</del><br><u>125.00</u> | December 31            | Before January 1    | A late renewal penalty of twenty-five percent of the total fees |
| Agent                        | <del>\$((52.00))</del><br><u>61.00</u>   | December 31            | Before January 1    | A late renewal penalty of twenty-five percent of the total fees |
| Additional license per class | \$25.00                                  | December 31            | Before January 1    | A late renewal penalty of twenty-five percent of the total fees |

(2) A licensee can be licensed in more than one class for an additional fee of twenty-five dollars per class. The principal license must be in the class requiring the greatest fee and all requirements must be met for each class in which a license is being requested.

(3) All fees and penalties must be paid before the department issues a license.

(4) Applications for licenses are considered incomplete unless an effective bond or other acceptable form of security is also filed with the director.

(5) Licenses may be obtained by contacting the department's commission merchants program at 360-902-1854 or e-mail at: [commerch@agr.wa.gov](mailto:commerch@agr.wa.gov). Application forms, bond forms, and forms for securities in lieu of a surety bond are available on the department's web site at: [http://www.agr.wa.gov/Inspection/CommissionMerchants/\(default.asp\)](http://www.agr.wa.gov/Inspection/CommissionMerchants/(default.asp)).

**WSR 09-17-127  
PROPOSED RULES  
PUGET SOUND  
CLEAN AIR AGENCY**

[Filed August 19, 2009, 9:47 a.m.]

Original Notice.

Exempt from preproposal statement of inquiry under RCW 70.94.141(1).

Title of Rule and Other Identifying Information: Amend Regulation I, Section 3.11 (Civil Penalties) and Section 3.25 (Federal Regulation Reference Date).

Hearing Location(s): Puget Sound Clean Air Agency, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, on September 24, 2009, at 9:15 a.m.

Date of Intended Adoption: September 24, 2009.

Submit Written Comments to: Lynn Sykes, Puget Sound Clean Air Agency, 1904 3rd Avenue, Suite 105, Seattle, WA

98101, e-mail lynns@psc Clean Air, fax (206) 343-7522, by September 23, 2009.

Assistance for Persons with Disabilities: Contact agency receptionist, (206) 689-4010, by September 17, 2009, TTY (800) 833-6388 or (800) 833-6385 (braille).

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: To adjust the maximum civil penalty amount for inflation and update the federal regulation reference date.

Reasons Supporting Proposal: Without the adjustment for inflation, the maximum civil penalty amount would effectively decrease each year. The federal regulation reference date needs to be kept current.

Statutory Authority for Adoption: Chapter 70.94 RCW. Statute Being Implemented: RCW 70.94.141.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Puget Sound Clean Air Agency, governmental.

Name of Agency Personnel Responsible for Drafting: Lynn Sykes, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, (206) 689-4067; Implementation and Enforcement: Jim Nolan, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, (206) 689-4053.

No small business economic impact statement has been prepared under chapter 19.85 RCW. This agency is not subject to the small business economic impact provision of the Administrative Procedure Act.

A cost-benefit analysis is not required under RCW 34.05.328. RCW 34.05.328 does not apply to local air agencies, per RCW 70.94.141.

August 19, 2009  
Dennis J. McLerran  
Executive Director

## **AMENDATORY SECTION**

### **REGULATION I SECTION 3.11 CIVIL PENALTIES**

(a) Any person who violates any of the provisions of chapter 70.94 RCW or any of the rules or regulations in force pursuant thereto, may incur a civil penalty in an amount not to exceed (~~(\$16,314.00)~~) \$16,445.00, per day for each violation.

(b) Any person who fails to take action as specified by an order issued pursuant to chapter 70.94 RCW or Regulations I, II, and III of the Puget Sound Clean Air Agency shall be liable for a civil penalty of not more than (~~(\$16,314.00)~~) \$16,445.00, for each day of continued noncompliance.

(c) Within 30 days of the date of receipt of a Notice and Order of Civil Penalty, the person incurring the penalty may apply in writing to the Control Officer for the remission or mitigation of the penalty. To be considered timely, a mitigation request must be actually received by the Agency, during regular office hours, within 30 days of the date of receipt of a Notice and Order of Civil Penalty. This time period shall be calculated by excluding the first day and including the last, unless the last day is a Saturday, Sunday, or legal holiday, and then it is excluded and the next succeeding day that is not a Saturday, Sunday, or legal holiday is included. The date

stamped by the Agency on the mitigation request is prima facie evidence of the date the Agency received the request.

(d) A mitigation request must contain the following:

(1) The name, mailing address, telephone number, and telefacsimile number (if available) of the party requesting mitigation;

(2) A copy of the Notice and Order of Civil Penalty involved;

(3) A short and plain statement showing the grounds upon which the party requesting mitigation considers such order to be unjust or unlawful;

(4) A clear and concise statement of facts upon which the party requesting mitigation relies to sustain his or her grounds for mitigation;

(5) The relief sought, including the specific nature and extent; and

(6) A statement that the party requesting mitigation has read the mitigation request and believes the contents to be true, followed by the party's signature.

The Control Officer shall remit or mitigate the penalty only upon a demonstration by the requestor of extraordinary circumstances such as the presence of information or factors not considered in setting the original penalty.

(e) Any civil penalty may also be appealed to the Pollution Control Hearings Board pursuant to chapter 43.21B RCW and chapter 371-08 WAC. An appeal must be filed with the Hearings Board and served on the Agency within 30 days of the date of receipt of the Notice and Order of Civil Penalty or the notice of disposition on the application for relief from penalty.

(f) A civil penalty shall become due and payable on the later of:

(1) 30 days after receipt of the notice imposing the penalty;

(2) 30 days after receipt of the notice of disposition on application for relief from penalty, if such application is made; or

(3) 30 days after receipt of the notice of decision of the Hearings Board if the penalty is appealed.

(g) If the amount of the civil penalty is not paid to the Agency within 30 days after it becomes due and payable, the Agency may bring action to recover the penalty in King County Superior Court or in the superior court of any county in which the violator does business. In these actions, the procedures and rules of evidence shall be the same as in an ordinary civil action.

(h) Civil penalties incurred but not paid shall accrue interest beginning on the 91st day following the date that the penalty becomes due and payable, at the highest rate allowed by RCW 19.52.020 on the date that the penalty becomes due and payable. If violations or penalties are appealed, interest shall not begin to accrue until the 31st day following final resolution of the appeal.

(i) To secure the penalty incurred under this section, the Agency shall have a lien on any vessel used or operated in violation of Regulations I, II, and III which shall be enforced as provided in RCW 60.36.050.

**AMENDATORY SECTION****REGULATION I SECTION 3.25 FEDERAL REGULATION REFERENCE DATE**

Whenever federal regulations are referenced in Regulation I, II, or III, the effective date shall be July 1, (~~2008~~) 2009.

**WSR 09-17-128**  
**PROPOSED RULES**  
**PUGET SOUND**  
**CLEAN AIR AGENCY**  
 [Filed August 19, 2009, 9:49 a.m.]

Original Notice.

Exempt from preproposal statement of inquiry under RCW 70.94.141(1).

Title of Rule and Other Identifying Information: Amend Regulation I, Sections 5.03 (Applicability of Registration Program) and 6.03 (Notice of Construction); and amend Regulation III, Section 2.02 (National Emission Standards for Hazardous Air Pollutants (NESHAP)).

Hearing Location(s): Puget Sound Clean Air Agency, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, on September 24, 2009, at 9:15 a.m.

Date of Intended Adoption: September 24, 2009.

Submit Written Comments to: Lynn Sykes, Puget Sound Clean Air Agency, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, e-mail lynn@pscleanair.org, fax (206) 343-7522, by September 23, 2009.

Assistance for Persons with Disabilities: Contact agency receptionist, (206) 689-4010, by September 17, 2009, TTY (800) 833-6388 or (800) 833-6385 (braille).

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: To exclude from our Environmental Protection Agency (EPA) delegation request certain newly promulgated EPA regulations.

Reasons Supporting Proposal: Certain NESHAPs should be excluded from delegation because there is little or no environmental benefit beyond our current requirements and/or implementing the NESHAP would shift environmental priorities inconsistent with agency policy direction (40 C.F.R. 63 Subpart XXXXXX and YYYYYY); and the agency has had insufficient time to assess the impacts of accepting delegation and needs additional time to perform this analysis (40 C.F.R. 63 Subpart ZZZZZZ).

Statutory Authority for Adoption: Chapter 70.94 RCW.

Statute Being Implemented: RCW 70.94.141.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Puget Sound Clean Air Agency, governmental.

Name of Agency Personnel Responsible for Drafting: Steve Van Slyke, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, (206) 689-4052; Implementation and Enforcement: Jim Nolan, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, (206) 689-4053.

No small business economic impact statement has been prepared under chapter 19.85 RCW. This agency is not subject to the small business economic impact provision of the Administrative Procedure Act.

A cost-benefit analysis is not required under RCW 34.05.328. RCW 34.05.328 does not apply to local air agencies, per RCW 70.94.141.

August 19, 2009  
 Dennis J. McLerran  
 Executive Director

**AMENDATORY SECTION****REGULATION I SECTION 5.03 APPLICABILITY OF REGISTRATION PROGRAM**

(a) The requirements of this article shall apply only to:

(1) Sources subject to a federal emission standard under:

(A) 40 CFR Part 60 (except Subparts B, S, BB, and AAA, and the provisions of Subpart IIII pertaining to owners and operators of emergency stationary compression ignition internal combustion engines);

(B) 40 CFR Part 61 (except Subparts B, H, I, K, Q, R, T, W, and the provisions of Subpart M pertaining to asbestos on roadways, asbestos demolition and renovation activities, and asbestos spraying);

(C) 40 CFR Part 62; or

(D) 40 CFR Part 63 (except Subpart LL, the provisions of Subparts S and MM pertaining to kraft and sulfite pulp mills, the provisions of Subpart ZZZZ pertaining to emergency and limited-use stationary reciprocating internal combustion engines, and Subparts WWWW, CCCCC, HHH-HHH, (~~and~~) WWWW, XXXXXX, YYYYYY, and ZZZZZZ);

(2) Sources with a federally enforceable emission limitation established in order to avoid operating permit program applicability under Article 7 of this regulation;

(3) Sources with annual emissions:

(A) Greater than or equal to 2.50 tons of any single hazardous air pollutant (HAP);

(B) Greater than or equal to 6.25 tons of total hazardous air pollutants (HAP); or

(C) Greater than or equal to 25.0 tons of carbon monoxide (CO), nitrogen oxides (NOx), particulate matter (PM2.5 or PM10), sulfur oxides (SOx), or volatile organic compounds (VOC);

(4) Sources subject to the following sections of Regulation I, II, or III:

(A) Refuse burning equipment subject to Section 9.05 of Regulation I (including crematories);

(B) Fuel burning equipment or refuse burning equipment burning oil that exceeds any limit in Section 9.08 of Regulation I and sources marketing oil to such sources;

(C) Fuel burning equipment subject to Section 9.09 of Regulation I with a rated heat input greater than or equal to 1 MMBtu/hr of any fuel other than natural gas, propane, butane, or distillate oil, or greater than or equal to 10 MMBtu/hr of any fuel;

(D) Sources with spray-coating operations subject to Section 9.16 of Regulation I;



(E) Petroleum refineries subject to Section 2.03 of Regulation II;

(F) Gasoline loading terminals subject to Section 2.05 of Regulation II;

(G) Gasoline dispensing facilities subject to Section 2.07 of Regulation II;

(H) Volatile organic compound storage tanks subject to Section 3.02 of Regulation II;

(I) Can and paper coating facilities subject to Section 3.03 of Regulation II;

(J) Motor vehicle and mobile equipment coating operations subject to Section 3.04 of Regulation II;

(K) Flexographic and rotogravure printing facilities subject to Section 3.05 of Regulation II;

(L) Polyester, vinyl ester, gelcoat, and resin operations subject to Section 3.08 of Regulation II;

(M) Aerospace component coating operations subject to Section 3.09 of Regulation II;

(N) Dry cleaners subject to Section 3.03 of Regulation III; or

(O) Ethylene oxide sterilizers subject to Section 3.07 of Regulation III;

(5) Sources with any of the following gas or odor control equipment having a rated capacity of greater than or equal to 200 cfm ( $\geq 4$ " diameter inlet):

(A) Activated carbon adsorption;

(B) Afterburner;

(C) Barometric condenser;

(D) Biofilter;

(E) Catalytic afterburner;

(F) Catalytic oxidizer;

(G) Chemical oxidation;

(H) Condenser;

(I) Dry sorbent injection;

(J) Flaring;

(K) Non-selective catalytic reduction;

(L) Refrigerated condenser;

(M) Selective catalytic reduction; or

(N) Wet scrubber;

(6) Sources with any of the following particulate control equipment having a rated capacity of greater than or equal to 2,000 cfm ( $\geq 10$ " diameter inlet):

(A) Baghouse;

(B) Demister;

(C) Electrostatic precipitator;

(D) HEPA (high efficiency particulate air) filter;

(E) HVAF (high velocity air filter);

(F) Mat or panel filter;

(G) Mist eliminator;

(H) Multiple cyclones;

(I) Rotoclone;

(J) Screen;

(K) Venturi scrubber;

(L) Water curtain; or

(M) Wet electrostatic precipitator;

(7) Sources with a single cyclone having a rated capacity of greater than or equal to 20,000 cfm ( $\geq 27$ " diameter inlet);

(8) Sources with any of the following equipment:

(A) Asphalt batch plants;

(B) Burn-off ovens;

(C) Coffee roasters;

(D) Commercial composting with raw materials from off-site;

(E) Commercial smokehouses with odor control equipment;

(F) Concrete batch plants (ready-mix concrete);

(G) Galvanizing;

(H) Iron or steel foundries;

(I) Microchip or printed circuit board manufacturing;

(J) Rendering plants;

(K) Rock crushers or concrete crushers;

(L) Sewage treatment plants with odor control equipment;

(M) Shipyards;

(N) Steel mills; or

(O) Wood preserving lines or retorts; and

(9) Sources with equipment (or control equipment) that has been determined by the Control Officer to warrant registration through review of a Notice of Construction application under Section 6.03(a) or a Notification under Section 6.03(b) of this regulation, due to the amount and nature of air contaminants produced, or the potential to contribute to air pollution, and with special reference to effects on health, economic and social factors, and physical effects on property.

(b) The requirements of this article shall not apply to:

(1) Motor vehicles;

(2) Nonroad engines or nonroad vehicles as defined in Section 216 of the federal Clean Air Act;

(3) Sources that require an operating permit under Article 7 of this regulation;

(4) Solid fuel burning devices subject to Article 13 of this regulation; or

(5) Any source, including any listed in Sections 5.03 (a)(4) through 5.03 (a)(9) of this regulation, that has been determined through review by the Control Officer not to warrant registration, due to the amount and nature of air contaminants produced or the potential to contribute to air pollution, and with special reference to effects on health, economic and social factors, and physical effects on property.

(c) It shall be unlawful for any person to cause or allow the operation of any source subject to registration under this section, unless it meets all the requirements of Article 5 of this regulation.

(d) An exemption from new source review under Article 6 of this regulation shall not be construed as an exemption from registration under this article. In addition, an exemption from registration under this article shall not be construed as an exemption from any other provision of Regulation I, II, or III.

## **AMENDATORY SECTION**

### **REGULATION I SECTION 6.03 NOTICE OF CONSTRUCTION**

(a) It shall be unlawful for any person to cause or allow the establishment of a new source, or the replacement or substantial alteration of control equipment installed on an existing source, unless a "Notice of Construction application" has been filed and an "Order of Approval" has been issued by the

Agency. The exemptions in Sections 6.03 (b) and (c) of this regulation shall not apply to:

(1) Any project that qualifies as construction, reconstruction, or modification of an affected facility within the meaning of 40 CFR Part 60 (New Source Performance Standards), except for Subpart AAA (New Residential Wood Heaters), Subpart BB (Kraft Pulp Mills), Subpart S (Primary Aluminum Reduction Plants), and Subpart IIII pertaining to owners and operators of emergency stationary compression ignition internal combustion engines; and for relocation of affected facilities under Subpart I (Hot Mix Asphalt Facilities) and Subpart OOO (Nonmetallic Mineral Processing Plants) for which an Order of Approval has been previously issued by the Agency;

(2) Any project that qualifies as a new or modified source within the meaning of 40 CFR 61.02 (National Emission Standards for Hazardous Air Pollutants), except for Subpart B (Radon from Underground Uranium Mines), Subpart H (Emissions of Radionuclides other than Radon from Department of Energy Facilities), Subpart I (Radionuclides from Federal Facilities other than Nuclear Regulatory Commission Licensees and not covered by Subpart H), Subpart K (Radionuclides from Elemental Phosphorus Plants), Subpart Q (Radon from Department of Energy Facilities), Subpart R (Radon from Phosphogypsum Stacks), Subpart T (Radon from Disposal of Uranium Mill Tailings), Subpart W (Radon from Operating Mill Tailings), and for demolition and renovation projects subject to Subpart M (Asbestos);

(3) Any project that qualifies as a new source as defined under 40 CFR 63.2 (National Emission Standards for Hazardous Air Pollutants for Source Categories), except for the provisions of Subpart M (Dry Cleaning Facilities) pertaining to area source perchloroethylene dry cleaners, Subpart LL (Primary Aluminum Reduction Plants), the provisions of Subpart S (Pulp and Paper Industry) and Subpart MM (Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semicheical Pulp Mills) pertaining to kraft and sulfite pulp mills, the provisions of Subpart ZZZZ (Reciprocating Internal Combustion Engines) pertaining to emergency and limited-use stationary reciprocating internal combustion engines, Subpart WWWW (Hospitals: Ethylene Oxide Sterilizers), Subpart CCCCC (Gasoline Dispensing Facilities), Subpart HHHHHH (Paint Stripping and Miscellaneous Surface Coating Operations), ~~((and))~~ Subpart WWWW (Plating and Polishing Operations), Subpart XXXXXX (Nine Metal Fabrication and Finishing Source Categories), Subpart YYYYYY (Ferroalloys Production Facilities), and Subpart ZZZZZZ (Aluminum, Copper, and Other Nonferrous Foundries);

(4) Any new major stationary source or major modification as defined under WAC 173-400-030; and

(5) Any stationary source previously exempted from review that is cited by the Agency for causing air pollution under Section 9.11 of this regulation.

(b) **Notifications.** A Notice of Construction application and Order of Approval are not required for the following new sources, provided that a complete notification is filed with the Agency prior to initial startup:

**Liquid Storage and Transfer**

(1) Storage tanks used exclusively for:

(A) Gasoline and having a rated capacity of 1,001-19,999 gallons, PROVIDED THAT they are installed in accordance with the current California Air Resources Board Executive Orders;

(B) Organic liquids with a true vapor pressure of 2.2-4.0 psia and having a rated capacity of 20,000-39,999 gallons; or

(C) Organic liquids with a true vapor pressure of 0.5-0.75 psia and having a rated capacity  $\geq$ 40,000 gallons.

(2) Loading and unloading equipment used exclusively for the storage tanks exempted above, including gasoline dispensers at gasoline stations.

**Relocation of Portable Batch Plants**

(3) Relocation of the following portable facilities: asphalt batch plants, nonmetallic mineral processing plants, rock (or concrete) crushers, and concrete batch plants for which an Order of Approval has been previously issued by the Agency. *All the conditions in the previously issued Order of Approval remain in effect.*

**Dry Cleaning**

(4) Unvented, dry-to-dry, dry-cleaning equipment that is equipped with refrigerated condensers to recover the cleaning solvent.

**Printing**

(5) Non-heatset, web offset presses and wholesale, sheet-fed offset presses (lithographic or letterpress) using exclusively soy-based or kerosene-like oil-based inks, fountain solutions with  $\leq$ 6% VOC by volume or  $\leq$ 8.5% if refrigerated to  $<60^{\circ}\text{F}$ , and cleaning solvents with a vapor pressure  $\leq$ 25mm Hg or a VOC content  $\leq$ 30% by volume.

**Water Treatment**

(6) Industrial and commercial wastewater evaporators (except flame impingement) used exclusively for wastewater generated on-site that meets all discharge limits for disposal into the local municipal sewer system (including metals, cyanide, fats/oils/grease, pH, flammable or explosive materials, organic compounds, hydrogen sulfide, solids, and food waste). *A letter from the local sewer district documenting compliance is required in order to use this exemption.*

**Sanding Equipment**

(7) Sanding equipment controlled by a fabric filter with an airflow of 2,000-5,000 cfm and an air-to-cloth ratio of  $<3.5:1$  (for reverse-air or manual cleaning) or  $<12:1$  (for pulse-jet cleaning).

**Ventilation and Control Equipment**

(8) Vacuum-cleaning systems used exclusively for industrial, commercial, or residential housekeeping purposes controlled by a fabric filter with an airflow of 2,000-5,000 cfm and an air-to-cloth ratio of  $<3.5:1$  (for mechanical or manual cleaning) or  $<12:1$  (for pulse-jet cleaning).

(9) Replacement of existing paint spray booths. *All the conditions in the previously issued Order of Approval remain in effect.*

**Miscellaneous**

(10) Any source not otherwise exempt under Section 6.03(c) of this regulation that has been determined through review of a Notice of Construction application by the Control Officer not to warrant an Order of Approval because it has a de minimis impact on air quality and does not pose a threat to human health or the environment.

**Coffee Roasters**

(11) Batch coffee roasters with a maximum rated capacity of 10 lbs per batch or less.

(c) **Exemptions.** A Notice of Construction application and Order of Approval are not required for the following new sources, provided that sufficient records are kept to document the exemption:

**Combustion**

(1) Fuel-burning equipment (except when combusting pollutants generated by a non-exempt source) having a rated capacity:

(A) <10 million Btu per hour heat input burning exclusively distillate fuel oil, natural gas, propane, butane (or any combination thereof);

(B) <0.5 million Btu per hour heat output burning waste-derived fuel (including fuel oil not meeting the specifications in Section 9.08 of this regulation); or

(C) <1 million Btu per hour heat input burning any other fuel.

(2) All stationary gas turbines with a rated heat input <10 million Btu per hour.

(3) Stationary internal combustion engines having a rated capacity:

(A) <50 horsepower output;

(B) Used solely for instructional purposes at research, teaching, or educational facilities; or

(C) Portable or standby units operated <500 hours per year, PROVIDED THAT they are not operated at a facility with a power supply contract that offers a lower rate in exchange for the power supplier's ability to curtail energy consumption with prior notice.

(4) Relocation of portable, stationary internal combustion engines or gas turbines for which an Order of Approval has been previously issued by the Agency.

(5) All nonroad compression ignition engines subject to 40 CFR Part 89.

**Metallurgy**

(6) Crucible furnaces, pot furnaces, or induction furnaces with a capacity  $\leq 1,000$  pounds, PROVIDED THAT no sweating or distilling is conducted, and PROVIDED THAT only precious metals, or an alloy containing >50% aluminum, magnesium, tin, zinc, or copper is melted.

(7) Crucible furnaces or pot furnaces with a capacity  $\leq 450$  cubic inches of any molten metal.

(8) Ladles used in pouring molten metals.

(9) Foundry sand-mold forming equipment.

(10) Shell core and shell-mold manufacturing machines.

(11) Molds used for the casting of metals.

(12) Die casting machines with a rated capacity  $\leq 1,000$  pounds that are not used for copper alloys.

(13) Equipment used for heating metals immediately prior to forging, pressing, rolling, or drawing, if any combustion equipment is also exempt.

(14) Forming equipment used exclusively for forging, rolling, or drawing of metals, if any combustion equipment is also exempt.

(15) Heat treatment equipment used exclusively for metals, if any combustion equipment is also exempt.

(16) Equipment used exclusively for case hardening, carburizing, cyaniding, nitriding, carbonitriding, siliconizing, or

diffusion treating of metals, if any combustion equipment is also exempt.

(17) Atmosphere generators used in connection with metal heat-treating processes.

(18) Sintering equipment used exclusively for metals other than lead, PROVIDED THAT no coke or limestone is used, if any combustion equipment is also exempt.

(19) Welding equipment and oxygen/gaseous fuel cutting equipment.

(20) Soldering or brazing, or equipment, including brazing ovens.

(21) Equipment used exclusively for surface preparation, passivation, deoxidation, and/or stripping that meets all of the following tank content criteria:

(A)  $\leq 50$  grams of VOC per liter;

(B) No acids other than boric, formic, acetic, phosphoric, sulfuric, or  $\leq 12\%$  hydrochloric; and

(C) May contain alkaline oxidizing agents, hydrogen peroxide, salt solutions, sodium hydroxide, and water in any concentration.

Associated rinse tanks and waste storage tanks used exclusively to store the solutions drained from this equipment are also exempt. (This exemption does not include anodizing, hard anodizing, chemical milling, circuit board etching using ammonia-based etchant, electrocleaning, or the stripping of chromium, except sulfuric acid and/or boric acid anodizing with a total bath concentration of  $\leq 20\%$  by weight and using  $\leq 10,000$  amp-hours per day, or phosphoric acid anodizing with a bath concentration of  $\leq 15\%$  by weight of phosphoric acid and using  $\leq 20,000$  amp-hours per day.)

(22) Equipment used exclusively for electrolytic plating (except the use of chromic and/or hydrochloric acid) or electrolytic stripping (except the use of chromic, hydrochloric, nitric, or sulfuric acid) of brass, bronze, copper, iron, tin, zinc, precious metals, and associated rinse tanks and waste storage tanks used exclusively to store the solutions drained from this equipment. Also, equipment used to electrolytically recover metals from spent or pretreated plating solutions that qualify for this exemption.

**Ceramics and Glass**

(23) Kilns used for firing ceramic-ware or artwork, if any combustion equipment is also exempt.

(24) Porcelain enameling furnaces, porcelain enameling drying ovens, vitreous enameling furnaces, or vitreous enameling drying ovens, if any combustion equipment is also exempt.

(25) Hand glass melting furnaces, electric furnaces, and pot furnaces with a capacity  $\leq 1,000$  pounds of glass.

(26) Heat-treatment equipment used exclusively for glass, if any combustion equipment is also exempt.

(27) Sintering equipment used exclusively for glass PROVIDED THAT no coke or limestone is used, if any combustion equipment is also exempt.

**Plastics and Rubber and Composites**

(28) Equipment used exclusively for conveying and storing plastic pellets.

(29) Extrusion equipment used exclusively for extruding rubber or plastics where no organic plasticizer is present, or for pelletizing polystyrene foam scrap.

(30) Equipment used for extrusion, compression molding, and injection molding of plastics, PROVIDED THAT the VOC content of all mold release products or lubricants is  $\leq 1\%$  by weight.

(31) Injection or blow-molding equipment for rubber or plastics, PROVIDED THAT no blowing agent other than compressed air, water, or carbon dioxide is used.

(32) Presses or molds used for curing, post-curing, or forming composite products and plastic products, PROVIDED THAT the blowing agent contains no VOC or chlorinated compounds.

(33) Presses or molds used for curing or forming rubber products and composite rubber products with a ram diameter  $\leq 26$  inches, PROVIDED THAT it is operated at  $\leq 400^\circ\text{F}$ .

(34) Ovens used exclusively for the curing or forming of plastics or composite products, where no foam-forming or expanding process is involved, if any combustion equipment is also exempt.

(35) Ovens used exclusively for the curing of vinyl plastisols by the closed-mold curing process, if any combustion equipment is also exempt.

(36) Equipment used exclusively for softening or annealing plastics, if any combustion equipment is also exempt.

(37) Hot wire cutting of expanded polystyrene foam and woven polyester film.

(38) Mixers, roll mills, and calenders for rubber or plastics where no material in powder form is added and no organic solvents, diluents, or thinners are used.

#### **Material Working and Handling**

(39) Equipment used for mechanical buffing (except tire buffers), polishing, carving, cutting, drilling, grinding, machining, planing, pressing, routing, sawing, stamping, or turning of wood, ceramic artwork, ceramic precision parts, leather, metals, plastics, rubber, fiberboard, masonry, glass, silicon, semiconductor wafers, carbon, graphite, or composites. This exemption also applies to laser cutting, drilling, and machining of metals.

(40) Hand-held sanding equipment.

(41) Sanding equipment controlled by a fabric filter with an airflow of  $< 2,000$  cfm.

(42) Equipment used exclusively for shredding of wood (e.g., tub grinders, hammermills, hoppers), or for extruding, pressing, handling, or storage of wood chips, sawdust, or wood shavings.

(43) Paper shredding and associated conveying systems and baling equipment.

(44) Hammermills used exclusively to process aluminum and/or tin cans.

(45) Tumblers used for the cleaning or deburring of metal products without abrasive blasting.

#### **Abrasive Blasting**

(46) Portable abrasive blasting equipment used at a temporary location to clean bridges, water towers, buildings, or similar structures, PROVIDED THAT any blasting with sand (or silica) is performed with  $\geq 66\%$  by volume water.

(47) Portable vacuum blasting equipment using steel shot and vented to a fabric filter.

(48) Hydroblasting equipment using exclusively water as the abrasive.

(49) Abrasive blasting cabinets vented to a fabric filter, PROVIDED THAT the total internal volume of the cabinet is  $\leq 100$  cubic feet.

(50) Shot peening operations, PROVIDED THAT no surface material is removed.

#### **Cleaning**

(51) Solvent cleaning:

(A) Non-refillable, hand-held aerosol spray cans of solvent; or

(B) Closed-loop solvent recovery systems with refrigerated or water-cooled condensers used for recovery of waste solvent generated on-site.

(52) Steam-cleaning equipment.

(53) Unheated liquid solvent tanks used for cleaning or drying parts:

(A) With a solvent capacity  $\leq 10$  gallons and containing  $\leq 5\%$  by weight perchloroethylene, methylene chloride, carbon tetra-chloride, chloroform, 1,1,1-trichloroethane, trichloroethylene, or any combination thereof;

(B) Using a solvent with a true vapor pressure  $\leq 0.6$  psi containing  $\leq 5\%$  by weight perchloroethylene, methylene chloride, carbon tetrachloride, chloroform, 1,1,1-trichloroethane, trichloro-ethylene, or any combination thereof;

(C) With a remote reservoir and using a solvent containing  $\leq 5\%$  by weight perchloroethylene, methylene chloride, carbon tetra-chloride, chloroform, 1,1,1-trichloroethane, trichloroethylene, or any combination thereof; or

(D) With a solvent capacity  $\leq 2$  gallons.

(54) Hand-wipe cleaning.

#### **Coating, Resin, and Adhesive Application**

(55) Powder-coating equipment.

(56) Portable coating equipment and pavement stripers used exclusively for the field application of architectural coatings and industrial maintenance coatings to stationary structures and their appurtenances or to pavements and curbs.

(57) High-volume low-pressure (HVLP) spray-coating equipment having a cup capacity  $\leq 8$  fluid ounces, PROVIDED THAT it is not used to coat  $> 9$  square feet per day and is not used to coat motor vehicles or aerospace components.

(58) Airbrushes having a cup capacity  $\leq 2$  fluid ounces and an airflow of 0.5-2.0 cfm.

(59) Hand-held aerosol spray cans having a capacity of  $\leq 1$  quart of coating.

(60) Spray-coating equipment used exclusively for application of automotive undercoating materials with a flash point  $> 100^\circ\text{F}$ .

(61) Ovens associated with an exempt coating operation, if any combustion equipment is also exempt.

(62) Ovens associated with a coating operation that are used exclusively to accelerate evaporation, if any combustion equipment is also exempt. (Note: The coating operation is not necessarily exempt.)

(63) Radiation-curing equipment using ultraviolet or electron beam energy to initiate a chemical reaction forming a polymer network in a coating.

(64) Hand lay, brush, and roll-up resins equipment and operations.

(65) Equipment used exclusively for melting or applying of waxes or natural and synthetic resins.

(66) Hot-melt adhesive equipment.

(67) Any adhesive application equipment that exclusively uses materials containing <1% VOC by weight and <0.1% HAP.

(68) Equipment used exclusively for bonding of linings to brake shoes, where no organic solvents are used.

#### **Printing**

(69) Retail, sheet-fed, non-heatset offset presses (lithographic or letter-press).

(70) Presses using exclusively UV-curable inks.

(71) Presses using exclusively plastisols.

(72) Presses using exclusively water-based inks (<1.5 lbs VOC per gallon, excluding water, or <10% VOC by volume) and cleaning solvents without VOC.

(73) Presses used exclusively for making proofs.

(74) Electrostatic, ink jet, laser jet, and thermal printing equipment.

(75) Ovens used exclusively for exempt printing presses, if any combustion equipment is also exempt.

#### **Photography**

(76) Photographic process equipment by which an image is reproduced upon material sensitized by radiant energy, excluding equipment using perchloroethylene.

#### **Liquid Storage and Transfer**

(77) Storage tanks permanently attached to a motor vehicle.

(78) Storage tanks used exclusively for:

(A) Liquefied gases, including any tanks designed to operate in excess of 29.7 psia without emissions;

(B) Asphalt at a facility other than an asphalt roofing plant, asphalt processing plant, or petroleum refinery;

(C) Any liquids (other than asphalt) that also have a rated capacity  $\leq 1,000$  gallons;

(D) Organic liquids (other than gasoline or asphalt) that also have a rated capacity <20,000 gallons;

(E) Organic liquids (other than asphalt) with a true vapor pressure <2.2 psia (e.g., ASTM spec. fuel oils and lubricating oils) that also have a rated capacity <40,000 gallons;

(F) Organic liquids (other than asphalt) with a true vapor pressure <0.5 psia that also have a rated capacity  $\geq 40,000$  gallons;

(G) Sulfuric acid or phosphoric acid with an acid strength  $\leq 99\%$  by weight;

(H) Nitric acid with an acid strength  $\leq 70\%$  by weight;

(I) Hydrochloric acid or hydrofluoric acid tanks with an acid strength  $\leq 30\%$  by weight;

(J) Aqueous solutions of sodium hydroxide, sodium hypochlorite, or salts, PROVIDED THAT the surface of the solution contains  $\leq 1\%$  VOC by weight;

(K) Liquid soaps, liquid detergents, vegetable oils, fatty acids, fatty esters, fatty alcohols, waxes, and wax emulsions;

(L) Tallow or edible animal fats intended for human consumption and of sufficient quality to be certifiable for United States markets;

(M) Water emulsion intermediates and products, including latex, with a VOC content  $\leq 5\%$  by volume or a VOC composite partial pressure of  $\leq 0.1$  psi at 68°F; or

(N) Wine, beer, or other alcoholic beverages.

(79) Loading and unloading equipment used exclusively for the storage tanks exempted above.

(80) Loading and unloading equipment used exclusively for transferring liquids or compressed gases into containers having a rated capacity <60 gallons, except equipment transferring >1,000 gallons per day of liquid with a true vapor pressure >0.5 psia.

(81) Equipment used exclusively for the packaging of sodium hypochlorite-based household cleaning or pool products.

#### **Mixing**

(82) Mixing equipment, PROVIDED THAT no material in powder form is added and the mixture contains <1% VOC by weight.

(83) Equipment used exclusively for the mixing and blending of materials at ambient temperature to make water-based adhesives.

(84) Equipment used exclusively for the manufacture of water emulsions of waxes, greases, or oils.

(85) Equipment used exclusively for the mixing and packaging of lubricants or greases.

(86) Equipment used exclusively for manufacturing soap or detergent bars, including mixing tanks, roll mills, plodders, cutters, wrappers, where no heating, drying, or chemical reactions occur.

(87) Equipment used exclusively to mill or grind coatings and molding compounds in a paste form, PROVIDED THAT the solution contains <1% VOC by weight.

(88) Batch mixers with a rated working capacity  $\leq 55$  gallons.

(89) Batch mixers used exclusively for paints, varnishes, lacquers, enamels, shellacs, printing inks, or sealers, PROVIDED THAT the mixer is equipped with a lid that contacts  $\geq 90\%$  of the rim.

#### **Water Treatment**

(90) Oil/water separators, except those at petroleum refineries.

(91) Water cooling towers and water cooling ponds not used for evaporative cooling of process water, or not used for evaporative cooling of water from barometric jets or from barometric condensers, and in which no chromium compounds are contained.

(92) Equipment used exclusively to generate ozone and associated ozone destruction equipment for the treatment of cooling tower water or for water treatment processes.

(93) Municipal sewer systems, including wastewater treatment plants and lagoons, PROVIDED THAT they do not use anaerobic digesters or chlorine sterilization. This exemption does not include sewage sludge incinerators.

(94) Soil and groundwater remediation projects involving <15 pounds per year of benzene or vinyl chloride, <500 pounds per year of perchloroethylene, and <1,000 pounds per year of toxic air contaminants.

#### **Landfills and Composting**

(95) Passive aeration of soil, PROVIDED THAT the soil is not being used as a cover material at a landfill.

(96) Closed landfills that do not have an operating, active landfill gas collection system.

(97) Non-commercial composting.

**Agriculture, Food, and Drugs**

(98) Equipment used in agricultural operations, in the growing of crops, or the raising of fowl or animals.

(99) Insecticide, pesticide, or fertilizer spray equipment.

(100) Equipment used in retail establishments to dry, cook, fry, bake, or grill food for human consumption, including charbroilers, smokehouses, barbecue units, deep fat fryers, cocoa and nut roasters, but not including coffee roasters.

(101) Cooking kettles (other than deep frying equipment) and confection cookers where all the product in the kettle is edible and intended for human consumption.

(102) Bakery ovens with a total production of yeast leavened bread products <10,000 pounds per operating day, if any combustion equipment is also exempt.

(103) Equipment used to dry, mill, grind, blend, or package <1,000 tons per year of dry food products such as seeds, grains, corn, meal, flour, sugar, and starch.

(104) Equipment used to convey, transfer, clean, or separate <1,000 tons per year of dry food products or waste from food production operations.

(105) Storage equipment or facilities containing dry food products that are not vented to the outside atmosphere, or that handle <1,000 tons per year.

(106) Equipment used exclusively to grind, blend, package, or store tea, cocoa, spices, coffee, flavor, fragrance extraction, dried flowers, or spices, PROVIDED THAT no organic solvents are used in the process.

(107) Equipment used to convey or process materials in bakeries or used to produce noodles, macaroni, pasta, food mixes, and drink mixes where products are edible and intended for human consumption, PROVIDED THAT no organic solvents are used in the process. This exemption does not include storage bins located outside buildings.

(108) Brewing operations at facilities producing <3 million gallons per year of beer.

(109) Fermentation tanks for wine (excluding tanks used for the commercial production of yeast for sale).

(110) Equipment used exclusively for tableting, or coating vitamins, herbs, or dietary supplements, PROVIDED THAT no organic solvents are used in the process.

(111) Equipment used exclusively for tableting or packaging pharmaceuticals and cosmetics, or coating pharmaceutical tablets, PROVIDED THAT no organic solvents are used.

**Quarries, Nonmetallic Mineral Processing Plants, and Concrete and Asphalt Batch Plants**

(112) Portable sand and gravel plants and crushed stone plants with a cumulative rated capacity of all initial crushers ≤150 tons per hour.

(113) Fixed sand and gravel plants and crushed stone plants with a cumulative rated capacity of all initial crushers ≤25 tons per hour.

(114) Common clay plants and pumice plants with a cumulative rated capacity of all initial crushers of ≤10 tons per hour.

(115) Mixers and other ancillary equipment at concrete batch plants (or aggregate product production facilities) with a rated capacity <15 cubic yards per hour.

(116) Concrete mixers with a rated working capacity of ≤1 cubic yard.

(117) Drilling or blasting (explosives detonation).

(118) Asphaltic concrete crushing/recycling equipment with a throughput <5,000 tons per year.

**Construction**

(119) Asphalt paving application.

(120) Asphalt (hot-tar) roofing application.

(121) Building construction or demolition, except that notification of demolitions is required under Section 4.03 of Regulation III.

**Ventilation and Control Equipment**

(122) Comfort air-conditioning systems, or ventilating systems (forced or natural draft), PROVIDED THAT they are not designed or used to control air contaminants generated by, or released from, sources subject to Notice of Construction.

(123) Refrigeration units, except those used as, or in conjunction with, air pollution control equipment.

(124) Refrigerant recovery and/or recycling units, excluding refrigerant reclaiming facilities.

(125) Emergency ventilation systems used exclusively to contain and control emissions resulting from the failure of a compressed gas storage system.

(126) Emergency ventilation systems used exclusively to scrub ammonia from refrigeration systems during process upsets or equipment breakdowns.

(127) Negative air machines equipped with HEPA filters used to control asbestos emissions from demolition/renovation activities.

(128) Portable control equipment used exclusively for storage tank degassing.

(129) Vacuum-cleaning systems used exclusively for industrial, commercial, or residential housekeeping purposes controlled by a fabric filter with an airflow <2,000 cfm.

(130) Control equipment used exclusively for sources that are exempt from Notice of Construction under Section 6.03(c) of this regulation.

(131) Routine maintenance, repair, or similar parts replacement of control equipment.

**Testing and Research**

(132) Laboratory testing and quality assurance/control testing equipment used exclusively for chemical and physical analysis, teaching, or experimentation, used specifically in achieving the purpose of the analysis, test, or teaching activity. Non-production bench scale research equipment is also included.

**Miscellaneous**

(133) Single-family and duplex dwellings.

(134) Oxygen, nitrogen, or rare gas extraction and liquefaction equipment, if any combustion equipment used to power such equipment is also exempt.

(135) Equipment, including dryers, used exclusively for dyeing, stripping, or bleaching of textiles where no organic solvents, diluents, or thinners are used, if any combustion equipment used to power such equipment is also exempt.

(136) Chemical vapor sterilization equipment where no ethylene oxide is used, and with a chamber volume of ≤2 cubic feet used by healthcare facilities.

(137) Ozone generators that produce <1 pound per day of ozone.

(138) Fire extinguishing equipment.

(d) Each Notice of Construction application and Section 6.03(b) notification shall be submitted on forms provided by

the Agency and shall be accompanied by the appropriate fee as required by Section 6.04 of this regulation. Notice of Construction applications shall also include any additional information required to demonstrate that the requirements of this Article are met. Notice of Construction applications shall also include an environmental checklist or other documents demonstrating compliance with the State Environmental Policy Act.

### **AMENDATORY SECTION**

#### **REGULATION III SECTION 2.02 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS**

It shall be unlawful for any person to cause or allow the operation of any source in violation of any provision of Part 61 or Part 63, Title 40, of the Code of Federal Regulations (excluding Part 61, Subparts B, H, I, K, Q, R, T, and W; and Part 63, Subpart LL, the provisions of Subpart M pertaining to area source perchloroethylene dry cleaners, the provisions of Subparts S and MM pertaining to kraft and sulfite pulp mills, and Subparts WWWW, CCCCC, HHHHH, ~~((and)) WWWW, XXXXX, YYYYY, and ZZZZ~~) in effect as of the federal regulation reference date listed in Section 3.25 of Regulation I herein incorporated by reference.

**WSR 09-17-129**  
**PROPOSED RULES**  
**PUGET SOUND**  
**CLEAN AIR AGENCY**  
 [Filed August 19, 2009, 9:50 a.m.]

Original Notice.

Exempt from preproposal statement of inquiry under RCW 70.94.141(1).

Title of Rule and Other Identifying Information: Amend Regulation I, Section 6.01 (Components of New Source Review Program); Regulation III, Sections 1.08 (Special Definitions), 1.11 (Reporting Requirements), 2.05 (Sources of Toxic Air Contaminants), and 2.07 (Evaluating the Impacts of Toxic Air Contaminants); and delete Regulation III, Appendix A (Acceptable Source Impact Levels).

Hearing Location(s): Puget Sound Clean Air Agency, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, on September 24, 2009, at 9:15 a.m.

Date of Intended Adoption: September 24, 2009.

Submit Written Comments to: Lynn Sykes, Puget Sound Clean Air Agency, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, e-mail lynns@pscleanair.org, fax (206) 343-7522, by September 23, 2009.

Assistance for Persons with Disabilities: Contact agency receptionist, (206) 689-4010, by September 17, 2009, TTY (800) 833-6388 or (800) 833-6385 (braille).

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: To incorporate ecology's newly promulgated update to WAC 173-400-110 and chapter 173-460 WAC into agency regulations.

Reasons Supporting Proposal: Updating agency regulations to align with ecology's program will provide a more level playing field for facilities subject to NSR throughout Washington.

Statutory Authority for Adoption: Chapter 70.94 RCW. Statute Being Implemented: RCW 70.94.141.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Puget Sound Clean Air Agency, governmental.

Name of Agency Personnel Responsible for Drafting: Agata McIntyre, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, (206) 689-4061; Implementation and Enforcement: Jim Nolan, 1904 3rd Avenue, Suite 105, Seattle, WA 98101, (206) 689-4053.

No small business economic impact statement has been prepared under chapter 19.85 RCW. This agency is not subject to the small business economic impact provision of the Administrative Procedure Act.

A cost-benefit analysis is not required under RCW 34.05.328. RCW 34.05.328 does not apply to local air agencies, per RCW 70.94.141.

August 19, 2009  
 Dennis J. McLerran  
 Executive Director

### **AMENDATORY SECTION**

#### **REGULATION I SECTION 6.01 COMPONENTS OF NEW SOURCE REVIEW PROGRAM**

(a) In addition to the provisions of this regulation, the Agency adopts by reference and enforces the following provisions of the new source review program established by the Washington State Department of Ecology:

WAC 173-400-030 Definitions. (effective 6/08/07)

WAC 173-400-081 Startup and shutdown. (effective 9/20/93)

WAC 173-400-110 (3) and (6)-(10) New source review (NSR). (effective ~~((6/08/07))~~ 6/20/09)

WAC 173-400-112 Requirements for new sources in nonattainment areas. (effective 2/10/05)

WAC 173-400-113 Requirements for new sources in attainment or unclassifiable areas. (effective 2/10/05)

WAC 173-400-114 Requirements for replacement or substantial alteration of emission control technology at an existing stationary source. (effective 9/15/01)

WAC 173-400-117 Special protection requirements for federal Class I areas. (effective 2/10/05)

WAC 173-400-171 Public involvement. - excluding references to chapter 173-460 WAC (effective 6/08/07)

WAC 173-400-200 Creditable stack height and dispersion techniques. (effective 2/10/05)

WAC 173-400-560 General order of approval. (effective 2/10/05)

WAC 173-400-700 Review of major stationary sources of air pollution. (effective 2/10/05)

WAC 173-400-710 Definitions. (effective 6/08/07)

WAC 173-400-720 Prevention of significant deterioration (PSD). (effective 6/08/07)

WAC 173-400-730 Prevention of significant deterioration application processing procedures. (effective 2/10/05)

WAC 173-400-740 PSD permitting public involvement requirements. (effective 2/10/05)

WAC 173-400-750 Revisions to PSD permits. (effective 2/10/05)

WAC 173-460-020 Definitions. (effective ~~(2/14/94)~~ 6/20/09)

WAC 173-460-030 Applicability. (effective 6/20/09)

WAC 173-460-040 ~~((3)-(10))~~ New source review. - excluding references to WAC 173-400-110 (4) and (5) (effective ~~(2/14/94)~~ 6/20/09)

WAC 173-460-050 Requirement to quantify emissions. (effective ~~(2/14/94)~~ 6/20/09)

WAC 173-460-060(1) Control technology requirements. (effective ~~(8/21/98)~~ 6/20/09)

WAC 173-460-070 Ambient impact requirement. (effective ~~(9/18/94)~~ 6/20/09)

WAC 173-460-071 Voluntary limits on emissions. (effective 6/20/09)

WAC 173-460-080 (2)-(4) First tier analysis. ~~((Demonstrating ambient impact compliance.))~~ (effective ~~(2/14/94)~~ 6/20/09)

WAC 173-460-090 Second tier analysis. (effective ~~(2/14/94)~~ 6/20/09)

WAC 173-460-100 Third tier analysis. (effective 6/20/09)

WAC 173-460-150 Table of ASIL, SQER values. - excluding references to de minimis emission values (effective 6/20/09)

(b) The Washington State Department of Ecology is the permitting agency for the Prevention of Significant Deterioration (PSD) program under WAC 173-400-700 through WAC 173-400-750 (as delegated by agreement with the US Environmental Protection Agency, Region 10), and for primary aluminum smelters, kraft pulp mills, and sulfite pulp mills.

(c) The Washington State Department of Health is the permitting agency for radionuclides under chapter 246-247 WAC.

(d) The Energy Facility Site Evaluation Council (EFSEC) is the permitting agency for large natural gas and oil pipelines, electric power plants above 350 megawatts, new oil refineries or large expansions of existing facilities, and underground natural gas storage fields under chapter 463-78 WAC.

## AMENDATORY SECTION

### **REGULATION III SECTION 1.08 SPECIAL DEFINITIONS**

~~((a) ACCEPTABLE SOURCE IMPACT LEVEL (ASIL) means a concentration of a toxic air contaminant in the outdoor atmosphere in any area that does not have restricted or controlled public access that is used to evaluate the air quality impacts of a single source. There are three types of acceptable source impact levels: risk based, threshold based, and special. Concentrations for these three types of ASILs are established by the Board after public hearing and are listed in Appendix A of this Regulation III.))~~

~~((b))~~ (a) **ETHYLENE OXIDE AERATOR** means any equipment, space, or room in which air is used to remove residual ethylene oxide from sterilized materials.

~~((c))~~ (b) **ETHYLENE OXIDE STERILIZER** means any chamber or related piece of equipment that uses ethylene oxide or an ethylene oxide mixture in any sterilization or fumigation process.

~~((d))~~ (c) **TOXIC AIR CONTAMINANT (TAC)** means any air contaminant listed in WAC 173-460-150 ~~((Appendix A of this Regulation III))~~.

## AMENDATORY SECTION

### **REGULATION III SECTION 1.11 REPORTING REQUIREMENTS**

(a) This section applies to all sources of toxic air contaminants that are subject to Article 5 or Article 7 of Regulation I.

(b) In addition to the reporting requirements of Article 5 or Article 7 of Regulation I, the owner or operator of an air contaminant source shall make reports to the Agency concerning the types and amounts of toxic air contaminants emitted and other relevant information needed to calculate such emissions.

(c) The owner or operator of an air contaminant source shall, upon request of the Agency, provide such existing or reasonably available information as necessary to assist the Agency to determine if the emissions of toxic air contaminants from the source may result in the exceedance of an ASIL contained in WAC 173-460-150 ~~((Appendix A of this Regulation III))~~.

## AMENDATORY SECTION

### **REGULATION III SECTION 2.05 SOURCES OF TOXIC AIR CONTAMINANTS**

(a) This section applies to all sources of toxic air contaminants that are subject to Article 5 or Article 7 of Regulation I, unless covered by specific rules referenced in Section 2.01 above.

(b) The Control Officer shall have the authority to conduct a screening evaluation of any source in accordance with Section 2.07 of this Regulation to determine if the toxic air contaminant emissions from the source would result in the exceedance of an ASIL contained in WAC 173-460-150 ~~((Appendix A of this Regulation III))~~. The owner or operator of the source shall be informed of the results of any such screening evaluation.

(c) If, as a result of the screening evaluation conducted under (b) above, the Control Officer determines that the toxic air contaminant emissions from a source may result in the exceedance of an ASIL contained in WAC 173-460-150 ~~((Appendix A of this Regulation III))~~, the Control Officer may issue an order requiring the owner or operator of the source to perform an analysis in accordance with Section 2.07 of this Regulation and may establish a schedule for submission of the analysis.

(d) It shall be unlawful for any person required to perform an analysis under (c) above, to cause or allow the continued operation of the source after the submission date



established by the Control Officer, unless one of the following conditions is met:

(1) A dispersion modeling analysis demonstrates to the Control Officer that the toxic air contaminant emissions from the source will not result in the exceedance of any ASIL contained in WAC 173-460-150 (~~Appendix A of this Regulation H~~); or

(2) A dispersion modeling analysis demonstrates to the Control Officer that the toxic air contaminant emissions from the source will not result in the exceedance of any ASIL contained in WAC 173-460-150 (~~Appendix A of this Regulation H~~) after the installation of the Best Available Control Technology (BACT) and a compliance schedule for employing BACT is approved by the Control Officer; or

(3) BACT is employed on the source or a compliance schedule for employing BACT is approved by the Control Officer, and a risk analysis demonstrates to the Control Officer that the toxic air contaminant emissions from the source will not cause air pollution as defined in Section 1.07 of Regulation I.

## AMENDATORY SECTION

### **REGULATION III SECTION 2.07 EVALUATING THE IMPACTS OF TOXIC AIR CONTAMINANTS**

(a) Applicability. This section describes the procedures that shall be used for quantifying emissions and analyzing impacts of toxic air contaminants in order to meet the requirements for new or modified toxic air contaminant sources (see Article 6 of Regulation I) and for existing toxic air contaminant sources (see Section 2.05 of this regulation). Terms and procedures not specifically defined in this section will be identical to those in chapter 173-460 WAC, as adopted in Section 6.01(a) of Regulation I.

(b) Quantifying Emissions of Toxic Air Contaminants.

(1) The owner or operator of a new or modified toxic air contaminant source subject to Article 6 of Regulation I shall quantify toxic air contaminant emissions that may be discharged to the atmosphere after applying the required control technology, and shall submit this information as part of a Notice of Construction and Application for Approval.

(2) The owner or operator of an existing toxic air contaminant source subject to Section 2.05 of this regulation shall, upon request by the Agency, quantify toxic air contaminant emissions emitted by the facility and submit that information within 30 days.

(3) ~~(The following assumptions shall be made when quantifying toxic air contaminant emissions:)~~ When quantifying toxic air contaminant emissions, the owner or operator shall assume that each

~~((A) Each))~~ toxic air contaminant is introduced into the atmosphere in an unaltered form continuously, at the maximum concentration known to exist at the source unless there is reliable data to the contrary or there is a physical or legal restriction.

~~((B) Dioxin and furan emissions shall be combined as one toxic air contaminant, equivalent in potency to 2,3,7,8-tetrachlorodi-benzo-p-dioxin.~~

~~((C) Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno~~

~~(1,2,3-cd)pyrene, and benzo(a)pyrene shall be combined as one toxic air contaminant, equivalent in potency to benzo(a)pyrene.))~~

(c) Analyzing Impacts of Toxic Air Contaminants. The air quality impact analysis for toxic air contaminant sources shall be performed using one of the following procedures:

(1) First Tier Analysis. Emissions of each toxic air contaminant discharged to the atmosphere shall be shown to be below the corresponding SQER listed in WAC 173-460-150:  
or

(2) First Tier Analysis. The EPA guideline dispersion model, TSCREEN, shall be used to demonstrate that the predicted concentration of each contaminant is below the corresponding ~~((Acceptable Source Impact Level listed in Appendix A of this regulation))~~ ASIL listed in WAC 173-460-150. Stack parameters shall be submitted with the notice of construction application, or, for existing sources, within 30 days after the Agency requests the information. The maximum 1-hour concentration calculated by the model shall be converted with a persistence factor of 0.4 to a 24-hour average concentration or 0.08 to an annual average concentration; or

~~((2))~~ (3) First Tier Analysis. The owner or operator shall submit a more comprehensive evaluation including the use of other EPA guideline models and more accurate emission estimation techniques to demonstrate that the predicted concentration of each contaminant is below the corresponding ~~((Acceptable Source Impact Level listed in Appendix A of this regulation))~~ ASIL listed in WAC 173-460-150 in all areas where the general public has access; or

~~((3) If predicted ambient concentrations are not below the Acceptable Source Impact Levels listed in Appendix A of this regulation, the owner or operator shall submit a risk analysis following the procedures in WAC 173-460-090(4), which demonstrates that emissions from the source will not cause air pollution. New or modified sources shall also comply with supplemental requirements of the Department of Ecology as specified in WAC 173-460-090 and 173-460-100.))~~

(4) Second and Third Tier Analyses. If predicted ambient concentrations from the first tier analysis are not below the ASILs listed in WAC 173-460-150, in order to gain approval for the new or modified source, the owner or operator shall submit a second tier or a third tier petition to the Department of Ecology and must gain Ecology's recommendation of approval for either the second or third tier petition. Second tier petitions shall follow the procedures in WAC 173-460-090. Third tier petitions shall follow the procedures in WAC 173-460-100.

## **REPEALER**

### **REGULATION III, APPENDIX A: ACCEPTABLE SOURCE IMPACT LEVELS**

**WSR 09-17-130**  
**PROPOSED RULES**  
**DEPARTMENT OF**  
**GENERAL ADMINISTRATION**  
 [Filed August 19, 2009, 10:17 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-14-103.

Title of Rule and Other Identifying Information: New chapter 236-17 WAC, Use of public areas of the capitol campus. This rule will establish how the department of general administration (GA) will consider appropriate time, place and manner criteria in evaluating and approving requests for use of the public areas of the capitol buildings and grounds.

Hearing Location(s): Auditorium, 1st Floor, General Administration Building, 210 11th Avenue, Olympia, WA, on September 22, 2009, at 4:00 p.m.

Date of Intended Adoption: October 21, 2009.

Submit Written Comments to: Jack Zeigler, P.O. Box 41000, Olympia, WA 98504-1000, e-mail jack.zeigler@ga.wa.gov, by September 22, 2009.

Assistance for Persons with Disabilities: Contact Ken Skillen by September 15, 2009, kskille@ga.wa.gov or (360) 902-7481.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The purpose of this rule is to establish how GA will consider reasonable time, place and manner criteria in evaluating and approving requests for use of the public areas of the capitol buildings and grounds.

Proposed changes to existing chapter 236-17 WAC, State capitol grounds traffic and parking regulations. Amending WAC 236-12-430 Demonstrations, parades—Obstructing traffic, state business—Prohibiting and 236-12-440 Permits for demonstrations, parades, processions.

Reasons Supporting Proposal: These rules will provide clarity on how GA will consider reasonable time, place and manner criteria in evaluating and approving requests for use of the public areas of the capitol buildings and grounds while balancing the conduct of government business and the stewardship of the historic capitol buildings and grounds.

Statutory Authority for Adoption: RCW 43.19.125 and 46.08.150.

Statute Being Implemented: RCW 43.19.125 and 46.08.150.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of general administration, governmental.

Name of Agency Personnel Responsible for Drafting: Martin Casey, GA, 210 11th Avenue S.W., P.O. Box 41000, Olympia, WA 98501, (360) 902-7225; Implementation: Pattie Williams, GA, 416 Sid Snyder Avenue, Legislative Building, Room 111, P.O. Box 41034, Olympia, WA 98504-1034, (360) 902-8885; and Enforcement: Chief John Batiste, Washington State Patrol, 210 11th Avenue S.W., P.O. Box 42600, Olympia, WA 98504-2600, (360) 596-4101.

No small business economic impact statement has been prepared under chapter 19.85 RCW. There is no disproportionate cost to small business.

A cost-benefit analysis is not required under RCW 34.05.328. There is no more than minimal cost to business.

August 19, 2009  
 Linda Villegas Bremer  
 Director

## Chapter 236-17 WAC

### USE OF THE PUBLIC AREAS OF THE CAPITOL BUILDINGS AND GROUNDS

#### GENERAL PROVISIONS

##### NEW SECTION

**WAC 236-17-010 Purpose.** The purpose of these rules is to provide guidance regarding the use of the public areas of the capitol buildings and grounds by the public for free speech and assembly activities, for commercial activities, and for private activities. General administration's objective is to balance the conduct of government business with public access and expression and the stewardship of the historic capitol buildings and grounds. These rules are not applicable to the conduct of government.

##### NEW SECTION

**WAC 236-17-020 Nondiscrimination.** General administration shall not discriminate in the application of these rules on the basis of race, religion or creed, color, national origin, age, disability, the use of a service animal, marital status, veteran's status, sexual orientation or gender identity, or political viewpoint.

##### NEW SECTION

**WAC 236-17-030 Definitions.** For purposes of these rules, these words or phrases have the following meaning:

(1) "Activity" means one or more people gathering for a common purpose or cause.

(2) "Applicant," "I," "you" or "your" refers to any person(s) or organization(s) seeking permission to use the public areas of the capitol buildings and grounds.

(3) "Capitol buildings and grounds" means those buildings and grounds over which the department of general administration exercises custody and control under RCW 43.19.125.

(a) "Buildings" means enclosed buildings and adjoining structures.

(b) "Grounds" means exterior spaces including, but not limited to, walkways, plazas, lawns, plantings and parks.

The capitol buildings and grounds include such locations as the capitol campus, Heritage Park, Marathon Park, Centennial Park, Sylvester Park, the Old Capitol Building, the surface and shores of Capitol Lake, and Deschutes Parkway.

(4) "Commercial activity" means an activity that promotes, creates, or exchanges commercial products or services. Commercial activities may include, but are not limited to, advertising, fund-raising, buying or selling any product or service, encouraging paid membership in any group, associa-

tion or organization, or the marketing of commercial activities. Commercial activities do not include such activities by or for government entities.

(5) "Director" means the director of the department of general administration.

(6) "Exhibit" or "display" means an object or collection of objects presented publicly with the intention to communicate facts, a particular impression, a viewpoint or an opinion. Exhibits or displays may include, but are not limited to, paintings, sculpture, ceramics, photographs, video or computer screens, informational booths and tables, or other similar objects and arrangements.

(7) "Free speech and assembly activity" means an activity for the purpose of communicating information or ideas to others that are intended to or likely to draw the attention, attendance, or participation of others. Free speech and assembly activities may include, but are not limited to, assemblies, marches, rallies, performances, community events, press conferences, demonstrations, celebrations, ceremonies, speeches and other similar expressive activities.

(8) "General administration," "department," "us," or "we" refers to the department of general administration.

(9) "Permit" means a written permit issued by the department of general administration authorizing the use of public areas of the capitol buildings and grounds when required by these rules.

(10) "Private activity" means an activity sponsored by a private individual, business or organization that is not open to the general public. Private activities may include, but are not limited to, banquets, receptions, award ceremonies, weddings, concerts, dances, and seminars.

(11) "Public area" means those areas of the capitol buildings and grounds that are generally open to the public, such as a building's primary public entrance lobby, rotundas and adjoining public mezzanines, and exterior plazas and lawns. Public areas do not include offices, meeting rooms, and other work areas that are ordinarily reserved for or primarily devoted to conducting the business and operations of state government, the governor's mansion, and any area which is identified by a sign pursuant to WAC 236-12-450 indicating that the area is not open to the public.

(12) "Service animal" means an animal, including guide dogs, trained to do work or perform tasks for the benefit of a person with a disability, as defined by applicable state and/or federal laws.

## PERMIT APPLICATION REQUIREMENTS

### NEW SECTION

**WAC 236-17-100 Do I need to apply for a permit?** You do not need a permit for free speech and assembly activities involving less than twenty-five people. However, a permit enables you to reserve access to specific locations and amenities for specific times.

A permit is required for free speech and assembly activities that are reasonably expected to involve twenty-five or more people and for all private or commercial activities so that we can schedule and manage the many activities and visitors that come to the capitol buildings and grounds each

year. This process is essential to balancing the conduct of government business with public access and expression and the stewardship of the historic capitol buildings and grounds.

### NEW SECTION

**WAC 236-17-110 When do I have to apply?** You must give us a completed application at least two working days prior to the date that you wish to reserve if your activity requires a permit. You may not submit an application more than one hundred twenty working days in advance of the date that you wish to reserve. Where circumstances establish good cause, the director may waive these time requirements.

### NEW SECTION

**WAC 236-17-120 What information do I have to provide?** (1) On your application, you must provide the following information:

(a) Your name and street address or e-mail address or telephone number.

(b) Your desired date, time, duration, and location for your activity.

(c) A description of the nature and type of activity.

(d) An estimate of the number of people who will attend your activity.

(e) A description of any equipment or gear to be used for your activity.

(2) We may also require additional information, including but not limited to:

(a) Any special consideration or accommodations being requested; and

(b) Any services provided by general administration that you will need and for which there are fees. These may include, but are not limited to, custodial services, sound or electrical equipment set-up or tear-down, or temporary amenities such as speaker stands, tents, platforms, stages, or chairs.

### NEW SECTION

**WAC 236-17-130 How long will it take to make a decision on my application?** We shall issue you a permit or deny your application as promptly as reasonably possible, and in all cases within two working days of receiving your completed application form. We shall state the reasons for any denial to you in writing.

### NEW SECTION

**WAC 236-17-140 How will general administration make a decision on my application?** First priority for the use of capitol buildings and grounds is for state government needs. If there would be no conflict with state government needs, we will process permit applications for other uses on a first-come, first-served basis.

We shall also consider whether your requested activity complies with our general use requirements (WAC 236-17-200 through 236-17-280) and any other applicable requirements set forth in this chapter.

NEW SECTION

**WAC 236-17-150 How can I appeal a denial of my application?** To appeal a denial of your application, you must submit your appeal in writing to the director of general administration within five working days of the denial. Your appeal must state why you think the application was improperly denied.

The director shall issue a decision on the appeal in writing within three working days of receiving it, and this will be the final decision of the department of general administration.

**GENERAL USE REQUIREMENTS**NEW SECTION

**WAC 236-17-200 General use requirements.** The following general use requirements apply to all activities in the public areas of the capitol buildings and grounds, including free speech and assembly activities and private or commercial activities, regardless of whether a permit is required under WAC 236-17-100. These requirements are not applicable to government activities. These requirements are intended to facilitate use of the public areas of the capitol buildings and grounds while protecting the normal conduct of state operations, the safety of people and property, and the condition and appearance of the capitol buildings and grounds.

All activities in the public areas of the capitol buildings and grounds shall comply with all applicable laws, rules and regulations.

NEW SECTION

**WAC 236-17-210 General administration may set reasonable time, place, and manner limits on activities.** We may establish reasonable time, place, and manner restrictions for use of the public areas of the capitol buildings and grounds, according to design, health, safety, operational or other such considerations. We may make further details about such reasonable time, place, and manner restrictions available for public inspection during normal business hours or post them where appropriate. These may include, but are not limited to:

- (1) Time and duration available for use;
- (2) The maximum number of people or vehicles allowed at any particular location for any given time or period; and
- (3) Locations available for use.

We shall not permit an activity where it would conflict with the date, time, or location of a previously permitted activity and where multiple activities cannot be reasonably accommodated at the same time. We may recommend to you other options for dates, times, or locations if your request would conflict with a previously permitted activity.

No exhibits or displays may be placed in or posted or affixed to any capitol building.

Banners or signs may be used during an activity in a capitol building only if they are handheld and not affixed to sticks or poles.

Banners, signs, exhibits or displays may be placed or posted on the capitol grounds. Such items must be removed

at the end of the activity. Such items must also clearly identify the sponsor and contain a disclaimer stating that they are not owned, maintained, promoted, or supported by or associated with the state. The state assumes no liability for loss or damage to such items.

NEW SECTION

**WAC 236-17-220 Activities may not disrupt the conduct of government business.** No activity may disrupt, conflict with, or interfere with the normal conduct of any state business, meeting, or proceeding.

NEW SECTION

**WAC 236-17-230 Activities may not obstruct safe access for people or vehicles.** No activity may obstruct entrances, exits, staircases, doorways, hallways, or the safe and efficient flow of people or vehicles.

NEW SECTION

**WAC 236-17-240 Activities may not create a hazard to people or damage to property.** We shall not permit activities in any location where they would present a hazard to people or property.

You may not alter or cause damage to capitol buildings or grounds.

NEW SECTION

**WAC 236-17-250 Service animals are allowed.** You may have service animals in the public areas of the capitol buildings and grounds. All other pets or domestic animals are prohibited in the public areas of capitol buildings, except as part of the conduct of state government business.

You may have pets or domestic animals in the public areas of the capitol grounds; however, you must keep them under your direct physical control and clean up after them at all times. The director may designate off-leash areas in the public areas of the capitol grounds, and any such areas will be clearly posted.

You may not allow your pet or domestic animal to menace or injure other people or animals.

NEW SECTION

**WAC 236-17-260 Permits are not transferable.** You may not transfer your permit to another person or organization. Activities may only be held in the area and during the time period designated by the permit.

NEW SECTION

**WAC 236-17-270 General administration may cancel a permit.** We may cancel your permit at any time if your activity does not comply with any applicable laws and rules or the terms of the permit. If your permit is canceled and you persist in your activity, appropriate law enforcement action may be taken.

NEW SECTION

**WAC 236-17-280 General administration may limit use at any time due to unforeseen operational circumstances.** We reserve the right to cancel a permit or limit use of the public areas of the capitol buildings and grounds at any time due to unforeseen operational circumstances, including, but not limited to, urgent security concerns, emergency repairs, or other state government needs. We will make reasonable efforts to alleviate the effects of such circumstances on permitted activities.

**FREE SPEECH AND ASSEMBLY ACTIVITIES**NEW SECTION

**WAC 236-17-300 People are welcome to exercise their rights to free speech and assembly.** People are welcome to exercise their rights to free speech and assembly at the capitol buildings and grounds. In addition to our general use requirements described above, the following requirements are intended to facilitate use of the public areas of the capitol buildings and grounds, regardless of whether a permit is required under WAC 236-17-100, while protecting the normal conduct of state operations, the safety of people and property, and the condition and appearance of the capitol buildings and grounds.

NEW SECTION

**WAC 236-17-310 There is no fee for free speech and assembly activity permits.** There is no fee for a permit for free speech and assembly activities. However, you may be responsible for paying for any services provided by general administration that you will need (such as for equipment set-up or custodial services). In order to effectively manage our services, you must submit your request for our services at least five working days prior to your activity.

NEW SECTION

**WAC 236-17-320 General administration may set reasonable time, place, and manner limits on free speech and assembly activities.** We may set reasonable time, place, and manner limits on free speech and assembly activities in the public areas of the capitol buildings and grounds, according to design, health, safety, operational or other such considerations. These may include, but are not limited to, limits designated by the director under WAC 236-17-210.

Free speech and assembly activities may not exceed fourteen consecutive calendar days in duration. We may set further limits on duration in order to accommodate and manage the many activities and visitors that come to the capitol buildings and grounds.

**PRIVATE AND COMMERCIAL ACTIVITIES**NEW SECTION

**WAC 236-17-400 Private and commercial activities may be permitted if consistent with state government**

**needs.** In addition to the general use requirements described above, these requirements are intended to accommodate private and commercial use of the public areas of the capitol buildings and grounds to the extent such use is consistent with state government needs and while protecting the normal conduct of state operations, the safety of people and property, and the condition and appearance of the capitol buildings and grounds.

NEW SECTION

**WAC 236-17-410 Private and commercial activities may be charged applicable fees.** General administration shall establish a fee schedule for permits for private and commercial activities and make the fee schedule available for public inspection. You are also responsible for paying for any services provided by general administration that you will need (such as for equipment set-up or custodial services). In order to effectively manage our services, you must submit your request for our services at least five working days prior to your activity.

NEW SECTION

**WAC 236-17-420 General administration may set reasonable time, place, and manner limits on private and commercial activities.** We may set reasonable time, place, and manner limits on private and commercial activities in the public areas of the capitol buildings and grounds, according to design, health, safety, operational or other such considerations. These may include, but are not limited to, limits designated by the director under WAC 236-17-210.

Private and commercial activities may not exceed fourteen consecutive calendar days in duration. Where circumstances establish good cause, the director may waive this time requirement.

Private or commercial sales, solicitation, or fund-raising activities are not permitted in the public areas of capitol campus buildings.

We may designate locations in less formal public areas of the capitol grounds such as Heritage Park, Sylvester Park, or Marathon Park for commercial vendor sales and for fund-raising activities by not-for-profit organizations as part of a permitted public community event such as Capital Lakefair, Music in the Park, or the Capital City Marathon.

NEW SECTION

**WAC 236-17-430 General administration may require additional conditions for private and commercial activities.** We may require additional conditions for private and commercial activities through written contract or agreement, including, but not limited to:

- (1) Liability insurance covering the applicant and the activity;
- (2) Hold harmless and indemnification provisions; and
- (3) Information on your ability to finance, plan, and manage the activity in order to protect the normal conduct of state operations, the safety of people and property, and the condition and appearance of the capitol buildings and grounds.

AMENDATORY SECTION (Amending Order 81-1, filed 5/7/81)

**WAC 236-12-430 Demonstrations, parades—Obstructing traffic, state business—Prohibiting.** No person ~~((+))~~ singly, or in combination with others, shall engage in demonstrations ~~((+))~~, parades, or other similar activities in such a manner as to disrupt the orderly flow of pedestrian or vehicular traffic on the state capitol grounds or the conduct of state business by state employees on the state capitol grounds or in any buildings on the state capitol grounds.

AMENDATORY SECTION (Amending Order 79-01, filed 4/11/79)

**WAC 236-12-440 Permits for demonstrations, parades, processions.** ~~((Any))~~ In order not to disrupt the orderly flow of pedestrian or vehicular traffic on the state capitol grounds, a person or group of persons desiring to conduct a demonstration, parade ~~((+))~~ or procession of twenty-five or more people on the state capitol grounds shall apply to the ~~((director))~~ department for ~~((written approval))~~ a permit using the process outlined in chapter 236-17 WAC. ~~((Application must be made, in writing, at least four days, excluding Saturdays, Sundays and holidays, prior to the time the demonstration, parade, or procession is to take place.))~~

### WSR 09-17-131

#### PROPOSED RULES

#### DEPARTMENT OF HEALTH

[Filed August 19, 2009, 10:35 a.m.]

#### Original Notice.

Exempt from preproposal statement of inquiry under RCW 34.05.310(4).

Title of Rule and Other Identifying Information: Chapter 246-205 WAC, Decontamination of illegal drug manufacturing or storage sites—Certification procedures and fees.

Hearing Location(s): Department of Health, Town Center 1, Room 163, 101 Israel Road S.E., Tumwater, WA 98501, on September 23, 2009, at 1:30 p.m.

Date of Intended Adoption: September 23, 2009.

Submit Written Comments to: Mark Soltman, Department of Health, Office of Environmental Health and Safety, P.O. Box 7825, Olympia, WA 98504, web site <http://www3.doh.wa.gov/policyreview/>, fax (360) 236-2261, by September 16, 2009.

Assistance for Persons with Disabilities: Contact Ted Dale by September 16, 2009, TTY (800) 833-6388 or 711.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposal clarifies renewal procedures for certified clandestine drug lab (CDL) workers, supervisors, contractors, and trainers and reduces certificate renewal fees. The proposal establishes a single certificate expiration date for CDL certificates and will simplify the renewal application process. The proposal also reduces the renewal fees for certificate holders.

Reasons Supporting Proposal: The CDL program has been dramatically impacted by budget reductions in the

2009-2011 biennia resulting in elimination of staff dedicated to operating the technical assistance and practitioner certification components of the program. In response to the budget limitations, the program proposes to reduce program activities and simplify certification renewal processes. These program reductions result in lower program costs and in turn allow for lower certification fees.

Statutory Authority for Adoption: RCW 64.44.070, 64.44.060, and 43.70.250.

Statute Being Implemented: RCW 64.44.070, 64.44.060, and 43.70.250.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of health, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Mark Soltman, 243 Israel Road S.E., Tumwater, WA 98501, (360) 236-3366.

No small business economic impact statement has been prepared under chapter 19.85 RCW. Under RCW 19.85.025 and 34.05.310 (4)(f), a small business economic impact statement is not required for proposed rules that set or adjust fees or rates pursuant to legislative standards.

A cost-benefit analysis is not required under RCW 34.05.328. RCW 34.05.328 (5)(b)(vi) exempts rules that set or adjust fees or rates pursuant to legislative standards.

August 19, 2009

Mary C. Selecky

Secretary

AMENDATORY SECTION (Amending WSR 03-02-022, filed 12/23/02, effective 1/23/03)

#### **WAC 246-205-021 Training provider certification.**

(1) Persons wanting to become an illegal drug lab decontamination training provider must obtain department approval of instructors and courses. The types of drug lab decontamination courses that may be approved by the department are:

- (a) Basic worker;
- (b) Basic supervisor; and
- (c) Refresher worker and supervisor.

(2) To be certified as a training provider for the refresher training course, applicants must be certified as a training provider for the basic worker and basic supervisor courses.

(3) To obtain approval of instructors, the applicant must demonstrate that the person has the breadth of knowledge and experience necessary to properly train workers and supervisors.

~~((3))~~ (4) To obtain approval of course work, the applicant must demonstrate the:

- (a) Adequacy and accuracy of content; and
- (b) Adequacy of training techniques.

~~((4))~~ (5) Applicants for training provider certification shall:

(a) Submit a completed training provider application as specified under subsection ~~((5))~~ (6) of this section;

(b) Submit the required fee as specified under WAC 246-205-990; and

(c) Ensure the department receives the application sixty or more days before the requested approval date.

~~((5))~~ (6) A training provider application includes, but is not limited to:

- (a) A completed training provider application form provided by the department;
- (b) A list of all personnel involved in course presentation and a description of their qualifications;
- (c) A detailed description of course content and the amount of time allotted to each major topic;
- (d) A description of teaching methods;
- (e) A list of questions for development of an examination; and
- (f) Copies of all materials proposed for use, when requested from the department.

~~((6))~~ (7) Training provider certification is valid for two years from the date of issuance. All training provider certificates issued after December 1, 2009, will expire on the same day: November 30, 2011, and on November 30th in every odd-numbered year thereafter. Certification fees will be prorated by the month for applications submitted during the two-year period.

~~((7))~~ (8) Training provider certification may be terminated if the training provider fails to:

- (a) Maintain the course content and quality as approved by the department; and
- (b) Make changes to a course as required by the department.

AMENDATORY SECTION (Amending WSR 03-02-022, filed 12/23/02, effective 1/23/03)

**WAC 246-205-061 Training provider certification renewal.** (1) Training provider certificate renewal is valid for two years from the date of issuance. All training provider certificates issued after December 1, 2009, will expire on the same day: November 30, 2011, and on November 30th in every odd-numbered year thereafter. Certification fees will be prorated by the month for applications submitted during the two-year period.

(2) Training providers seeking renewal certification shall submit the following to the department thirty or more days before expiration of the current certificate:

~~((1))~~ (a) A completed training provider application as described in WAC 246-205-021(5); and

~~((2))~~ (b) A fee as prescribed in WAC 246-205-990.

(3) If a training provider fails to renew his or her certificate before it expires, the department shall notify the trainer that the certificate is temporarily valid for sixty days beginning on the expiration date of the trainer's certificate.

(4) If a training provider renews his or her certificate during the sixty-day period, he or she shall pay the full two-year certificate renewal fee.

(5) If the training provider fails to renew the certificate within the sixty-day period, the certificate is invalid. The department shall notify the trainer in writing of an invalid certificate.

(6) A training provider who fails to renew his or her certificate while it is valid may reapply for certification, but must meet the requirements for a new applicant established in WAC 246-205-021.

AMENDATORY SECTION (Amending WSR 03-02-022, filed 12/23/02, effective 1/23/03)

**WAC 246-205-071 Worker and supervisor certification.** (1) Applicants seeking certification as a decontamination worker shall ensure the department receives the following within ~~((sixty))~~ ninety days of completing the basic worker course:

- (a) A completed decontamination worker application;
- (b) A fee as prescribed in WAC 246-205-990;
- (c) Evidence of satisfying the requirements of WAC 296-62-30410;
- (d) Evidence of successful completion of a department sponsored or approved basic decontamination worker course; and
- (e) Evidence of passing the basic decontamination worker examination administered by the department with a score of seventy percent or higher.

(2) Applicants seeking certification as a decontamination supervisor shall ensure the department receives the following within ~~((sixty))~~ ninety days of completing the basic supervisor course:

- (a) A completed decontamination supervisor application;
- (b) A fee as prescribed in WAC 246-205-990;
- (c) Evidence of a valid Washington state decontamination worker certificate;
- (d) Evidence of forty or more hours of on-site experience in hazardous material or illegal drug manufacturing or storage site decontamination projects;
- (e) Evidence of satisfying the requirements of WAC 296-62-30415.

(f) Evidence of successful completion of a department sponsored or approved basic decontamination supervisor course; and

(g) Evidence of passing the basic decontamination supervisor examination administered by the department with a score of seventy percent or higher.

~~(3) ((Applicants for decontamination supervisor certification who can demonstrate that their work experience and training has resulted in experience and training equivalent to the requirements in WAC 246-205-031 and 246-205-071 (1)(c) and (2)(c), (d), and (e) may be certified as a CDL supervisor when they apply prior to May 1, 2003.~~

~~(a) For purposes of this subsection, an application includes:~~

~~(i) A completed decontamination supervisor application form;~~

~~(ii) A fee as prescribed in WAC 246-205-990; and~~

~~(iii) Evidence of meeting the requirements of this subsection.~~

~~(b) All other decontamination supervisor certification requirements of this chapter apply.)~~ If a previously certified worker applies for certification following expiration of the previous certificate, but less than two years after expiration of the previous certificate, the worker shall:

(a) Submit to the department a completed application form for certificate renewal;

(b) Submit to the department a fee prescribed in WAC 246-205-990; and

(c) Retake the entire basic worker course.

(4) Worker and supervisor certificates are valid for two years from the date of issuance. All worker and supervisor certificates issued after December 1, 2009, will expire on the same day: November 30, 2011, and on November 30th in every odd-numbered year thereafter. Certification fees will be prorated by the month for applications submitted during the two-year period.

(5) Workers and supervisors shall make certificates available for inspection at all times during an illegal drug manufacturing or storage site decontamination project.

(6) The certificate may be denied, suspended, or revoked as described in WAC 246-205-121 and RCW 64.44.060.

(7) If a previously certified supervisor applies for certification following expiration of the previous certificate, but less than two years after expiration of the previous certificate, the supervisor shall:

(a) Submit to the department a completed application form for certificate renewal;

(b) Submit to the department a fee prescribed in WAC 246-205-990; and

(c) Retake the entire basic supervisor course.

AMENDATORY SECTION (Amending WSR 03-02-022, filed 12/23/02, effective 1/23/03)

**WAC 246-205-081 Worker and supervisor certification renewal.** (1) Worker and supervisor (~~(certification)~~) certificate renewal is valid for two years from the date of issuance. All worker and supervisor certificates issued after December 1, 2009, will expire on the same day: November 30, 2011, and on November 30th in every odd-numbered year thereafter. Certification fees will be prorated by the month for applications submitted during the two-year period.

(2) Certified workers and supervisors seeking certificate renewal shall submit to the department thirty or more days before expiration of the current certificate:

(a) A completed application form for certificate renewal;

(b) A fee prescribed in WAC 246-205-990; and

(c) Evidence of successful completion of a department sponsored or approved refresher training course.

(3) If a ~~((previously certified worker applies for certification following expiration of the previous certificate, but less than two years after expiration of the previous certificate, the worker shall:~~

~~(a) Submit to the department a completed application form for certificate renewal;~~

~~(b) Submit to the department a fee prescribed in WAC 246-205-990; and~~

~~(c) Retake the entire basic worker course.~~

~~(4) If a previously certified supervisor applies for certification following expiration of the previous certificate, but less than two years after expiration of the previous certificate, the supervisor shall:~~

~~(a) Submit to the department a completed application form for certificate renewal;~~

~~(b) Submit to the department a fee prescribed in WAC 246-205-990; and~~

~~(c) Retake the entire basic supervisor course.)~~ worker or supervisor fails to renew his or her certificate before it expires, the department shall notify the worker or supervisor

that the certificate is temporarily valid for sixty days beginning on the expiration date of the worker's or supervisor's certificate.

(4) If a worker or supervisor renews his or her certificate during the sixty-day period, he or she shall pay the full two-year certificate renewal fee.

(5) If the worker or supervisor fails to renew the certificate within the sixty-day period, the certificate is invalid. The department shall notify the worker or supervisor in writing of an invalid certificate.

(6) A worker or supervisor who fails to renew his or her certificate while it is valid may reapply for certification, but must meet the requirements for a previously certified worker or supervisor established in WAC 246-205-071.

AMENDATORY SECTION (Amending WSR 06-16-119, filed 8/1/06, effective 9/1/06)

**WAC 246-205-990 Fees.** (1) ~~((The department charges the following fees for issuing and renewing certificates:~~

~~(2) The fees must cover the cost of issuing certificates, filing papers and notices, and administering this chapter. The costs include reproduction, travel, per diem, and administrative and legal support costs.~~

~~(3)) Fees are nonrefundable and must be paid by check or money order made payable to the department.~~

~~((4)) (2) Fees shall be prorated by the month for certificates issued for less than two years.~~

(3) An applicant must pay the following fees based on a two-year certification period when submitting an application:

(a) \$100 for each initial ~~((renewal,))~~ or reciprocal worker certificate application.

(b) \$50 for each renewal worker certificate application.

(c) \$200 for each initial ~~((renewal,))~~ or reciprocal supervisor certificate application.

~~((e) \$1,125 for each initial, renewal, or reciprocal authorized contractor certificate application. The applicant's certificate shall expire annually on the expiration date of the contractor's license issued under chapter 18.27 RCW.)~~

(d) \$150 for each renewal supervisor certificate application.

(e) \$1,000 for each initial application and ~~((750))~~ 500 for each renewal application for training provider certification for the worker drug lab decontamination course.

~~((e))~~ (f) \$1,000 for each initial application and ~~((750))~~ 500 for each renewal application for training provider certification for the supervisor drug lab decontamination course.

~~((f) To be certified as a training provider for the refresher training course, applicants must be certified as a training provider for the worker and supervisor courses.)~~ (g) There is no fee for application as a training provider for the refresher training course.

(4) An applicant must pay \$1,125 for each initial, renewal, or reciprocal authorized contractor certificate application, based on a one-year certification period. The applicant's certificate shall expire annually on the expiration date of the contractor's license issued under chapter 18.27 RCW.



**WSR 09-17-136**  
**PROPOSED RULES**  
**BUILDING CODE COUNCIL**

[Filed August 19, 2009, 11:17 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-05-054.

Title of Rule and Other Identifying Information: Amendment of chapter 51-11 WAC, Washington State Energy Code (WSEC).

Hearing Location(s): Holiday Inn Select Renton, One Grady Way South, Renton, WA, on September 29, 2009, at 10:00 a.m.; and at the Spokane City Council Chambers, West 808 Spokane Falls Boulevard, Spokane, WA, on October 5, 2009, at 9:00 a.m.

Date of Intended Adoption: November 12, 2009.

Submit Written Comments to: Peter DeVries, Council Chair, P.O. Box 42525, Olympia, WA 98504-2525, e-mail sbcc@commerce.wa.gov, fax (360) 586-9383, by October 5, 2009.

Assistance for Persons with Disabilities: Contact Sue Mathers by September 15, 2009, TTY (360) 586-0772 or (360) 725-2966.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposed rules amend the WSEC. The WSEC has been extensively revised and reformatted. The council received a request from Governor Gregoire to increase stringency over the 2006 Energy Code by 30%, in keeping with the recommendations from the climate action team. The council is also working on transitioning to the International Energy Conservation Code (IECC), and some initial reformatting changes have been incorporated to assist in that effort. In addition, the Energy Policy Act and the American Recovery and Reinvestment Act require that states meet minimum standards for energy codes, the IECC for residential buildings and ASHRAE 90.1 for commercial buildings. Modifications were made to the WSEC to bring stringency values up to the most recent edition of these national model codes. The following is a list of the major changes to the WSEC. General changes to update referenced standards, terminology, or providing editorial changes are not noted below.

**Chapter 1:** The scope of the residential portion (Chapters 1-6) of the WSEC is changed to cover only buildings constructed under the International Residential Code (IRC), now referred to as "Single-Family Residential." All other residential construction would need to comply with Chapters 11 through 15 (throughout).

References are added for the new Chapter 9 requirements (Section 101.2).

When existing HVAC equipment is updated, the ducts associated with those systems must be tested (Section 101.3.2.6).

A list of insulation R-values and glazing U-factors and SHGCs is required to be posted near electrical panel (Section 101.5).

**Chapter 2:** Definitions have been added and modified to conform to proposed changes.

**Chapter 3:** Outdoor design temperatures have been added to the code to eliminate the need to go to an additional reference document (Section 302).

The VIAQ is proposed to be integrated into the IRC, so the references are updated to reflect that proposal (Section 303).

**Chapter 4:** Provisions for space cooling and domestic hot water are added to the systems analysis requirements (Section 402).

See also Chapter 9.

**Chapter 5:** References to new Chapter 9 requirements are added (throughout).

Insulation details are updated to reflect best practices (Section 502/1311.2).

Unvented attic provisions went through public hearing last year and were approved by the council in January, but must sit through a legislative session prior to becoming effective (Sections 502.1.6.3/1313.2).

Requirements for air leakage control are added (Section 502.4.5).

Requirements for variable speed motors on air handling equipment are added (Section 503.4.1).

Requirements for controls have been expanded and revised (Section 503.8).

Duct leakage testing protocols have been modified (Section 503.10.2).

Water heaters must meet minimum efficiency requirements (Sections 504.2.1, 1440).

Swimming pool and spa provisions have been revised (Section 504.5).

Half of installed luminaires are required to have high efficacy lamps (Section 505.1).

Table 5-1 has been revised. Some requirements are more stringent, and the format is closer to that found in the IECC.

Tables 5-12/14-6 have been updated for consistency with national standards.

**Chapter 6:** Both climate zones share the same prescriptive table. References to Table 6-2 have been removed. Table 6-1 has been reduced to three paths.

See also Chapter 9.

**Chapter 7:** Reference standards have been updated. Two additional standards have been added for duct testing and commissioning.

**Chapter 8:** Systems analysis software listing has been updated.

**Chapter 9:** New Chapter 9 requires that single-family residences achieve additional energy savings through compliance with one or more of the listed options.

**Chapter 10:** Default tables have been expanded and updated for ease of use. Some values have been changed for consistency with national standards. The small business window default table was updated to provide paths for compliance with the proposed code. Duct sealing, testing required for both residential and nonresidential systems.

**Chapter 11:** All residential construction other than single-family and townhouses would need to comply with Chapters 11 through 15, along with all nonresidential construction.

Controls are required to integrate economizer operation on replaced space cooling equipment (1132.2).

The threshold for lighting alterations to comply with Chapter 15 has been lowered to 20% (Section 1132.3).

A threshold trigger has been added for building commissioning (Section 1135).

**Chapter 12:** A new chapter has been added to require specific building meters for certain building types.

**Chapter 13:** New requirements for cold and refrigerated storage have been added (Sections 1310, 1416, 1437, 1460-1465).

Requirements and testing for air leakage control and air barriers are added, including a requirement for vestibules (Section 1314).

Clarification added that area-weighted averaging of R-values is not allowed (Section 1322).

Requirement for low-e coating added for glazing assemblies (Section 1323).

New allowance for projection factor for window shading, allowing a reduced SHGC (Section 1323.3).

New restriction in use of Seattle EnvStd for showing compliance (Section 1331).

Tables 13-1 and 13-2 have been reformatted to look more like those found in the IECC and to incorporate Group R requirements. Stringency is also increased for some components. Glazing area reduced to 40% of wall area.

**Chapter 14:** New requirement for documentation of mechanical equipment efficiency ratings have been added (Section 1411).

New limitations placed on air-cooled chillers (Section 1411).

Method provided for rating nonstandard water-chilled systems (Section 141.2.1).

New requirements added for heating unenclosed spaces (Section 1411.5).

New lighting and HVAC control requirements added for hotel/motel guest rooms (Sections 1412.4, 1513.7).

New requirements for motorized dampers, damper controls (Section 1412.4.1).

Proposed lower threshold for optimum start controls, DCV systems (Section 1412.4.2, 1412.8).

New requirements for parking garage ventilation controls (Section 1412.9).

New requirements for duct testing proposed (Section 1414).

Requirements for building commissioning have been rewritten, and a new checklist provided (Section 1416).

Modification of qualifications for simple systems (Section 1421).

Modifications to economizer requirements, exceptions (Sections 1413, 1423, 1433).

New requirements for system sizing (Section 1421.1 and 1431.1).

New requirements for temperature reset controls (Section 1432.2).

New requirements for hydronic systems to reduce pump energy (Sections 1432.3, 1432.4).

Modifications to complex system controls (Sections 1432.5, 1435).

Expansion of requirements for heat recovery (Sections 1436, 1445, 1455).

Revised flow systems and extend variable speed drive requirements to motors 5 hp and above (Section 1438).

Revised requirements for exhaust systems (Section 1439).

Requirement for individual hot water meters in multi-family residential buildings (Section 1446).

Equipment efficiency tables updated (Tables 14-1A-G).

Revised tables for electric motor efficiency (Tables 14-4A, 14-4B).

**Chapter 15:** The lists of exempt spaces and exempt lighting equipment have been modified (Section 1512).

Daylighting, and the controls for daylight zones, have been modified to include primary and secondary zones (Section 1513.3 and the Definition of Daylight Zone).

New lighting and HVAC control requirements added for hotel/motel guest rooms (Sections 1412.4, 1513.7).

New requirements for controls of egress lighting (Section 1515).

Additional lighting power allowance table added for space-by-space calculations (Table 15-1B).

Lighting power allowance is decreased in most occupancy uses (Table 15-1A).

Table 15-2 revised for consistency with ASHRAE 90.1; divided into four exterior lighting zones (Tables 15-2A and 15-2B).

New section provided for regulation of, and controls for, moving walkways and escalators (Section 1550).

**RS-29:** RS-29 has been replaced with an amended version of ASHRAE 90.1 Appendix G to make it more user-friendly and compatible with the LEED process.

Reasons Supporting Proposal: RCW 19.27A.025 and 19.27A.045.

Statutory Authority for Adoption: RCW 19.27A.025, 19.27A.045.

Statute Being Implemented: Chapters 19.27, 19.27A, and 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: The council is seeking comments on the issues proposed in the rules shown below.

Name of Proponent: Washington state building code council, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Krista Braaksma, P.O. Box 42525, Olympia, WA 98504-2525, (360) 725-2964; and Enforcement: Local jurisdictions.

A small business economic impact statement has been prepared under chapter 19.85 RCW.

#### Small Business Economic Impact Statement

**Purpose:** The purpose of this analysis is to comply with the requirements of chapter 19.85 RCW, Regulatory Fairness Act, to examine whether proposed rules will have a disproportionate impact on small businesses.

**Introduction:** The state building code council is proposing to adopt the 2009 version of the Washington State Energy Code (chapter 51-11 WAC). The following sections were identified by the council's economic and regulatory

assessment committee (ERAC) as having a potential disproportionate cost impact to small business:

- Tables 5-1 and 6-1 Envelope requirements (IRC buildings).
- Section 502.4.5 Air leakage testing (IRC buildings).
- Chapter 9 "Additional requirements" (IRC buildings).
- Table 13, Envelope requirements, commercial buildings (all buildings except IRC buildings).
- Section 1314.7 Air barrier (all buildings except IRC buildings).

A small business is defined as any business that has fifty or fewer employees, RCW 19.85.020.

The IRC is the International Residential Code and covers one and two family dwellings and townhouses.

The council appointed a technical advisory group (TAG) to do a comprehensive review and analysis of proposed changes to the Washington State Energy Code, submitted to the council by March 1, 2009. The TAG held weekly meetings over a four month period. All proposed state amendments were examined. The TAG identified items with more than a minor first cost impact and referred these items to be reviewed by ERAC.

The council members and participants are [a] representative sample of individuals involved in the building construction industry. The participants included: Architects, home builders, building officials, contractors, fire officials, energy professionals, manufacturers, engineers, plumbers, state and local officials, inspectors, industry associations and organizations, companies and business, electricians, and the general public. See directory of TAG and council members.

**Brief Description of Compliance Requirements:**

**Tables 5-1 and 6-1 Envelope requirements, (IRC buildings):** The proposed rule amends the WSEC tables 5-1 and 6-1, building envelope requirements for IRC buildings, to increase energy efficiency by reducing heat loss and heat gain. The proposed rule increases insulation for floors, walls and roofs; decreases U value (thermal transmittance) for fenestration (windows and skylights); decreases U value for doors.

**Reporting and record-keeping requirements:** The proposed rule would not impact the reporting and/or record keeping required to comply. Reporting and record keeping would remain the same as the current rule.

**Associated costs:** Reports submitted to the TAG showed a cost of between \$1 per square foot and \$1.25 per square foot depending on the size of the house.

Associated costs of equipment, supplies, labor, professional services and administrative costs are included in the cost of compliance.

The TAG identified a disproportionate impact on small business window manufacturers to meet proposed vertical fenestration U values (thermal transmittance value). The cost of testing sample production units to meet National Fenestration Rating Council standards would be disproportionate due to the production process. A comparison per one hundred dollars of sales shows a disproportionate cost for small manufacturers to test and label product. Large window manufacturers, due to volume of production, have a cost per unit for testing and labeling disproportionately less compared to

small business window manufacturers; the cost per testing and labeling custom window due to limited production lines has an impact at least ten times greater than large manufacturers and in fact makes production cost prohibitive and compliance with the rule impractical.

**Lost sales or revenue:** The proposal [proposed] rule is intended to decrease operating cost and create a market for energy efficient materials. The TAG identified a potential loss of sales and revenue for small business window manufacturers. Other measures apply equally to large and small business and would not create a disproportionate impact on revenue.

**Section 502.4.5 Air leakage testing (IRC buildings):**

The proposed rule amends air leakage control provisions to require pressure testing the building.

**Reporting and record-keeping requirements:** The proposed rule adds a reporting and/or record-keeping element required to comply. Reporting and record keeping would include documentation of compliance with the rule. Cost of record keeping would apply equally to both large and small businesses.

**Associated costs:** Reports submitted to the TAG showed a cost for an average size home a minor cost of less than 1/4 of 1% of total construction cost to conduct the pressure test.

The TAG identified a possible disproportionate impact on small business window manufacturers to comply with the rule.

Associated costs of equipment, supplies, labor, professional services and administrative costs are included in the cost of compliance.

**Lost sales or revenue:** The proposed rule applies equally to both large and small businesses. The proposal [proposed] rule is intended to increase value and create sales and revenue for HVAC system testing. No disproportionate loss of sales or revenue for small businesses is expected.

**Chapter 9 "Additional requirements" (IRC buildings):**

The proposed rule adds a new chapter to the WSEC for IRC buildings, requiring credits as a method to reduce energy use in residential construction. A set of options for credits provide a selection of building envelope, equipment, or renewable energy improvements.

**Reporting and record-keeping requirements:** The proposed rule adds a reporting and/or record-keeping element required to comply. Reporting and record keeping would include documentation of credit options used to comply with the rule. Cost of record keeping would be minimal.

**Associated costs:** Reports submitted to the TAG showed a cost for an average size home between 1% and 3% of construction cost. The economic analysis submitted with the proposal estimates the home buyer will experience a positive cash flow in the second year of ownership, based on energy savings.

Associated costs of equipment, supplies, labor, professional services and administrative costs are included in the cost of compliance.

**Lost sales or revenue:** The proposed rule applies equally to both large and small businesses. The proposal [proposed] rule is intended to increase value and create a market for high efficiency and renewable energy equipment.

No disproportionate loss of sales or revenue for small businesses is expected.

**Table 13 Envelope requirements, (non-IRC buildings):** The proposed changes to chapter 13 tables of the WSEC, building envelope requirements for non-IRC buildings, are intended to increase energy efficiency by reducing heat loss and heat gain. The proposed rule increases insulation for floors, walls and roofs; decreases U value (thermal transmittance) for fenestration (windows and skylights); decreases U value for doors.

**Reporting and record-keeping requirements:** The proposed rule would not impact the reporting and/or record keeping required to comply. Reporting and record keeping would remain the same as the current rule.

**Associated costs:** Associated costs of equipment, supplies, labor, professional services and administrative costs are included in the cost of compliance.

The TAG determined based on modifications to this item the first cost would be up to 1% of total construction cost.

The TAG identified a disproportionate impact on small business manufacturers to meet proposed vertical fenestration U values (thermal transmittance value). The cost of testing sample production units to meet National Fenestration Rating Council standards would be disproportionate due to the production process. A comparison per one hundred dollars of sales shows a disproportionate cost for small manufacturers to test and label product. Large window manufacturers, due to volume of production, have a cost per unit for testing and labeling disproportionately less compared to small business window manufacturers; the cost per testing and labeling custom window due to limited production lines has an impact at least ten times greater than large manufacturers and in fact makes production cost prohibitive and compliance with the rule impractical.

The Concrete Masonry Association testified that the proposed change to mass wall U value would be a major cost impact to small business suppliers and installers. In a study on a typical large retail occupancy constructed of concrete masonry block, the cost exceeded 1% of construction cost, and the benefit in energy savings did not recover the cost.

**Lost sales or revenue:** The proposed rule applies equally to both large and small businesses. The proposal [proposed] rule is based on nationally recognized standards which are in current practice in this industry. No disproportionate loss of sales or revenue for small businesses is expected.

**Section 1314.7 Continuous Air barrier (non-IRC buildings):** For buildings over five stories, the proposed rule requires the building envelope be designed and constructed with a continuous air barrier to control air leakage into, or out of, the conditioned space.

**Reporting and record-keeping requirements:** The proposed rule adds a reporting and/or record-keeping element required to comply. Reporting and record keeping would include documentation of compliance with the rule. Cost of record keeping would apply equally to both large and small businesses.

**Associated costs:** Reports submitted to the TAG showed a cost of up to 1% of total construction cost to conduct the pressure test.

The TAG identified a possible disproportionate impact on small business window manufacturers to comply with the rule.

Associated costs of equipment, supplies, labor, professional services and administrative costs are included in the cost of compliance.

**Lost sales or revenue:** The proposed rule applies equally to both large and small businesses. The proposal [proposed] rule is intended to increase value and create a market for high efficiency and renewable energy equipment.

**Steps taken to reduce costs:** The council and the affected industries have considered and mitigated costs associated with the proposed rules through negotiated rule making to modify the proposed rules. The council modified substantive regulatory requirements on small businesses. The proposed rule allows an energy efficiency rating by product description to avoid cost and disproportionate economic impact associated with testing and labeling window and door products manufactured by small businesses in Washington state. The proposed rule provides an alternate method for pressure testing when window products manufactured by small business are installed in the building envelope. The council solicited feedback from industry to develop methods to mitigate the costs and provide a method to avoid additional costs of compliance.

**Involvement of small businesses:** The council has included small businesses in the development of the proposed rules.

- Small businesses were included in mailings and electronic notices.
- Small businesses were notified of meetings, agenda topics and proposals.
- Council members, technical group members and staff responded to inquiries from small businesses.
- The technical advisory group convened a special meeting to address small business concerns.

**List of industries required to comply:** A sample of the industries required to comply with the proposed rules are listed below:

| NAICS # | DESCRIPTION                         | NUMBER OF FIRMS |               |
|---------|-------------------------------------|-----------------|---------------|
| 23611   | Residential construction            | Total           | >50 employees |
| 236115  | Single-family housing construction  | 3235            | 47            |
| 236116  | Multifamily housing construction    | 65              | 0             |
| 236118  | Residential Remodel                 | 2879            | 7             |
| 2362    | Nonresidential construction         |                 |               |
| 23621   | Industrial buildings and warehouses | 94              | 8             |

| NAICS # | DESCRIPTION                            | NUMBER OF FIRMS |    |
|---------|--|-----------------|----|
| 23622   | Commercial and Institutional Buildings | 1460            | 45 |
| 238     | Specialty Trades                       |                 |    |
| 238130  | Framing Contractors                    | 2997            | 25 |
| 238140  | Masonry Contractors                    | 607             | 11 |
| 238220  | Plumbing, heating, air-conditioning    | 2122            | 65 |
| 238310  | Drywall and Insulation Contractors     | 1038            | 22 |
| 321     | Manufacturing                          |                 |    |
| 321911  | Wood window and door manufacturing     | 52              | 5  |
| 332321  | Metal window and door manufacturing    | 14              | 3  |
| 327211  | Flat Glass Manufacturing               | 10              | 2  |
| 321918  | Other Millwork                         | 49              | 6  |
| 444190  | Other Building Materials Dealers       | 644             | 36 |
| 327331  | Concrete Block and Brick Manufacturing | 14              | 0  |

The North American Industry Classification System data from 2007 (the most recent) were analyzed to determine the number of small and large businesses in Washington state, and the number of employees per business. Data from department of labor and industries report "Experience factor and firm size by NAICS."

**Job estimates:** The number of jobs created or lost as a result of compliance with the proposed rule is unknown.

The proposed rules would create jobs in some specialty trades such as framing, insulation, window manufacturing, HVAC testing.

**CONCLUSION:** The council recognizes that the proposed rules may impose an economic impact on businesses in the building construction industry. However, the council also realizes its obligation to ensure the health, safety and welfare of the occupants or users of buildings and structures and the general public through the provisions of the building codes throughout the state, as stated in the council's legislative mandate.

The council has negotiated the proposed rules into their current form in an effort to achieve a minimum standard that meets the need of the building construction industry and the citizens of this state.

The council appointed TAGs to do a comprehensive review and analysis of the proposed changes to the WSEC. All proposed state amendments submitted in 2009 were reviewed. The TAG findings were reviewed by ERAC to determine where the proposed rules would impact small businesses. To mitigate the impacts, the proposed rules were modified to eliminate disproportionate cost impact on the effected small businesses.

A copy of the statement may be obtained by contacting Tim Nogler, P.O. Box 42525, Olympia, WA 98504-2525, phone (360) 725-2969, fax (360) 586-9383, e-mail sbcc@commerce.wa.gov.

A cost-benefit analysis is not required under RCW 34.05.328. The state building code council is not listed in this section as one of the agencies required to comply with this statute.

August 1, 2009  
Peter D. DeVries  
Council Chair

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0101 Section 101—Scope and general requirements.**

101.1 Title: Chapters 1 through 10 of this Code shall be known as the "Washington State Single-Family Residential Energy Code" and may be cited as such; and will be referred to herein as "this Code."

101.2 Purpose and Intent: The purpose of this Code is to provide minimum standards for new or altered buildings and structures or portions thereof to achieve efficient use and conservation of energy.

The purpose of this Code is not to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefitted by the terms of this Code.

It is intended that these provisions provide flexibility to permit the use of innovative approaches and techniques to achieve efficient use and conservation of energy. These provisions are structured to permit compliance with the intent of this Code by any one of the following three paths of design:

1. A systems analysis approach for the entire building and its energy-using sub-systems which may utilize renewable energy sources, Chapters 4 and 9.
2. A component performance approach for various building elements and mechanical systems and components, Chapters 5 and 9.
3. A prescriptive requirements approach, Chapters 6 and 9.

Compliance with any one of these approaches meets the intent of this Code. This Code is not intended to abridge any safety or health requirements required under any other applicable codes or ordinances.

The provisions of this Code do not consider the efficiency of various energy forms as they are delivered to the building envelope. A determination of delivered energy efficiencies in conjunction with this Code will provide the most efficient use of available energy in new building construction.

101.3 Scope: This Code sets forth minimum requirements for the design of new buildings and structures that provide facilities or shelter for residential occupancies by regulating their exterior envelopes and the selection of their ~~((HVAC))~~ mechanical systems, ~~((service))~~ domestic water ~~((heating))~~ systems, electrical distribution and illuminating systems, and equipment for efficient use and conservation of energy.

Buildings shall be designed to comply with the requirements of either Chapter 4, 5, or 6 of this Code and the additional energy efficiency requirements included in Chapter 9 of this Code.

~~((For the purposes of this Code:~~

~~Detached one and two family dwellings built under the International Residential Code shall be considered R-3 Occupancies.~~

~~Attached multiple single family dwellings (townhouses) built under the International Residential Code shall be considered R-2 Occupancies.)~~ Spaces within the scope of Section R101.2 of the International Residential Code shall comply with Chapters 1 through 10 of this Code. All other spaces, including other Group R Occupancies, shall comply with Chapters 11 through 20 of this Code. Chapter 2 (Definitions), Chapter 7 (Standards), and Chapter 10 (default heat loss coefficients), are applicable to all building types.

101.3.1 Exempt Buildings: Buildings and structures or portions thereof meeting any of the following criteria shall be exempt from the building envelope requirements of Sections 502 and 602, but shall comply with all other requirements for ~~((building))~~ mechanical systems and ~~((service))~~ domestic water ~~((heating))~~ systems.

101.3.1.1: Buildings and structures or portions thereof whose peak design rate of energy usage is less than three and four tenths (3.4) Btu/h per square foot or one point zero (1.0) watt per square foot of floor area for space conditioning requirements.

101.3.1.2: Buildings and structures or portions thereof which are neither heated according to the definition of heated space in Chapter 2, nor cooled by a nonrenewable energy source, provided that the nonrenewable energy use for space conditioning complies with requirements of Section 101.3.1.1.

101.3.1.3: Greenhouses isolated from any conditioned space and not intended for occupancy.

101.3.1.4: The provisions of this code do not apply to the construction, alteration, or repair of temporary worker housing except as provided by rule adopted under chapter 70.114A RCW or chapter 37, Laws of 1998 (SB 6168). "Temporary worker housing" means a place, area, or piece of

land where sleeping places or housing sites are provided by an employer for his or her employees or by another person, including a temporary worker housing operator, who is providing such accommodations for employees, for temporary, seasonal occupancy, and includes "labor camps" under RCW 70.54.110.

101.3.2 Application to Existing Buildings: Additions, historic buildings, changes of occupancy or use, and alterations or repairs shall comply with the requirements in the subsections below.

EXCEPTION: The building official may approve designs of alterations or repairs which do not fully conform with all of the requirements of this Code where in the opinion of the building official full compliance is physically impossible and/or economically impractical and:

1. The alteration or repair improves the energy efficiency of the building; or
2. The alteration or repair is energy efficient and is necessary for the health, safety, and welfare of the general public.

In no case, shall building envelope requirements or mechanical system requirements be less than those requirements in effect at the time of the initial construction of the building.

101.3.2.1 Additions to Existing Buildings: Additions to existing buildings or structures may be made to such buildings or structures without making the entire building or structure comply, provided that the new additions shall conform to the provisions of this Code.

EXCEPTION: New additions which do not fully comply with the requirements of this Code and which have a floor area which is less than seven hundred fifty square feet shall be approved provided that improvements are made to the existing occupancy to compensate for any deficiencies in the new addition. Compliance shall be demonstrated by either systems analysis or component performance calculations. The nonconforming addition and upgraded, existing occupancy shall have an energy budget or Target UA which is less than or equal to the unimproved existing building (minus any elements which are no longer part of the building envelope once the addition is added), with the addition designed to comply with this Code.

101.3.2.2 Historic Buildings: The building official may modify the specific requirements of this Code for historic buildings and require in lieu thereof alternate requirements which will result in a reasonable degree of energy efficiency. This modification may be allowed for those buildings which have been specifically designated as historically significant by the state or local governing body, or listed in The National Register of Historic Places or which have been determined to be eligible for listing.

101.3.2.3 Change of Occupancy or Use:

Any ~~((Other than Group R Occupancy))~~ space not within the scope of Section 101.3 which is converted to ~~((Group R Occupancy))~~ space that is within the scope of Section 101.3 shall be brought into full compliance with this Code.

101.3.2.4 Alterations and Repairs: All alterations and repairs to buildings or portions thereof originally constructed subject to the requirements of this Code shall conform to the provisions of this Code without exception. For all other exist-

ing buildings, initial tenant alterations shall comply with the new construction requirements of this Code. Other alterations and repairs may be made to existing buildings and moved buildings without making the entire building comply with all of the requirements of this Code for new buildings, provided the ~~((following))~~ requirements of Sections 101.3.2.5 through 101.3.2.8 are met~~((s))~~.

101.3.2.5 Building Envelope: The result of the alterations or repairs both:

1. Improves the energy efficiency of the building, and

2. Complies with the overall average thermal transmittance values of the elements of the exterior building envelope in Table 5-1 of Chapter 5 or the nominal R-values and glazing requirements of the reference case in Table~~((s))~~ 6-1 ~~((and 6-2))~~.

EXCEPTIONS:

1. Untested storm windows may be installed over existing glazing for an assumed U-factor of 0.90, however, where glass and sash are being replaced ~~((in Group R Occupancy))~~, glazing shall comply with the appropriate reference case in Table 6-1 ~~((and 6-2))~~.
2. Where the structural elements of the altered portions of roof/ceiling, wall or floor are not being replaced, these elements shall be deemed to comply with this Code if all existing framing cavities which are exposed during construction are filled to the full depth with batt insulation or insulation having an equivalent nominal R-value ~~((while, for roof/ceilings, maintaining))~~. 2x4 framed walls shall be insulated to a minimum of R-15 and 2x6 framed walls shall be insulated to a minimum of R-21. Roof/ceiling assemblies shall maintain the required space for ventilation. Existing walls and floors without framing cavities need not be insulated. Existing roofs shall be insulated to the requirements of this Code if
  - a. The roof is uninsulated or insulation is removed to the level of the sheathing, or
  - b. All insulation in the roof/ceiling was previously installed exterior to the sheathing or nonexistent.

101.3.2.6 ~~((Building))~~ Mechanical Systems: Those parts of systems which are altered or replaced shall comply with Section 503 of this Code. When a space-conditioning system is altered by the installation or replacement of space-conditioning equipment (including replacement of the air handler, outdoor condensing unit of a split system air conditioner or heat pump, cooling or heating coil, or the furnace heat exchanger), the duct system that is connected to the new or replacement space-conditioning equipment shall be sealed, as confirmed through field verification and diagnostic testing in accordance with procedures for duct sealing of existing duct systems as specified in RS-33. The test results shall confirm at least one of the following performance requirements:

1. The measured total duct leakage shall be less than or equal to 8 percent of the conditioned floor area, measured in CFM @ 25 Pascals; or

2. The measured duct leakage to outside shall be less than 6 percent of the conditioned floor area, measured in CFM @ 25 Pascals; or

3. The measured duct leakage shall be reduced by more than 50 percent relative to the measured leakage prior to the installation or replacement of the space conditioning equip-

ment and a visual inspection including a smoke test shall demonstrate that all accessible leaks have been sealed; or

4. If it is not possible to meet the duct requirements of 1, 2 or 3, all accessible leaks shall be sealed and verified through a visual inspection and through a smoke test by a certified third party.

EXCEPTIONS:

1. Duct systems that are documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in RS-33.
2. Ducts with less than 40 linear feet in unconditioned spaces.
3. Existing duct systems constructed, insulated or sealed with asbestos.

101.3.2.7 ~~((Service))~~ Domestic Water ~~((Heating))~~ Systems: Those parts of systems which are altered or replaced shall comply with section 504.

101.3.2.8 Lighting: Alterations shall comply with Sections 505 and 1132.3.

~~((EXCEPTION: Group R-3 and R-4 Occupancy and the dwelling unit portions of Group R-1 and R-2 Occupancy.))~~

101.3.3 Mixed Occupancy: When a building houses more than one occupancy, each portion of the building shall conform to the requirements for the occupancy housed therein. Where approved by the building official, where minor accessory uses do not occupy more than ten percent of the area of any floor of a building, the major use may be considered the building occupancy.

101.4 Amendments by Local Government: Except as provided in RCW 19.27A.020(7), this Code shall be the maximum and minimum energy code for ~~((Group R Occupancy))~~ Single-family residential in each town, city and county ~~((, no later than July 1, 1994))~~.

AMENDATORY SECTION (Amending WSR 04-01-106, filed 12/17/03, effective 7/1/04)

#### **WAC 51-11-0105 Inspections and enforcement.**

105.1 General: All construction or work for which a permit is required shall be subject to inspection by the building official and all such construction or work shall remain accessible and exposed for inspection purposes until approved by the building official.

105.2 Approvals Required: No work shall be done on any part of the building or structure beyond the point indicated in each successive inspection without first obtaining the approval of the building official.

105.2.1 Required Inspections: The building official, upon notification, shall make the following inspection in addition to those inspections required in section 109.3 of the International Building Code:

1. Wall insulation inspection: To be made after all wall insulation and air vapor retarder sheet or film materials are in place, but before any wall covering is placed.

105.3 Reinspection: The building official may require a structure to be reinspected.

105.4 Certificate: A permanent certificate shall be posted within three feet of the electrical distribution panel. The certificate shall be completed by the building or registered design professional. The certificate shall list the predominant R-values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor), and ducts outside the conditioned spaces; U-factors for fenestration; and the solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall list the type and efficiency of heating, cooling, and service water heating equipment, duct leakage rates including test conditions as specified in Section 503.10.2, and air leakage results if a blower door test was conducted.

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0201 Scope.** The following definitions shall apply to chapters 1 through 20.

**201.1 Application of Terms:** For the purposes of this Code, certain abbreviations, terms, phrases, words and their derivatives, shall be as set forth in this chapter. Where terms are not defined, they shall have their ordinary accepted meanings within the context with which they are used. In the event there is a question about the definition of a term, the definitions for terms in the codes enumerated in RCW 19.27.031 and the edition of Webster's dictionary referenced therein shall be considered as the sources for providing ordinarily accepted meanings.

**Addition:** See the Washington State Building Code.

**Advanced framed ceiling:** Advanced framing assumes full and even depth of insulation extending to the outside edge of exterior walls. (See Standard Framing and Section 1007.2 of this Code.)

**Advanced framed walls:** Studs framed on twenty-four inch centers with double top plate and single bottom plate. Corners use two studs or other means of fully insulating corners, and one stud is used to support each header. Headers consist of double 2X material with R-10 insulation between the header and exterior sheathing. Interior partition wall/exterior wall intersections are fully insulated in the exterior wall. (See Standard Framing and Section 1005.2 of this Code.)

**AFUE. Annual fuel utilization efficiency:** Unlike steady state conditions, this rating is based on average usage including on and off cycling as set out in the standardized Department of Energy Test Procedures.

**Air barrier:** Material(s) assembled and joined together to provide a barrier to air leakage through the building envelope. An air barrier may be a single material or a combination of materials.

**Air conditioning, comfort:** The process of treating air to control simultaneously its temperature, humidity, cleanliness and distribution to meet requirements of the conditioned space.

**((ARI+)) Air-impermeable insulation:** An insulation having an air permeance equal to or less than 0.02 L/s-m<sup>2</sup> at

75 Pa pressure differential tested in accordance with ASTM E2178 or ASTM E283.

**AHRI:** Air-Conditioning, Heating and Refrigeration Institute.

**Approved:** Approval by the Code official as a result of investigation and tests conducted by him or her, or by reason of accepted principles, or tests by nationally recognized organizations.

**ASHRAE:** American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.

**ASTM:** American Society for Testing and Materials

**Automatic:** Self-acting, operating by its own mechanism when actuated by some impersonal influence, as for example, a change in current strength, pressure, temperature or mechanical configuration. (See **Manual**.)

**Below grade walls:** ((Walls or the portion of walls which are entirely below the finish grade or which extend two feet or less above the finish grade.)) (See **Walls**.)

**Boiler capacity:** The rate of heat output in Btu/h measured at the boiler outlet, at the design inlet and outlet conditions and rated fuel/energy input.

**Building entrance:** Any doorway, set of doors, turnstile, vestibule, or other form of portal that is ordinarily used to gain access to the building by its users and occupants.

**Building envelope:** For ((Group R Occupancy)) Single-family residential spaces, the elements of a building which enclose conditioned spaces through which thermal energy may be transferred to or from the exterior or to or from spaces exempted by the provisions of Section 101.3.1. For other ((~~than Group R Occupancy~~)) spaces, the elements of a building which enclose conditioned spaces through which thermal energy may be transferred to or from the exterior, or to or from unconditioned spaces, or to or from semi-heated spaces, or to or from spaces exempted by the provisions of Section 1301.

**Building, existing:** See the Washington State Building Code.

**Building official:** The official authorized to act in behalf of a jurisdiction code enforcement agency or its authorized representative.

**Building project:** A building or group of buildings, including on-site energy conversion or electric-generating facilities, which utilize a single submittal for a construction permit or are within the boundary of a contiguous area under one ownership.

**Cold storage space:** Spaces that are mechanically cooled and designed to be maintained at a temperature below 45°F (7°C) and at or above 28°F (-2.2°C).

**Commissioning:** A systematic process of verification and documentation that ensures that the selected building systems have been designed, installed and function properly, efficiently, and can be maintained in accordance with the contract documents in order to satisfy the building owner's design intent and operational requirements.

**Conditioned floor area:** (See Gross conditioned floor area.)

**Conditioned space:** A cooled space, heated space (fully heated), heated space (semi-heated) or indirectly conditioned space, excluding cold storage spaces and frozen storage spaces.



**Continuous insulation (c.i.):** Insulation that is continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior or exterior or is integral to any opaque surface of the building envelope.

**Cooled space:** An enclosed space within a building that is cooled by a cooling system whose sensible capacity

a. Exceeds 5 Btu/(h·ft<sup>2</sup>), or

b. Is capable of maintaining space dry bulb temperature of 90°F or less at design cooling conditions.

**COP - Coefficient of performance:** The ratio of the rate of net heat output (heating mode) or heat removal (cooling mode) to the rate of total on-site energy input to the heat pump, expressed in consistent units and under designated rating conditions. (See Net Heat Output, Net Heat Removal, Total On-Site Energy Input.)

**Daylighted zone:**

a. Under overhead glazing: The area under overhead glazing whose horizontal dimension, in each direction, is equal to the overhead glazing dimension in that direction plus either 70 percent of the floor to ceiling height or the dimension to a ceiling height opaque partition, or one-half the distance to adjacent overhead or vertical glazing, whichever is least.

b. At vertical glazing: The area adjacent to vertical glazing which receives daylighting from the glazing. For purposes of this definition and unless more detailed daylighting analysis is provided, the ((daylighting)) primary daylighted zone depth ((is assumed to)) extends into the space a distance ((of 15 feet)) equal to the window head height and the secondary daylighted zone extends from the edge of the primary zone to a distance equal to two times the window head height, or to the nearest ceiling height opaque partition, whichever is less. The daylighting zone width is assumed to be the width of the window plus either two feet on each side (the distance to an opaque partition) or one-half the distance to adjacent overhead or vertical glazing, whichever is least.

**Daylight sensing control (DS):** A device that automatically regulates the power input to electric lighting near the glazing to maintain the desired workplace illumination, thus taking advantage of direct or indirect sunlight.

**Deadband:** The temperature range in which no heating or cooling is used.

**Demand control ventilation (DCV):** A ventilation system capability that provides for the automatic reduction of outdoor air intake below design rates when the actual occupancy of spaces served by the system is less than design occupancy.

**Design cooling conditions:** The cooling outdoor design temperature from the 0.5% column for summer from the Puget Sound Chapter of ASHRAE publication "Recommended Outdoor Design Temperatures, Washington State, ASHRAE."

**Design heating conditions:** The heating outdoor design temperature from the 0.6% column for winter from the Puget Sound Chapter of ASHRAE publication "Recommended Outdoor Design Temperatures, Washington State, ASHRAE."

**Domestic water system:** Supply of hot water and cold water for domestic or commercial purposes other than comfort heating and cooling.

**Door:** All operable opening areas, which are not glazing, in the building envelope including swinging and roll-up doors, fire doors, smoke vents and access hatches.

**Door area:** Total area of door measured using the rough opening and including the door and frame.

**Dwelling unit:** See the Washington State Building Code.

**Economizer, air:** A ducting arrangement and automatic control system that allows a cooling supply fan system to supply outside air to reduce or eliminate the need for mechanical refrigeration during mild or cold weather.

**Economizer, water:** A system by which the supply air of a cooling system is cooled directly, indirectly or both, by evaporation of water or by other appropriate fluid in order to reduce or eliminate the need for mechanical refrigeration.

**EER. Energy efficiency ratio:** The ratio of net equipment cooling capacity in Btu/h to total rate of electric input in watts under designated operating conditions.

**Efficiency, HVAC system:** The ratio of useful energy (at the point of use) to the energy input for a designated time period, expressed in percent.

**Emissivity:** The ability to absorb infrared radiation. A low emissivity implies a higher reflectance of infrared radiation.

**Energy:** The capacity for doing work; taking a number of forms which may be transformed from one into another, such as thermal (heat), mechanical (work), electrical and chemical; in customary units, measured in kilowatt-hours (kWh) or British thermal units (Btu). (See **New energy**.)

**Energy, recovered:** (See **Recovered energy**.)

**Energy recovery ventilation system:** System that employs air-to-air heat exchangers to recover energy from exhaust air for the purpose of preheating, precooling, humidifying or dehumidifying outdoor ventilation air prior to supplying the air to a space, either directly or as part of an HVAC system.

**Exterior envelope:** (See **Building envelope**.)

**F-Factor:** The perimeter heat loss factor expressed in Btu/hr·ft·°F.

**F-Value:** (See F-Factor.)

**Facade area:** Vertical projected area including nonhorizontal roof area, overhangs, cornices, etc. measured in elevation in a vertical plane parallel to the plane of the building face.

**Fenestration:** All areas (including the frames) in the building envelope that let in light, including windows, plastic panels, clerestories, skylights, doors that are more than one-half glass, and glass block walls. (See building envelope and door.)

a. **Skylight:** A fenestration surface having a slope of less than 60 degrees from the horizontal plane. Other fenestration, even if mounted on the roof of a building, is considered vertical fenestration.

b. **Vertical fenestration:** All fenestration other than skylights. Trombe wall assemblies, where glazing is installed within 12 inches of a mass wall, are considered walls, not fenestration. For the purposes of determining

building envelope requirements, the vertical fenestration classifications are defined as follows:

i. **Metal framing:** Products with metal framing with or without thermal break.

ii. **Metal framing, entrance door:** Any doorway, set of doors, turnstile, vestibule, or other form of portal that is ordinarily used to gain access by its users and occupants to the building or to individual tenant spaces accessed from the exterior. (See also building entrance.)

iii. **Metal framing, fixed:** All vertical fenestration, other than entrance door and operable, including, but not limited to, curtain walls, window walls, fixed windows, picture windows, glass block walls, nonopenable clerestory windows, and nonopenable sidelites and transoms.

iv. **Metal framing, operable:** All vertical fenestration that opens, except entrance doors, including, but not limited to, casement windows, projecting windows, pivoting windows, horizontal sliding windows, vertical sliding windows, openable clerestory windows, openable sidelites and transoms, sliding glass doors, and doors that are not entrance doors.

v. **Nonmetal framing:** All products with framing materials other than metal with or without metal reinforcing or cladding.

**Floor, envelope:** That lower portion of the building envelope, including opaque area and fenestration, that has conditioned or semiheated space above and is horizontal or tilted at an angle of less than 60 degrees from horizontal but excluding slab-on-grade floors. For the purposes of determining building envelope requirements, the classifications are defined as follows:

a. **Mass floor:** A floor with a heat capacity that exceeds 7 Btu/ft<sup>2</sup>·°F or 5 Btu/ft<sup>2</sup>·°F provided that the floor has a material unit mass not greater than 120 lb/ft<sup>3</sup>.

b. **Steel-joist floor:** A floor that is not a mass floor and has steel joist members supported by structural members.

c. **Wood-framed and other floors:** All other floor types, including wood joist floors. (See also building envelope, fenestration, opaque area and slab-on-grade floor.)

**Floor over unconditioned space:** A floor which separates a conditioned space from an unconditioned space which is buffered from exterior ambient conditions including vented crawl spaces and unconditioned basements or other similar spaces, or exposed to exterior ambient conditions including open parking garages and enclosed garages which are mechanically ventilated.

**Frozen storage space:** Spaces that are mechanically cooled and designed to be maintained at a temperature below 28°F (-2.2°C).

**Garden window:** A multisided glazing product that projects beyond the plane of the wall.

**Glazed wall system:** A category of site assembled fenestration products used in the NFRC 100 and NFRC 200 rating procedures that include curtainwalls.

**Glazing:** All areas, including the frames, in the shell of a conditioned space that let in natural light including windows, clerestories, skylights, sliding or swinging glass doors and glass block walls.

**Glazing area:** Total area of the glazing measured using the rough opening, and including the glazing, sash, and

frame. For doors where the daylight opening area is less than 50% of the door area, the glazing area is the daylight opening area. For all other doors, the glazing area is the door area.

**Gross conditioned floor area:** The horizontal projection of that portion of interior space which is contained within exterior walls and which is conditioned directly or indirectly by an energy-using system, and which has an average height of five feet or greater, measured from the exterior faces.

**Gross exterior wall area:** The normal projection of the building envelope wall area bounding interior space which is conditioned by an energy-using system and which separates conditioned space from: Unconditioned space, or semi-heated space, or exterior ambient conditions or earth; includes opaque wall, vertical glazing and door areas. The gross area of walls consists of all opaque wall areas, including foundation walls, between floor spandrels, peripheral edges of floors, vertical glazing areas and door areas, where such surfaces are exposed to exterior ambient conditions and enclose a conditioned space including interstitial areas between two such spaces. The area of the wall is measured from the top of the floor insulation to the bottom of the roof insulation. (See Below grade wall.)

**Gross floor area:** The sum of the areas of the several floors of the building, including basements, cellars, mezzanine and intermediate floored tiers and penthouses of headroom height, measured from the exterior faces of exterior walls or from the center line of walls separating buildings, but excluding: Covered walkways, open roofed-over areas, porches and similar spaces. Pipe trenches, exterior terraces or steps, chimneys, roof overhangs and similar features.

**Gross roof/ceiling area:** A roof/ceiling assembly shall be considered as all components of the roof/ceiling envelope through which heat flows, thus creating a building transmission heat loss or gain, where such assembly is exposed to exterior ambient conditions and encloses a conditioned space. The assembly does not include those components that are separated from a heated and/or cooled space by a vented airspace. The gross area of a roof/ceiling assembly consists of the total interior surface of such assembly, including overhead glazing.

**Guest room:** See the Washington State Building Code.

**Heat:** The form of energy that is transferred by virtue of a temperature difference.

**Heat storage capacity:** The physical property of materials (mass) located inside the building envelope to absorb, store, and release heat.

**Heated space (Fully heated):** An enclosed space within a building, including adjacent connected spaces separated by an uninsulated component (e.g., basements, utility rooms, garages, corridors), which is heated by a heating system whose output capacity is

a. Capable of maintaining a space dry-bulb temperature of 45°F or greater at design heating conditions; or

b. 8 Btu/(h·ft<sup>2</sup>) or greater in Climate Zone 1 and 12 Btu/(h·ft<sup>2</sup>) or greater in Climate Zone 2.

**Heated space (Semi-heated):** An enclosed space within a building, including adjacent connected spaces separated by an uninsulated component (e.g., basements, utility rooms, garages, corridors), which is heated by a heating system

a. Whose output capacity is 3 Btu/(h•ft<sup>2</sup>) or greater in Climate Zone 1 and 5 Btu/(h•ft<sup>2</sup>) or greater in Climate Zone 2; and

b. Is not a Heated Space (Fully Heated).

c. Is not a cold storage space or frozen storage space.

**High efficacy lamps:** Compact fluorescent lamps, T-8 or smaller diameter linear fluorescent lamps, or lamps with a minimum efficacy of:

a. 60 lumens per watt for lamps over 40 watts;

b. 50 lumens per watt for lamps over 15 watts to 40 watts; and

c. 40 lumens per watt for lamps 15 watts or less.

**High efficacy luminaire:** A lighting fixture that does not contain a medium screw base socket (E24/E26) and whose lamps or other light source have a minimum efficiency of:

a. 60 lumens per watt for lamps over 40 watts;

b. 50 lumens per watt for lamps over 15 watts to 40 watts;

c. 40 lumens per watt for lamps 15 watts or less.

**HSPF. Heating season performance factor:** The total heating output (in Btu) of a heat pump during its normal annual usage period for heating divided by the total (watt hour) electric power input during the same period, as determined by test procedures consistent with the U.S. Department of Energy "Test Procedure for Central Air Conditioners, Including Heat Pumps" published in Standard RS-30. When specified in Btu per watt hour an HSPF of 6.826 is equivalent to a COP of 2.0.

**Humidistat:** A regulatory device, actuated by changes in humidity, used for automatic control of relative humidity.

**HVAC:** Heating, ventilating and air conditioning.

**HVAC system components:** HVAC system components provide, in one or more factory-assembled packages, means for chilling and/or heating water with controlled temperature for delivery to terminal units serving the conditioned spaces of the buildings. Types of HVAC system components include, but are not limited to, water chiller packages, reciprocating condensing units and water source (hydronic) heat pumps. (See **HVAC system equipment**.)

**HVAC system efficiency:** (See **Efficiency, HVAC system**.)

**HVAC system equipment:** HVAC system equipment provides, in one (single package) or more (split system) factory-assembled packages, means for air circulation, air cleaning, air cooling with controlled temperature and dehumidification; and optionally, either alone or in combination with a heating plant, the functions of heating and humidifying. The cooling function may be either electrically or heat operated and the refrigerant condenser may be air, water or evaporatively cooled. Where the equipment is provided in more than one package, the separate packages shall be designed by the manufacturer to be used together. The equipment may provide the heating function as a heat pump or by the use of electric elements. (The word "equipment" used without modifying adjective may, in accordance with common industry usage, apply either to HVAC system equipment or HVAC system components.)

**Indirectly conditioned space:** An enclosed space within a building that is not a heated or cooled space, whose

area weighted heat transfer coefficient to heated or cooled spaces exceeds that to the outdoors or to unconditioned spaces; or through which air from heated or cooled spaces is transferred at a rate exceeding three air changes per hour. Enclosed corridors between conditioned spaces shall be considered as indirectly conditioned space. (See **Heated Space, Cooled Space and Unconditioned Space**.)

**Infiltration:** The uncontrolled inward air leakage through cracks and interstices in any building element and around windows and doors of a building caused by the pressure effects of wind and/or the effect of differences in the indoor and outdoor air density.

**Insulation baffle:** A rigid material, resistant to wind driven moisture, the purpose of which is to allow air to flow freely into the attic or crawl space and to prevent insulation from blocking the ventilation of these spaces, or the loss of insulation. Example materials for this purpose are sheet metal, or wax impregnated cardboard.

**Insulation position:**

a. **Exterior Insulation Position:** A wall having all or nearly all of its mass exposed to the room air with the insulation on the exterior of the mass.

b. **Integral Insulation Position:** A wall having mass exposed to both room and outside air, with substantially equal amounts of mass on the inside and outside of the insulation layer.

c. **Interior Insulation Position:** A wall not meeting either of the above definitions; particularly a wall having most of its mass external to the insulation layer.

**International Building Code (IBC):** (See Washington State Building Code.)

**International Mechanical Code (IMC):** (See Washington State Building Code.)

**IPLV—Integrated part-load value:** A single number figure of merit based on part-load EER or COP expressing part-load efficiency for air conditioning and heat pump equipment on the basis of weighted operation at various load capacities for the equipment as specified in the Air-Conditioning and Refrigeration Institute (ARI) and Cooling Tower Institute (CTI) procedures.

**Labeled:** Devices, equipment, or materials to which have been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, inspection agency, or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items that attests to compliance with a specific standard.

**Liner system (Ls):** A continuous membrane is installed below the purlins and uninterrupted by framing members. Uncompressed, unfaced insulation rests on top of the membrane between the purlins. For multilayer installations, the last rated R-value of insulation is for unfaced insulation draped over purlins and then compressed when the metal roof panels are attached. A minimum R-3 (R-0.5) thermal spacer block between the purlins and the metal roof panels is required, unless compliance is shown by the overall assembly U-factor.

**Listed:** Equipment, appliances, assemblies, or materials included in a list published by an approved testing laboratory, inspection agency, or other organization concerned with

product evaluation that maintains periodic inspection of production of listed equipment, appliances, assemblies, or material, and whose listing states either that the equipment, appliances, assemblies, or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

**Luminaire:** A complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the electric power supply.

**Manual:** Capable of being operated by personal intervention. (See **Automatic**.)

**Mechanical system:** Equipment and components that provide heating, cooling, and ventilation for any purpose other than domestic water systems.

**Microcell:** A wireless communication facility consisting of an antenna that is either: (a) Four (4) feet in height and with an area of not more than 580 square inches; or (b) if a tubular antenna, no more than four (4) inches in diameter and no more than six (6) feet in length; and the associated equipment cabinet that is six (6) feet or less in height and no more than 48 square feet in floor area.

**NFPA:** National Fire Protection Association.

**NFRC:** National Fenestration Rating Council.

**Net heat output:** The change in the total heat content of the air entering and leaving the equipment (not including supplementary heat and heat from boilers).

**Net heat removal:** The total difference in heat content of the air entering and leaving the equipment (without heat) or the difference in total heat content of the water or refrigerant entering and leaving the component.

**New energy:** Energy, other than recovered energy, utilized for the purpose of heating or cooling. (See **energy**.)

**Nominal R-value:** The thermal resistance of insulation alone as determined in accordance with the U.S. Federal Trade Commission R-value rule (CFR Title 16, Part 460) in units of  $\text{h}\cdot\text{ft}^2\cdot^\circ\text{F}/\text{Btu}$  at a mean temperature of  $75^\circ\text{F}$ . Nominal R-value refers to the thermal resistance of the added insulation in framing cavities or insulated sheathing only and does not include the thermal resistance of other building materials or air films.

**Nonrenewable energy sources:** All energy sources that are not renewable energy sources including natural gas, oil, coal, wood, ((~~liquefied~~)) liquefied petroleum gas, steam, and any utility-supplied electricity.

**Nonresidential:** All ((~~buildings and~~)) spaces ((~~in the International Building Code (IBC) occupancies~~)) as defined in this Code other than ((~~Group R~~)) residential.

**Occupancy:** See the Washington State Building Code.

**Occupancy sensor:** A device that detects occupants within an area, causing any combination of lighting, equipment or appliances to be turned on or shut off.

**On-site renewable energy power system:** Photovoltaic, solar thermal, geothermal, and wind systems used to generate electrical power and located on the building site.

**Opaque envelope areas:** All exposed areas of a building envelope which enclose conditioned space, except openings for doors, glazing and building service systems.

**Open blown:** Loose fill insulation pneumatically installed in an unconfined attic space.

**Outdoor air (outside air):** Air taken from the outdoors and, therefore, not previously circulated through a building.

**Overhead glazing:** A glazing surface that has a slope of less than  $60^\circ$  from the horizontal plane.

**Packaged terminal air conditioner:** A factory-selected combination of heating and cooling components, assemblies or sections intended to serve a room or zone. (For the complete technical definition, see Standard RS-5.)

**Permeance (perm):** The ability of a material of specified thickness to transmit moisture in terms of amount of moisture transmitted per unit time for a specified area and differential pressure (grains per hour  $\cdot$   $\text{ft}^2$   $\cdot$  inches of HG). Permeance may be measured using ASTM E-96-00 or other approved dry cup method as specified in RS-1.

**Personal wireless service facility:** A Wireless Communication Facility (WCF), including a microcell, which is a facility for the transmission and/or reception of radio frequency signals and which may include antennas, equipment shelter or cabinet, transmission cables, a support structure to achieve the necessary elevation, and reception and/or transmission devices or antennas.

**Pool cover:** A vapor-retardant cover which lies on or at the surface of the pool.

**Power:** In connection with machines, the time rate of doing work. In connection with the transmission of energy of all types, the rate at which energy is transmitted; in customary units, it is measured in watts (W) or British Thermal Units per hour (Btu/h).

**Process energy:** Energy consumed in support of a manufacturing, industrial, or commercial process other than the maintenance of building comfort or amenities for building occupants.

**Radiant slab floor:** A slab floor assembly on grade or below, containing heated pipes, ducts, or electric heating cables that constitute a floor or portion thereof for complete or partial heating of the structure.

**Readily accessible:** See the Washington State Mechanical Code.

**Recooling:** The removal of heat by sensible cooling of the supply air (directly or indirectly) that has been previously heated above the temperature to which the air is to be supplied to the conditioned space for proper control of the temperature of that space.

**Recovered energy:** Energy utilized which would otherwise be wasted (i.e., not contribute to a desired end use) from an energy utilization system.

**Refrigerated warehouse:** A building that contains cold storage spaces or frozen storage spaces that have a total area exceeding 3,000 square feet.

**Reheat:** The application of sensible heat to supply air that has been previously cooled below the temperature of the conditioned space by either mechanical refrigeration or the introduction of outdoor air to provide cooling.

**Renewable energy sources:** Renewable energy sources of energy (excluding minerals) are derived from: (1) Incoming solar radiation, including but not limited to, natural daylighting and photosynthetic processes; (2) energy sources resulting from wind, waves and tides, lake or pond thermal differences; and (3) energy derived from the internal heat of the earth, including nocturnal thermal exchanges.

**Reset:** Adjustment of the set point of a control instrument to a higher or lower value automatically or manually to conserve energy.

**Residential:** The following two categories comprise all residential spaces for the purposes of this Code:

**a. Single-family:** All spaces within the scope of Section R101.2 of the International Residential Code.

**b. Multifamily:**

i. All Group R Occupancy not falling under the scope of Section 101.2 of the International Residential Code including, but not limited to, dwelling units, hotel/motel guest rooms, dormitories, fraternity/sorority houses, hostels, prisons, and fire stations;

ii. All sleeping areas in Group I Occupancy including, but not limited to, assisted living facilities, nursing homes, patient rooms in hospitals, prisons, and fire stations; and

iii. All sleeping areas in other occupancies including, but not limited to, fire stations.

**Roof:** The upper portion of the building envelope, including opaque areas and fenestration, that is horizontal or tilted at an angle of less than 60 degrees from horizontal. For the purposes of determining building envelope requirements, the classifications are defined as follows:

**a. Attic and other roofs:** All other roofs, including roofs with insulation entirely below (inside of) the roof structure (i.e., attics, cathedral ceilings, and single-rafter ceilings), roofs with insulation both above and below the roof structure, and roofs without insulation but excluding metal building roofs.

**b. Metal building roof:** A roof that is:

i. Constructed with a metal, structural, weathering surface;

ii. Has no ventilated cavity; and

iii. Has the insulation entirely below deck (i.e., does not include composite concrete and metal deck construction nor a roof framing system that is separated from the superstructure by a wood substrate) and whose structure consists of one or more of the following configurations:

A. Metal roofing in direct contact with the steel framing members;

B. Insulation between the metal roofing and the steel framing members;

C. Insulated metal roofing panels installed as described in 1 or 2.

**Roof with insulation entirely above deck:** A roof with all insulation installed above (outside of) the roof structure and continuous (i.e., uninterrupted by framing members).

**Roof/ceiling assembly:** (See Gross roof/ceiling area.)

**SEER - Seasonal Energy Efficiency Ratio:** The total cooling output of an air conditioner during its normal annual usage period, in Btu's, divided by the total electric energy input in watt-hours, during the same period, as determined by 10 CFR, Part 430.

**Semi-heated space:** Sub-category of **Heated Space**. (See **Heated Space**.)

**Sequence:** A consecutive series of operations.

**Service systems:** All energy-using systems in a building that are operated to provide services for the occupants or processes housed therein, including HVAC, service water heat-

ing, illumination, transportation, cooking or food preparation, laundering or similar functions.

**Service water heating:** Supply of hot water for domestic or commercial purposes other than comfort heating.

**Shaded:** Glazed area which is externally protected from direct solar radiation by use of devices permanently affixed to the structure or by an adjacent building, topographical feature, or vegetation.

**Shading coefficient:** The ratio of solar heat gain occurring through nonopaque portions of the glazing, with or without integral shading devices, to the solar heat gain occurring through an equivalent area of unshaded, 1/8 inch thick, clear, double-strength glass.

Note: Heat gains to be compared under the same conditions. See Chapter ((30)) 15 of Standard RS-1, listed in Chapter 7 of this Code.

**Shall:** Denotes a mandatory code requirement.

**Single family:** ~~((One and two family residential dwelling units with no more than two units in a single building.))~~ (See **Residential**.)

**Skylight:** (See ~~((Overhead glazing))~~ **Fenestration**.)

**Slab-below-grade:** Any portion of a slab floor in contact with the ground which is more than 24 inches below the final elevation of the nearest exterior grade.

**Slab-on-grade, exterior:** Any portion of a slab floor in contact with the ground which is less than or equal to twenty-four inches below the final elevation of the nearest exterior grade.

**Small business:** Any business entity (including a sole proprietorship, corporation, partnership, or other legal entity) which is owned and operated independently from all other businesses, which has the purpose of making a profit, and which has fifty or fewer employees, or which has a million dollars or less per year in gross sales, of window products.

**Solar energy source:** Source of natural daylighting and of thermal, chemical or electrical energy derived directly from conversion of incident solar radiation.

**Solar heat gain coefficient (SHGC):** The ratio of the solar heat gain entering the space through the glazing product to the incident solar radiation. Solar heat gain includes directly transmitted solar heat and absorbed solar radiation which is then reradiated, conducted or convected into the space.

**Split system:** Any heat pump or air conditioning unit which is provided in more than one assembly requiring refrigeration piping installed in the field.

**Standard framing:** All framing practices not defined as "intermediate" or "advanced" shall be considered standard. (See Advanced framed ceiling, Advanced framed walls, Intermediate framed wall and Section 1005.2 of this Code.)

**Substantial contact:** A condition where adjacent building materials are placed in a manner that proximal surfaces are contiguous, being installed and supported as to eliminate voids between materials, without compressing or degrading the thermal performance of either product.

**System:** A combination of central or terminal equipment or components and/or controls, accessories, interconnecting means, and terminal devices by which energy is transformed so as to perform a specific function, such as HVAC, service water heating or illumination.

**Tapering:** Installation of a reduced level of ceiling insulation at the eaves, due to reduced clearance.

**Thermal by-pass:** An area where the envelope surrounding the conditioned space is breached, or where an ineffective application compromises the performance of a thermal or infiltration barrier, increasing the structure's energy consumption by exposing finished surfaces to ambient conditions and additional heat transfer.

**Thermal conductance (C):** Time rate of heat flow through a body (frequently per unit area) from one of its bounding surfaces to the other for a unit temperature difference between the two surfaces, under steady conditions (Btu/hr • ft<sup>2</sup> • °F).

**Thermal resistance (R):** The reciprocal of thermal conductance (hr • ft<sup>2</sup> • °F/Btu).

**Thermal transmittance (U):** The coefficient of heat transmission (air to air). It is the time rate of heat flow per unit area and unit temperature difference between the warm side and cold side air films (Btu/hr • ft<sup>2</sup> • °F).

**Thermal transmittance, overall (U<sub>o</sub>):** The overall (average) heat transmission of a gross area of the exterior building envelope (Btu/hr • ft<sup>2</sup> • °F). The U<sub>o</sub>-factor applies to the combined effect of the time rate of heat flows through the various parallel paths, such as glazing, doors and opaque construction areas, comprising the gross area of one or more exterior building components, such as walls, floors or roof/ceiling.

**Thermostat:** An automatic control device actuated by temperature and designed to be responsive to temperature.

**Total on-site energy input:** The combination of all the energy inputs to all elements and accessories as included in the equipment components, including but not limited to, compressor(s), compressor sump heater(s), circulating pump(s), purge devices, fan(s), and the HVAC system component control circuit.

**Transmission coefficient:** The ratio of the solar heat gain through a glazing system to that of an unshaded single pane of double strength window glass under the same set of conditions.

**Transverse joint:** The primary connection between air distribution system fittings.

**U-factor:** (See thermal transmittance.)

**U-Value:** (See U-factor.)

**Uniform Plumbing Code (UPC):** (See Washington State Plumbing Code.)

**Unitary cooling and heating equipment:** One or more factory-made assemblies which include an evaporator or cooling coil, a compressor and condenser combination, and may include a heating function as well. Where such equipment is provided in more than one assembly, the separate assemblies shall be designed to be used together.

**Unitary heat pump:** One or more factory-made assemblies which include an indoor conditioning coil, compressor(s) and outdoor coil or refrigerant-to-water heat exchanger, including means to provide both heating and cooling functions. When such equipment is provided in more than one assembly, the separate assemblies shall be designed to be used together.

**Vapor retarder:** A layer of low moisture transmissivity material (not more than 1.0 perm dry cup) placed over the

warm side (in winter) of insulation, over the exterior of below grade walls, and under floors as ground cover to limit the transport of water and water vapor through exterior walls, ceilings, and floors. Vapor retarding paint, listed for this application, also meets this definition.

**Vaulted ceilings:** All ceilings where enclosed joist or rafter space is formed by ceilings applied directly to the underside of roof joists or rafters.

**Ventilation:** The process of supplying or removing air by natural or mechanical means to or from any space. Such air may or may not have been conditioned.

**Ventilation air:** That portion of supply air which comes from outside (outdoors) plus any recirculated air that has been treated to maintain the desired quality of air within a designated space.

**Vertical glazing:** A glazing surface that has a slope of 60° or greater from the horizontal plane.

**Wall:** That portion of the building envelope, including opaque area and fenestration, that is vertical or tilted at an angle of 60 degrees from horizontal or greater. This includes above- and below-grade walls, between floor spandrels, peripheral edges of floors, and foundation walls. For the purposes of determining building envelope requirements, the classifications are defined as follows:

**a. Above-grade wall:** A wall that is not a below-grade wall.

**b. Below-grade wall:** That portion of a wall in the building envelope that is entirely below the finish grade and in contact with the ground.

**c. Mass wall:** A wall with a heat capacity exceeding 7 Btu/ft<sup>2</sup> • °F or 5 Btu/ft<sup>2</sup> • °F, provided that the wall has a material unit weight not greater than 120 lb/ft<sup>3</sup>.

**d. Metal building wall:** A wall whose structure consists of metal spanning members supported by steel structural members (i.e., does not include spandrel glass or metal panels in curtain wall systems).

**e. Steel-framed wall:** A wall with a cavity (insulated or otherwise) whose exterior surfaces are separated by steel framing members (i.e., typical steel stud walls and curtain wall systems).

**f. Wood-framed and other walls:** All other wall types, including wood stud walls.

**Walls (exterior):** Any member or group of members which defines the exterior boundaries or courts of a building and which have a slope of sixty degrees or greater with the horizontal plane, and separates conditioned from unconditioned space. Band joists between floors are to be considered a part of exterior walls.

**Washington State Building Code:** The Washington State Building Code is comprised of the International Building Code; the International Residential Code; the International Mechanical Code; the International Fire Code; the Uniform Plumbing Code; the state regulations for barrier-free facilities, as designated in RCW 19.27.031; the State Energy Code; and any other codes so designated by the Washington state legislature as adopted and amended by the State Building Code Council.

**Zone:** A space or group of spaces within a building with heating and/or cooling requirements sufficiently similar so that comfort conditions can be maintained throughout by a

single controlling device. Each dwelling unit in residential buildings shall be considered a single zone.

AMENDATORY SECTION (Amending WSR 91-01-112, filed 12/19/90, effective 7/1/91)

**WAC 51-11-0302 Thermal design parameters.**

302.1 Exterior Design Conditions: The heating or cooling outdoor design temperatures shall be selected from ((0.6 percent column for winter and 0.5 percent column for summer from the Puget Sound Chapter of ASHRAE publication "Recommended Outdoor Design Temperatures, Washington State, ASHRAE." (See also Washington State Energy Code Manual.)) Table 3-1.

302.2 Interior Design Conditions:

302.2.1 Indoor Design Temperature: Indoor design temperature shall be seventy degrees F for heating and seventy-eight degrees F for cooling.

EXCEPTION: Other design temperatures may be used for equipment selection if it results in a lower energy usage.

302.2.2 Humidification: If humidification is provided during heating, it shall be designed for a maximum relative humidity of thirty percent. When comfort air conditioning is provided, the actual design relative humidity within the comfort envelope as defined in Standard RS-4, listed in Chapter 7, shall be selected for minimum total HVAC system energy use.

302.3 Climate Zones: All buildings shall comply with the requirements of the appropriate climate zone as defined herein.

ZONE 1: Climate Zone 1 shall include all counties not included in Climate Zone 2.

ZONE 2: Climate Zone 2 shall include: Adams, Chelan, Douglas, Ferry, Grant, Kittitas, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, and Whitman counties.

**TABLE 3-1  
OUTDOOR DESIGN TEMPERATURES**

| <u>Location</u>        | <u>Outdoor Design Temp. (in °F) (heating)</u> | <u>Outdoor Design Temp. (in °F) (cooling)</u> |
|------------------------|---|---|
| <u>Aberdeen 20 NNE</u> | <u>25.0</u>                                   | <u>83</u>                                     |
| <u>Anacortes</u>       | <u>24.0</u>                                   | <u>72</u>                                     |
| <u>Anatone</u>         | <u>-4.0</u>                                   | <u>89</u>                                     |
| <u>Auburn</u>          | <u>25.0</u>                                   | <u>84</u>                                     |
| <u>Battleground</u>    | <u>19.0</u>                                   | <u>91</u>                                     |
| <u>Bellevue</u>        | <u>24.0</u>                                   | <u>83</u>                                     |
| <u>Bellingham 2 N</u>  | <u>19.0</u>                                   | <u>78</u>                                     |
| <u>Blaine</u>          | <u>17.0</u>                                   | <u>73</u>                                     |
| <u>Bremerton</u>       | <u>29.0</u>                                   | <u>83</u>                                     |
| <u>Burlington</u>      | <u>19.0</u>                                   | <u>77</u>                                     |
| <u>Chehalis</u>        | <u>21.0</u>                                   | <u>87</u>                                     |
| <u>Chelan</u>          | <u>10.0</u>                                   | <u>89</u>                                     |

**TABLE 3-1  
OUTDOOR DESIGN TEMPERATURES**

| <u>Location</u>             | <u>Outdoor Design Temp. (in °F) (heating)</u> | <u>Outdoor Design Temp. (in °F) (cooling)</u> |
|-----------------------------|---|---|
| <u>Cheney</u>               | <u>4.0</u>                                    | <u>94</u>                                     |
| <u>Chesaw</u>               | <u>-11.0</u>                                  | <u>81</u>                                     |
| <u>Clarkston</u>            | <u>10.0</u>                                   | <u>94</u>                                     |
| <u>Cle Elum</u>             | <u>1.0</u>                                    | <u>91</u>                                     |
| <u>Colfax 1 NW</u>          | <u>2.0</u>                                    | <u>94</u>                                     |
| <u>Colville AP</u>          | <u>-2.0</u>                                   | <u>92</u>                                     |
| <u>Concrete</u>             | <u>19.0</u>                                   | <u>83</u>                                     |
| <u>Connell 4 NNW</u>        | <u>6.0</u>                                    | <u>100</u>                                    |
| <u>Cougar 5 E</u>           | <u>25.0</u>                                   | <u>93</u>                                     |
| <u>Dallesport AP</u>        | <u>14.0</u>                                   | <u>99</u>                                     |
| <u>Darrington RS</u>        | <u>13.0</u>                                   | <u>85</u>                                     |
| <u>Davenport</u>            | <u>5.0</u>                                    | <u>92</u>                                     |
| <u>Edmonds</u>              | <u>24.0</u>                                   | <u>82</u>                                     |
| <u>Ellensburg AP</u>        | <u>2.0</u>                                    | <u>90</u>                                     |
| <u>Elma</u>                 | <u>24.0</u>                                   | <u>88</u>                                     |
| <u>Ephrata AP</u>           | <u>7.0</u>                                    | <u>97</u>                                     |
| <u>Everett Paine AFB</u>    | <u>21.0</u>                                   | <u>79</u>                                     |
| <u>Forks 1 E</u>            | <u>23.0</u>                                   | <u>81</u>                                     |
| <u>Glacier RS</u>           | <u>13.0</u>                                   | <u>82</u>                                     |
| <u>Glenoma (Kosmos)</u>     | <u>18.0</u>                                   | <u>89</u>                                     |
| <u>Goldendale</u>           | <u>7.0</u>                                    | <u>94</u>                                     |
| <u>Grays River Hatchery</u> | <u>24.0</u>                                   | <u>86</u>                                     |
| <u>Greenwater</u>           | <u>1.4</u>                                    | <u>84</u>                                     |
| <u>Grotto</u>               | <u>21.0</u>                                   | <u>84</u>                                     |
| <u>Hoquiam AP</u>           | <u>26.0</u>                                   | <u>79</u>                                     |
| <u>Inchelium 2 NW</u>       | <u>0.0</u>                                    | <u>92</u>                                     |
| <u>John Day Dam</u>         | <u>19.0</u>                                   | <u>100</u>                                    |
| <u>Kent</u>                 | <u>21.0</u>                                   | <u>85</u>                                     |
| <u>Kirkland</u>             | <u>17.0</u>                                   | <u>83</u>                                     |
| <u>La Grande</u>            | <u>23.0</u>                                   | <u>88</u>                                     |
| <u>Leavenworth</u>          | <u>-3.0</u>                                   | <u>93</u>                                     |
| <u>Little Goose Dam</u>     | <u>22.0</u>                                   | <u>101</u>                                    |
| <u>Long Beach 3 NNE</u>     | <u>25.0</u>                                   | <u>77</u>                                     |
| <u>Longview</u>             | <u>24.0</u>                                   | <u>87</u>                                     |
| <u>Lower Granite Dam</u>    | <u>14.0</u>                                   | <u>98</u>                                     |
| <u>Lower Monument Dam</u>   | <u>18.0</u>                                   | <u>103</u>                                    |
| <u>Marysville</u>           | <u>23.0</u>                                   | <u>79</u>                                     |
| <u>Metaline Falls</u>       | <u>-1.0</u>                                   | <u>89</u>                                     |
| <u>Methow 2 W</u>           | <u>1.0</u>                                    | <u>89</u>                                     |
| <u>Nespelem 2 S</u>         | <u>-4.0</u>                                   | <u>93</u>                                     |
| <u>Newhalem</u>             | <u>19.0</u>                                   | <u>89</u>                                     |

**TABLE 3-1  
OUTDOOR DESIGN TEMPERATURES**

| <u>Location</u>     | <u>Outdoor Design Temp. (in °F) (heating)</u> | <u>Outdoor Design Temp. (in °F) (cooling)</u> |
|---------------------|---|---|
| Newport             | <u>-5.0</u>                                   | <u>92</u>                                     |
| Northport           | <u>2.0</u>                                    | <u>92</u>                                     |
| Oak Harbor          | <u>16.0</u>                                   | <u>74</u>                                     |
| Odessa              | <u>7.0</u>                                    | <u>100</u>                                    |
| Olga 2 SE           | <u>24.0</u>                                   | <u>71</u>                                     |
| Olympia, AP         | <u>17.0</u>                                   | <u>85</u>                                     |
| Omak 2 NW           | <u>3.0</u>                                    | <u>90</u>                                     |
| Oroville            | <u>5.0</u>                                    | <u>93</u>                                     |
| Othello             | <u>9.0</u>                                    | <u>98</u>                                     |
| Packwood            | <u>16.0</u>                                   | <u>90</u>                                     |
| Plain               | <u>-3.0</u>                                   | <u>89</u>                                     |
| Pleasant View       | <u>16.0</u>                                   | <u>98</u>                                     |
| Pomeroy             | <u>3.0</u>                                    | <u>95</u>                                     |
| Port Angeles        | <u>28.0</u>                                   | <u>75</u>                                     |
| Port Townsend       | <u>25.0</u>                                   | <u>76</u>                                     |
| Prosser             | <u>12.0</u>                                   | <u>97</u>                                     |
| Puyallup            | <u>19.0</u>                                   | <u>86</u>                                     |
| Quilcene 2 SW       | <u>23.0</u>                                   | <u>83</u>                                     |
| Quinalt RS          | <u>25.0</u>                                   | <u>84</u>                                     |
| Rainier, Longmire   | <u>15.0</u>                                   | <u>85</u>                                     |
| Paradise RS         | <u>8.0</u>                                    | <u>71</u>                                     |
| Raymond             | <u>28.0</u>                                   | <u>81</u>                                     |
| Redmond             | <u>17.0</u>                                   | <u>83</u>                                     |
| Republic            | <u>-9.0</u>                                   | <u>87</u>                                     |
| Richland            | <u>11.0</u>                                   | <u>101</u>                                    |
| Ritzville           | <u>6.0</u>                                    | <u>99</u>                                     |
| Satus Pass          | <u>10.0</u>                                   | <u>90</u>                                     |
| Seattle: Sea-Tac AP | <u>24.0</u>                                   | <u>83</u>                                     |
| Sedro Woolley 1 E   | <u>19.0</u>                                   | <u>78</u>                                     |
| Sequim              | <u>23.0</u>                                   | <u>78</u>                                     |
| Shelton             | <u>23.0</u>                                   | <u>85</u>                                     |
| Smyrna              | <u>8.0</u>                                    | <u>102</u>                                    |
| Snohomish           | <u>21.0</u>                                   | <u>81</u>                                     |
| Snoqualmie Pass     | <u>6.0</u>                                    | <u>80</u>                                     |
| Spokane AP          | <u>4.0</u>                                    | <u>92</u>                                     |
| Spokane CO          | <u>10.0</u>                                   | <u>96</u>                                     |
| Stampede Pass       | <u>7.0</u>                                    | <u>76</u>                                     |
| Stehekin 3 NW       | <u>12.0</u>                                   | <u>85</u>                                     |
| Stevens Pass        | <u>6.0</u>                                    | <u>77</u>                                     |
| Tacoma CO           | <u>29.0</u>                                   | <u>82</u>                                     |
| Tatoosh Island      | <u>31.0</u>                                   | <u>63</u>                                     |
| Toledo AP           | <u>17.0</u>                                   | <u>84</u>                                     |
| Vancouver           | <u>22.0</u>                                   | <u>88</u>                                     |

**TABLE 3-1  
OUTDOOR DESIGN TEMPERATURES**

| <u>Location</u> | <u>Outdoor Design Temp. (in °F) (heating)</u> | <u>Outdoor Design Temp. (in °F) (cooling)</u> |
|-----------------|---|---|
| Vashon Island   | <u>28.0</u>                                   | <u>78</u>                                     |
| Walla Walla AP  | <u>6.0</u>                                    | <u>96</u>                                     |
| Waterville      | <u>1.0</u>                                    | <u>88</u>                                     |
| Wellpinit       | <u>1.0</u>                                    | <u>93</u>                                     |
| Wenatchee CO    | <u>10.0</u>                                   | <u>92</u>                                     |
| Whidbey Island  | <u>11.0</u>                                   | <u>71</u>                                     |
| Willapa Harbor  | <u>26.0</u>                                   | <u>81</u>                                     |
| Wilson Creek    | <u>3.0</u>                                    | <u>96</u>                                     |
| Winthrop 1 WSW  | <u>-12.0</u>                                  | <u>91</u>                                     |
| Yakima AP       | <u>11.0</u>                                   | <u>94</u>                                     |

**AMENDATORY SECTION** (Amending WSR 91-01-112, filed 12/19/90, effective 7/1/91)

**WAC 51-11-0303 Mechanical ventilation.** (~~For all Occupancies,~~) The minimum requirements for ventilation shall comply with Section M1508 of the Washington State ((Ventilation Code and Indoor Air Quality)) Residential Code. (WAC ((51-13)) 51-51.)

**AMENDATORY SECTION** (Amending WSR 93-21-052, filed 10/18/93, effective 4/1/94)

**WAC 51-11-0401 Scope.**

401.1 General: This chapter establishes design criteria in terms of total energy use by a building, including all of its systems. Analysis of design for all ~~((Group R Occupancy))~~ single-family residential shall comply with Sections 402.1 to 402.6. In addition, the design shall comply with the additional energy efficiency requirements of Chapter 9.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0402 Systems analysis.**

402.1 Special Requirements for ~~((All Group R Occupancy))~~ Single-Family Residential:

402.1.1 Energy Budgets: Proposed buildings designed in accordance with this section shall be designed to use no more energy from nonrenewable sources for space heating, space cooling and domestic hot water heating than a standard building whose enclosure elements and energy consuming systems are designed in accordance with section 502.2 of this Code for the appropriate climate zone, and heating system type and cooling system and whose mechanical system type is the same as the proposed building and which complies with Section 503 of this Code. Energy derived from renewable sources may be excluded from the total annual energy consumption attributed to the alternative building.



402.1.2 Calculation of Energy Consumption: The application for a building permit shall include documentation which demonstrates, using a calculation procedure as listed in Chapter 8, or an approved alternate, that the proposed building's annual space heating, space cooling and domestic hot water heating energy use does not exceed the annual space heating, space cooling and domestic hot water heating energy use of a standard building conforming to Chapter 5 of this Code for the appropriate climate zone. The total calculated annual energy consumption shall be shown in units of kWh/ft<sup>2</sup>-yr or Btu/ft<sup>2</sup>-yr of conditioned area.

402.1.3 Input Values: The following standardized input values shall be used in calculating annual space heating budgets:

| PARAMETER                                | VALUE   |
|--|---|
| Thermostat set point, heating            | 65° F   |
| Thermostat set point, cooling            | 78° F   |
| Thermostat night set back                | 65° F   |
| Thermostat night set back period         | 0 hours   |
| Internal gain                            | <u>3000 Btu/h</u>   |
| <del>((R-3 and R-4 units</del>           | <del>3000 Btu/hr</del>  |
| <del>R-1 and R-2 units</del>             | <del>1500 Btu/hr)</del>   |
| Domestic Hot Water Heater Setpoint       | 120° F  |
| Domestic Hot Water Consumption           | 20 gallons/person/day.  |
| Minimum heat storage                     | Calculated using standard engineering practice for the actual building or as approved.                                |
| Site weather data                        | Typical meteorological year (TMY) or ersatz TMY data for the closest appropriate TMY site or other sites as approved. |
| Heating and cooling equipment efficiency | Equipment shall comply with Section 1411.   |

The standard building shall be modeled with glazing area distributed equally among the four cardinal directions. Parameter values that may be varied by the building designer to model energy saving options include, but are not limited to, the following:

1. Overall thermal transmittance, U<sub>o</sub>, of building envelope or individual building components;
2. Heat storage capacity of building;
3. Glazing orientation; area; and solar heat coefficients; (where Chapter 5 does not contain SHGC requirements, the standard design shall be modeled with glazing SHGC as determined by Tables 13-1 and 13-2. SHGC values shall be determined in accordance with Section 1312.2.)

4. Heating system efficiency.

Parameter values that may not be varied:

- Domestic hot water consumption.

402.1.4 Solar Shading and Access: Building designs using passive solar features with eight percent or more south facing equivalent glazing to qualify shall provide to the building official a sun chart or other approved documentation depicting actual site shading for use in calculating compliance under this section. The building shall contain at least forty-five Btu/°F for each square foot of south facing glass.

402.1.5 Infiltration: Infiltration levels used shall be set at 0.35 air changes per hour for thermal calculation purposes only.

402.1.6 Heat Pumps: The heating season performance factor (HSPF) for heat pumps shall be calculated using procedures consistent with section 5.2 of the U.S. Department of Energy Test Procedure for Central Air Conditioners, including heat pumps published in the December 27, 1979 Federal Register Vol. 44, No. 24.10 CFR 430. Climate data as specified above, the proposed buildings overall thermal performance value (Btu/°F) and the standardized input assumptions specified above shall be used to model the heat pumps HSPF.

402.2 Energy Analysis: Compliance with this chapter will require an analysis of the annual energy usage, hereinafter called an annual energy analysis.

EXCEPTIONS: Chapters 5, and 6 of this Code establish criteria for different energy-consuming and enclosure elements of the building which, will eliminate the requirement for an annual systems energy analysis while meeting the intent of this Code.

A building designed in accordance with this chapter will be deemed as complying with this Code if the calculated annual energy consumption is ~~((not greater than))~~ 16 percent less than a similar building (defined as a "standard design") whose enclosure elements and energy-consuming systems are designed in accordance with Chapter 5.

For an alternate building design to be considered similar to a "standard design," it shall utilize the same energy source(s) for the same functions and have equal floor area and the same ratio of envelope area to floor area, environmental requirements, occupancy, climate data and usage operational schedule.

402.3 Design: The standard design, conforming to the criteria of Chapter 5 and the proposed alternative design shall be designed on a common basis as specified herein:

The comparison shall be expressed as kBtu or kWh input per square foot of conditioned floor area per year at the building site.

402.4 Analysis Procedure: The analysis of the annual energy usage of the standard and the proposed alternative building and system design shall meet the following criteria:

- a. The building heating/cooling load calculation procedure used for annual energy consumption analysis shall be detailed to permit the evaluation of effect of factors specified in section 402.5.

b. The calculation procedure used to simulate the operation of the building and its service systems through a full-year operating period shall be detailed to permit the evaluation of the effect of system design, climatic factors, operational characteristics, and mechanical equipment on annual energy usage. Manufacturer's data or comparable field test data shall be used when available in the simulation of systems and equipment. The calculation procedure shall be based upon eight thousand seven hundred sixty hours of operation of the building and its service systems.

402.5 Calculation Procedure: The calculation procedure shall cover the following items:

a. Design requirements—Environmental requirements as required in Chapter 3.

b. Climatic data—Coincident hourly data for temperatures, solar radiation, wind and humidity of typical days in the year representing seasonal variation.

c. Building data—Orientation, size, shape, mass, air, moisture and heat transfer characteristics.

d. Operational characteristics—Temperature, humidity, ventilation, illumination, control mode for occupied and unoccupied hours.

e. Mechanical equipment—Design capacity, part load profile.

f. Building loads—Internal heat generation, lighting, equipment, number of people during occupied and unoccupied periods.

EXCEPTION: ((Group R—Occupancy)) Single-family residential shall comply with calculation procedures in Chapter 8, or an approved alternate.

402.6 Documentation: Proposed alternative designs, submitted as requests for exception to the standard design criteria, shall be accompanied by an energy analysis comparison report. The report shall provide technical detail on the two building and system designs and on the data used in and resulting from the comparative analysis to verify that both the analysis and the designs meet the criteria of Chapter 4 of this Code.

AMENDATORY SECTION (Amending WSR 91-01-112, filed 12/19/90, effective 7/1/91)

#### **WAC 51-11-0501 Scope.**

501.1 General: Buildings that are heated or mechanically cooled shall be constructed so as to provide the required thermal performance of the various components. A building that is designed to be both heated and cooled shall meet the more stringent of the heating or cooling requirements as provided in this Code when requirements of the exterior envelope differ. In addition, the design shall comply with the additional energy efficiency requirements of Chapter 9.

AMENDATORY SECTION (Amending WSR 09-06-024, filed 2/23/09, effective 7/1/10)

#### **WAC 51-11-0502 Building envelope requirements.**

##### 502.1 General:

502.1.1: The stated U- or F-factor of any component assembly, listed in Table 5-1, such as roof/ceiling, opaque wall or opaque floor may be increased and the U-factor for other components decreased, provided that the total heat gain or loss for the entire building envelope does not exceed the total resulting from compliance to the U-factors specified in this section.

The U-factors for typical construction assemblies are included in Chapter 10. These values shall be used for all calculations. Where proposed construction assemblies are not represented in Chapter 10, values shall be calculated in accordance with Chapters ~~((23-30))~~ 16 through 18 and 25 through 27 in Standard RS-1 listed in Chapter 7, using the framing factors listed in Chapter 10 where applicable.

For envelope assemblies containing metal framing, the U-factor shall be determined by one of the following methods:

1. Results of laboratory or field measurements.
2. Standard RS-1, listed in Chapter 7, where the metal framing is bonded on one or both sides to a metal skin or covering.
3. The zone method as provided in Chapter ~~((25))~~ 27 of Standard RS-1, listed in Chapter 7.
4. Results of parallel path correction factors effective framing/cavity R-values as provided in Table 10-5A - EFFECTIVE R-VALUES FOR METAL FRAMING AND CAVITY ONLY for metal stud walls and roof/ceilings.

502.1.2: For consideration of thermal mass effects, see section 402.4.

502.1.3: When return air ceiling plenums are employed, the roof/ceiling assembly shall:

- a. For thermal transmittance purposes, not include the ceiling proper nor the plenum space as part of the assembly; and
- b. For gross area purposes, be based upon the interior face of the upper plenum surface.

##### 502.1.4 Insulation:

502.1.4.1 General: All insulating materials shall comply with sections 2603 and/or 719 of the International Building Code. Substantial contact of the insulation with the surface being insulated is required. All insulation materials shall be installed according to the manufacturer's instructions to achieve proper densities and maintain uniform R-values and shall be installed in a manner which will permit inspection of the manufacturer's R-value identification mark. To the maximum extent possible, insulation shall extend over the full component area to the intended R-value.

~~((Alternatively,))~~ The thickness of roof/ceiling ~~((and wall))~~ insulation that is either blown in or spray-applied shall be identified by inches of thickness, density and R-value markers installed at least one for every 300 square feet (28 m<sup>2</sup>) through the attic, ceiling ~~((and/or wall))~~ space. In attics, the markers shall be affixed to the trusses or joists and marked with the minimum initial installed thickness ~~((and minimum settled thickness))~~ with numbers a minimum 1.0 inch (25 mm) in height. Each marker shall face the attic access. The thickness of installed attic insulation shall meet or exceed the minimum initial installed thickness shown by the marker. ~~((In cathedral ceilings and walls, the markers shall be affixed to the rafter and wall frame at alternating high and low intervals and marked with the minimum installed density and R-value with numbers a minimum 1.0 inch (25 mm) in height. Each marker shall face the conditioned room area.))~~

502.1.4.2 Insulation Materials: All insulation materials including facings such as vapor barriers or breather papers installed within floor/ceiling assemblies, roof/ceiling assemblies, walls, crawl spaces, or attics shall have a flame spread rating of less than 25 and a smoke density not to exceed 450 when tested in accordance with ASTM E84-01.

EXCEPTIONS:

1. Foam plastic insulation shall comply with section 2603 of the International Building Code.
2. When such materials are installed in concealed spaces of Types III, IV and V construction, the flame spread and smoke developed limitations do not apply to facing, provided that the facing is installed in substantial contact with the unexposed surface of the ceiling, floor or wall finish.
3. Cellulose insulation shall comply with section 719 of the International Building Code.

502.1.4.3 Clearances: Where required, insulation shall be installed with clearances according to manufacturer's specifications. Insulation shall be installed so that required ventilation is unobstructed. For blown or poured loose fill insulation, clearances shall be maintained through installation of a permanent retainer.

502.1.4.4 Access Hatches and Doors: Access doors from conditioned spaces to unconditioned spaces (e.g., attics and crawl spaces) shall be weatherstripped and insulated to a level equivalent to the insulation on the surrounding surfaces. Access shall be provided to all equipment which prevents damaging or compressing the insulation. A wood framed or equivalent baffle or retainer must be provided when loose fill insulation is installed, the purpose of which is to prevent the loose fill insulation from spilling into the living space when the attic access is opened, and to provide a permanent means of maintaining the installed R-value of the loose fill insulation.

502.1.4.5 Roof/Ceiling Insulation: Where two or more layers of rigid board insulation are used in a roof assembly, the vertical joints between each layer shall be staggered. Open-blown or poured loose fill insulation may be used in attic spaces where the slope of the ceiling is not more than 3 feet in 12 and there is at least 30 inches of clear distance from the top of the bottom chord of the truss or ceiling joist to the underside of the sheathing at the roof ridge. When eave vents

are installed, baffling of the vent openings shall be provided so as to deflect the incoming air above the surface of the insulation. Baffles shall be, rigid material, resistant to wind driven moisture. Requirements for baffles for ceiling insulation shall meet the International Building Code section 1203.2 for minimum ventilation requirements. When feasible, the baffles shall be installed from the top of the outside of the exterior wall, extending inward, to a point 6 inches vertically above the height of noncompressed insulation, and 12 inches vertically above loose fill insulation.

502.1.4.6 Wall Insulation: Insulation installed in exterior walls shall comply with the provisions of this section. All wall insulation shall fill the entire framed cavity. Exterior wall cavities isolated during framing shall be fully insulated to the levels of the surrounding walls. All faced insulation shall be face stapled to avoid compression.

EXCEPTION:

Framed cavity can be empty or partially filled provided:

1. The wall assembly calculations are performed along with a completed performance calculation for the whole building; and
2. Insulation installed in partially filled cavities is not included in the performance calculation.

502.1.4.7 Floor Insulation: Floor insulation shall be installed in a permanent manner in substantial contact with the surface being insulated. Insulation supports shall be installed so spacing is no more than 24 inches on center. Foundation vents shall be placed so that the top of the vent is below the lower surface of the floor insulation.

EXCEPTIONS:

1. Insulation may be omitted from floor areas over heated basements, heated garages or underfloor areas used as HVAC supply plenums. When foundation walls are insulated, the insulation shall be attached in a permanent manner. The insulation shall not block the airflow through foundation vents when installed. When foundation vents are not placed so that the top of the vent is below the lower surface of the floor insulation, a permanently attached baffle shall be installed at an angle of 30° from horizontal, to divert air flow below the lower surface of the floor insulation.
2. Substantial contact with the surface being insulated is not required in enclosed floor/ceiling assemblies containing ducts where full depth insulation is installed between the duct and the exterior surface.

502.1.4.8 Slab-On-Grade: Slab-on-grade insulation(~~(; installed)) shall be placed on the outside of the foundation or on the inside of the foundation wall(~~(;))~~. The insulation shall extend downward from the top of the slab for a minimum distance of 24 inches or downward to at least the bottom of the slab and then horizontally ((beneath the slab for a minimum combined distance of 24 inches. Insulation installed outside the foundation shall extend downward to a minimum of 24 inches or to the frostline)) to the interior or exterior for the total distance of 24 inches.~~ Above grade insulation shall be protected. A 2-inch by 2-inch (maximum) nailer may be placed at the finished floor elevation for attachment of interior finish materials.

~~((EXCEPTION: For monolithic slabs, the insulation shall extend downward from the top of the slab to the bottom of the footing.))~~

502.1.4.9 Radiant Slabs: The entire area of a radiant slab shall be thermally isolated from the soil, with a minimum of R-10 insulation. The insulation shall be an approved product for its intended use. If a soil gas control system is present below the radiant slab, which results in increased convective flow below the radiant slab, the radiant slab shall be thermally isolated from the sub-slab gravel layer. R-10 radiant slab insulation is required for all compliance paths.

502.1.4.10 Below Grade Walls: Below grade exterior wall insulation used on the exterior (cold) side of the wall shall extend from the top of the below grade wall to the top of the footing and shall be approved for below grade use. Above grade insulation shall be protected.

Insulation used on the interior (warm) side of the wall shall extend from the top of the below grade wall to the below grade floor level.

502.1.5 Glazing and Door U-factors: Glazing and door U-factors shall be determined in accordance with sections 502.1.5.1 and 502.1.5.2. All products shall be labeled with the NFRC certified or default U-factor. The labeled U-factor shall be used in all calculations to determine compliance with this Code. Sealed insulating glass shall conform to, or be in test for, ASTM E-774-81 class A.

((EXCEPTIONS: 1. For glazed wall systems, assemblies with all of the following features are deemed to satisfy the vertical glazing U-factor requirement in Table 6-1 or 6-2 options with vertical glazing U-0.40 and greater:  
a. Double glazing with a minimum 1/2 inch gap width, having a low-emissivity coating with e = 0.10 maximum, with 90% minimum argon gas fill, and a non-aluminum spacer (as defined in footnote 1 to Table 10-6B); and  
b. Frame that is thermal break aluminum (as defined in footnote 9 to Table 10-6B), wood, aluminum clad wood, vinyl, aluminum clad vinyl, or reinforced vinyl. The only labeling requirement for products using this exception shall be a description of the product and a label stating: "This product is deemed to satisfy the Table 6-1 or 6-2 vertical glazing U-factor requirement using the exception to Section 502.1.5 in the Washington State Energy Code."  
2. For overhead glazing, assemblies with all of the following features are deemed to satisfy the overhead glazing U-factor requirement in Table 6-1 or 6-2 options ~~except~~ the unlimited glazing area options (Options IV and V in Table 6-1 and Options V, VI and VII in Table 6-2):  
a. Either, double glazing with a minimum 1/2 inch gap width, having a low-emissivity coating with e = 0.20 maximum, with 90% minimum argon gas fill, or, triple glazed plastic domes, and  
b. Frame that is thermal break aluminum (as defined in footnote 9 to Table 10-6B), wood, aluminum clad wood, vinyl, aluminum clad vinyl, or reinforced vinyl. The only labeling requirement for products using this exception shall be a description of the product and a label stating: "This product is deemed to satisfy the Table 6-1 or 6-2 overhead glazing U-factor requirement using the exception to Section 502.1.5 in the Washington State Energy Code."  
3. For solariums with a floor area which does not exceed 300 square feet, assemblies which comply with the features listed in exception 2 are deemed to satisfy the vertical glazing and overhead glazing U-factor requirement in Table 6-1 or 6-2 options with vertical glazing U-0.40 and greater.

The only labeling requirement for products using this exception shall be a description of the product and a label stating: "This product is deemed to satisfy the Table 6-1 or 6-2 vertical glazing and overhead glazing U-factor requirements using the exception to Section 502.1.5 in the Washington State Energy Code.")

502.1.5.1 Standard Procedure for Determination of Glazing U-factors: U-factors for glazing shall be determined, certified and labeled in accordance with the National Fenestration Rating Council (NFRC) Product Certification Program (PCP), as authorized by an independent certification and inspection agency licensed by the NFRC. Compliance shall be based on the Residential Model Size. Product samples used for U-factor determinations shall be production line units or representative of units as purchased by the consumer or contractor. Products that are listed in the NFRC Certified Products Directory or certified to the NFRC standard shall not use default values.

EXCEPTIONS: 1. Glazing products without NFRC ratings may be assigned default U-factors from Table 10-6A for vertical glazing and from Table 10-6E for overhead glazing.  
2. Units without NFRC ratings produced by a small business may be assigned default U-factors from Table 10-6A for garden windows, from Table 10-6B for other vertical glazing, and from Table 10-6E for overhead glazing.

502.1.5.2 Standard Procedure for Determination of Door U-factors: All doors, including fire doors, shall be assigned default U-factors from Table 10-6C.

EXCEPTIONS: 1. U-factors determined, certified and labeled in accordance with the National Fenestration Rating Council (NFRC) Product Certification Program (PCP), as authorized by an independent certification and inspection agency licensed by the NFRC.  
2. The default values for the opaque portions of doors shall be those listed in Table 10-6C, provided that the U-factor listed for a door with a thermal break shall only be allowed if both the door and the frame have a thermal break.  
3. One unlabeled or untested exterior swinging door with the maximum area of 24 square feet may be installed for ornamental, security or architectural purposes. Products using this exception shall not be included in the U-factor calculation requirements, however glazing area shall be included in glazing area calculations.

#### 502.1.6 Moisture Control:

502.1.6.1 Vapor Retarders: Vapor retarders shall be installed on the warm side (in winter) of insulation as specified in the following cases.

EXCEPTION: Vapor retarder installed with not more than 1/3 of the nominal R-value between it and the conditioned space.

502.1.6.2 Floors: Floors separating conditioned space from unconditioned space shall have a vapor retarder installed. The vapor retarder shall have a one perm dry cup rating or less (i.e., four mil (~~(0.004 inch thick)~~) (0.004 inch thick) polyethylene or kraft faced material).

502.1.6.3 Roof/Ceilings: Roof/ceiling assemblies where the ventilation space above the insulation is less than an average of 12 inches shall be provided with a vapor retarder.

Faced batt insulation where used as a vapor retarder shall be face stapled. Single rafter joist vaulted ceiling cavities shall be of sufficient depth to allow a minimum one inch vented air space above the insulation.

**EXCEPTION:**

Unvented attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) shall be permitted if all the following conditions are met:

1. The unvented attic space is completely contained within the building thermal envelope.
2. No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.
3. Where wood shingles or shakes are used, a minimum 1/4 inch (6 mm) vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.
4. Any air-impermeable insulation shall be a vapor retarder, or shall have a vapor retarder coating or covering in direct contact with the underside of the insulation.
  5. Either items a, b or c shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.
    - a. Air-impermeable insulation only. Insulation shall be applied in direct contact to the underside of the structural roof sheathing.
    - b. Air-permeable insulation only. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing as specified per WA Climate Zone for condensation control.
      - i. Climate Zone #1 R-10 minimum rigid board or air-impermeable insulation R-value.
      - ii. Climate Zone #2 R-25 minimum rigid board or air-impermeable insulation R-value.
    - c. Air-impermeable and air-permeable insulation. The air-impermeable insulation shall be applied in direct contact to the underside of the structural roof sheathing as specified per WA Climate Zone for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.
      - i. Climate Zone #1 R-10 minimum rigid board or air-impermeable insulation R-value.
      - ii. Climate Zone #2 R-25 minimum rigid board or air-impermeable insulation R-value.

502.1.6.4: Vapor retarders shall not be required in roof/ceiling assemblies where the ventilation space above the insulation averages 12 inches or greater.

502.1.6.5: Vapor retarders shall not be required where all of the insulation is installed between the roof membrane and the structural roof deck.

502.1.6.6 Walls: Walls separating conditioned space from unconditioned space shall have a vapor retarder installed. Faced batt insulation shall be face stapled.

**EXCEPTION:**

For climate zone 1, wood framed walls with a minimum of nominal R-5 continuous insulated sheathing installed outside of the framing and structural sheathing. For climate zone 2, wood framed walls with a minimum of nominal R-7.5 continuous insulated sheathing installed outside of the framing and structural sheathing. The interior cavity insulation for this exception shall be a maximum of nominal R-21.

502.1.6.7 Ground Cover: A ground cover of six mil (0.006 inch thick) black polyethylene or approved equal shall be laid over the ground within crawl spaces. The ground

cover shall be overlapped 12 inches minimum at the joints and shall extend to the foundation wall.

**EXCEPTION:**

The ground cover may be omitted in crawl spaces if the crawl space has a concrete slab floor with a minimum thickness of 3-1/2 inches.

### 502.2 Thermal Criteria for ((Group R Occupancy)) Single-Family Residential:

502.2.1 UA Calculations: The proposed UA as calculated using Equations 2 and 3 shall not exceed the target UA as calculated using Equation 1. For the purpose of determining equivalent thermal performance, the glazing area for the target UA shall be calculated using values in Table 5-1. The opaque door area shall be the same in the target UA and the proposed UA. When showing compliance with Table 9-1 using options 3a, 3b or 3c, the proposed design shall be less than the target UA by the fraction noted in the table.

**EXCEPTION:**

Log and solid timber walls that have a minimum average thickness of 3.5" and with space heat type other than electric resistance, are exempt from wall target UA and proposed UA calculations.

502.2.2 Space Heat Type: The following two categories comprise all space heating types:

1. Electric Resistance: Space heating systems which include baseboard units, radiant units and forced air units as either the primary or secondary heating system.

**EXCEPTION:**

Electric resistance systems for which the total electric heat capacity in each individual dwelling unit does not exceed the greater of: 1) One thousand watts (1000 w) per dwelling unit, or; 2) One watt per square foot (1 w/ft<sup>2</sup>) of the gross floor area.

2. Other: All gas, wood, oil and propane space heating systems, unless electric resistance is used as a secondary heating system, and all heat pump space heating systems. (See EXCEPTIONS, Electric Resistance, section 502.2.2 above.)

502.3 Reserved.

502.4 Air Leakage:

502.4.1 General: The requirements of this section shall apply to all buildings and structures, or portions thereof, and only to those locations separating outdoor ambient conditions from interior spaces that are heated or mechanically cooled.

502.4.2 Doors and Windows, General: Exterior doors and windows shall be designed to limit air leakage into or from the building envelope. Site-constructed doors and windows shall be sealed in accordance with Section 502.4.3.

502.4.3 Seals and Weatherstripping:

a. Exterior joints around windows and door frames, openings between walls and foundation, between walls and roof and wall panels; openings at penetrations of utility services through walls, floors and roofs; and all other openings in the building envelope (~~for all occupancies~~) and all other openings in between units (~~in R-1 and R-2 Occupancy~~) shall be sealed, caulked, gasketed or weatherstripped to limit air leakage. Other exterior joints and seams shall be similarly

treated, or taped, or covered with moisture vapor permeable housewrap.

b. All exterior doors or doors serving as access to an enclosed unheated area shall be weatherstripped to limit leakage around their perimeter when in a closed position.

c. Site built windows are exempt from testing but shall be made tight fitting. Fixed lights shall have glass retained by stops with sealant or caulking all around. Operating sash shall have weatherstripping working against overlapping trim and a closer/latch which will hold the sash closed. The window frame to framing crack shall be made tight with caulking, overlapping membrane or other approved technique.

d. Openings that are required to be fire resistive are exempt from this section.

502.4.4 Recessed (~~(Lighting Fixtures)~~) Luminaires: When installed in contact with the building envelope, recessed (~~(lighting fixtures)~~) luminaires shall be Type IC rated and certified under ASTM E283 to have no more than 2.0 cfm air movement from the conditioned space to the ceiling cavity. The (~~(lighting fixture)~~) luminaire shall be tested at 75 Pascals or 1.57 lbs/ft<sup>2</sup> pressure difference and have a label attached, showing compliance with this test method. Recessed (~~(lighting fixtures)~~) luminaires shall be installed with a gasket or caulk between the fixture and ceiling to prevent air leakage.

502.4.5 Building Air Leakage Testing: Building envelope air leakage control shall be considered acceptable when tested to have an air leakage is less than 0.00030 Specific Leakage Area (SLA) when tested with a blower door at a pressure of 50 Pascals (0.2 inch w.g.). Testing shall occur any time after rough in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation, and combustion appliances and sealing thereof. When required by the building official, the test shall be conducted in the presence of department staff. The blower door test results shall be recorded on the certificate required in Section 105.4.

- EXCEPTIONS:
1. Additions less than 750 square feet.
  2. Once a visual inspection has confirmed the presence of a gasket (see Section 502.4), operable windows and doors manufactured by a small business shall be permitted to be sealed off at the frame prior to the test.

Specific Leakage Area (SLA) shall be calculated as follows:

SLA ≡ (CFM50 x 0.055) / (CFA x 144)

Where:

- CFM50 ≡ Blower door fan flow at 50 Pascal pressure difference  
 CFA ≡ Conditioned Floor Area of the housing unit

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed;
2. Dampers shall be closed, but not sealed; including exhaust, intake, makeup air, back draft, and flue dampers;

3. Interior doors connecting conditioned spaces shall be open; access hatches to conditioned crawl spaces and conditioned attics shall be open; doors connecting to unconditioned spaces closed but not sealed;

4. Exterior openings for continuous operation ventilation systems and heat recovery ventilators shall be closed and sealed;

5. Heating and cooling system(s) shall be turned off;

6. HVAC ducts supply and return registers shall not be sealed.

AMENDATORY SECTION (Amending WSR 09-06-024, filed 2/23/09, effective 7/1/10)

**WAC 51-11-0503 ((Building)) Mechanical systems.**

503.1 General: This section covers the determination of design requirements, system and component performance, control requirements, insulating systems and duct sealing. For all other duct construction requirements, refer to the State Mechanical Code (chapter (~~(51-42)~~) 51-52 WAC).

503.2 Calculations of Heating and Cooling Loads, and System Sizing Limits: The design parameters specified in Chapter 3 shall apply for all computations.

503.2.1 Calculation Procedures: Heating and cooling design loads for the purpose of sizing HVAC systems are required and shall be calculated in accordance with accepted engineering practice, including infiltration and ventilation.

503.2.2 Space Heating and Space Cooling System Sizing Limits: ((~~Building~~) Mechanical) systems for all buildings which provide space heating and/or space cooling shall be sized (~~(no greater than one hundred fifty percent (150%) of the heating and cooling design loads as calculated above)~~) as required in IRC Section M1401.3.

- EXCEPTIONS:
- The following limited exemptions from the sizing limit shall be allowed; however, in all cases heating and/or cooling design load calculations shall be submitted.
1. For equipment which provides both heating and cooling in one package unit, including heat pumps with electric heating and cooling and gas-pack units with gas heating and electric cooling, compliance need only be demonstrated for ((~~either~~) the larger of the space heating or space cooling load for the selected system size.)
  2. Natural gas- or oil-fired space heating equipment whose total rated space heating output in any one dwelling unit is 40,000 Btu/h or less is exempt from the sizing limit.  
 ((a. 40,000 Btu/h or less is exempt from the sizing limit,  
 b. Larger than 40,000 Btu/h may exceed the one hundred fifty (150%) percent sizing limit but not exceed 250 percent provided that the installed equipment has an annual fuel utilization efficiency (AFUE) of ninety (90%) percent or greater.))
  3. Stand-by equipment may be installed if controls and other devices are provided which allow redundant equipment to operate only when the primary equipment is not operating.
  4. Electric resistance heaters under 2 kW.

503.3 Simultaneous Heating and Cooling: Systems and equipment that provide simultaneous heating and cooling

shall comply with the requirements in, as appropriate, Section 1422 or Section 1435.

503.4 HVAC Equipment Performance Requirements: All heating equipment shall meet the requirements of the National Appliance Energy Conservation Act (NAECA) and be so labeled. Equipment shall also comply with Section 1411.

503.4.1 Fan Power: Furnace and space conditioning air handling equipment covered under this section shall have direct induction fans (variable speed DC motors) with the capability of having reduced speed of at least 75 percent of the main rating power. The use of these fans for ventilation or circulation separate from space conditioning shall be restricted to a maximum of 50 percent of the rated fan power.

503.5 Reserved.

503.6 Balancing: The HVAC system design shall provide a means for balancing air and water systems. Balancing the system shall include, but not be limited to, dampers, temperature and pressure test connections and balancing valves.

503.7 Cooling with Outdoor Air (Economizer Cycle): Systems and equipment that provide mechanical cooling shall comply with Section 1413 and, as appropriate, Section 1423 or 1433.

503.8 Controls:

503.8.1 Temperature Control: The primary space conditioning system within each dwelling unit shall be provided with at least one programmable thermostat for the regulation of temperature. The thermostat shall allow for, at a minimum, a 5-2 programmable schedule (weekdays/weekends) and be capable of providing at least two programmable setback periods per day.

Each additional system provided within a dwelling unit shall be provided with at least one adjustable thermostat for the regulation of temperature. The thermostat shall allow for, at a minimum, a 5-2 programmable scheduled (weekdays/weekends).

EXCEPTIONS:

1. Systems controlled by an occupant sensor that is capable of shutting the system off when no occupant is sensed for a period of up to thirty minutes.
2. Systems controlled solely by a manually operated timer capable of operating the system for no more than two hours.

Each thermostat shall be capable of being set by adjustment or selection of sensors as follows:

503.8.1.1: When used to control heating only: Fifty-five degrees to seventy-five degrees F.

503.8.1.2: When used to control cooling only: Seventy degrees to eighty-five degrees F.

503.8.1.3: When used to control both heating and cooling, it shall be capable of being set from fifty-five degrees to eighty-five degrees F and shall be capable of operating the system heating and cooling in sequence. The thermostat and/or control system shall have an adjustable deadband of not less than ten degrees F.

503.8.2 Humidity Control: If a system is equipped with a means for adding moisture to maintain specific selected relative humidities in space or zones, a humidistat shall be provided. Humidistats shall be capable of being set to prevent new energy from being used to produce space-relative humidity above thirty percent.

EXCEPTION: Special uses requiring different relative humidities may be permitted when approved by the building official.

503.8.3 Zoning for Temperature Control:

503.8.3.1 One- and Two-Family Dwellings: At least one thermostat for regulation of space temperature shall be provided for each separate system. In addition, a readily accessible manual or automatic means shall be provided to partially restrict or shut off the heating and/or cooling input to each zone or floor.

503.8.3.2 Multifamily Dwellings: For multifamily dwellings, each individual dwelling unit shall have at least one thermostat for regulation of space temperature. A readily accessible manual or automatic means shall be provided to partially restrict or shut off the heating and/or cooling input to each room. Spaces other than living units shall meet the requirements of 503.8.3.3.

503.8.3.3 Control Setback and Shutoff:

One- and Two-Family and Individual Multifamily dwelling units—The thermostat required in section 503.8.3.1 or section 503.8.3.2, or an alternate means such as a switch or clock, shall provide a readily accessible, manual or automatic means for reducing the energy required for heating and cooling during the periods of nonuse or reduced need, such as, but not limited to unoccupied periods and sleeping hours. Lowering thermostat set points to reduce energy consumption of heating systems shall not cause energy to be expended to reach the reduced setting.

503.8.3.4 Systems Serving Multiple Dwelling Units, Guest Rooms, and Common Areas: Systems that serve more than two dwelling units, guest rooms, and common areas shall comply with the control requirements in Sections 1412 and 1432, with the exceptions of Sections 1412.4.2 and 1432.1.

503.8.3.5 Heat Pump Controls: ((Programmable thermostats are required for all heat pump systems. The cut on temperature for the compression heating shall be higher than the cut on temperature for the supplementary heat, and the cut-off temperature for the compression heating shall be higher than the cut-off temperature for the supplementary heat. Heat pump thermostats will be capable of providing at least two programmable setback periods per day. The automatic setback thermostat shall have the capability of limiting the use of supplemental heat during the warm-up period.)) Heat pumps with supplementary electric resistance heaters shall have controls complying with Section 503.8.1. In addition, controls shall meet the following requirements:

1. Prevent supplementary heater operation when the heating load can be met by the heat pump alone; and

2. The cut-on temperature for compression heating shall be higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compressing heating shall be higher than the cut-off temperature for supplementary heating.

All heat pumps installed under this section shall include the capability to lock out the supplementary heat based on outdoor temperature. This control shall have a maximum setting of 40°F. At final inspection, the lock out control shall be set to 32°F or less.

EXCEPTION: The controls may allow supplementary heater operation during defrost.

503.9 Air Handling Duct System Insulation: Ducts, plenums and enclosures installed in or on buildings shall be thermally insulated per Table 5-11.

EXCEPTIONS: Duct insulation (except where required to prevent condensation) is not required in any of the following cases:

1. When the heat gain or loss of the ducts, without insulation, will not increase the energy requirements of the building.
2. Within the HVAC equipment.
3. Exhaust air ducts.
4. Supply or return air ducts installed in ~~((unvented crawl spaces with insulated walls,))~~ basements(;) or cellars in one- and two-family dwellings.
5. The insulation required on supply air ducts may be reduced to R-4 when installed in buffer spaces not intended for human occupancy such as insulation crawl spaces and enclosed attic spaces. The buffer space must be air sealed and insulated to the full value of conditioned spaces.

### 503.10 Ducts.

503.10.1 Installation of ducts in exterior walls, floors or ceilings shall not displace required envelope insulation. Building cavities may not be used as ducts.

503.10.2 Leakage Testing: ~~((High-pressure and medium-pressure ducts shall be leak tested in accordance with the 1985 Edition of the SMACNA HVAC Air Duct Leakage Test Manual with the rate of air leakage not to exceed the maximum rate specified in that standard.))~~ Ducts shall be leak tested in accordance with RS-33, using the maximum duct leakage rates specified in Section 503.10.3.

~~((503.10.2))~~ 503.10.3 Sealing: All ducts, air handlers, filter boxes, and building cavities used as ducts shall be sealed. Joints and seams shall comply with Section M1601.3 of the International Residential Code or Section 603.9 of the International Mechanical Code. Duct tightness testing shall be conducted to verify that the ducts are sealed. A signed affidavit documenting the test results shall be provided to the jurisdiction having authority by the testing agent. When required by the building official, the test shall be conducted in the presence of department staff. Duct tightness shall be verified by either of the following:

1. Postconstruction test: Leakage to outdoors shall be less than or equal to 6 cfm per 100 ft<sup>2</sup> of conditioned floor area or a total leakage less than or equal to 8 cfm per 100 ft<sup>2</sup> of conditioned floor area when tested at a pressure differen-

tial of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.

2. Rough-in test: Total leakage shall be less than or equal to 6 cfm per 100 ft<sup>2</sup> of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the roughed-in system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 4 cfm per 100 ft<sup>2</sup> of conditioned floor area.

EXCEPTIONS:

1. Duct tightness test is not required if the air handler and all ducts are located within conditioned space.
2. Duct tightness test is not required if the furnace is a nondirect vent type combustion appliance installed in an unconditioned space. A maximum of six feet of connected ductwork in the unconditioned space is allowed. All additional supply and return ducts shall be within the conditioned space. Ducts outside the conditioned space shall be sealed with a mastic type duct sealant and insulated on the exterior with R-8 insulation for above grade ducts and R-5 water resistant insulation when within a slab or earth.

~~((503.10.3))~~ 503.10.4 Dampers: Requirements for Automatic or manual dampers are found in Chapter 15 of the Washington State ((Ventilation and Indoor Air Quality Code)) Residential Code (chapter 51-51 WAC).

503.11 Pipe Insulation: All piping shall be thermally insulated in accordance with Table 5-12.

EXCEPTION: Piping installed within unitary HVAC equipment.

Cold water pipes outside the conditioned space shall be insulated in accordance with the Washington State Plumbing Code (chapter 51-56 WAC).

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0504 ((Service)) Domestic water ((heating)) systems.**

504.1 Scope: The purpose of this section is to provide criteria for design and equipment selection that will produce energy savings when applied to ~~((service))~~ domestic water ((heating)) systems.

### 504.2 Water Heaters, Storage Tanks and Boilers:

504.2.1 Performance Efficiency: ~~((All Storage water heaters shall meet the requirements of the National Appliance Energy Conservation Act and be so labeled.))~~ Domestic water heating equipment shall comply with the applicable efficiencies in Tables 14-1A through 14-1G. All electric water heaters in unheated spaces or on concrete floors shall be placed on an incompressible, insulated surface with a minimum thermal resistance of R-10.

For combination space and service water heaters with a principal function of providing space heat, the Combined Annual Efficiency (CAE) may be calculated by using ASHRAE Standard 124-1991. Storage water heaters used in combination space heat and water heat applications shall



have either an Energy Factor (EF) or a Combined Annual Efficiency (CAE) of not less than the following:

|                         | Energy Factor (EF) | Combined Annual Efficiency (CAE) |
|-------------------------|--------------------|----------------------------------|
| <50 gallon storage      | 0.58               | 0.71                             |
| 50 to 70 gallon storage | 0.57               | 0.71                             |
| >70 gallon storage      | 0.55               | 0.70                             |

EXCEPTIONS:

1. Systems with service/space heating boilers having a standby loss Btu/h less than:
 
$$(13.3 \text{ pmd} + 400)/n$$
 determined by the fixture count method where:

pmd = probably maximum demand in gallons/hour as determined in accordance with Chapter 49 of Standard RS-11.

n = fraction of year when outdoor daily mean temperature exceeds 64.9° F.

The standby loss is to be determined for a test period of twenty-four-hour duration while maintaining a boiler water temperature of ninety degrees F above an ambient of sixty degrees F and a five foot stack on appliance.

2. For systems where the use of a single heating unit will lead to energy savings, such unit shall be utilized.

504.3 Automatic Controls: Service water heating systems shall be equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use. Temperature setting range shall be set to one hundred twenty degrees F or forty-nine degrees C.

504.4 Shutdown: A separate switch shall be provided to permit turning off the energy supplied to electric service water heating systems. A separate valve shall be provided to permit turning off the energy supplied to the main burner(s) of all other types of service water heater systems.

504.5 Swimming Pools:

504.5.1 Controls: All pool heaters shall be equipped with readily accessible ON/OFF switch to allow shutting off the operation of the heater without adjusting the thermostat setting. Controls shall be provided to allow the water temperature to be regulated from the maximum design temperature down to sixty-five degrees F.

504.5.2 Residential Pool Pumps:

504.5.2.1 Motor Efficiency: Pool pump motors may not be split-phase or capacitor start-induction run type.

504.5.2.2 Two-Speed Capability:

1. Pump motors: Pool pump motors with a capacity of 1 hp or more shall have the capability of operating at two or more speeds with low speed having a rotation rate that is no more than one-half of the motor's maximum rotation rate.

2. Pump controls: Pool pump motor controls shall have the capability of operating the pool pump with at least two speeds. The default circulation speed shall be the lowest speed, with a high speed override capability being for a temporary period not to exceed one normal cycle.

504.5.2.3 Portable Electric Spas: The standby power of portable electric spas shall not be greater than  $5(V^{2/3})$  watts where V = the total volume, in gallons.

504.2.2 Insulation: Heat loss from unfired hot-water storage tanks shall be limited to a maximum of 9.6 Btu/hr/ft<sup>2</sup> of external tank surface area. The design ambient temperature shall be no higher than sixty-five degrees F.

504.2.3 Combination Service Water Heating/Space Heating Boilers: Service water heating equipment shall not be dependent on year round operation of space heating boilers.

504.5.3 Pool Covers: Heated swimming pools shall be equipped with a pool cover, approved by the building official.

504.6 Pump Operation: Circulating ((hot)) water systems shall be controlled so that the circulation pump(s) can be conveniently turned off, automatically or manually, when the ((hot)) water system is not in operation.

504.7 Pipe Insulation: Piping shall be thermally insulated in accordance with section 503.11.

504.8 Conservation of ((Hot)) Water:

504.8.1 Showers and Lavatories: Showers and lavatories used for other than safety reasons shall be equipped with flow control devices or specially manufactured showerheads or aerators to limit the total water flow rate as set forth in chapter 51-56 WAC, as measured with both hot and cold faucets turned on to their maximum flow.

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0505 Lighting.**

505.1 **Interior Lighting ((Controls)):** ~~((Hotel and motel guest rooms and guest suites shall have a master control device at the main room entry that controls all permanently installed luminaires and switched receptacles.~~

505.2 **Lighting Power:** Lighting shall comply with the Prescriptive Lighting Option in Section 1520 or the Lighting Power Allowance Option in Section 1530.

- EXCEPTIONS:
1. Group R-3 and R-4 Occupancy and the dwelling unit portions of Group R-1 and R-2 Occupancy.
  2. Lighting exempted by Section 1512.

505.3 **Outdoor))** A minimum of 50 percent of all luminaires shall have a high efficacy lamp.

EXCEPTION: Lighting that complies with the Prescriptive Lighting Option in Section 1520 or the Lighting Power Allowance Option in Section 1530.

505.2 **Exterior Lighting:** Luminaires providing outdoor lighting and permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy luminaires.

controlled by a motion sensor(s) with integral photo-control photosensor.  
2. Permanently installed luminaires in or around swimming pools, water features.

EXCEPTIONS: 1. Permanently installed outdoor luminaires that are not high efficacy shall be allowed provided they are

((505.4)) **505.3 Linear Fluorescent Fixtures:** Linear fluorescent fixtures must be fitted with T-8 or smaller lamps (but not T-10 or T-12 lamps).

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0525 Equation 1—((Group R Occupancy)) Single-family residential.**

**EQUATION 1—((GROUP R OCCUPANCY)) SINGLE-FAMILY RESIDENTIAL  
TARGET UA**

$$UA_T = U_W A_W + U_{BGW} A_{BGW} + U_{VG} A_{VG} + U_{OG} A_{OG} + U_F A_F + U_{RC} A_{RC} + U_{CC} A_{CC} + U_D A_D + F_S P_S$$

**Where:**

- UA<sub>T</sub> = the target combined thermal transmittance of the gross exterior wall, floor and roof/ceiling assembly area.
- U<sub>W</sub> = the thermal transmittance value of the opaque above grade wall area found in Table 5-1.
- A<sub>W</sub> = opaque above grade wall area.
- U<sub>BGW</sub> = the thermal transmittance value of the below grade opaque wall area found in Table 5-1.
- A<sub>BGW</sub> = opaque below grade wall area.
- U<sub>VG</sub> = the thermal transmittance value of the vertical glazing area found in Table 5-1.
- A<sub>VG</sub> = 15% of the total floor area of the conditioned space minus A<sub>OG</sub>
- U<sub>OG</sub> = the thermal transmittance value of the overhead glazing area found in Table 5-1 (see Table 5-1 footnote 2).
- A<sub>OG</sub> = overhead glazing area (if the proposed A<sub>OG</sub> exceeds 15 percent, the target A<sub>OG</sub> shall be 15 percent of the total floor area of the conditioned space).
- U<sub>F</sub> = the thermal transmittance value of the floor area found in Table 5-1.
- A<sub>F</sub> = floor area over unconditioned space.
- U<sub>RC</sub> = the thermal transmittance value of the roof/ceiling area found in Table 5-1.
- A<sub>RC</sub> = roof/ceiling area.
- U<sub>CC</sub> = the thermal transmittance value of the cathedral ceiling area found in Table 5-1.
- A<sub>CC</sub> = cathedral ceiling area.
- U<sub>D</sub> = the thermal transmittance value of the opaque door area found in Table 5-1.
- A<sub>D</sub> = opaque door area.
- F<sub>S</sub> = concrete slab component F-factor found in Table 5-1.
- P<sub>S</sub> = lineal ft. of concrete slab perimeter.

AMENDATORY SECTION (Amending WSR 98-03-003, filed 1/8/98, effective 7/1/98)

**WAC 51-11-0527 Equation 3—((Group R Occupancy)) Single-family residential.**

**EQUATION 3 — ((GROUP R OCCUPANCY)) SINGLE-FAMILY RESIDENTIAL  
PROPOSED UA**

$$UA = U_W A_W + U_{BGW} A_{BGW} + U_{VG} A_{VG} + U_{OG} A_{OG} + U_F A_F + U_{RC} A_{RC} + U_{CC} A_{CC} + U_D A_D + F_S P_S$$

**Where:**

- UA = the combined thermal transmittance of the gross exterior wall, floor and roof/ceiling assembly area.
- U<sub>W</sub> = the thermal transmittance of the opaque wall area.
- A<sub>W</sub> = opaque wall area.
- U<sub>BGW</sub> = the thermal transmittance value of the below grade opaque wall area.

- A<sub>BGW</sub> = opaque below grade wall area.
- U<sub>VG</sub> = the thermal transmittance value of the vertical glazing area.
- A<sub>VG</sub> = vertical glazing area, including windows in exterior doors.
- U<sub>OG</sub> = the thermal transmittance value of the overhead glazing area.
- A<sub>OG</sub> = overhead glazing area.
- U<sub>F</sub> = the thermal transmittance of the floor area.
- A<sub>F</sub> = floor area over unconditioned space.
- U<sub>RC</sub> = the thermal transmittance of the roof/ceiling area.
- A<sub>RC</sub> = roof/ceiling area.
- U<sub>CC</sub> = the thermal transmittance of the cathedral ceiling area.
- A<sub>CC</sub> = cathedral ceiling area.
- U<sub>D</sub> = the thermal transmittance value of the opaque door area.
- A<sub>D</sub> = opaque door area.
- F<sub>S</sub> = concrete slab component F-factor.
- P<sub>S</sub> = lineal ft. of concrete slab perimeter.

**NOTE :** Where more than one type of wall, window, roof/ceiling, door and skylight is used, the U and A terms for those items shall be expanded into sub-elements as:

$$U_{W1}A_{W1} + U_{W2}A_{W2} + U_{W3}A_{W3} + \dots \text{ etc.}$$

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0530 Table 5-1.**

**TABLE 5-1  
TARGET COMPONENT VALUES FOR ((GROUP OCCUPANCY))  
SINGLE-FAMILY RESIDENTIAL**

| Component  | Climate Zone  |   |
|--|---|---|
|  | 1   | 2   |
| Glazing % Floor Area   | 15%   | 15%   |
| Vertical Glazing U-Factor  | U = 0.30  | U = 0.30  |
| Vertical Glazing U-Factor<br>((Group R-1 and R-2<br>Group R-3 and R-4      | U = 0.400<br>U = 0.350))<br>U = 0.30                            | U = 0.400<br>U = 0.350<br>U = 0.30                              |
| Overhead Glazing U-Factor  | ((U = 0.58))<br>U = 0.50  | ((U = 0.58))<br>U = 0.50  |
| Doors  | U = 0.200<br>((R-5))  | U = 0.200<br>((R-5))  |
| Ceilings<br>((Attic<br><br>Single Rafter/<br>Joist-Vaulted <sup>3</sup> )) | ((U = 0.034<br>(R-38))<br><br>U = 0.034<br>(R-30))<br>U = 0.027 | ((U = 0.034<br>(R-38))<br><br>U = 0.034<br>(R-30))<br>U = 0.027 |
| Walls <sup>(+2)</sup> )  | U = ((0.057<br>(R-24)) 0.056                                    | U = ((0.044<br>(R-19A + R-5))<br>0.056                          |
| Floors   | U = 0.029<br>((R-30))   | U = 0.029<br>((R-30))   |
| Slab on Grade<br>((Slab R-Value))  | F = ((0.54<br>(R-10)) 0.36                                      | F = ((0.54<br>(R-10)) 0.36                                      |
| Below Grade ((Interior))   |   |   |
| Wall R-Value   | ((R-19)) R-21   | ((R-19)) R-21   |

| Component                              | Climate Zone                                |   |
|--|---|---|
|  | 1   | 2   |
| 2' Depth: Walls<br>Slab                | U = ((0.043))<br>0.042<br>F = ((0.69)) 0.59 | U = ((0.043))<br>0.042<br>F = ((0.69)) 0.59 |
| 3.5' Depth: Walls<br>Slab              | U = 0.041<br>F = 0.64                       | U = 0.041<br>F = 0.64                       |
| 7' Depth: Walls<br>Slab                | U = 0.037<br>F = 0.57                       | U = 0.037<br>F = 0.57                       |
| ((Below-Grade Exterior<br>Wall R-Value | R-10  | R-12  |
| 2' Depth: Walls<br>Slab                | U = 0.070<br>F = 0.60                       | U = 0.061<br>F = 0.60                       |
| 3.5' Depth: Walls<br>Slab              | U = 0.064<br>F = 0.57                       | U = 0.057<br>F = 0.57                       |
| 7' Depth: Walls<br>Slab                | U = 0.056<br>F = 0.42                       | U = 0.050<br>F = 0.42))                     |

((1-)) Log and Solid Timber walls that have a minimum average thickness of 3.5" in spaces with space heating by "other fuels" are exempt from wall target UA and proposed UA calculations.

((2- "A" means advanced framing. For more information, see Section 1005.2.

3- Requirement applicable only to single rafter or joist vaulted ceilings where both (a) the distance between the top of the ceiling and the underside of the roof sheathing is less than 12 inches and (b) there is a minimum 1-inch vented airspace above the insulation. Other single rafter or joist vaulted ceilings shall comply with the "ceiling" requirements. This option is limited to 500 square feet of ceiling area for any one dwelling unit.))

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0540 Table 5-11.**

TABLE 5-11  
INSULATION OF DUCTS

| DUCT LOCATION   | CLIMATE ZONE | ((GROUP R OCCU-<br>PANCY)) SINGLE-FAM-<br>ILY RESIDENTIAL<br>HEATING OR<br>COOLING DUCTS |
|---|--------------|--|
|   |              |  |
| On roof or on exterior of building  | I            | E and W  |
|   | II           | D and W  |
| Attic, garage, crawl space, in walls <sup>1</sup> , in floor/ceiling <sup>1</sup> | I            | E  |
|   | II           | E  |
| Within the conditioned space or in heated basement                                |              | None Required  |
| In cement slab or in ground   |              | B  |

Note: Where ducts are used for both heating and cooling, the minimum insulation shall be as required for the most restrictive condition.

<sup>1</sup> Insulation may be omitted on that portion of a duct which is located within a wall or floor-ceiling space where both sides of this space are exposed to condi-

tioned air and where this space is not ventilated or otherwise exposed to unconditioned air.  
<sup>2</sup> Vapor barriers shall be installed on conditioned air supply ducts in geographic areas where the average of the July, August, and September mean dewpoint temperature exceeds 60°F.

INSULATION TYPES: Minimum densities and out-of-package thickness.

- A. 0.5-inch 1.5 to 2 lb/cu. ft. duct liner, mineral or glass fiber blanket or equivalent to provide an installed total thermal resistance of at least R-2.
- B. 2-inch 0.60 lb/cu. ft. mineral or glass fiber blanket 1.5-inch 1.5 to 2 lb/cu. ft. duct liner, mineral or glass fiber blanket. 1.5-inch 3 to 7 lb/cu. ft. mineral or glass fiber board or equivalent to provide an installed total thermal resistance of at least R-5.
- C. 3-inch 0.60 lb/cu. ft. mineral or glass fiber blanket 2-inch 1.5 to 2 lb/cu. ft. duct liner, mineral or glass fiber blanket. 2-inch 3 to 7 lb/cu. ft. mineral or glass fiber board or equivalent to provide an installed total thermal resistance of at least R-7.
- D. 4-inch 0.60 lb/cu. ft. mineral or glass fiber blanket 3-inch 1.5 to 2 lb/cu. ft. duct liner, mineral or glass fiber blanket. 3-inch 3 to 7 lb/cu. ft. mineral or glass fiber board or equivalent to provide an installed total thermal resistance of at least R-10.
- E. 3.5 inch 0.60 lb/cu. ft. mineral or glass fiber blanket, 2.5 inch 1.5 to 2 lb/cu. ft. duct liner, mineral or glass fiberboard or equivalent to provide an installed total thermal resistance of at least R-8.
- V. Vapor barrier, with perm rating not greater than 0.5 perm, all joints sealed.
- W. Approved weatherproof barrier.

AMENDATORY SECTION (Amending WSR 98-03-003, filed 1/8/98, effective 7/1/98)

**WAC 51-11-0541 Table 5-12.**

TABLE 5-12  
MINIMUM PIPE INSULATION ((REQUIREMENTS)) THICKNESS<sup>1</sup>

| Fluid Design Operating Temp. Range, °F                               | Insulation Conductivity                            |                      | Normal Pipe ((Diameter)) or Tube Size (in.) |                 |                        |                   |                    |             |
|--|--|----------------------|---|-----------------|------------------------|-------------------|--------------------|-------------|
|  | Conductivity Range Btu•in./(h•ft <sup>2</sup> •°F) | Mean Rating Temp. °F | ((Round <sup>2</sup> up to 2))              | ≤1 ((and less)) | ((≥) 1 to ((2)) ≤1-1/2 | ((≥2)) 1-1/2 to 4 | ((≥) 4 to ((6)) ≤8 | > ((6)) 8   |
| Heating systems (Steam, Steam Condensate and Hot water) <sup>2</sup> |  |                      | ((Nominal Insulation Thickness))            |                 |                        |                   |                    |             |
| ((Above)) ≥350   | 0.32-0.34  | 250                  | ((1.5))                                     | ((2.5)) 3.0     | ((2.5)) 3.5            | ((3.0)) 3.5       | ((3.5)) 4.5        | ((3.5)) 4.5 |
| 251-350  | 0.29-((0.34)) 0.32                                 | 200                  | ((1.5))                                     | 2.0             | 3.5                    | 3.5               | 4.5                | 3.5         |
| 201-250  | 0.27-0.30  | 150                  | ((1.0))                                     | ((1.5))         | ((2.5))                | ((2.5))           | 3.5                | ((3.5)) 2.5 |
| 141-200  | 0.25-0.29  | 125                  | ((0.5))                                     | 2.0             | 3.0                    | 3.5               | ((2.0))            | ((1.5)) 2.0 |
| 105-140  | 0.24-0.28  | 100                  | ((0.5))                                     | 1.5             | ((1.5)) 2.0            | ((2.0)) 2.5       | 2.5                | 1.5         |
|  |  |                      |   | 1.0             | 1.5                    | 2.5               | ((1.5))            |             |
|  |  |                      |   |                 | 1.0                    | 1.5               | 2.0                |             |
|  |  |                      |   |                 |                        | 1.5               | 1.5                |             |
|  |  |                      |   |                 |                        | 1.5               | 1.5                |             |
| Domestic and Service Hot Water Systems                               |  |                      |   |                 |                        |                   |                    |             |
| ≥105 ((and Greater))   | ((0.24)) 0.22-0.28                                 | 100                  | ((0.5))                                     | 1.0             | 1.0                    | 1.5               | 1.5                | 1.5         |
| Cooling Systems (Chilled Water, Brine and Refrigerant)               |  |                      |   |                 |                        |                   |                    |             |

| Fluid Design Operating Temp. Range, °F | Insulation Conductivity                                  |                                | Normal Pipe ((Diameter)) or Tube Size (in.) |                       |                         |                       |                       |                            |
|--|--|--------------------------------|---|-----------------------|-------------------------|-----------------------|-----------------------|----------------------------|
|  | Conductivity Range Btu•in./(h•ft <sup>2</sup> •°F)       | Mean Rating Temp. °F           | ((Runouts <sup>2</sup> up to 2))            | ≤1 ((and less))       | ((≥) 1 to ((2)) ≤1- 1/2 | ((≥2)) 1- 1/2 to 4    | ((≥) 4 to ((6)) ≤8    | > ((6)) 8                  |
| 40-55 ((Below)) ≤40                    | ((0.23-0.27))<br>0.22-0.28<br>((0.23-0.27))<br>0.22-0.28 | ((75))<br>100<br>((75))<br>100 | ((0.5))<br>((1.0))                          | ((0.5))<br>1.0<br>1.0 | ((0.75))<br>1.0<br>1.5  | ((1.0))<br>1.5<br>1.5 | ((1.0))<br>1.5<br>1.5 | ((1.0)) 1.5<br>((1.5)) 2.0 |

1. ~~((Alternative Insulation Types. Insulation thicknesses in Table 5-12 are based on insulation with thermal conductivities within the range listed in Table 5-12 for each fluid operating temperature range, rated in accordance with ASTM C 335-84 at the mean temperature listed in the table. For insulation that has a conductivity outside the range shown in Table 5-12 for the applicable fluid operating temperature range at the mean rating temperature shown (when rounded to the nearest 0.01 Btu•in./(h•ft<sup>2</sup>•°F)), the minimum thickness shall be determined in accordance with the following equation:))~~ For insulation outside the stated conductivity range, the minimum thickness (T) shall be determined as follows:

$$T = \frac{((PR)((1+t/PR))^k - 1)}{t} \{ (1 + t/r)K/k - 1 \}$$

Where:

- T = Minimum insulation thickness ~~((for material with conductivity K)), inches ((-))~~
- ((PR = ((Pipe)) Actual outside radius of pipe, inches)) r
- t = Insulation thickness from Table 5-12 ~~((inches))~~ for applicable fluid temperature and pipe size
- K = Conductivity of alternate material at the mean rating temperature indicated ~~((in Table 5-12))~~ for the applicable fluid temperature ~~((range)), Btu•in.((/))((h•ft<sup>2</sup>•°F))~~
- k = The ~~((lower))~~ upper value of the conductivity range listed in Table 5-12 for the applicable fluid temperature ~~((range, Btu•in.((h•ft<sup>2</sup>•°F))~~

2. ~~((Runouts to individual terminal units not exceeding 12 ft. in length.))~~ Piping insulation is not required between the control valve and coil on runouts when the control valve is located within 4 feet of the coil and the pipe size is 1 inch or less.

AMENDATORY SECTION (Amending WSR 04-01-106, filed 12/17/03, effective 7/1/04)

**WAC 51-11-0601 Scope.**

601.1 General: This chapter establishes design criteria in terms of prescribed requirements for building construction.

The provisions of this chapter are applicable to all ~~((Group R Occupancies))~~ Single-Family residential. ~~((Occupancies))~~ Spaces shall comply with all the requirements of Chapter 5 except for the modifications herein specified. In addition, the design shall comply with the additional energy efficiency requirements of Chapter 9.

For duplexes and townhouses, compliance shall be shown on a dwelling-unit by dwelling-unit basis. Averaging is not allowed.

For wood frame assemblies, the building envelope requirements of this chapter may be met by installing one of the prescriptive packages in Table 6-1 ~~((or 6-2)).~~ Installed components shall meet the requirements of section 602. Compliance with nominal R-Values shall be demonstrated for the thermal resistance of the added insulation in framing cavities and/or insulated sheathing only and shall not include the thermal transmittance of other building materials or air films, but shall permit interruption by occasional framing members. Other than wood frame assemblies with continuous insulation uninterrupted by framing shall also be allowed to comply with nominal R-values.

For metal frame assemblies, compliance shall be demonstrated in accordance with Chapter 4 or Chapter 5 based on the assemblies in Chapter 10. Compliance with nominal R-values is not allowed, unless the full nominal R-value of the insulation is installed either inside or outside of the framing and is uninterrupted by framing.

~~((EXCEPTION: Group R-1 and R-2 Occupancy buildings may use a maximum area weighted average U-factor for components not exceeding those prescribed in Paths III and V in Table 6-1 or Paths IV and VI in Table 6-2.))~~

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0602 Building envelope requirements for ~~((Group R Occupancy))~~ Single-Family residential.**

602.1 Roof/Ceiling: Ceilings below vented attics and single-rafter, joist-vaulted ceilings shall be insulated to not less than the nominal R-value specified for ceilings in Table 6-1 or 6-2 as applicable.

602.2 Exterior Walls Both Above and Below Grade: Above grade exterior walls shall be insulated to not less than the nominal R-value specified in Table 6-1 ~~((or 6-2))~~ as applicable. The following walls should be considered to meet R-21 without additional documentation:

- 1. 2 x 6 framed and insulated with R-21 fiberglass batts.
- 2. 2 x 4 framed and insulated with R-15 fiberglass batts plus R-4.0 foam sheathing.
- 3. 2 x 4 framed and insulated with R-13 fiberglass batts plus R-5.0 foam sheathing.

4. 2 x 6 framed and insulated to full depth with spray applied or blown insulation having a minimum R-value of 3.6 per inch of thickness.

602.3 Exterior Walls (Below Grade): Below grade exterior walls surrounding conditioned space shall be insulated to not less than the nominal R-value specified for below grade walls in Table 6-1 (~~(or 6-2)~~) as applicable.

602.4 Slab-on-grade Floors: Slab-on-grade floors shall be insulated along their perimeter to not less than the nominal R-values specified for slab-on-grade floors in Table 6-1 (~~(or 6-2)~~) as applicable. Slab insulation shall be installed in compliance with section 502.1.4.8. See Chapter 5, section 502.1.4.9, for additional requirements for radiant slab heating.

602.5 Floors Over Unconditioned Space: Floors over unconditioned spaces, such as vented crawl spaces, unconditioned basements, and parking garages shall be insulated to not less than the nominal R-value shown for floors over unconditioned spaces, in Table 6-1 (~~(or 6-2)~~).

602.6 Exterior Doors: Doors shall comply with Sections 602.6.1 and 602.6.2.

- EXCEPTIONS:
1. Glazed doors whose area and U-factor are included in the calculations for compliance with the requirements for glazing in section 602.7 shall be exempt from the door U-factor requirements prescribed in Table 6-1 (~~(or 6-2)~~).
  2. One unlabeled or untested exterior swinging door with the maximum area of 24 square feet may be installed per unit for ornamental, security or architectural purposes. Products using this exception shall not be included in either the U-factor or glazing area calculation requirements.

602.6.1 Exterior Door Area: For half-lite and full-lite doors, the glazing area shall be included in calculating the allowed total glazing area in Section 602.7.1. (~~(Single glazing used for ornamental, security or architectural purposes shall be calculated using the exception to Section 602.7.2.)~~)

602.6.2 Exterior Door U-Factor: Doors, including fire doors, shall have a maximum area weighted average U-factor not exceeding that prescribed in Table 6-1 (~~(or 6-2)~~).

602.7 Glazing:

602.7.1 Glazing Area: The total glazing area as defined in Chapter 2 shall not exceed the percentage of gross conditioned floor area specified in Table 6-1 (~~(or 6-2)~~). This area shall also include any glazing in doors.

602.7.2 Glazing U-Factor: The total glazing area as defined in Chapter 2 shall have an area weighted average U-factor not to exceed that specified in Table 6-1 (~~(or 6-2)~~). U-factors for glazing shall be determined in accordance with section 502.1.5. These areas and U-factors shall also include any doors using the exception of section 602.6.

If the U-factors for all vertical and overhead glazing products are below the appropriate U-factor specified, then no calculations are required. If compliance is to be achieved through an area weighted calculation, then the areas and U-factors shall be included in the plans submitted with a building permit application.

EXCEPTION: (~~(Single glazing for ornamental, security, or architectural purposes and)~~) Double glazed garden windows with a wood or vinyl frame shall be exempt from the U-factor calculations but shall have its area tripled and shall be included in the percentage of the total glazing area as allowed for in Table 6-1 (~~(or 6-2)~~). The maximum area (before tripling) allowed for the total of all (~~(single glazing and)~~) garden windows is one percent of the floor area or 20 square feet, whichever is less.

602.8 Air Leakage For (~~(Group R Occupancy)~~) Single-Family Residential: The minimum air leakage control measures shall be as specified in section 502.4 as applicable, including building envelope air leakage testing.

AMENDATORY SECTION (Amending WSR 02-01-112, filed 12/18/01, effective 7/1/02)

**WAC 51-11-0603 (~~(Building)~~) Mechanical systems for (~~(Group R Occupancy)~~) Single-Family residential.**

603.1: (~~(Group R Occupancies)~~) Spaces that are (~~(space)~~) heated by air-to-air, ground-to-air, or water-to-air heat pumps shall comply with Table 6-1 (~~(or 6-2)~~). System sizing shall be determined by an analysis consistent with section 503.2 of this Code (~~(, or, when approved by the building official, Chapter 9)~~). All mechanical equipment efficiencies (~~(and service water heating system efficiencies)~~) shall comply with standard(~~(s)~~) as stated in Section(~~(s)~~) 503 (~~(and 504)~~) of this Code.

AMENDATORY SECTION (Amending WSR 01-03-010, filed 1/5/01, effective 7/1/01)

**WAC 51-11-0604 (~~(Reserved)~~) Domestic water systems. Domestic water systems, including plumbing fixtures and appliances, shall comply with Section 504.**

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0625 Table 6-1.**

**TABLE 6-1  
PRESCRIPTIVE REQUIREMENTS<sup>0,1</sup> FOR (~~(GROUP R OCCUPANCY)~~) SINGLE FAMILY RESIDENTIAL  
CLIMATE ZONE 1 AND 2**

| Option    | Glazing Area <sup>10</sup> :<br>% of Floor | Glazing U-Factor              |                            | Door <sup>9</sup><br>U-Factor | Ceiling <sup>2</sup> | Vaulted Ceiling <sup>3</sup>  | Wall <sup>12</sup><br>Above Grade              | Wall• int <sup>4</sup><br>Below Grade | Wall• ext <sup>4</sup><br>Below Grade | Floor <sup>5</sup> | Slab <sup>6</sup><br>on Grade |
|-----------|--|-------------------------------|----------------------------|-------------------------------|----------------------|-------------------------------|--|---------------------------------------|---------------------------------------|--------------------|-------------------------------|
|           |  | Vertical                      | Overhead <sup>11</sup>     |                               |                      |                               |  |                                       |                                       |                    |                               |
| <b>I.</b> | ( <del>(40%)</del> )<br>13%                | ( <del>(0.32)</del> )<br>0.34 | ( <del>(0.58)</del> ) 0.50 | 0.20                          | R-49 or R-38<br>adv  | ( <del>(R-30)</del> )<br>R-38 | ( <del>(R-15)</del> )<br>R-21 int <sup>2</sup> | ( <del>(R-15)</del> )<br>R-21 TB      | R-10                                  | R-30               | R-10 2'                       |

| Option                | Glazing Area <sup>10</sup> :<br>% of<br>Floor          | Glazing U-Factor |                        | Door <sup>9</sup><br>U-<br>Factor | Ceiling <sup>2</sup>                        | Vaulted<br>Ceiling <sup>3</sup>  | Wall <sup>12</sup><br>Above<br>Grade | Wall• int <sup>4</sup><br>Below<br>Grade | Wall• ext <sup>4</sup><br>Below<br>Grade | Floor <sup>5</sup>       | Slab <sup>6</sup><br>on<br>Grade |
|-----------------------|--|------------------|------------------------|-----------------------------------|---|----------------------------------|--------------------------------------|--|--|--------------------------|----------------------------------|
|                       |  | Vertical         | Overhead <sup>11</sup> |                                   |   |                                  |                                      |  |  |                          |                                  |
| <b>II.*</b>           | ((15%))<br>25%   | ((0.35))<br>0.32 | ((0.58))<br>0.50       | 0.20                              | R-49 or R-38<br>adv                         | ((R-30))<br>R-38                 | R-21 int <sup>7</sup>                | R-21 TB                                  | R-10                                     | R-30                     | R-10 2'                          |
| <del>(III.)</del>     | 25%<br>Group R-1 and R-2<br>Occupancy only             | 0.40             | 0.58                   | 0.20                              | R-38/<br>U=<br>0.034                        | R-30/<br>U=<br>0.034             | R-21/<br>U=<br>0.057                 | R-15                                     | R-10                                     | R-30/<br>U=<br>0.029     | R-10                             |
| <b>IV.</b>            | Unlimited Group<br>R-3 and R-4 Occu-<br>pancy only     | 0.35             | 0.58                   | 0.20                              | R-38  | R-30                             | R-21                                 | R-21                                     | R-10                                     | R-30                     | R-10))                           |
| <del>((V)) III.</del> | Unlimited ((Group<br>R-1 and R-2 Occu-<br>pancy only)) | ((0.35))<br>0.30 | ((0.58))<br>0.50       | 0.20                              | R-49 or R-<br>38((/<br>U=<br>0.034))<br>adv | ((R-30/<br>U=<br>0.034))<br>R-38 | R-21((/<br>U=<br>0.057))<br>int      | ((R-15)) R-<br>21                        | R-10                                     | R-30((/<br>U=<br>0.029)) | R-10 2'                          |

- \* Reference Case
- 0. Nominal R-values are for wood frame assemblies only or assemblies built in accordance with Section 601.1.
- 1. Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 13%, it shall comply with all of the requirements of the 15% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2. Requirement applies to all ceilings except single rafter or joist vaulted ceilings complying with note 3. 'Adv' denotes Advanced Framed Ceiling.
- 3. Requirement applicable only to single rafter or joist vaulted ceilings ((where both (a) the distance between the top of the ceiling and the underside of the roof sheathing is less than 12 inches and (b) there is a minimum 1-inch vented airspace above the insulation. Other single rafter or joist vaulted ceilings shall comply with the "ceiling" requirements. This option is limited to 500 square feet of ceiling area for any one dwelling unit)).
- 4. Below grade walls shall be insulated either on the exterior to a minimum level of ((R-10)) R-5, continuous or on the interior ((to the same level as walls above grade)) as a framed wall. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5. Floors over crawl spaces or exposed to ambient air conditions.
- 6. Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4. For slabs inside a foundation wall, the insulation shall be installed to provide a thermal break between the slab edge and the foundation. Monolithic slabs shall include insulation, installed outside the foundation wall, and shall extend downward from the top of the slab for a minimum distance of 24 inches or downward and then horizontally for a minimum combined distance of 24 inches. Monolithic slabs shall also include R-10 insulation under the nonload bearing portions of the slab.
- 7. Int. denotes standard framing 16 inches on center with headers insulated with a minimum of R-10 insulation.
- 8. ((This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing-)) Reserved.
- 9. Doors, including all fire doors, shall be assigned default U-factors from Table 10-6C.
- 10. Where a maximum glazing area is listed, the total glazing area (combined vertical plus overhead) as a percent of gross conditioned floor area shall be less than or equal to that value. Overhead glazing with U-factor of ((U=0.40)) U=0.35 or less is not included in glazing area limitations.
- 11. Overhead glazing shall have U-factors determined in accordance with NFRC 100 or as specified in Section 502.1.5.
- 12. Log and solid timber walls with a minimum average thickness of 3.5" are exempt from this insulation requirement.

**TABLE 6-2**  
**((PRESCRIPTIVE REQUIREMENTS<sup>9+4</sup> FOR GROUP R OCCUPANCY**  
**CLIMATE ZONE 2)) RESERVED.**

| Option      | Glazing Area <sup>10</sup> :<br>% of<br>Floor      | Glazing U-Factor |                        | Door <sup>9</sup><br>U-<br>Factor | Ceiling <sup>2</sup> | Vaulted-<br>Ceiling <sup>3</sup> | Wall <sup>12</sup> -<br>Above-<br>Grade | Wall•int <sup>4</sup> -<br>Below-<br>Grade | Wall•ext <sup>4</sup> -<br>Below-<br>Grade | Floor <sup>5</sup>   | Slab <sup>6</sup><br>on<br>Grade |
|-------------|--|------------------|------------------------|-----------------------------------|----------------------|----------------------------------|---|--|--|----------------------|----------------------------------|
|             |  | Vertical         | Overhead <sup>11</sup> |                                   |                      |                                  |   |  |  |                      |                                  |
| <b>I.</b>   | 12%  | 0.35             | 0.58                   | 0.20                              | R-38                 | R-30                             | R-21 Int <sup>7</sup>                   | R-21                                       | R-12                                       | R-30                 | R-10                             |
| <b>II.*</b> | 15%  | 0.35             | 0.58                   | 0.20                              | R-38                 | R-30                             | R-19<br>+R-5 <sup>8</sup>               | R-21                                       | R-12                                       | R-30                 | R-10                             |
| <b>III.</b> | 17%  | 0.32             | 0.58                   | 0.20                              | R-38                 | R-30                             | R-19<br>+R-5 <sup>8</sup>               | R-21                                       | R-12                                       | R-30                 | R-10                             |
| <b>IV.</b>  | 25%<br>Group R-1 and R-2<br>Occupancy only         | 0.35             | 0.58                   | 0.20                              | R-38/<br>U=<br>0.034 | R-30/<br>U=<br>0.034             | R-21 int <sup>7</sup> /<br>U=<br>0.054  | R-15                                       | R-12                                       | R-30/<br>U=<br>0.029 | R-10/<br>F=<br>0.54              |
| <b>V.</b>   | Unlimited<br>Group R-3 and R-4<br>Occupancy only   | 0.35             | 0.58                   | 0.20                              | R-38                 | R-30                             | R-19+R-5 <sup>8</sup>                   | R-21                                       | R-12                                       | R-30                 | R-10                             |
| <b>VI.</b>  | Unlimited Group<br>R-3 and R-4<br>Occupancies only | 0.30             | 0.58                   | 0.20                              | R-49 or R-38<br>ADV  | R-38                             | R-21 int <sup>7</sup> .                 | R-21                                       | R-12                                       | R-30                 | R-10                             |

| ((Option   | Glazing Area <sup>10</sup> :<br>% of Floor | Glazing U-Factor |                        | Door <sup>9</sup><br>U-Factor | Ceiling <sup>2</sup> | Vaulted Ceiling <sup>3</sup> | Wall <sup>12</sup> : Above-Grade          | Wall•int <sup>4</sup> : Below-Grade | Wall•ext <sup>4</sup> : Below-Grade | Floor <sup>5</sup>   | Slab <sup>6</sup> on Grade |
|------------|--|------------------|------------------------|-------------------------------|----------------------|------------------------------|---|-------------------------------------|-------------------------------------|----------------------|----------------------------|
|            |  | Vertical         | Overhead <sup>11</sup> |                               |                      |                              |   |                                     |                                     |                      |                            |
| <b>VH:</b> | Unlimited Group R-1 Occupancy only         | 0.32             | 0.58                   | 0.20                          | R-38/<br>U=<br>0.031 | R-30/<br>U=<br>0.034         | R-21<br>int <sup>7</sup> /<br>U=<br>0.054 | R-15                                | R-12                                | R-30/<br>U=<br>0.029 | R-10/<br>F=<br>0.54        |

- ※ Reference Case
- 0. Nominal R-values are for wood frame assemblies only or assemblies built in accordance with Section 601.1.
- 1. Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 13%, it shall comply with all of the requirements of the 15% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2. Requirement applies to all ceilings except single rafter or joist vaulted ceilings complying with note 3. 'Adv' denotes Advanced Framed Ceiling.
- 3. Requirement applicable only to single rafter or joist vaulted ceilings where both (a) the distance between the top of the ceiling and the underside of the roof sheathing is less than 12 inches and (b) there is a minimum 1-inch vented airspace above the insulation. Other single rafter or joist vaulted ceilings shall comply with the "ceiling" requirements. This option is limited to 500 square feet of ceiling area for any one dwelling unit.
- 4. Below grade walls shall be insulated either on the exterior to a minimum level of R-12, or on the interior to the same level as walls above grade. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5. Floors over crawl spaces or exposed to ambient air conditions.
- 6. Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
- 7. Int. denotes standard framing 16 inches on center with headers insulated with a minimum of R-10 insulation.
- 8. This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing.
- 9. Doors, including all fire doors, shall be assigned default U-factors from Table 10-6C.
- 10. Where a maximum glazing area is listed, the total glazing area (combined vertical plus overhead) as a percent of gross conditioned floor area shall be less than or equal to that value. Overhead glazing with U factor of U = 0.40 or less is not included in glazing area limitations.
- 11. Overhead glazing shall have U factors determined in accordance with NFRC 100 or as specified in Section 502.1.5.
- 12. Log and solid timber walls with a minimum average thickness of 3.5" are exempt from this insulation requirement.)

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0701 Scope.** The following standards shall apply to Chapters 1 through 20. The standards and portions thereof, which are referred to in various parts of this Code shall be part of the Washington State Energy Code and are hereby declared to be a part of this Code.

| REFERENCE STANDARD | TITLE AND SOURCE   |
|--------------------|--|
| RS-1               | <del>((2005))</del> <u>2009</u> ASHRAE Fundamentals Handbook.  |
| RS-2               | Super Good Cents Technical Reference C Builder's Field Guide.  |
| RS-3               | (Reserved).  |
| RS-4               | ASHRAE Standard 55-2004 Thermal Environmental Conditions for Human Occupancy.  |
| RS-5               | 2006 ASHRAE Refrigeration Handbook.  |
| RS-6               | <del>((SMACNA, Installation Standards for Residential Heating and Air Conditioning Systems, 6th Edition, 1988.))</del> (Reserved.) |
| RS-7               | SMACNA, HVAC Duct Construction Standards, Metal and Flexible, <del>((2nd Edition, 1995))</del> <u>2005</u> .                       |
| RS-8               | <del>((SMACNA, Fibrous Glass Duct Construction Standards, 6th Edition, 1992.))</del> (Reserved.)                                   |

REFERENCE STANDARD

| NO.          | TITLE AND SOURCE   |
|--------------|--|
| RS-9         | ASHRAE/IESNA Standard <del>((90.1-2004))</del> <u>90.1-2007</u> , Energy Standard for Buildings Except Low-Rise Residential Buildings.           |
| RS-10        | <del>((2004))</del> <u>2008</u> ASHRAE <u>HVAC</u> Systems and Equipment Handbook.   |
| RS-11        | <del>((2003))</del> <u>2007</u> ASHRAE HVAC <del>((Systems and))</del> Applications Handbook.  |
| RS-12        | through RS-28 (Reserved).  |
| RS-29        | Nonresidential Building Design by Systems Analysis.  |
| RS-30        | Title 10, Code of Federal Regulations (CFR), Part 430 (March 14, 1988).  |
| RS-31        | National Fenestration Rating Council (NFRC) Standard 100-2004.   |
| RS-32        | Seattle EnvStd 2006.   |
| <u>RS-33</u> | <u>Duct Testing Standard for New and Existing Construction, Washington State University Extension Energy Program Publication #WSUEEP 09-008.</u> |
| <u>RS-34</u> | <u>Optional Acceptance Requirements for Nonresidential Buildings, SBCC 2009.</u>   |

ACCREDITED AUTHORITATIVE AGENCIES

ANSI refers to the American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036  
 Phone 212-642-4900 fax 212-398-0023, internet www.ansi.org



~~((ARI))~~ AHRI refers to the Air Conditioning, Heating and Refrigeration Institute, 4301 N. Fairfax Dr., Suite 425, Arlington, VA 22203  
Phone 703-524-8800 fax 703-528-3816, internet [www.ari.org](http://www.ari.org)

ASHRAE refers to the American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc., 1791 Tullie Circle, N.E., Atlanta, GA 30329  
Phone 404-636-8400 fax 404-321-5478, internet [www.ashrae.org](http://www.ashrae.org)

ASTM refers to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959  
Phone 610-832-9585 fax 610-832-9555, internet [www.astm.org](http://www.astm.org)

CTI refers to the Cooling Tower Institute, 530 Wells Fargo Drive, Suite 218, Houston, TX 77090  
Phone 281-583-4087 fax 281-537-1721, internet [www.cti.org](http://www.cti.org)

IESNA refers to the Illuminating Engineering Society of North America, 120 Wall Street, Floor 17, New York, NY 10005-4001  
Phone 212-248-5000 fax 212-248-5017, internet [www.iesna.org](http://www.iesna.org)

NFRC refers to the National Fenestration Rating Council, Incorporated, 8484 Georgia Avenue, Suite 320, Silver Spring, Maryland 20910  
Phone 301-589-1776 fax 301-589-3884, internet [www.nfrc.org](http://www.nfrc.org)

SBCC refers to the Washington State Building Code Council, P.O. Box 42525, Olympia, WA 98504-2525  
Phone 360-725-2990 fax 360-586-9383, internet [www.sbcc.wa.gov](http://www.sbcc.wa.gov)

SMACNA refers to the Sheet Metal and Air Conditioning Contractors National Association, Inc., 4201 Lafayette Center Drive, P.O. Box 221230, Chantilly, VA 20153-1230  
Phone 703-803-2980 fax 703-803-3732, internet [www.smacna.org](http://www.smacna.org)

WSU refers to the Washington State University Extension Energy Program, 905 Plum Street S.E., Building #3, P.O. Box 43165, Olympia, WA 98506-3166  
Phone 360-956-2000 fax 360-956-2217, internet [www.energy.wsu.edu](http://www.energy.wsu.edu)

AMENDATORY SECTION (Amending WSR 02-24-076, filed 12/4/02, effective 5/1/03)

**WAC 51-11-0800 Section 0800—Suggested software for chapter 4 systems analysis approach (~~for Group R Occupancy~~).** The simulation program shall be tested according to ANSI/ASHRAE Standard 140 and the results shall be furnished by the software provider.

The following is a list of suggested software, but not limited to:

|                         |   |
|-------------------------|---|
| Program Name:           | Source  |
| <del>((CALPAS-3</del>   | <u>BSG Software</u><br>40 Lincoln Street<br>Lexington, MA 02173<br>(617) 861-0109))   |
| DOE ((2)) <u>2.1E</u>   | <del>((ACROSOF/CAER Engineers</del><br>1204 1/2 Washington Avenue<br>Golden, CO 80401<br>(303) 279-8136)) <u>Energy Science</u><br><u>Technology Software Center</u><br><u>(ESTSC)</u><br><u>P.O. Box 1220</u><br><u>Oakridge, TN 37831-1020</u><br><u>423-576-2606</u> |
| <del>((F-LOAD</del>     | <u>F-CHART SOFTWARE</u><br>4406 Fox Bluff Rd.<br>Middleton, WI 53562<br>(608) 836-8531  |
| <u>MICROPAS</u>         | <u>ENERCOMP</u><br>1721 Arroyo Drive<br>Auburn, CA 95603<br>(800) 755-5903  |
| <u>SUNDAY</u>           | <u>ECOTOPE</u><br>2812 East Madison St.<br>Seattle, WA 98112<br>(206) 322-3753))  |
| <u>DOE 2.2 (EQuest)</u> | <u>James J. Hirsch &amp; Associates</u><br><u>Building Performance Analysis</u><br><u>Software &amp; Consulting</u><br><u>12185 Presilla Road</u><br><u>Camarillo, CA 93012-9243</u><br><u>805-532-1045</u>   |
| <u>EnergyPlus</u>       | <u>Kathy Ellington</u><br><u>Lawrence Berkeley National Laboratory (LBNL)</u><br><u>Building 90, Room 3147</u><br><u>Berkeley, CA 94720-0001</u><br><u>510-486-5711</u>   |

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-0900 (~~Section~~) Chapter 0900—(~~Reserved~~) Additional residential energy efficiency requirements.**

**901 Additional Residential Energy Efficiency Requirements.** Dwelling units permitted under this Code shall comply with all provisions of Chapter 5 of this Code and develop 2 credits from Table 9-1.

EXCEPTION: Buildings complying using Chapter 4 Building Design by Systems Analysis shall meet this provision of this section by demonstrating that the proposed

building energy use is 16 percent less than the target building energy use.

**TABLE 9-1  
ENERGY CREDITS (DEBITS)**

| <b>TABLE 9-1<br/>ENERGY CREDITS (DEBITS)</b> |  |                  | <b>OPTION</b> | <b>DESCRIPTION</b>  | <b>CREDIT(S)</b> |
|--|--|------------------|---------------|---|------------------|
| <b>OPTION</b>                                | <b>DESCRIPTION</b>   | <b>CREDIT(S)</b> |               | <b>OR</b>   |                  |
| <u>1a</u>                                    | <u>HIGH EFFICIENCY HVAC EQUIPMENT 1:<br/>Gas, propane or oil-fired furnace or boiler with minimum AFUE of 92%.</u>   | <u>1.0</u>       |               | <u>Component performance compliance:<br/>Reduce the Target UA from Table 5.1 by 15%, as determined using EQUATION 1.1</u>   |                  |
|  | <b>OR</b>  |                  | <u>3c</u>     | <u>SUPER-EFFICIENT BUILDING ENVELOPE 3:<br/>Prescriptive compliance is based on Table 6-1, Option III with the following modifications: Window U = .22 and wall R-21 plus R-12 and R-38 floor, slab on grade R-10 full, below grade slab R-10 full and R-21 plus R-12 below grade basement walls and R-49 advanced ceiling and vault.</u>   | <u>2.0</u>       |
| <u>1b</u>                                    | <u>HIGH EFFICIENCY HVAC EQUIPMENT 2:<br/>Closed-loop ground source heat pump; with a minimum COP of 3.3.</u>   | <u>2.0</u>       |               | <b>OR</b>   |                  |
| <u>1c</u>                                    | <u>HIGH EFFICIENCY HVAC EQUIPMENT 3:<br/>DUCTLESS SPLIT SYSTEM HEAT PUMPS, ZONAL CONTROL:<br/>In home where the primary space heating system is zonal electric heating, a ductless heat pump system shall be installed and provide heating to at least one zone of the housing unit.</u>   | <u>1.0</u>       |               | <u>Component performance compliance:<br/>Reduce the Target UA from Table 5.1 by 30%, as determined using EQUATION 1.1</u>   |                  |
| <u>2</u>                                     | <u>HIGH EFFICIENCY HVAC DISTRIBUTION SYSTEM:<sup>1</sup><br/>All heating and cooling system components installed inside the conditioned space. All combustion equipment shall be direct vent or sealed combustion. Locating system components in conditioned crawl spaces is not permitted under this option.<br/>Electric resistance heat is not permitted under this option.<br/>Direct combustion heating equipment with AFUE less than 80% is not permitted under this option.</u> | <u>1.0</u>       | <u>4a</u>     | <u>AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION:<br/>Envelope leakage reduced to SLA of 0.00020 building envelope tightness shall be considered acceptable when tested air leakage is less than specific leakage area of 0.00020 when tested with a blower door at a pressure difference of 50 PA. Testing shall occur after rough in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation, and combustion appliances.</u> | <u>0.5</u>       |
| <u>3a</u>                                    | <u>EFFICIENT BUILDING ENVELOPE 1:<br/>Prescriptive compliance is based on Table 6-1, Option III with the following modifications: Window U = .28 floor R-38, slab on grade R-10 full, below grade slab R-10 full.</u>  | <u>0.5</u>       |               | <b>and</b>  |                  |
|  | <b>OR</b>  |                  | <u>4b</u>     | <u>ADDITIONAL AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION:<br/>Envelope leakage reduced to SLA of 0.00015 building envelope tightness shall be considered acceptable when tested air leakage is less than specific leakage area of 0.00015 when tested with a blower door at a pressure difference of 50 PA. Testing shall occur after rough in and after installation of penetrations of the building envelope.</u>  | <u>1.0</u>       |
| <u>3b</u>                                    | <u>EFFICIENT BUILDING ENVELOPE 2:<br/>Prescriptive compliance is based on Table 6-1, Option III with the following modifications: Window U = .25 and wall R-21 plus R-4 and R-38 floor, slab on grade R-10 full, below grade slab R-10 full, and R-21 plus R-5 below grade basement walls.</u>   | <u>1.0</u>       |               |   |                  |

**TABLE 9-1  
ENERGY CREDITS (DEBITS)**

**TABLE 9-1  
ENERGY CREDITS (DEBITS)**

| OPTION | DESCRIPTION   | CREDIT(S) |
|--------|---|-----------|
|        | including penetrations for utilities, plumbing, electrical, ventilation, and combustion appliances.<br><b>and</b><br>All whole house ventilation requirements as determined by Section M1508 of the Washington State Residential Code shall be met with a heat recovery ventilation system in accordance with Section M1508.7 of that Code.   |           |
| 5a     | <u>EFFICIENT WATER HEATING:</u> <sup>1</sup><br>Water heating system shall include one of the following:<br>Gas, propane or oil water heater with a minimum EF of 0.62.<br><b>or</b><br>Electric Water Heater with a minimum EF of .93.<br><b>and for both cases</b><br>All showerhead and kitchen sink faucets installed in the house shall meet be rated at 1.75 GPM or less. All other lavatory faucets shall be rated at 1.0 GPM or less. <sup>2</sup>  | 0.5       |
| 5b     | <u>HIGH EFFICIENCY WATER HEATING:</u> <sup>1</sup><br>Water heating system shall include one of the following:<br>Gas, propane or oil water heater with a minimum EF of 0.82.<br><b>or</b><br>Solar water heating supplementing a minimum standard water heater. Solar water heating will provide a rated minimum savings of 85 therms or 2000 kWh based on the Solar Rating and Certification Corporation (SRCC) Annual Performance of OG-300 Certified Solar Water Heating Systems.<br><b>or</b><br>Electric heat pump water heater with a minimum EF of 2.0. | 1.5       |
| 6      | <u>SMALL DWELLING UNIT 1:</u> <sup>1</sup><br>Dwelling units less than 1500 square feet in floor area with less than 300 square feet of window + door area. Additions to existing building that are less than 750 square feet of heated floor area.   | 1.0       |

| OPTION | DESCRIPTION  | CREDIT(S) |
|--------|--|-----------|
| 7      | <u>LARGE DWELLING UNIT 1:</u> <sup>1</sup><br>Dwelling units exceeding 5000 square feet of floor area shall be assessed a deduction for purposes of complying with Section 901 of this Code.   | -1.0      |
| 8      | <u>RENEWABLE ELECTRIC ENERGY:</u><br>For each 1200 kWh of electrical generation provided annually by on-site wind or solar equipment a 0.5 credit shall be allowed, up to 3 credits. Generation shall be calculated as follows:<br>For solar electric systems, the design shall be demonstrated to meet this requirement using the National Renewable Energy Laboratory calculator PVWATTS. Documentation noting solar access shall be included on the plans.<br>For wind generation projects designs shall document annual power generation based on the following factors:<br>The wind turbine power curve; average annual wind speed at the site; frequency distribution of the wind speed at the site and height of the tower. | 0.5       |

**FOOTNOTES:**  
1. **Interior Duct Placement:** Ducts included as Option 2 of Table 9-1 shall be placed wholly within the heated envelope of the housing unit. The placement shall be inspected and certified to receive the credits associated with this option.

**EXCEPTION:**  
Ducts complying with this section may have up to 5% of the total linear feet of ducts located in the exterior cavities or buffer spaces of the dwelling. If this exception is used the ducts will be tested to the following standards:

Post-construction test: Leakage to outdoors shall be less than or equal to 1 CFM per 100 ft<sup>2</sup> of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.

2. **Plumbing Fixtures Flow Ratings.** Low flow plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following requirements:

(a) Residential bathroom lavatory sink faucets: Maximum flow rate - 3.8 L/min (1.0 gal/min) when tested in accordance with ASME A112.18.1/CSA B125.1.

(b) Residential kitchen faucets: Maximum flow rate - 6.6 L/min (1.75 gal/min) when tested in accordance with ASME A112.18.1/CSA B125.1.

(c) Residential showerheads: Maximum flow rate - 6.6 L/min (1.75 gal/min) when tested in accordance with ASME A112.18.1/CSA B125.1.

**AMENDATORY SECTION** (Amending WSR 04-01-106, filed 12/17/03, effective 7/1/04)

**WAC 51-11-1001 Section 1001 General.**

1001.1 Scope: The following defaults shall apply to Chapters 1 through 20. This chapter includes tables of seasonal average heat-loss coefficients for specified nominal insulation. The heat-loss coefficients may also be used for heating system sizing.

1001.2 Description: These coefficients were developed primarily from data and procedures from Standard RS-1, and taken specifically from Standard RS-2, listed in Chapter 7.

Coefficients not contained in this chapter may be computed using the procedures listed in these references if the assumptions in the following sections and Standard RS-2,

listed in Chapter 7, are used, along with data from the sources referenced above.

1001.3 **Air Films:** Default R-values used for air films shall be as follows:

|         |  |
|---------|--|
| R-Value | Condition                                    |
| 0.17    | All exterior surfaces                        |
| 0.61    | Interior horizontal surfaces, heat flow up   |
| 0.92    | Interior horizontal surfaces, heat flow down |
| 0.68    | Interior vertical surfaces                   |

1001.4 **Compression of Insulation:** Insulation which is compressed shall be rated in accordance with Table 10-A or reduction in value may be calculated in accordance with the procedures in Standard RS-1, listed in Chapter 7.

**TABLE 10-A  
R-Value of Fiberglass Batts Compressed within Various Depth Cavities**

| Insulation R-Value at Standard Thickness |                                |   |      |      |      |        |                   |                   |                 |                   |                   |                   |                   |                   |          |       |
|--|--------------------------------|---|------|------|------|--------|-------------------|-------------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------|-------|
| Rated R-Value                            | 82                             | 71  | 60   | 49   | 38   | 30     | 22                | 21                | 19              | 15                | 13                | 11                | ((8))             | ((5))             | ((3))    |       |
| Standard Thickness, Inches               | 26.0                           | 22.5  | 19.0 | 15.5 | 12.0 | 9-1/2" | ((6-3/4"))<br>9.5 | ((5-1/2"))<br>5.5 | ((6-1/4"))<br>6 | ((3-1/2"))<br>3.5 | ((3-5/8"))<br>3.5 | ((3-1/2"))<br>3.5 | ((2-1/2"))<br>3.5 | ((1-1/2"))<br>3.5 | ((3/4")) |       |
| Nominal Lumber Sizes, Inches             | Actual Depth of Cavity, Inches | Insulation R-Values when Installed in a Confined Cavity |      |      |      |        |                   |                   |                 |                   |                   |                   |                   |                   |          |       |
| Truss                                    | 26.0                           | 82  | =    | =    | =    | =      | =                 | =                 | =               | =                 | =                 | =                 | =                 | =                 | =        |       |
| Truss                                    | 22.5                           | =   | 71   | =    | =    | =      | =                 | =                 | =               | =                 | =                 | =                 | =                 | =                 | =        |       |
| Truss                                    | 19.0                           | =   | =    | 60   | =    | =      | =                 | =                 | =               | =                 | =                 | =                 | =                 | =                 | =        |       |
| Truss                                    | 15.5                           | =   | =    | =    | 49   | =      | =                 | =                 | =               | =                 | =                 | =                 | =                 | =                 | =        |       |
| Truss                                    | 12.0                           | =   | =    | =    | =    | 38     | =                 | =                 | =               | =                 | =                 | =                 | =                 | =                 | =        |       |
| 2 x 12                                   | ((11-1/4))<br>11.25            | =   | =    | =    | =    | 37     | —                 | —                 | —               | —                 | —                 | —                 | —                 | ((—))             | ((—))    | ((—)) |
| 2 x 10                                   | ((9-1/4)) 9.25                 | =   | =    | =    | =    | 32     | 30                | —                 | —               | —                 | —                 | —                 | —                 | ((—))             | ((—))    | ((—)) |
| 2 x 8                                    | ((7-1/4)) 7.25                 | =   | =    | =    | =    | 27     | 26                | —                 | —               | —                 | —                 | —                 | —                 | ((—))             | ((—))    | ((—)) |
| 2 x 6                                    | ((5-1/2)) 5.5                  | =   | =    | =    | =    | —      | 21                | 20                | 21              | 18                | —                 | —                 | —                 | ((—))             | ((—))    | ((—)) |
| 2 x 4                                    | ((3-1/2)) 3.5                  | =   | =    | =    | =    | —      | —                 | 14                | —               | 13                | 15                | 13                | 11                | ((—))             | ((—))    | ((—)) |
| ((2 x 3))                                | ((2-1/2)) 2.5                  | =   | =    | =    | =    | —      | —                 | —                 | —               | —                 | 9.8               | —                 | —                 | ((—))             | ((—))    | ((—)) |
| ((2 x 2))                                | ((1-1/2)) 1.5                  | =   | =    | =    | =    | —      | —                 | —                 | —               | —                 | 6.3               | 6.0               | ((5.7))           | ((5.0))           | ((—))    |       |
| ((2 x 1))                                | 3/4                            | =   | =    | =    | =    | —      | —                 | —                 | —               | —                 | —                 | —                 | —                 | 3.2               | 3.0      |       |

**AMENDATORY SECTION** (Amending WSR 04-01-106, filed 12/17/03, effective 7/1/04)

**WAC 51-11-1004 Section 1004: Floors over unconditioned space.**

1004.1 General: Tables 10-3, 10-4 and 10-4a list heat-loss coefficients for floors over unconditioned spaces in units of Btu/h • ft<sup>2</sup> • °F.

They are derived from procedures listed in RS-1, listed in Chapter 7, assuming an average outdoor temperature of 45°F, an average indoor temperature of 65°F, and a crawlspace area of 1350 ft<sup>2</sup> and 100 ft of perimeter. The crawlspace is assumed to be 2.5 feet high, with 24 inches below grade and 6 inches above grade.

1004.2 Crawlspace Description: Four configurations are considered: ((~~Vented~~)) Naturally ventilated crawlspace, ((~~unvented~~)) mechanically ventilated crawlspace, heated plenum crawlspace and exposed floor.

((~~Vented~~)) Naturally ventilated crawlspaces: Assumed to have 3.0 air-changes per hour, with at least 1.0 ft<sup>2</sup> of net-free ventilation in the foundation for every three hundred ft<sup>2</sup> of crawlspace floor area. The crawlspace is not actively heated.

Floors over unheated areas, such as garages, may only use those values which have R-0 perimeter insulation.

((~~Unvented~~)) Mechanically ventilated crawlspaces: Assumed to have 1.5 air changes per hour, with less than 1.0 ft<sup>2</sup> of net-free ventilation in the foundation for every three hundred ft<sup>2</sup> of crawlspace floor area. The crawlspace is not

actively heated. Floors over unheated basements may only use those values which have R-0 perimeter insulation.

Heated-plenum crawlspaces: Assumed to have 0.25 air-changes per hour, with no foundation vents. Heated supply air from central furnace is blown into a crawlspace and allowed to enter the living space unducted via holes cut into the floor.

Enclosed floors: Assumes no buffer space, and a covering of one-half inch of T1-11 on the exterior of the cavity exposed to the outside air or rigid insulation below a concrete floor, such as over parking garages.

1004.3 Construction Description: Floors are assumed to be either joisted floors framed on sixteen inch centers, or post and beam on four by eight foot squares. Insulation is assumed to be installed under the subflooring between the joists or beams with no space between the insulation and the subfloor. Insulation is assumed to be uncompressed. Exposed floors also include concrete with continuous rigid insulation assumed.

Perimeter insulation is assumed to extend from the top of the rim joist to the crawlspace floor and then inward along the ground (on top of the ground cover) for at least twenty-four inches.

Floor coverings are assumed to be light carpet with rubber pad.

**TABLE 10-3  
DEFAULT U-FACTORS FOR FLOORS OVER VENTED CRAWL-SPACE OR UNHEATED BASEMENT**

| Nominal R-value |           | U-factor    |        |
|-----------------|-----------|-------------|--------|
| Floor           | Perimeter | Post & Beam | Joists |
| 0               | 0         | 0.112       | 0.134  |
|                 | 11        | 0.100       | 0.116  |
|                 | 19        | 0.098       | 0.114  |
|                 | 30        | 0.093       | 0.107  |
| 11              | 0         | 0.052       | 0.056  |
|                 | 11        | 0.048       | 0.052  |
| 19              | 0         | 0.038       | 0.041  |
|                 | 11        | 0.036       | 0.038  |
| 22              | 0         | 0.034       | 0.037  |
|                 | 11        | 0.033       | 0.035  |
| 25              | 0         | 0.032       | 0.034  |
|                 | 11        | 0.031       | 0.033  |
| 30              | 0         | 0.028       | 0.029  |
|                 | 11        | 0.027       | 0.028  |
| 38              | 0         | 0.024       | 0.025  |
|                 | 11        | 0.024       | 0.024  |

**TABLE 10-4  
DEFAULT U-FACTORS FOR FLOORS OVER HEATED PLENUM CRAWLSPACES**

| Nominal R-value Perimeter | U-factor |
|---------------------------|----------|
| 11                        | 0.085    |

**TABLE 10-4  
DEFAULT U-FACTORS FOR FLOORS OVER HEATED PLENUM CRAWLSPACES**

| Nominal R-value Perimeter | U-factor |
|---------------------------|----------|
| 19                        | 0.075    |
| 30                        | 0.069    |

**TABLE 10-4A  
EXPOSED FLOOR**

| Nominal R-value | U-factor |            |             |
|-----------------|----------|------------|-------------|
|                 | Concrete | Wood Joist | Metal Joist |
| R-11            | 0.077    | 0.088      | 0.14        |
| R-15            | 0.059    | 0.076      | 0.12        |
| R-19            | 0.048    | 0.062      | 0.11        |
| R-21            | 0.043    | 0.057      | 0.11        |
| R-25            | 0.037    | 0.051      | 0.10        |
| R-30            | 0.031    | 0.040      | 0.09        |
| R-38            | 0.025    | 0.034      | 0.08        |

Note: Crawlspaces used as heated plenums have approximately 30% higher heat-loss rate than unvented crawlspaces with the same assumed ACH. Default U-values in Table 10-4 reflect this higher rate of heat loss.

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1005 Section 1005: Above-grade walls.**

Section 1005.1 General: Table 10-5, 10-5A and 10-5B list heat-loss coefficients for the opaque portion of above-grade wood stud frame walls, metal stud frame walls and concrete masonry walls (Btu/h • ft<sup>2</sup> • °F) respectively. They are derived from procedures listed in RS-1, listed in Chapter 7. For intermediate floor slabs which penetrate the insulated wall, use the concrete wall U-factors in Table 10-5B.

Insulation is assumed to uniformly fill the entire cavity and to be installed as per manufacturer's directions. All walls are assumed to be finished on the inside with one-half inch gypsum wallboard, and on the outside with either beveled wood siding over one-half inch plywood sheathing or with five-eighths inch T1-11 siding. Insulated sheathing (either interior or exterior) is assumed to cover the entire opaque wall surface.

Metal building walls have a different construction and are addressed in Table 10-5A(3).

1005.2 Framing Description: For wood stud frame walls, three framing types are considered, and defined as follows:

Standard: Studs framed on sixteen inch centers with double top plate and single bottom plate. Corners use three studs and each opening is framed using two studs. Headers consist of double 2X or single 4X material with an air space left between the header and the exterior sheathing. Interior

partition wall/ exterior wall intersections use two studs in the exterior wall.

|                            |                  |     |
|----------------------------|------------------|-----|
| Framing weighting factors: | Studs and plates | .19 |
|                            | Insulated cavity | .77 |
|                            | Headers          | .04 |

Intermediate: Studs framed on sixteen inch centers with double top plate and single bottom plate. Corners use two studs or other means of fully insulating corners, and each opening is framed by two studs. Headers consist of double 2X material with R-10 insulation between the header and exterior sheathing. Interior partition wall/ exterior wall intersections are fully insulated in the exterior wall.

|                            |                  |     |
|----------------------------|------------------|-----|
| Framing weighting factors: | Studs and plates | .18 |
|                            | Insulated cavity | .78 |
|                            | Headers          | .04 |

Advanced: Studs framed on twenty-four inch centers with double top plate and single bottom plate. Corners use two studs or other means of fully insulating corners, and one stud is used to support each header. Headers consist of double 2X material with R-10 insulation between the header and exterior sheathing. Interior partition wall/ exterior wall intersections are fully insulated in the exterior wall.

|                            |                  |     |
|----------------------------|------------------|-----|
| Framing weighting factors: | Studs and plates | .13 |
|                            | Insulated cavity | .83 |
|                            | Headers          | .04 |

1005.3 Component Description: Default coefficients for ~~((four))~~ the following types of walls are listed: Single-stud walls, ~~((metal stud walls,))~~ strap walls, ~~((and))~~ double-stud walls, log walls, stress-skin panels, metal stud walls, and metal building walls.

Single-Stud Wall, Tables 10-5(1) through 10-5(8): Assumes either 2x4 or 2x6 studs framed on sixteen or twenty-four inch centers. Headers are solid for 2x4 walls and double 2x for 2x6 walls, with either dead-air or rigid-board insulation in the remaining space.

~~((Metal Stud Wall: Assumes metal studs spaced on 16 or 24 inch centers with insulation installed to fill wall cavities. Continuous rigid board insulation is applied without creating uninsulated voids in the wall assembly.))~~

Strap Wall, Table 10-5(9): Assumes 2x6 studs framed on sixteen or twenty-four inch centers. 2x3 or 2x4 strapping is run horizontally along the interior surface of the wall to provide additional space for insulation.

Double-Stud Wall, Tables 10-5(10) and 10-5(11): Assumes an exterior structural wall and a separate interior, nonstructural wall. Insulation is placed in both wall cavities and in the space between the 2 walls. Stud spacing is assumed to be on 24 inch centers for both walls.

Log Wall, Table 10-5(12).

Stress-Skin Panel, Table 10-5(13).

Metal Stud Wall, Overall Assembly U-Factors, Table 10-5A(1): Assumes metal studs spaced on 16- or 24-inch centers with insulation installed to fill wall cavities. Continuous rigid board insulation is applied without creating uninsulated voids in the wall assembly.

Metal Stud Wall, Effective R-Values for Metal Framing and Cavity Only, Table 10-5A(2): These values may be used for the metal-framing/cavity layers in walls with metal studs spaced on 16- or 24-inch centers with insulation installed to fill wall cavities in lieu of using the zone method provided in Chapter 25 of Standard RS-1 listed in Chapter 7.

Metal Building Wall, Table 10-5A(3): A wall whose structure consists of metal spanning panels supported by steel structural members (does not include spandrel glass or metal panels in curtain wall systems). The first nominal R-value is for insulation compressed between metal wall panels and the steel structure. For double-layer installations, the second rated R-value of insulation is for insulation installed from the inside, covering the girts. For continuous insulation (e.g., insulation boards) it is assumed that the insulation boards are installed on the inside of the girts and uninterrupted by the framing members. Insulation exposed to the conditioned space or semiheated space shall have a facing, and all insulation seams shall be continuously sealed to provide a continuous air barrier.

Concrete and Masonry Walls, Table 10-5B(1).

Peripheral Edges of Intermediate Concrete Floors, Table 10-5B(2).

**TABLE 10-5  
DEFAULT U-FACTORS FOR ABOVE-GRADE WALLS**

**TABLE 10-5(1)**

**2 x 4 Single Wood Stud: R-11 Batt**

**NOTE:**

Nominal Batt R-value:  
R-11 at 3.5 inch thickness

Installed Batt R-value:  
R-11 in 3.5 inch cavity

| Siding Material/Framing Type |             |       |       |       |
|------------------------------|-------------|-------|-------|-------|
| R-value of Foam Board        | Lapped Wood |       | T1-11 |       |
|                              | STD         | ADV   | STD   | ADV   |
| 0                            | 0.088       | 0.084 | 0.094 | 0.090 |
| 1                            | 0.080       | 0.077 | 0.085 | 0.082 |
| 2                            | 0.074       | 0.071 | 0.078 | 0.075 |
| 3                            | 0.069       | 0.066 | 0.072 | 0.070 |
| 4                            | 0.064       | 0.062 | 0.067 | 0.065 |
| 5                            | 0.060       | 0.058 | 0.063 | 0.061 |
| 6                            | 0.056       | 0.055 | 0.059 | 0.057 |
| 7                            | 0.053       | 0.052 | 0.055 | 0.054 |
| 8                            | 0.051       | 0.049 | 0.052 | 0.051 |
| 9                            | 0.048       | 0.047 | 0.050 | 0.049 |
| 10                           | 0.046       | 0.045 | 0.047 | 0.046 |
| 11                           | 0.044       | 0.043 | 0.045 | 0.044 |
| 12                           | 0.042       | 0.041 | 0.043 | 0.042 |

**TABLE 10-5(2)**

**2 x 4 Single Wood Stud: R-13 Batt**

**NOTE:**

Nominal Batt R-value:  
R-13 at 3.63 inch thickness

Installed Batt R-value:  
R-12.7 in 3.5 inch cavity

| Siding Material/Framing Type |             |       |       |       |
|------------------------------|-------------|-------|-------|-------|
| R-value of Foam Board        | Lapped Wood |       | T1-11 |       |
|                              | STD         | ADV   | STD   | ADV   |
| 0                            | 0.082       | 0.078 | 0.088 | 0.083 |
| 1                            | 0.075       | 0.072 | 0.080 | 0.076 |
| 2                            | 0.069       | 0.066 | 0.073 | 0.070 |
| 3                            | 0.065       | 0.062 | 0.068 | 0.065 |
| 4                            | 0.060       | 0.058 | 0.063 | 0.061 |
| 5                            | 0.057       | 0.055 | 0.059 | 0.057 |
| 6                            | 0.053       | 0.052 | 0.056 | 0.054 |
| 7                            | 0.051       | 0.049 | 0.052 | 0.051 |
| 8                            | 0.048       | 0.047 | 0.050 | 0.048 |
| 9                            | 0.046       | 0.045 | 0.047 | 0.046 |
| 10                           | 0.044       | 0.043 | 0.045 | 0.044 |
| 11                           | 0.042       | 0.041 | 0.043 | 0.042 |
| 12                           | 0.040       | 0.039 | 0.041 | 0.040 |

**TABLE 10-5(3)**

2 x 4 Single Wood Stud: R-15 Batt

| Siding Material/Framing Type |             |       |       |       |
|------------------------------|-------------|-------|-------|-------|
|                              | Lapped Wood |       | T1-11 |       |
| R-value of Foam Board        | STD         | ADV   | STD   | ADV   |
| 0                            | 0.076       | 0.071 | 0.081 | 0.075 |
| 1                            | 0.069       | 0.065 | 0.073 | 0.069 |
| 2                            | 0.064       | 0.061 | 0.068 | 0.069 |
| 3                            | 0.060       | 0.057 | 0.063 | 0.059 |
| 4                            | 0.056       | 0.053 | 0.059 | 0.056 |
| 5                            | 0.053       | 0.051 | 0.055 | 0.052 |
| 6                            | 0.050       | 0.048 | 0.052 | 0.050 |
| 7                            | 0.047       | 0.046 | 0.049 | 0.047 |
| 8                            | 0.045       | 0.044 | 0.047 | 0.045 |
| 9                            | 0.043       | 0.042 | 0.044 | 0.043 |
| 10                           | 0.041       | 0.040 | 0.042 | 0.041 |
| 11                           | 0.039       | 0.038 | 0.041 | 0.039 |
| 12                           | 0.038       | 0.037 | 0.039 | 0.038 |

**NOTE:**

Nominal Batt R-value:  
R-15 at 3.5 inch thickness

Installed Batt R-value:  
R-15 in 3.5 inch cavity

**TABLE 10-5(4)**

2 x 6 Single Wood Stud: R-19 Batt

| Siding Material/Framing Type |             |       |       |       |       |       |
|------------------------------|-------------|-------|-------|-------|-------|-------|
|                              | Lapped Wood |       |       | T1-11 |       |       |
| R-value of Foam Board        | STD         | INT   | ADV   | STD   | INT   | ADV   |
| 0                            | 0.062       | 0.058 | 0.055 | 0.065 | 0.061 | 0.058 |
| 1                            | 0.058       | 0.055 | 0.052 | 0.060 | 0.057 | 0.055 |
| 2                            | 0.054       | 0.052 | 0.050 | 0.056 | 0.054 | 0.051 |
| 3                            | 0.051       | 0.049 | 0.047 | 0.053 | 0.051 | 0.049 |
| 4                            | 0.048       | 0.046 | 0.045 | 0.050 | 0.048 | 0.046 |
| 5                            | 0.046       | 0.044 | 0.043 | 0.048 | 0.046 | 0.044 |
| 6                            | 0.044       | 0.042 | 0.041 | 0.045 | 0.044 | 0.042 |
| 7                            | 0.042       | 0.040 | 0.039 | 0.043 | 0.042 | 0.040 |
| 8                            | 0.040       | 0.039 | 0.038 | 0.041 | 0.040 | 0.039 |
| 9                            | 0.038       | 0.037 | 0.035 | 0.039 | 0.038 | 0.037 |
| 10                           | 0.037       | 0.036 | 0.035 | 0.038 | 0.037 | 0.036 |
| 11                           | 0.036       | 0.035 | 0.034 | 0.036 | 0.035 | 0.035 |
| 12                           | 0.034       | 0.033 | 0.033 | 0.035 | 0.034 | 0.033 |

**NOTE:**

Nominal Batt R-value:  
R-19 at 6 inch thickness

Installed Batt R-value:  
R-18 in 5.5 inch cavity



**TABLE 10-5(5)**

2 x 6 Single Wood Stud: R-21 Batt

**NOTE:**

Nominal Batt R-value:  
R-21 at 5.5 inch thickness

Installed Batt R-value:  
R-21 in 5.5 inch cavity

| Siding Material/Framing Type |             |       |       |       |       |       |
|------------------------------|-------------|-------|-------|-------|-------|-------|
|                              | Lapped Wood |       |       | T1-11 |       |       |
| R-value of Foam Board        | STD         | INT   | ADV   | STD   | INT   | ADV   |
| 0                            | 0.057       | 0.054 | 0.051 | 0.060 | 0.056 | 0.053 |
| 1                            | 0.054       | 0.051 | 0.048 | 0.056 | 0.053 | 0.050 |
| 2                            | 0.050       | 0.048 | 0.045 | 0.052 | 0.050 | 0.047 |
| 3                            | 0.048       | 0.045 | 0.043 | 0.049 | 0.047 | 0.045 |
| 4                            | 0.045       | 0.043 | 0.041 | 0.047 | 0.045 | 0.043 |
| 5                            | 0.043       | 0.041 | 0.040 | 0.044 | 0.042 | 0.041 |
| 6                            | 0.041       | 0.039 | 0.038 | 0.042 | 0.041 | 0.039 |
| 7                            | 0.039       | 0.038 | 0.036 | 0.040 | 0.039 | 0.037 |
| 8                            | 0.038       | 0.036 | 0.035 | 0.039 | 0.037 | 0.036 |
| 9                            | 0.036       | 0.035 | 0.034 | 0.037 | 0.036 | 0.035 |
| 10                           | 0.035       | 0.034 | 0.033 | 0.036 | 0.035 | 0.033 |
| 11                           | 0.033       | 0.033 | 0.032 | 0.034 | 0.033 | 0.032 |
| 12                           | 0.032       | 0.031 | 0.031 | 0.033 | 0.032 | 0.031 |

**TABLE 10-5(6)**

2 x 6 Single Wood Stud: R-22 Batt

**NOTE:**

Nominal Batt R-value:  
R-22 at 6.75 inch thickness

Installed Batt R-value:  
R-20 in 5.5 inch cavity

| Siding Material/Framing Type |             |       |       |       |       |       |
|------------------------------|-------------|-------|-------|-------|-------|-------|
|                              | Lapped Wood |       |       | T1-11 |       |       |
| R-value of Foam Board        | STD         | INT   | ADV   | STD   | INT   | ADV   |
| 0                            | 0.059       | 0.055 | 0.052 | 0.062 | 0.058 | 0.054 |
| 1                            | 0.055       | 0.052 | 0.049 | 0.057 | 0.054 | 0.051 |
| 2                            | 0.052       | 0.049 | 0.047 | 0.054 | 0.051 | 0.048 |
| 3                            | 0.049       | 0.046 | 0.044 | 0.050 | 0.048 | 0.046 |
| 4                            | 0.046       | 0.044 | 0.042 | 0.048 | 0.046 | 0.044 |
| 5                            | 0.044       | 0.042 | 0.041 | 0.045 | 0.043 | 0.042 |
| 6                            | 0.042       | 0.040 | 0.039 | 0.043 | 0.042 | 0.040 |
| 7                            | 0.040       | 0.039 | 0.037 | 0.041 | 0.040 | 0.038 |
| 8                            | 0.038       | 0.037 | 0.036 | 0.039 | 0.038 | 0.037 |
| 9                            | 0.037       | 0.036 | 0.035 | 0.038 | 0.037 | 0.035 |
| 10                           | 0.035       | 0.034 | 0.033 | 0.036 | 0.035 | 0.034 |
| 11                           | 0.034       | 0.033 | 0.032 | 0.035 | 0.034 | 0.033 |
| 12                           | 0.033       | 0.032 | 0.031 | 0.034 | 0.033 | 0.032 |

**TABLE 10-5(7)**

**2 x 6 Single Wood Stud: Two R-11 Batts**

| Siding Material/Framing Type |             |       |       |       |       |       |
|------------------------------|-------------|-------|-------|-------|-------|-------|
| R-value of Foam Board        | Lapped Wood |       |       | T1-11 |       |       |
|                              | STD         | INT   | ADV   | STD   | INT   | ADV   |
| 0                            | 0.060       | 0.057 | 0.054 | 0.063 | 0.059 | 0.056 |
| 1                            | 0.056       | 0.053 | 0.051 | 0.059 | 0.056 | 0.053 |
| 2                            | 0.053       | 0.050 | 0.048 | 0.055 | 0.052 | 0.050 |
| 3                            | 0.050       | 0.048 | 0.046 | 0.052 | 0.049 | 0.047 |
| 4                            | 0.047       | 0.045 | 0.044 | 0.049 | 0.047 | 0.045 |
| 5                            | 0.045       | 0.043 | 0.042 | 0.046 | 0.045 | 0.043 |
| 6                            | 0.043       | 0.041 | 0.040 | 0.044 | 0.043 | 0.041 |
| 7                            | 0.041       | 0.040 | 0.038 | 0.042 | 0.041 | 0.039 |
| 8                            | 0.039       | 0.038 | 0.037 | 0.040 | 0.039 | 0.038 |
| 9                            | 0.038       | 0.037 | 0.036 | 0.039 | 0.038 | 0.036 |
| 10                           | 0.036       | 0.035 | 0.034 | 0.037 | 0.036 | 0.035 |
| 11                           | 0.035       | 0.034 | 0.033 | 0.036 | 0.035 | 0.034 |
| 12                           | 0.034       | 0.033 | 0.032 | 0.034 | 0.034 | 0.033 |

**NOTE:**

Nominal Batt R-value:  
R-22 at 7 inch thickness

Installed Batt R-value:  
R-18.9 in 5.5 inch cavity

**TABLE 10-5(8)**

**2 x 8 Single Stud: R-25 Batt**

| Siding Material/Framing Type |             |       |       |       |       |       |
|------------------------------|-------------|-------|-------|-------|-------|-------|
| R-value of Foam Board        | Lapped Wood |       |       | T1-11 |       |       |
|                              | STD         | INT   | ADV   | STD   | INT   | ADV   |
| 0                            | 0.051       | 0.047 | 0.045 | 0.053 | 0.049 | 0.046 |
| 1                            | 0.048       | 0.045 | 0.043 | 0.049 | 0.046 | 0.044 |
| 2                            | 0.045       | 0.043 | 0.041 | 0.047 | 0.044 | 0.042 |
| 3                            | 0.043       | 0.041 | 0.039 | 0.044 | 0.042 | 0.040 |
| 4                            | 0.041       | 0.039 | 0.037 | 0.042 | 0.040 | 0.038 |
| 5                            | 0.039       | 0.037 | 0.036 | 0.040 | 0.038 | 0.037 |
| 6                            | 0.037       | 0.036 | 0.035 | 0.038 | 0.037 | 0.036 |
| 7                            | 0.036       | 0.035 | 0.033 | 0.037 | 0.035 | 0.034 |
| 8                            | 0.035       | 0.033 | 0.032 | 0.035 | 0.034 | 0.033 |
| 9                            | 0.033       | 0.032 | 0.031 | 0.034 | 0.033 | 0.032 |
| 10                           | 0.032       | 0.031 | 0.030 | 0.033 | 0.032 | 0.031 |
| 11                           | 0.031       | 0.030 | 0.029 | 0.032 | 0.031 | 0.030 |
| 12                           | 0.030       | 0.029 | 0.028 | 0.031 | 0.030 | 0.029 |

**NOTE:**

Nominal Batt R-value:  
R-25 at 8 inch thickness

Installed Batt R-value:  
R-23.6 in 7.25 inch cavity

**TABLE 10-5(9)**

| 2 x 6: Strap Wall          |             |       |       |       |  |
|----------------------------|-------------|-------|-------|-------|--|
| Siding Material/Frame Type |             |       |       |       |  |
|                            | Lapped Wood |       |       | T1-11 |  |
|                            | STD         | ADV   | STD   | ADV   |  |
| R-19 +R-11 Batts           | 0.036       | 0.035 | 0.038 | 0.036 |  |

| <b>2 x 6: Strap Wall</b>          |       |  |              |            |            |
|-----------------------------------|-------|--|--------------|------------|------------|
| <b>Siding Material/Frame Type</b> |       |  |              |            |            |
| <b>Lapped Wood</b>                |       |  | <b>T1-11</b> |            |            |
| <b>STD</b>                        |       |  | <b>ADV</b>   | <b>STD</b> | <b>ADV</b> |
| R-19 +R-<br>8 Batts               | 0.041 |  | 0.039        | 0.042      | 0.040      |

**TABLE 10-5(10)**

**2 x 6 + 2 x 4: Double Wood Stud**

| <b>Batt Configuration</b> |               |                 | <b>Siding Material/Frame Type</b> |            |              |            |
|---------------------------|---------------|-----------------|-----------------------------------|------------|--------------|------------|
|                           |               |                 | <b>Lapped Wood</b>                |            | <b>T1-11</b> |            |
| <b>Exterior</b>           | <b>Middle</b> | <b>Interior</b> | <b>STD</b>                        | <b>ADV</b> | <b>STD</b>   | <b>ADV</b> |
| R-19                      | ————          | R-11            | 0.040                             | 0.037      | 0.041        | 0.038      |
| R-19                      | ————          | R-19            | 0.034                             | 0.031      | 0.035        | 0.032      |
| R-19                      | R-8           | R-11            | 0.029                             | 0.028      | 0.031        | 0.029      |
| R-19                      | R-11          | R-11            | 0.027                             | 0.026      | 0.028        | 0.027      |
| R-19                      | R-11          | R-19            | 0.024                             | 0.023      | 0.025        | 0.023      |
| R-19                      | R-19          | R-19            | 0.021                             | 0.020      | 0.021        | 0.020      |

**TABLE 10-5(11)**

**2 x 4 + 2 x 4: Double Wood Stud**

| <b>Batt Configuration</b> |               |                 | <b>Siding Material/Frame Type</b> |            |              |            |
|---------------------------|---------------|-----------------|-----------------------------------|------------|--------------|------------|
|                           |               |                 | <b>Lapped Wood</b>                |            | <b>T1-11</b> |            |
| <b>Exterior</b>           | <b>Middle</b> | <b>Interior</b> | <b>STD</b>                        | <b>ADV</b> | <b>STD</b>   | <b>ADV</b> |
| R-11                      | ————          | R-11            | 0.050                             | 0.046      | 0.052        | 0.048      |
| R-19                      | ————          | R-11            | 0.039                             | 0.037      | 0.043        | 0.039      |
| R-11                      | R-8           | R-11            | 0.037                             | 0.035      | 0.036        | 0.036      |
| R-11                      | R-11          | R-11            | 0.032                             | 0.031      | 0.033        | 0.032      |
| R-13                      | R-13          | R-13            | 0.029                             | 0.028      | 0.029        | 0.028      |
| R-11                      | R-19          | R-11            | 0.026                             | 0.026      | 0.027        | 0.026      |

**TABLE 10-5(12)**

**Log Walls**

|                           | <b>Average Log Diameter, Inches</b> | <b>U-factor</b> |
|---------------------------|-------------------------------------|-----------------|
| R-value of wood:          | 6                                   | 0.148           |
| R-1.25 per inch thickness | 8                                   | 0.111           |
|                           | 10                                  | 0.089           |
| Average wall thickness    | 12                                  | 0.074           |
| 90% average log diameter  | 14                                  | 0.063           |
|                           | 16                                  | 0.056           |

**TABLE 10-5(13)**

**Stress Skin Panel**

|  | <b>Panel Thickness, Inches</b> | <b>U-factor</b> |
|--|--------------------------------|-----------------|
| R-value of expanded polystyrene: R-3.85 per inch | 3 1/2                          | 0.071           |
|  | 5 1/2                          | 0.048           |
|  | 7 1/4                          | 0.037           |
|  | 9 1/4                          | 0.030           |
|  | 11 1/4                         | 0.025           |

Framing: 6%  
Spline: 8%

No thermal bridging between interior and exterior splines

**Metal Stud Walls:** The nominal R-values in Table 10-5A may be used for purposes of calculating metal stud wall section U-factors in lieu of the ASHRAE zone calculation method as provided in Chapter ((25)) 27 of Standard RS-1.

TABLE 10-5A

Default U-factors for Overall Assembly Metal Stud Walls, Effective R-values for Metal Framing and Cavity Only, and Default Metal Building U-factors

TABLE 10-5A(1)

OVERALL ASSEMBLY U-FACTORS FOR METAL STUD WALLS

| Metal Framing | R-Value of Continuous Foam Board Insulation | Cavity Insulation |                |                |                |                |                |
|---------------|---|-------------------|----------------|----------------|----------------|----------------|----------------|
|               |   | R-0               | R-11           | R-13           | R-15           | R-19           | R-21           |
| 16" o.c.      | R-0 (none)                                  | U-0.352           | U-0.132        | U-0.124        | U-0.118        | U-0.109        | U-0.106        |
|               | R-1   | U-0.260           | U-0.117        | U-0.111        | U-0.106        | U-0.099        | U-0.096        |
|               | R-2   | U-0.207           | U-0.105        | U-0.100        | U-0.096        | U-0.090        | U-0.087        |
|               | R-3   | U-0.171           | U-0.095        | U-0.091        | U-0.087        | U-0.082        | U-0.080        |
|               | R-4   | U-0.146           | U-0.087        | U-0.083        | U-0.080        | U-0.076        | U-0.074        |
|               | R-5   | U-0.128           | U-0.080        | U-0.077        | U-0.074        | U-0.071        | U-0.069        |
|               | R-6   | U-0.113           | U-0.074        | U-0.071        | U-0.069        | U-0.066        | U-0.065        |
|               | R-7   | U-0.102           | U-0.069        | U-0.066        | U-0.065        | U-0.062        | U-0.061        |
|               | R-8   | U-0.092           | U-0.064        | U-0.062        | U-0.061        | U-0.058        | U-0.057        |
|               | R-9   | U-0.084           | U-0.060        | U-0.059        | U-0.057        | U-0.055        | U-0.054        |
|               | R-10  | U-0.078           | U-0.057        | U-0.055        | U-0.054        | U-0.052        | U-0.051        |
|               | <u>R-11</u>                                 | <u>U-0.072</u>    | <u>U-0.054</u> | <u>U-0.052</u> | <u>U-0.051</u> | <u>U-0.050</u> | <u>U-0.049</u> |
|               | <u>R-12</u>                                 | <u>U-0.067</u>    | <u>U-0.051</u> | <u>U-0.050</u> | <u>U-0.049</u> | <u>U-0.047</u> | <u>U-0.047</u> |
|               | <u>R-13</u>                                 | <u>U-0.063</u>    | <u>U-0.049</u> | <u>U-0.048</u> | <u>U-0.047</u> | <u>U-0.045</u> | <u>U-0.045</u> |
|               | <u>R-14</u>                                 | <u>U-0.059</u>    | <u>U-0.046</u> | <u>U-0.045</u> | <u>U-0.045</u> | <u>U-0.043</u> | <u>U-0.043</u> |
|               | <u>R-15</u>                                 | <u>U-0.056</u>    | <u>U-0.044</u> | <u>U-0.043</u> | <u>U-0.043</u> | <u>U-0.041</u> | <u>U-0.041</u> |
| <u>R-20</u>   | <u>U-0.044</u>                              | <u>U-0.036</u>    | <u>U-0.036</u> | <u>U-0.035</u> | <u>U-0.034</u> | <u>U-0.034</u> |                |
| 24" o.c.      | R-0 (none)                                  | U-0.338           | U-0.116        | U-0.108        | U-0.102        | U-0.094        | U-0.090        |
|               | R-1   | U-0.253           | U-0.104        | U-0.098        | U-0.092        | U-0.086        | U-0.083        |
|               | R-2   | U-0.202           | U-0.094        | U-0.089        | U-0.084        | U-0.079        | U-0.077        |
|               | R-3   | U-0.168           | U-0.086        | U-0.082        | U-0.078        | U-0.073        | U-0.071        |
|               | R-4   | U-0.144           | U-0.079        | U-0.075        | U-0.072        | U-0.068        | U-0.066        |
|               | R-5   | U-0.126           | U-0.073        | U-0.070        | U-0.067        | U-0.064        | U-0.062        |
|               | R-6   | U-0.112           | U-0.068        | U-0.066        | U-0.063        | U-0.060        | U-0.059        |
|               | R-7   | U-0.100           | U-0.064        | U-0.062        | U-0.059        | U-0.057        | U-0.055        |
|               | R-8   | U-0.091           | U-0.060        | U-0.058        | U-0.056        | U-0.054        | U-0.052        |
|               | R-9   | U-0.084           | U-0.057        | U-0.055        | U-0.053        | U-0.051        | U-0.050        |
|               | R-10  | U-0.077           | U-0.054        | U-0.052        | U-0.050        | U-0.048        | U-0.048        |
|               | <u>R-11</u>                                 | <u>U-0.072</u>    | <u>U-0.051</u> | <u>U-0.049</u> | <u>U-0.048</u> | <u>U-0.046</u> | <u>U-0.045</u> |
|               | <u>R-12</u>                                 | <u>U-0.067</u>    | <u>U-0.048</u> | <u>U-0.047</u> | <u>U-0.046</u> | <u>U-0.044</u> | <u>U-0.043</u> |
|               | <u>R-13</u>                                 | <u>U-0.063</u>    | <u>U-0.046</u> | <u>U-0.045</u> | <u>U-0.044</u> | <u>U-0.042</u> | <u>U-0.042</u> |
|               | <u>R-14</u>                                 | <u>U-0.059</u>    | <u>U-0.044</u> | <u>U-0.043</u> | <u>U-0.042</u> | <u>U-0.041</u> | <u>U-0.040</u> |
|               | <u>R-15</u>                                 | <u>U-0.056</u>    | <u>U-0.042</u> | <u>U-0.041</u> | <u>U-0.040</u> | <u>U-0.039</u> | <u>U-0.038</u> |
| <u>R-20</u>   | <u>U-0.044</u>                              | <u>U-0.035</u>    | <u>U-0.034</u> | <u>U-0.034</u> | <u>U-0.033</u> | <u>U-0.032</u> |                |

Footnote: Continuous foam board insulation: Continuous insulation assumes no thermal bridging of insulation by framing or z-furring through applied foam board. Zone calculation method as provided in RS-1 must be used for thermally bridged foam board insulation.

**TABLE 10-5A(2)**  
**EFFECTIVE R-VALUES FOR METAL FRAMING AND CAVITY ONLY**

|            | Cavity                     |                      | Insulation      |                   |          |
|------------|----------------------------|----------------------|-----------------|-------------------|----------|
|            | Nominal Depth, Inches      | Actual Depth, Inches | Nominal R-Value | Effective R-Value |          |
|            |                            |                      |                 | 16" O.C.          | 24" O.C. |
| Air Cavity | any                        | any                  | R-0.91 (air)    | 0.79              | 0.91     |
| Wall       | 4                          | 3-1/2                | R-11            | 5.5               | 6.6      |
|            | 4                          | 3-1/2                | R-13            | 6.0               | 7.2      |
|            | 4                          | 3-1/2                | R-15            | 6.4               | 7.8      |
|            | 6                          | 5-1/2                | R-19            | 7.1               | 8.6      |
|            | 6                          | 5-1/2                | R-21            | 7.4               | 9.0      |
|            | 8                          | 7-1/4                | R-25            | 7.8               | 9.6      |
| Roof       | Insulation is uncompressed |                      | R-11            | 5.5               | 6.1      |
|            |                            |                      | R-19            | 7.0               | 9.1      |
|            |                            |                      | R-30            | 9.3               | 11.4     |

**TABLE 10-5A(3)**  
**DEFAULT METAL BUILDING WALL U-FACTORS**

|  | <del>(R-10</del> | <del>R-11</del>  | <del>R-13</del>  | <del>R-19</del>  | <del>R-24</del>  | <del>R-30</del>  |
|--|------------------|------------------|------------------|------------------|------------------|------------------|
| Faced fiber glass blanket insulation rolled over and perpendicular to structural frame. Metal covering sheets fastened to the frame, holding insulation in place.      | <del>0.133</del> | <del>0.127</del> | <del>0.114</del> | <del>0.091</del> | <del>na</del>    | <del>na</del>    |
| Faced fiber glass batt insulation suspended between structural frame. Metal covering sheets fastened directly to frame.  | <del>0.134</del> | <del>0.123</del> | <del>0.107</del> | <del>0.079</del> | <del>0.065</del> | <del>0.057</del> |
| Faced fiber glass blanket insulation rolled over and perpendicular to structural frame. Rigid insulation blocks placed over insulation to align with structural frame. | <del>0.102</del> | <del>0.096</del> | <del>0.084</del> | <del>0.065</del> | <del>na</del>    | <del>na</del>    |
| Faced fiber glass batt insulation suspended between structural frame. Rigid insulation blocks placed over insulation to align with structural frame.                   | <del>0.099</del> | <del>0.093</del> | <del>0.080</del> | <del>0.059</del> | <del>0.048</del> | <del>0.041</del> |

| Insulation System                    | Rated R-Value of Insulation | Overall U-Factor for Entire Base Wall Assembly | Overall U-Factor for Assembly of Base Wall Plus Continuous Insulation (Uninterrupted by Framing) |              |               |              |               |              |
|--------------------------------------|-----------------------------|--|--|--------------|---------------|--------------|---------------|--------------|
|                                      |                             |  | <u>R-6.5</u>   | <u>R-13</u>  | <u>R-19.5</u> | <u>R-26</u>  | <u>R-32.5</u> | <u>R-39</u>  |
| <u>Single Layer of Mineral Fiber</u> |                             |  |  |              |               |              |               |              |
|                                      | <u>None</u>                 | <u>1.180</u>                                   | <u>0.136</u>   | <u>0.072</u> | <u>0.049</u>  | <u>0.037</u> | <u>0.030</u>  | <u>0.025</u> |
|                                      | <u>R-10</u>                 | <u>0.186</u>                                   | <u>0.084</u>   | <u>0.054</u> | <u>0.040</u>  | <u>0.032</u> | <u>0.026</u>  | <u>0.023</u> |
|                                      | <u>R-11</u>                 | <u>0.185</u>                                   | <u>0.084</u>   | <u>0.054</u> | <u>0.040</u>  | <u>0.032</u> | <u>0.026</u>  | <u>0.023</u> |
|                                      | <u>R-13</u>                 | <u>0.162</u>                                   | <u>0.079</u>   | <u>0.052</u> | <u>0.039</u>  | <u>0.031</u> | <u>0.026</u>  | <u>0.022</u> |
|                                      | <u>R-16</u>                 | <u>0.155</u>                                   | <u>0.077</u>   | <u>0.051</u> | <u>0.039</u>  | <u>0.031</u> | <u>0.026</u>  | <u>0.022</u> |
|                                      | <u>R-19</u>                 | <u>0.147</u>                                   | <u>0.075</u>   | <u>0.050</u> | <u>0.038</u>  | <u>0.030</u> | <u>0.025</u>  | <u>0.022</u> |

**Concrete Masonry Walls:** The nominal R-values in Table 10-5B may be used for purposes of calculating concrete masonry wall section U-factors in lieu of the ASHRAE isothermal planes calculation method as provided in Chapter ~~(25)~~ 27 of Standard RS-1.

TABLE 10-5B(1)  
Default U-Factors for Concrete and Masonry Walls

| <b>((8" CONCRETE MASONRY</b>                                  |                                    |                      |             |             |
|---|------------------------------------|----------------------|-------------|-------------|
| WALL DESCRIPTION  | CORE TREATMENT                     |                      |             |             |
|   | Partial Grout with UngROUTED Cores |                      |             | Solid Grout |
|   | Empty                              | Loose-fill insulated |             |             |
|   |                                    | Perlite              | Vermiculite |             |
| Exposed Block, Both Sides                                     | 0.40                               | 0.23                 | 0.24        | 0.43        |
| R-5 Interior Insulation, Wood Furring                         | 0.14                               | 0.11                 | 0.12        | 0.15        |
| R-6 Interior Insulation, Wood Furring                         | 0.14                               | 0.11                 | 0.11        | 0.14        |
| R-10.5 Interior Insulation, Wood Furring                      | 0.11                               | 0.09                 | 0.09        | 0.11        |
| R-8 Interior Insulation, Metal Clips                          | 0.11                               | 0.09                 | 0.09        | 0.11        |
| R-6 Exterior Insulation                                       | 0.12                               | 0.10                 | 0.10        | 0.12        |
| R-10 Exterior Insulation                                      | 0.08                               | 0.07                 | 0.07        | 0.08        |
| R-9.5 Rigid Polystyrene Integral Insulation, Two-Webbed Block | 0.11                               | 0.09                 | 0.09        | 0.12))      |

| <b>((12" CONCRETE MASONRY</b>                                 |                                    |                      |             |             |
|---|------------------------------------|----------------------|-------------|-------------|
| WALL DESCRIPTION  | CORE TREATMENT                     |                      |             |             |
|   | Partial Grout with UngROUTED Cores |                      |             | Solid Grout |
|   | Empty                              | Loose-fill insulated |             |             |
|   |                                    | Perlite              | Vermiculite |             |
| Exposed Block, Both Sides                                     | 0.35                               | 0.17                 | 0.18        | 0.33        |
| R-5 Interior Insulation, Wood Furring                         | 0.14                               | 0.10                 | 0.10        | 0.13        |
| R-6 Interior Insulation, Wood Furring                         | 0.13                               | 0.09                 | 0.10        | 0.13        |
| R-10.5 Interior Insulation, Wood Furring                      | 0.11                               | 0.08                 | 0.08        | 0.10        |
| R-8 Interior Insulation, Metal Clips                          | 0.10                               | 0.08                 | 0.08        | 0.09        |
| R-6 Exterior Insulation                                       | 0.11                               | 0.09                 | 0.09        | 0.11        |
| R-10 Exterior Insulation                                      | 0.08                               | 0.06                 | 0.06        | 0.08        |
| R-9.5 Rigid Polystyrene Integral Insulation, Two-Webbed Block | 0.11                               | 0.08                 | 0.09        | 0.12))      |

| <b>((8" CLAY BRICK</b>                   |                                    |                      |             |             |
|--|------------------------------------|----------------------|-------------|-------------|
| WALL DESCRIPTION                         | CORE TREATMENT                     |                      |             |             |
|  | Partial Grout with UngROUTED Cores |                      |             | Solid Grout |
|  | Empty                              | Loose-fill insulated |             |             |
|  |                                    | Perlite              | Vermiculite |             |
| Exposed Block, Both Sides                | 0.50                               | 0.31                 | 0.32        | 0.56        |
| R-5 Interior Insulation, Wood Furring    | 0.15                               | 0.13                 | 0.13        | 0.16        |
| R-6 Interior Insulation, Wood Furring    | 0.15                               | 0.12                 | 0.12        | 0.15        |
| R-10.5 Interior Insulation, Wood Furring | 0.12                               | 0.10                 | 0.10        | 0.12        |
| R-8 Interior Insulation, Metal Clips     | 0.11                               | 0.10                 | 0.10        | 0.11        |
| R-6 Exterior Insulation                  | 0.12                               | 0.11                 | 0.11        | 0.13        |
| R-10 Exterior Insulation                 | 0.08                               | 0.08                 | 0.08        | 0.09))      |

| <del>((6" CONCRETE POURED OR PRECAST</del> |                                    |                      |             |             |
|--|------------------------------------|----------------------|-------------|-------------|
| WALL DESCRIPTION                           | CORE TREATMENT                     |                      |             |             |
|  | Partial Grout with UngROUTED Cores |                      |             | Solid Grout |
|  | Empty                              | Loose-fill insulated |             |             |
|  |                                    | Perlite              | Vermiculite |             |
| Exposed Concrete, Both Sides               | NA                                 | NA                   | NA          | 0.61        |
| R-5 Interior Insulation, Wood Furring      | NA                                 | NA                   | NA          | 0.16        |
| R-6 Interior Insulation, Wood Furring      | NA                                 | NA                   | NA          | 0.15        |
| R-10.5 Interior Insulation, Wood Furring   | NA                                 | NA                   | NA          | 0.12        |
| R-8 Interior Insulation, Metal Clips       | NA                                 | NA                   | NA          | 0.12        |
| R-6 Exterior Insulation                    | NA                                 | NA                   | NA          | 0.13        |
| R-10 Exterior Insulation                   | NA                                 | NA                   | NA          | 0.09))      |

| <u>Framing Type and Depth</u>                                    | <u>Rated R-Value of Insulation Alone</u>          | <u>Assembly U-Factors for 8 in. Normal Weight 145 lb/ft<sup>3</sup> Solid Concrete Walls</u> | <u>Assembly U-Factors for 8 in. Medium Weight 115 lb/ft<sup>3</sup> Concrete Block Walls: Solid Grouted</u> | <u>Assembly U-Factors for 8 in. Medium Weight 115 lb/ft<sup>3</sup> Concrete Block Walls: Partially Grouted (cores uninsulated except where specified)</u> |
|--|---|--|---|--|
| No Framing   | R-0   | U-0.740  | U-0.580   | U-0.480  |
|  | UngROUTED Cores Filled with Loose-Fill Insulation | NA   | NA  | U-0.350  |
| <b>Continuous metal framing at 24 in. on center horizontally</b> |   |  |   |  |
| 1.0 in   | R-0   | U-0.414  | U-0.359   | U-0.318  |
| 1.0 in   | R-3.8   | U-0.325  | U-0.290   | U-0.263  |
| 1.0 in   | R-5   | U-0.314  | U-0.281   | U-0.255  |
| 1.0 in   | R-6.5   | U-0.305  | U-0.274   | U-0.249  |
| 1.5 in   | R-11  | U-0.267  | U-0.243   | U-0.223  |
| 2.0 in   | R-7.6   | U-0.230  | U-0.212   | U-0.197  |
| 2.0 in   | R-10  | U-0.219  | U-0.202   | U-0.188  |
| 2.0 in   | R-13  | U-0.210  | U-0.195   | U-0.182  |
| 3.0 in   | R-11.4  | U-0.178  | U-0.167   | U-0.157  |
| 3.0 in   | R-15  | U-0.168  | U-0.158   | U-0.149  |
| 3.0 in   | R-19.5  | U-0.160  | U-0.151   | U-0.143  |
| 3.5 in   | R-11.0  | U-0.168  | U-0.158   | U-0.149  |
| 3.5 in   | R-13.0  | U-0.161  | U-0.152   | U-0.144  |
| 3.5 in   | R-15.0  | U-0.155  | U-0.147   | U-0.140  |
| 4.5 in   | R-17.1  | U-0.133  | U-0.126   | U-0.121  |
| 4.5 in   | R-22.5  | U-0.124  | U-0.119   | U-0.114  |
| 4.5 in   | R-25.2  | U-0.122  | U-0.116   | U-0.112  |
| 5.0 in   | R-19.0  | U-0.122  | U-0.117   | U-0.112  |
| 5.0 in   | R-25.0  | U-0.115  | U-0.110   | U-0.106  |
| 5.0 in   | R-28.0  | U-0.112  | U-0.107   | U-0.103  |
| 5.0 in   | R-32.5  | U-0.109  | U-0.104   | U-0.101  |
| 5.5 in   | R-19.0  | U-0.118  | U-0.113   | U-0.109  |
| 5.5 in   | R-20.9  | U-0.114  | U-0.109   | U-0.105  |
| 5.5 in   | R-21.0  | U-0.113  | U-0.109   | U-0.105  |
| 5.5 in   | R-27.5  | U-0.106  | U-0.102   | U-0.099  |

| <b><u>Framing Type and Depth</u></b>                         | <b><u>Rated R-Value of Insulation Alone</u></b> | <b><u>Assembly U-Factors for 8 in. Normal Weight 145 lb/ft<sup>3</sup> Solid Concrete Walls</u></b> | <b><u>Assembly U-Factors for 8 in. Medium Weight 115 lb/ft<sup>3</sup> Concrete Block Walls: Solid Grouted</u></b> | <b><u>Assembly U-Factors for 8 in. Medium Weight 115 lb/ft<sup>3</sup> Concrete Block Walls: Partially Grouted (cores uninsulated except where specified)</u></b> |
|--|---|---|--|---|
| 5.5 in   | <u>R-30.8</u>                                   | <u>U-0.104</u>  | <u>U-0.100</u>   | <u>U-0.096</u>  |
| 6.0 in   | <u>R-22.8</u>                                   | <u>U-0.106</u>  | <u>U-0.102</u>   | <u>U-0.098</u>  |
| 6.0 in   | <u>R-30.0</u>                                   | <u>U-0.099</u>  | <u>U-0.095</u>   | <u>U-0.092</u>  |
| 6.0 in   | <u>R-33.6</u>                                   | <u>U-0.096</u>  | <u>U-0.093</u>   | <u>U-0.090</u>  |
| 6.5 in   | <u>R-24.7</u>                                   | <u>U-0.099</u>  | <u>U-0.096</u>   | <u>U-0.092</u>  |
| 7.0 in   | <u>R-26.6</u>                                   | <u>U-0.093</u>  | <u>U-0.090</u>   | <u>U-0.087</u>  |
| 7.5 in   | <u>R-28.5</u>                                   | <u>U-0.088</u>  | <u>U-0.085</u>   | <u>U-0.083</u>  |
| 8.0 in   | <u>R-30.4</u>                                   | <u>U-0.083</u>  | <u>U-0.081</u>   | <u>U-0.079</u>  |
| <b><u>Continuous insulation uninterrupted by framing</u></b> |   |   |  |   |
| <u>No Framing</u>  | <u>R-1.0</u>                                    | <u>U-0.425</u>  | <u>U-0.367</u>   | <u>U-0.324</u>  |
| <u>No Framing</u>  | <u>R-2.0</u>                                    | <u>U-0.298</u>  | <u>U-0.269</u>   | <u>U-0.245</u>  |
| <u>No Framing</u>  | <u>R-3.0</u>                                    | <u>U-0.230</u>  | <u>U-0.212</u>   | <u>U-0.197</u>  |
| <u>No Framing</u>  | <u>R-4.0</u>                                    | <u>U-0.187</u>  | <u>U-0.175</u>   | <u>U-0.164</u>  |
| <u>No Framing</u>  | <u>R-5.0</u>                                    | <u>U-0.157</u>  | <u>U-0.149</u>   | <u>U-0.141</u>  |
| <u>No Framing</u>  | <u>R-6.0</u>                                    | <u>U-0.136</u>  | <u>U-0.129</u>   | <u>U-0.124</u>  |
| <u>No Framing</u>  | <u>R-7.0</u>                                    | <u>U-0.120</u>  | <u>U-0.115</u>   | <u>U-0.110</u>  |
| <u>No Framing</u>  | <u>R-8.0</u>                                    | <u>U-0.107</u>  | <u>U-0.103</u>   | <u>U-0.099</u>  |
| <u>No Framing</u>  | <u>R-9.0</u>                                    | <u>U-0.097</u>  | <u>U-0.093</u>   | <u>U-0.090</u>  |
| <u>No Framing</u>  | <u>R-10.0</u>                                   | <u>U-0.088</u>  | <u>U-0.085</u>   | <u>U-0.083</u>  |
| <u>No Framing</u>  | <u>R-11.0</u>                                   | <u>U-0.081</u>  | <u>U-0.079</u>   | <u>U-0.076</u>  |
| <u>No Framing</u>  | <u>R-12.0</u>                                   | <u>U-0.075</u>  | <u>U-0.073</u>   | <u>U-0.071</u>  |
| <u>No Framing</u>  | <u>R-13.0</u>                                   | <u>U-0.070</u>  | <u>U-0.068</u>   | <u>U-0.066</u>  |
| <u>No Framing</u>  | <u>R-14.0</u>                                   | <u>U-0.065</u>  | <u>U-0.064</u>   | <u>U-0.062</u>  |
| <u>No Framing</u>  | <u>R-15.0</u>                                   | <u>U-0.061</u>  | <u>U-0.060</u>   | <u>U-0.059</u>  |
| <u>No Framing</u>  | <u>R-16.0</u>                                   | <u>U-0.058</u>  | <u>U-0.056</u>   | <u>U-0.055</u>  |
| <u>No Framing</u>  | <u>R-17.0</u>                                   | <u>U-0.054</u>  | <u>U-0.053</u>   | <u>U-0.052</u>  |
| <u>No Framing</u>  | <u>R-18.0</u>                                   | <u>U-0.052</u>  | <u>U-0.051</u>   | <u>U-0.050</u>  |
| <u>No Framing</u>  | <u>R-19.0</u>                                   | <u>U-0.049</u>  | <u>U-0.048</u>   | <u>U-0.047</u>  |
| <u>No Framing</u>  | <u>R-20.0</u>                                   | <u>U-0.047</u>  | <u>U-0.046</u>   | <u>U-0.045</u>  |
| <u>No Framing</u>  | <u>R-21.0</u>                                   | <u>U-0.045</u>  | <u>U-0.044</u>   | <u>U-0.043</u>  |
| <u>No Framing</u>  | <u>R-22.0</u>                                   | <u>U-0.043</u>  | <u>U-0.042</u>   | <u>U-0.042</u>  |
| <u>No Framing</u>  | <u>R-23.0</u>                                   | <u>U-0.041</u>  | <u>U-0.040</u>   | <u>U-0.040</u>  |
| <u>No Framing</u>  | <u>R-24.0</u>                                   | <u>U-0.039</u>  | <u>U-0.039</u>   | <u>U-0.038</u>  |
| <u>No Framing</u>  | <u>R-25.0</u>                                   | <u>U-0.038</u>  | <u>U-0.037</u>   | <u>U-0.037</u>  |
| <u>No Framing</u>  | <u>R-30.0</u>                                   | <u>U-0.032</u>  | <u>U-0.032</u>   | <u>U-0.031</u>  |
| <u>No Framing</u>  | <u>R-35.0</u>                                   | <u>U-0.028</u>  | <u>U-0.027</u>   | <u>U-0.027</u>  |
| <u>No Framing</u>  | <u>R-40.0</u>                                   | <u>U-0.024</u>  | <u>U-0.024</u>   | <u>U-0.024</u>  |
| <u>No Framing</u>  | <u>R-45.0</u>                                   | <u>U-0.022</u>  | <u>U-0.021</u>   | <u>U-0.021</u>  |
| <u>No Framing</u>  | <u>R-50.0</u>                                   | <u>U-0.019</u>  | <u>U-0.019</u>   | <u>U-0.019</u>  |
| <u>No Framing</u>  | <u>R-55.0</u>                                   | <u>U-0.018</u>  | <u>U-0.018</u>   | <u>U-0.018</u>  |
| <u>No Framing</u>  | <u>R-60.0</u>                                   | <u>U-0.016</u>  | <u>U-0.016</u>   | <u>U-0.016</u>  |
| <b><u>Brick cavity wall with continuous insulation</u></b>   |   |   |  |   |
| <u>No Framing</u>  | <u>R-0</u>                                      | <u>U-0.337</u>  | <u>U-0.299</u>   | <u>U-0.270</u>  |



| <b>Framing Type and Depth</b>   | <b>Rated R-Value of Insulation Alone</b> | <b>Assembly U-Factors for 8 in. Normal Weight 145 lb/ft<sup>3</sup> Solid Concrete Walls</b> | <b>Assembly U-Factors for 8 in. Medium Weight 115 lb/ft<sup>3</sup> Concrete Block Walls: Solid Grouted</b> | <b>Assembly U-Factors for 8 in. Medium Weight 115 lb/ft<sup>3</sup> Concrete Block Walls: Partially Grouted (cores uninsulated except where specified)</b> |
|---|--|--|---|--|
| No Framing  | <u>R-3.8</u>                             | <u>U-0.148</u>   | <u>U-0.140</u>  | <u>U-0.133</u>   |
| No Framing  | <u>R-5.0</u>                             | <u>U-0.125</u>   | <u>U-0.120</u>  | <u>U-0.115</u>   |
| No Framing  | <u>R-6.5</u>                             | <u>U-0.106</u>   | <u>U-0.102</u>  | <u>U-0.098</u>   |
| No Framing  | <u>R-7.6</u>                             | <u>U-0.095</u>   | <u>U-0.091</u>  | <u>U-0.088</u>   |
| No Framing  | <u>R-10</u>                              | <u>U-0.077</u>   | <u>U-0.075</u>  | <u>U-0.073</u>   |
| No Framing  | <u>R-10.5</u>                            | <u>U-0.079</u>   | <u>U-0.077</u>  | <u>U-0.075</u>   |
| No Framing  | <u>R-11.4</u>                            | <u>U-0.070</u>   | <u>U-0.068</u>  | <u>U-0.066</u>   |
| No Framing  | <u>R-15</u>                              | <u>U-0.056</u>   | <u>U-0.055</u>  | <u>U-0.053</u>   |
| No Framing  | <u>R-16.5</u>                            | <u>U-0.054</u>   | <u>U-0.053</u>  | <u>U-0.052</u>   |
| No Framing  | <u>R-19.5</u>                            | <u>U-0.045</u>   | <u>U-0.044</u>  | <u>U-0.043</u>   |
| No Framing  | <u>R-22.5</u>                            | <u>U-0.041</u>   | <u>U-0.040</u>  | <u>U-0.039</u>   |
| No Framing  | <u>R-28.5</u>                            | <u>U-0.033</u>   | <u>U-0.032</u>  | <u>U-0.032</u>   |
| <b>Continuous insulation uninterrupted by framing with stucco and continuous metal framing at 24 in. on center horizontally</b> |  |  |   |  |
| <u>1.0 in</u>   | <u>R-0 + R-19.5 c.i.</u>                 | <u>U-0.045</u>   | <u>U-0.045</u>  | <u>U-0.044</u>   |
| <u>1.0 in</u>   | <u>R-3.8 + R-19.5 c.i.</u>               | <u>U-0.044</u>   | <u>U-0.043</u>  | <u>U-0.043</u>   |
| <u>1.0 in</u>   | <u>R-5 + R-19.5 c.i.</u>                 | <u>U-0.044</u>   | <u>U-0.043</u>  | <u>U-0.043</u>   |
| <u>1.0 in</u>   | <u>R-6.5 + R-19.5 c.i.</u>               | <u>U-0.044</u>   | <u>U-0.043</u>  | <u>U-0.042</u>   |
| <u>1.5 in</u>   | <u>R-11 + R-19.5 c.i.</u>                | <u>U-0.043</u>   | <u>U-0.042</u>  | <u>U-0.042</u>   |
| <u>2.0 in</u>   | <u>R-7.6 + R-19.5 c.i.</u>               | <u>U-0.042</u>   | <u>U-0.041</u>  | <u>U-0.041</u>   |
| <u>2.0 in</u>   | <u>R-10 + R-19.5 c.i.</u>                | <u>U-0.041</u>   | <u>U-0.041</u>  | <u>U-0.040</u>   |
| <u>2.0 in</u>   | <u>R-13 + R-19.5 c.i.</u>                | <u>U-0.041</u>   | <u>U-0.040</u>  | <u>U-0.040</u>   |
| <u>3.0 in</u>   | <u>R-11.4 + R-19.5 c.i.</u>              | <u>U-0.040</u>   | <u>U-0.039</u>  | <u>U-0.039</u>   |
| <u>3.0 in</u>   | <u>R-15 + R-19.5 c.i.</u>                | <u>U-0.039</u>   | <u>U-0.039</u>  | <u>U-0.038</u>   |
| <u>3.0 in</u>   | <u>R-19.5 + R-19.5 c.i.</u>              | <u>U-0.039</u>   | <u>U-0.038</u>  | <u>U-0.038</u>   |
| <u>3.5 in</u>   | <u>R-11.0 + R-19.5 c.i.</u>              | <u>U-0.039</u>   | <u>U-0.039</u>  | <u>U-0.038</u>   |
| <u>3.5 in</u>   | <u>R-13.0 + R-19.5 c.i.</u>              | <u>U-0.039</u>   | <u>U-0.038</u>  | <u>U-0.038</u>   |
| <u>5.0 in</u>   | <u>R-19.0 + R-19.5 c.i.</u>              | <u>U-0.036</u>   | <u>U-0.036</u>  | <u>U-0.035</u>   |
| <u>5.0 in</u>   | <u>R-25 + R-19.5 c.i.</u>                | <u>U-0.035</u>   | <u>U-0.035</u>  | <u>U-0.034</u>   |
| <u>5.0 in</u>   | <u>R-32.5 + R-19.5 c.i.</u>              | <u>U-0.035</u>   | <u>U-0.034</u>  | <u>U-0.034</u>   |
| <u>5.5 in</u>   | <u>R-19.0 + R-19.5 c.i.</u>              | <u>U-0.036</u>   | <u>U-0.035</u>  | <u>U-0.035</u>   |
| <u>5.5 in</u>   | <u>R-21.0 + R-19.5 c.i.</u>              | <u>U-0.035</u>   | <u>U-0.035</u>  | <u>U-0.034</u>   |

## Notes for Default Table 10-5B(1)

- It is acceptable to use the U-factors in Table 10-5B(1) for all concrete and masonry walls, provided that the grouting is equal to or less than that specified.  
For ungrouted walls, use the partially grouted column.  
For metal studs and z-furring, use the continuous metal framing category.  
For insulation that is attached without any framing members (e.g., glued), use the continuous insulation uninterrupted by framing member category. Continuous insulation may be installed on the interior or exterior of masonry walls, or between stand-alone walls in multilayer masonry walls, or on the interior or exterior of the concrete.
- For Table 10-5B(1), the U-factor includes R-0.17 for exterior air film and R-0.68 for interior air film-vertical surfaces. For insulated walls, the U-factor also includes R-0.45 for 0.5 inch gypsum board.  
U-factors are provided for the following configurations:

- a. Concrete wall: 8-inch normal weight concrete wall with a density of 145 lb/ft<sup>3</sup>.
  - b. Solid grouted concrete block wall: 8-inch medium weight ASTM C90 concrete block with a density of 115 lb/ft<sup>3</sup> and solid grouted cores.
  - c. Partially grouted concrete block wall: 8-inch medium weight ASTM C90 concrete block with a density of 115 lb/ft<sup>3</sup> having reinforcing steel every 32 inches vertically and every 48 inches horizontally, with cores grouted in those areas only. Other cores are filled with insulating material only if there is no other insulation.
3. For walls with insulation contained in a framing layer, the U-factors in Table 10-5B(1) assume contact (and thermal bridging) between the mass wall and other framing. For wall assemblies with multiple layers where the wood or metal framing layer does not contact the concrete or masonry layer (i.e., walls with an airspace between the stud wall and the mass wall layer), it is acceptable to use the appropriate wood or metal frame wall default U-factors in Tables 10-5 or 10-5A.
- Note:** It is acceptable to use this approach where the insulation extends beyond the framing and is in contact with the mass wall layer (e.g., a nominal 4-inch metal stud containing insulation that is nominally 6 inches thick and therefore extends 2 inches beyond the back of the metal stud).
4. Except for wall assemblies qualifying for Note 3, if not taken from Table 10-5B(1), mass wall U-factors shall be determined in accordance with ASHRAE/IESNA Standard 90.1-2007, Appendix A, Section A3.1 and Tables A3.1A to A3.1D, or Section A9.4. If not taken from Table 10-9, heat capacity for mass walls shall be taken from ASHRAE/IESNA Standard 90.1-2007, Appendix A, Table A3.1B or A3.1C.

**TABLE 10-5B(2)**  
**Default U-Factors for Peripheral Edges of Intermediate Concrete Floors**

| SLAB EDGE TREATMENT             | AVERAGE THICKNESS OF WALL ABOVE AND BELOW |              |              |              |
|---------------------------------|---|--------------|--------------|--------------|
|                                 | 6 inches                                  | 8 inches     | 10 inches    | 12 inches    |
| Exposed Concrete                | 0.816                                     | 0.741        | 0.678        | 0.625        |
| R-5 Exterior Insulation         | 0.161                                     | 0.157        | 0.154        | 0.152        |
| R-6 Exterior Insulation         | 0.138                                     | 0.136        | 0.134        | 0.132        |
| R-7 Exterior Insulation         | 0.122                                     | 0.120        | 0.118        | 0.116        |
| R-8 Exterior Insulation         | 0.108                                     | 0.107        | 0.106        | 0.104        |
| R-9 Exterior Insulation         | 0.098                                     | 0.097        | 0.095        | 0.094        |
| R-10 Exterior Insulation        | 0.089                                     | 0.088        | 0.087        | 0.086        |
| <u>R-11 Exterior Insulation</u> | <u>0.082</u>                              | <u>0.081</u> | <u>0.080</u> | <u>0.079</u> |
| <u>R-12 Exterior Insulation</u> | <u>0.076</u>                              | <u>0.075</u> | <u>0.074</u> | <u>0.074</u> |
| <u>R-13 Exterior Insulation</u> | <u>0.070</u>                              | <u>0.070</u> | <u>0.069</u> | <u>0.068</u> |
| <u>R-14 Exterior Insulation</u> | <u>0.066</u>                              | <u>0.065</u> | <u>0.065</u> | <u>0.064</u> |
| <u>R-15 Exterior Insulation</u> | <u>0.062</u>                              | <u>0.061</u> | <u>0.061</u> | <u>0.060</u> |

**(Notes for Default Table 10-5B)**

- 1. Grouted cores at 40" x 48" on center vertically and horizontally in partial-grouted walls.
- 2. Interior insulation values include 1/2" gypsum board on the inner surface.
- 3. Furring and stud spacing is 16" on center. Insulation is assumed to fill furring space and is not compressed.
- 4. Intermediate values may be interpolated using this table. Values not contained in this table may be computed using the procedures listed in Standard RS-1.)

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1006 Section 1006 Default U-factors for glazing and doors.**

1006.1 Glazing and Doors without NFRC Certification: Glazing and doors that do not have NFRC certification shall be assigned the following U-factors:

**TABLE 10-6**  
**Other than ((Group R Occupancy)) Single-Family Residential:**  
**DEFAULT U-FACTORS FOR VERTICAL GLAZING, OVERHEAD GLAZING AND OPAQUE DOORS**

| Vertical Glazing                                       | U-Factor              |                          |                                     |
|--|-----------------------|--------------------------|-------------------------------------|
|  | Any Frame             | Aluminum W/Thermal Break | Vinyl/Wood/ <u>Fiberglass</u> Frame |
| Single   | 1.45                  | 1.45                     | 1.45                                |
| Double   | 0.90                  | 0.85                     | 0.75                                |
| 1/2 Inch Air, Fixed/Operable                           | 0.75/0.90             | 0.70/0.84                | 0.60/0.72                           |
| 1/2 Inch Air, Low-e <sup>(0.40)</sup> , Fixed/Operable | ((0.60))<br>0.70/0.84 | ((0.55))<br>0.60/0.72    | 0.50/0.60                           |

| Vertical Glazing   |                       |                          |                                 |
|--|-----------------------|--------------------------|---------------------------------|
|  | U-Factor              |                          |                                 |
|  | Any Frame             | Aluminum W/Thermal Break | Vinyl/Wood/<br>Fiberglass Frame |
| 1/2 Inch Air, Low-e <sup>(0.10)</sup> , Fixed/<br>Operable   | ((0.55))<br>0.65/0.78 | ((0.50))<br>0.55/0.66    | 0.45/0.54                       |
| 1/2 Inch Argon, Low-e <sup>(0.10)</sup> , Fixed/<br>Operable | ((0.50))<br>0.60/0.72 | ((0.45))<br>0.50/0.60    | 0.40/0.48                       |
| Triple   | 0.75                  | 0.55                     | 0.50                            |
| 1/2 Inch Air, Fixed/Operable                                 | 0.55/0.66             | 0.50/0.60                | 0.45/0.54                       |
| 1/2 Inch Air, Low-e <sup>(0.20)</sup> , Fixed/<br>Operable   | 0.50/0.60             | 0.45/0.54                | 0.40/0.48                       |
| 1/2 Inch Air, 2 Low-e <sup>(0.10)</sup> , Fixed/Operable     | 0.45/0.54             | 0.35/0.42                | 0.30/0.36                       |
| 1/2 Inch Argon, Low-e <sup>(0.10)</sup> , Fixed/Operable     | 0.40/0.48             | 0.30/0.36                | 0.25/0.30                       |

The category for aluminum frame with a thermal break is as defined in footnote 7 to Table 10-6A.

| Overhead Glazing: Sloped Glazing (Including Frame) |                  |                          |                                 |
|--|------------------|--------------------------|---------------------------------|
|  | U-Factor         |                          |                                 |
|  | Any Frame        | Aluminum W/Thermal Break | Vinyl/Wood/<br>Fiberglass Frame |
| Single   | 1.74             | 1.74                     | 1.74                            |
| Double   | 1.08             | 1.02                     | 0.90                            |
| 1/2 Inch Air, Fixed                                | 0.90             | 0.84                     | 0.72                            |
| 1/2 Inch Air, Low-e <sup>(0.40)</sup> , Fixed      | ((0.72))<br>0.84 | ((0.66))<br>0.72         | 0.60                            |
| 1/2 Inch Air, Low-e <sup>(0.10)</sup> , Fixed      | ((0.66))<br>0.78 | ((0.60))<br>0.66         | 0.54                            |

| Overhead Glazing: Sloped Glazing (Including Frame) |                  |                          |                                 |
|--|------------------|--------------------------|---------------------------------|
|  | U-Factor         |                          |                                 |
|  | Any Frame        | Aluminum W/Thermal Break | Vinyl/Wood/<br>Fiberglass Frame |
| 1/2 Inch Argon, Low-e <sup>(0.10)</sup> , Fixed    | ((0.60))<br>0.72 | ((0.54))<br>0.60         | 0.48                            |
| Triple   | 0.90             | 0.66                     | 0.60                            |
| 1/2 Inch Air, Fixed                                | 0.66             | 0.60                     | 0.54                            |
| 1/2 Inch Air, Low-e <sup>(0.20)</sup> , Fixed      | 0.60             | 0.54                     | 0.48                            |
| 1/2 Inch Air, 2 Low-e <sup>(0.10)</sup> , Fixed    | 0.54             | 0.42                     | 0.36                            |
| 1/2 Inch Argon, 2 Low-e <sup>(0.10)</sup> , Fixed  | 0.48             | 0.36                     | 0.30                            |

This default table is applicable to sloped glazing only. (Sloped glazing is a multiple-lite glazed system (similar to a curtain wall) that is mounted at a slope greater than 15° from the vertical plane.) Other overhead glazing shall use the defaults in Table 10-6E.

| Opaque Doors   |                 |
|--|-----------------|
|  | U-Factor        |
| Uninsulated Metal                                    | 1.20            |
| Insulated Metal (Including Fire Door and Smoke Vent) | 0.60            |
| Wood   | 0.50            |
| Other Doors  | See Table 10-6C |

Notes:

- Where a gap width is listed (i.e.: 1/2 inch), that is the minimum allowed.
- Where a low-emissivity emittance is listed (i.e.: 0.40, 0.20, 0.10), that is the maximum allowed.
- Where a gas other than air is listed (i.e.: Argon), the gas fill shall be a minimum of 90%.
- Where an operator type is listed (i.e.: Fixed), the default is only allowed for that operator type. Where a frame type is listed (i.e.: Wood/vinyl), the default is only allowed for that frame type. Wood/vinyl frame includes reinforced vinyl and aluminum-clad wood.

TABLE 10-6A  
Group R Occupancy: DEFAULT U-FACTORS FOR VERTICAL GLAZING

| Description <sup>1,2,3,4</sup> |                | Frame Type <sup>5,6</sup> |                                     |            |      |
|--------------------------------|----------------|---------------------------|-------------------------------------|------------|------|
|                                |                | Aluminum                  | Aluminum Thermal Break <sup>7</sup> | Wood/Vinyl |      |
| Windows                        | Single         | 1.20                      | 1.20                                | 1.20       |      |
|                                | Double, < 1/2" | Clear                     | 0.92                                | 0.75       | 0.63 |
|                                |                | Clear + Argon             | 0.87                                | 0.71       | 0.60 |
|                                |                | Low-e                     | 0.85                                | 0.69       | 0.58 |
|                                |                | Low-e + Argon             | 0.79                                | 0.62       | 0.53 |
|                                | Double, ≥ 1/2" | Clear                     | 0.86                                | 0.69       | 0.58 |
|                                |                | Clear + Argon             | 0.83                                | 0.67       | 0.55 |
|                                |                | Low-e                     | 0.78                                | 0.61       | 0.51 |
|                                |                | Low-e + Argon             | 0.75                                | 0.58       | 0.48 |

**TABLE 10-6A**  
**Group R Occupancy: DEFAULT U-FACTORS FOR VERTICAL GLAZING**

| Description <sup>1,2,3,4</sup> |         |               | Frame Type <sup>5,6</sup> |                                     |            |
|--------------------------------|---------|---------------|---------------------------|-------------------------------------|------------|
|                                |         |               | Aluminum                  | Aluminum Thermal Break <sup>7</sup> | Wood/Vinyl |
|                                | Triple, | Clear         | 0.70                      | 0.53                                | 0.43       |
|                                |         | Clear + Argon | 0.69                      | 0.52                                | 0.41       |
|                                |         | Low-e         | 0.67                      | 0.49                                | 0.40       |
|                                |         | Low-e + Argon | 0.63                      | 0.47                                | 0.37       |
| Garden Windows                 | Single  |               | 2.60                      | n.a.                                | 2.31       |
|                                | Double  | Clear         | 1.81                      | n.a.                                | 1.61       |
|                                |         | Clear + Argon | 1.76                      | n.a.                                | 1.56       |
|                                |         | Low-e         | 1.73                      | n.a.                                | 1.54       |
|                                |         | Low-e + Argon | 1.64                      | n.a.                                | 1.47       |

- 1 < 1/2" = a minimum dead air space of less than 0.5 inches between the panes of glass.  
 ≥ 1/2" = a minimum dead air space of 0.5 inches or greater between the panes of glass.  
 Where no gap width is listed, the minimum gap width is 1/4".
- 2 Any low-e (emissivity) coating (0.1, 0.2 or 0.4).
- 3 U-factors listed for argon shall consist of sealed, gas-filled insulated units for argon, CO2, SF6, argon/SF6 mixtures and Krypton.
- 4 "Glass block" assemblies may use a U-factor of 0.51.
- 5 Insulated fiberglass framed products shall use wood/vinyl U-factors.
- 6 Aluminum clad wood windows shall use the U-factors listed for wood/vinyl windows.
- 7 Aluminum Thermal Break = An aluminum thermal break framed window shall incorporate the following minimum design characteristics:
  - a) The thermal conductivity of the thermal break material shall be not more than 3.6 Btu-in/h/ft<sup>2</sup>/°F;
  - b) The thermal break material must produce a gap in the frame material of not less than 0.210 inches; and,
  - c) All metal framing members of the products exposed to interior and exterior air shall incorporate a thermal break meeting the criteria in a) and b) above.

**TABLE 10-6B<sup>(4)</sup>**

**((Group R Occupancy)) All Occupancies: SMALL BUSINESS COMPLIANCE TABLE DEFAULT U-FACTORS FOR VERTICAL GLAZING**

| DESCRIPTION <sup>2,3,4,6</sup> | ((FRAME TYPE <sup>7,8</sup> |                                  |            |  |
|--------------------------------|-----------------------------|----------------------------------|------------|--|
|                                | ALUMINUM                    | ALUM. THERMAL BREAK <sup>9</sup> | WOOD/VINYL | ALUM. CLAD WOOD/REINFORCED VINYL <sup>10</sup> |
| Double, Clear 1/4"             | 0.82                        | 0.66                             | 0.56       | 0.59   |
| Double, Clear 1/4" + argon     | 0.77                        | 0.63                             | 0.53       | 0.56   |
| Double, Low-e 1/4"             | 0.76                        | 0.61                             | 0.52       | 0.54   |
| Double, Low-e 2 1/4"           | 0.73                        | 0.58                             | 0.49       | 0.51   |
| Double, Low-e 1 1/4"           | 0.70                        | 0.55                             | 0.47       | 0.49   |
| Double, Low-e 4 1/4" + argon   | 0.70                        | 0.55                             | 0.47       | 0.49   |
| Double, Low-e 2 1/4" + argon   | 0.66                        | 0.52                             | 0.43       | 0.46   |
| Double, Low-e 1 1/4" + argon   | 0.64                        | 0.50                             | 0.41       | 0.43   |
| Double, Clear 3/8"             | 0.78                        | 0.63                             | 0.54       | 0.57   |
| Double, Clear 3/8" + argon     | 0.75                        | 0.60                             | 0.51       | 0.54   |
| Double, Low-e 4 3/8"           | 0.72                        | 0.57                             | 0.48       | 0.51   |
| Double, Low-e 2 3/8"           | 0.69                        | 0.54                             | 0.45       | 0.48   |
| Double, Low-e 1 3/8"           | 0.66                        | 0.51                             | 0.43       | 0.46   |

TABLE 10-6B<sup>(\*)</sup>

**((Group R-Occupancy)) All Occupancies: SMALL BUSINESS COMPLIANCE TABLE DEFAULT U-FACTORS FOR VERTICAL GLAZING**

| DESCRIPTION <sup>2,3,4,6</sup> | ((FRAME TYPE <sup>7,8</sup> |                                  |                   |  |
|--------------------------------|-----------------------------|----------------------------------|-------------------|--|
|                                | ALUMINUM                    | ALUM. THERMAL BREAK <sup>9</sup> | WOOD/VINYL        | ALUM. CLAD WOOD/REINFORCED VINYL <sup>10</sup> |
| Double, Low-e4 3/8" + argon    | 0.68                        | 0.53                             | 0.44              | 0.47   |
| Double, Low-e2 3/8" + argon    | 0.63                        | 0.49                             | 0.41              | 0.44   |
| Double, Low-e1 3/8" + argon    | 0.61                        | 0.47                             | 0.35              | 0.41   |
| Double, Clear 1/2"             | 0.75                        | 0.60                             | 0.50              | 0.54   |
| Double, Clear 1/2" + argon     | 0.72                        | 0.58                             | 0.48              | 0.51   |
| Double, Low-e4 1/2"            | 0.68                        | 0.53                             | 0.44              | 0.47   |
| Double, Low-e2 1/2"            | 0.64                        | 0.50                             | 0.40              | 0.44   |
| Double, Low-e1 1/2"            | 0.61                        | 0.47                             | 0.35 <sup>5</sup> | 0.42   |
| Double, Low-e4 1/2" + argon    | 0.65                        | 0.50                             | 0.42              | 0.44   |
| Double, Low-e2 1/2" + argon    | 0.60                        | 0.46                             | 0.37              | 0.40   |
| Double, Low-e1 1/2" + argon    | 0.58                        | 0.43                             | 0.34              | 0.38   |
| Triple, Clear 1/4"             | 0.66                        | 0.52                             | 0.42              | 0.44   |
| Triple, Clear 1/4" + argon     | 0.63                        | 0.49                             | 0.39              | 0.42   |
| Triple, Low-e4 1/4"            | 0.64                        | 0.50                             | 0.40              | 0.40   |
| Triple, Low-e2 1/4"            | 0.62                        | 0.48                             | 0.39              | 0.41   |
| Triple, Low-e1 1/4"            | 0.61                        | 0.47                             | 0.38              | 0.40   |
| Triple, Low-e4 1/4" + argon    | 0.60                        | 0.46                             | 0.37              | 0.39   |
| Triple, Low-e2 1/4" + argon    | 0.58                        | 0.43                             | 0.34              | 0.37   |
| Triple, Low-e1 1/4" + argon    | 0.57                        | 0.42                             | 0.34              | 0.36   |
| Triple, Clear 1/2"             | 0.61                        | 0.46                             | 0.37              | 0.40   |
| Triple, Clear 1/2" + argon     | 0.59                        | 0.45                             | 0.36              | 0.38   |
| Triple, Low-e4 1/2"            | 0.58                        | 0.43                             | 0.35              | 0.37   |
| Triple, Low-e2 1/2"            | 0.55                        | 0.41                             | 0.32              | 0.35   |
| Triple, Low-e1 1/2"            | 0.54                        | 0.39                             | 0.31              | 0.33   |
| Triple, Low-e4 1/2" + argon    | 0.55                        | 0.41                             | 0.32              | 0.35   |
| Triple, Low-e2 1/2" + argon    | 0.52                        | 0.38                             | 0.30              | 0.32   |
| Triple, Low-e1 1/2" + argon    | 0.51                        | 0.37                             | 0.29              | 0.31))   |

| Vertical Glazing Description |                          |                         |              | Frame Type  |                                     |                                     |
|------------------------------|--------------------------|-------------------------|--------------|-------------|-------------------------------------|-------------------------------------|
|                              |                          |                         |              | Any Frame   | Aluminum Thermal Break <sup>2</sup> | Wood/Vinyl Fiberglass               |
| Panes                        | Low-e <sup>1</sup>       | Spacer                  | Fill         |             |                                     |                                     |
| <b>Double<sup>3</sup></b>    | <u>A</u>                 | <u>Any</u>              | <u>Argon</u> | <u>0.48</u> | <u>0.41</u>                         | <u>0.32</u>                         |
|                              | <u>B</u>                 | <u>Any</u>              | <u>Argon</u> | <u>0.46</u> | <u>0.39</u>                         | <u>0.30</u>                         |
|                              | <u>C</u>                 | <u>Any</u>              | <u>Argon</u> | <u>0.44</u> | <u>0.37</u>                         | <u>0.28</u>                         |
|                              | <u>C</u>                 | <u>High Performance</u> | <u>Argon</u> | <u>0.42</u> | <u>0.35</u>                         | <u>Deemed to comply<sup>5</sup></u> |
| <b>Triple<sup>4</sup></b>    | <u>A</u>                 | <u>Any</u>              | <u>Air</u>   | <u>0.50</u> | <u>0.44</u>                         | <u>0.26</u>                         |
|                              | <u>B</u>                 | <u>Any</u>              | <u>Air</u>   | <u>0.45</u> | <u>0.39</u>                         | <u>0.22</u>                         |
|                              | <u>C</u>                 | <u>Any</u>              | <u>Air</u>   | <u>0.41</u> | <u>0.34</u>                         | <u>0.20</u>                         |
|                              | <u>Any, double low-e</u> | <u>Any</u>              | <u>Air</u>   | <u>0.35</u> | <u>0.32</u>                         | <u>0.18</u>                         |

Footnotes to Table 10-6B

- ((4 Subtract 0.02 from the listed default U factor for nonaluminum spacer. Acceptable spacer materials may include but is not limited to fiberglass, wood and butyl or other material with an equivalent thermal performance.
- 2 1/4" = a minimum dead air space of 0.25 inches between the panes of glass.  
3/8" = a minimum dead air space of 0.375 inches between the panes of glass.  
1/2" = a minimum dead air space of 0.5 inches between the panes of glass.  
Product with air spaces different than those listed above shall use the value for the next smaller air space; i.e. 3/4 inch = 1/2 inch U factors, 7/16 inch = 3/8 inch U factors, 5/16 inch = 1/4 inch U factors.
- 3 Low-e4 (emissivity) shall be 0.4 or less.  
Low-e2 (emissivity) shall be 0.2 or less.  
Low-e1 (emissivity) shall be 0.1 or less.
- 4 U-factors listed for argon shall consist of sealed, gas-filled insulated units for argon, CO2, SF6, and argon/SF6 mixtures. The following conversion factor shall apply to Krypton gas-filled units: 1/4" or greater with krypton is equivalent to 1/2" argon.
- 5 For this assembly only, products shall be deemed to comply if they have an emissivity of 0.16 or less.
- 6 "Glass block" assemblies may use a U-factor of 0.51.
- 7 Insulated fiberglass framed products shall use wood/vinyl U-factors.
- 8 Subtract 0.02 from the listed default values for solariums.
- 9 Aluminum Thermal Break = An aluminum thermal break framed window shall incorporate the following minimum design characteristics:
  - a) The thermal conductivity of the thermal break material shall be not more than 3.6 Btu-in/h/ft<sup>2</sup>/F°;
  - b) The thermal break material must produce a gap in the frame material of not less than 0.210 inches; and,
  - e) All metal framing members of the products exposed to interior and exterior air shall incorporate a thermal break meeting the criteria in a) and b) above.
- 10 Aluminum-clad wood windows shall use the U-factors listed for Aluminum Clad Wood/Reinforced Vinyl windows. Vinyl-clad wood window shall use the U-factors listed for Wood/Vinyl windows. Any vinyl frame window with metal reinforcement in more than one rail shall use the U-factors listed for Aluminum Clad Wood/Reinforced Vinyl window-))
- 1. Low-eA (emissivity) shall be 0.24 to 0.16.  
Low-eB (emissivity) shall be 0.15 to 0.08.  
Low-eC (emissivity) shall be 0.07 or less.
- 2. Aluminum Thermal Break = An aluminum thermal break framed window shall incorporate the following minimum design characteristics:
  - a) The thermal conductivity of the thermal break material shall be not more than 3.6 Btu-in/h/ft<sup>2</sup>/° F;
  - b) The thermal break material must produce a gap in the frame material of not less than 0.210 inches; and
  - c) All metal framing members of the products exposed to interior and exterior air shall incorporate a thermal break meeting the criteria in a) and b) above.
- 3. A minimum air space of 0.375 inches between panes of glass is required for double glazing.
- 4. A minimum air space of 0.25 inches between panes of glass is required for triple glazing.
- 5. Deemed to comply glazing shall not be used for performance compliance.

**TABLE 10-6C**  
**Group R Occupancy: DEFAULT U-FACTORS FOR DOORS**

| Door Type   | No Glazing | Single Glazing | Double Glazing with 1/4 in. Airspace | Double Glazing with 1/2 in. Airspace | Double Glazing with e = 0.10, 1/2 in. Argon |
|---|------------|----------------|--------------------------------------|--------------------------------------|---|
| <b>SWINGING DOORS (Rough opening - 38 in. x 82 in.)</b> |            |                |                                      |                                      |   |
| <i>Slab Doors</i>                                       |            |                |                                      |                                      |   |
| Wood slab in wood frame <sup>a</sup>                    | 0.46       |                |                                      |                                      |   |
| 6% glazing (22 in. x 8 in. lite)                        | -          | 0.48           | 0.47                                 | 0.46                                 | 0.44  |
| 25% glazing (22 in. x 36 in. lite)                      | -          | 0.58           | 0.48                                 | 0.46                                 | 0.42  |
| 45% glazing (22 in. x 64 in. lite)                      | -          | 0.69           | 0.49                                 | 0.46                                 | 0.39  |

| Door Type   | No Glazing      | Single Glazing | Double Glazing with 1/4 in. Airspace | Double Glazing with 1/2 in. Airspace | Double Glazing with e = 0.10, 1/2 in. Argon |
|---|-----------------|----------------|--------------------------------------|--------------------------------------|---|
| More than 50% glazing   | Use Table 10-6A |                |                                      |                                      |   |
| Insulated steel slab with wood edge in wood frame <sup>a</sup>        | 0.16            |                |                                      |                                      |   |
| 6% glazing (22 in. x 8 in. lite)                                      | -               | 0.21           | 0.20                                 | 0.19                                 | 0.18  |
| 25% glazing (22 in. x 36 in. lite)                                    | -               | 0.39           | 0.28                                 | 0.26                                 | 0.23  |
| 45% glazing (22 in. x 64 in. lite)                                    | -               | 0.58           | 0.38                                 | 0.35                                 | 0.26  |
| More than 50% glazing   | Use Table 10-6A |                |                                      |                                      |   |
| Foam insulated steel slab with metal edge in steel frame <sup>b</sup> | 0.37            |                |                                      |                                      |   |
| 6% glazing (22 in. x 8 in. lite)                                      | -               | 0.44           | 0.42                                 | 0.41                                 | 0.39  |
| 25% glazing (22 in. x 36 in. lite)                                    | -               | 0.55           | 0.50                                 | 0.48                                 | 0.44  |
| 45% glazing (22 in. x 64 in. lite)                                    | -               | 0.71           | 0.59                                 | 0.56                                 | 0.48  |
| More than 50% glazing   | Use Table 10-6A |                |                                      |                                      |   |
| Cardboard honeycomb slab with metal edge in steel frame <sup>b</sup>  | 0.61            |                |                                      |                                      |   |

*Style and Rail Doors*

Sliding glass doors/French doors Use Table 10-6A

*Site-Assembled Style and Rail Doors*

|   |   |      |      |      |      |
|---|---|------|------|------|------|
| Aluminum in aluminum frame                    | - | 1.32 | 0.99 | 0.93 | 0.79 |
| Aluminum in aluminum frame with thermal break | - | 1.13 | 0.80 | 0.74 | 0.63 |

~~((REVOLVING DOORS (Rough opening — 82 in. x 84 in.))~~

~~Aluminum in aluminum frame~~

|                   |              |                 |              |              |              |
|-------------------|--------------|-----------------|--------------|--------------|--------------|
| <del>Open</del>   | <del>-</del> | <del>1.32</del> | <del>-</del> | <del>-</del> | <del>-</del> |
| <del>Closed</del> | <del>-</del> | <del>0.65</del> | <del>-</del> | <del>-</del> | <del>-</del> |

~~SECTIONAL OVERHEAD DOORS (Nominal — 10 ft x 10 ft)~~

|  |                 |              |              |              |               |
|--|-----------------|--------------|--------------|--------------|---------------|
| <del>Uninsulated steel (nominal U = 1.15)<sup>e</sup></del>                  | <del>1.15</del> | <del>-</del> | <del>-</del> | <del>-</del> | <del>-</del>  |
| <del>Insulated steel (nominal U = 0.11)<sup>e</sup></del>                    | <del>0.24</del> | <del>-</del> | <del>-</del> | <del>-</del> | <del>-</del>  |
| <del>Insulated steel with thermal break (nominal U = 0.08)<sup>e</sup></del> | <del>0.13</del> | <del>-</del> | <del>-</del> | <del>-</del> | <del>-)</del> |

- a. Thermally broken sill (add 0.03 for nonthermally broken sill)
- b. Nonthermally broken sill
- c. Nominal U-factors are through the center of the insulated panel before consideration of thermal bridges around the edges of the door sections and due to the frame.

| REVOLVING DOORS |          |
|-----------------|----------|
| Size (W x H)    | U-Factor |
| 3-wing          |          |
| 8 ft. x 7 ft.   | 0.79     |
| 10 ft. x 8 ft.  | 0.80     |
| 4-wing          |          |
| 7 ft. x 6.5 ft. | 0.63     |
| 7 ft. x 7.5 ft. | 0.64     |
| Open            |          |
| 82 in. x 84 in. | 1.32     |

| DOUBLE-SKIN STEEL EMERGENCY EXIT DOORS |               |                 |
|--|---------------|-----------------|
| Core Insulation                        | 3 ft. x 6 ft. | 6 ft. x 6 ft. 8 |
|  | 8 in.         | in.             |
| 1-3/8 in. thickness                    |               |                 |
| Honeycomb kraft paper                  | 0.57          | 0.52            |
| Mineral wool, steel ribs               | 0.44          | 0.36            |
| Polyurethane foam                      | 0.34          | 0.28            |
| 1-3/4 in. thickness                    |               |                 |
| Honeycomb kraft paper                  | 0.57          | 0.54            |
| Mineral wool, steel ribs               | 0.41          | 0.33            |
| Polyurethane foam                      | 0.31          | 0.26            |

| <b>DOUBLE-SKIN STEEL EMERGENCY EXIT DOORS</b> |                                |                                |
|---|--------------------------------|--------------------------------|
| <b>Core Insulation</b>                        | <b>3 ft. x 6 ft.<br/>8 in.</b> | <b>6 ft. x 6 ft. 8<br/>in.</b> |
| <b>1-3/8 in. thickness</b>                    |                                |                                |
| Honeycomb kraft paper                         | 0.60                           | 0.55                           |
| Mineral wool, steel ribs                      | 0.47                           | 0.39                           |
| Polyurethane foam                             | 0.37                           | 0.31                           |
| <b>1-3/4 in. thickness</b>                    |                                |                                |
| Honeycomb kraft paper                         | 0.60                           | 0.57                           |
| Mineral wool, steel ribs                      | 0.44                           | 0.37                           |
| Polyurethane foam                             | 0.34                           | 0.30                           |

| <b>DOUBLE-SKIN STEEL GARAGE AND AIRCRAFT HANGAR DOORS</b> |                                      |                       |                                      |                                    |                                     |
|---|--------------------------------------|-----------------------|--------------------------------------|------------------------------------|-------------------------------------|
| <b>Insulation<sup>e</sup></b>                             | <b>One-piece tilt-up<sup>a</sup></b> |                       | <b>Sectional tilt-up<sup>b</sup></b> | <b>Aircraft hangar</b>             |                                     |
|   | <b>8 ft. x 7 ft.</b>                 | <b>16 ft. x 7 ft.</b> | <b>9 ft. x 7 ft.</b>                 | <b>72 ft. x 12 ft.<sup>c</sup></b> | <b>240 ft. x 50 ft.<sup>d</sup></b> |
| <b>1-3/8 in. thickness</b>                                |                                      |                       |                                      |                                    |                                     |
| EPS, steel ribs   | 0.36                                 | 0.33                  | 0.34-0.39                            |                                    |                                     |
| XPS, steel ribs   | 0.33                                 | 0.31                  | 0.31-0.36                            |                                    |                                     |
| <b>2 in. thickness</b>                                    |                                      |                       |                                      |                                    |                                     |
| EPS, steel ribs   | 0.31                                 | 0.28                  | 0.29-0.33                            |                                    |                                     |
| XPS, steel ribs   | 0.29                                 | 0.26                  | 0.27-0.31                            |                                    |                                     |
| <b>3 in. thickness</b>                                    |                                      |                       |                                      |                                    |                                     |
| EPS, steel ribs   | 0.26                                 | 0.23                  | 0.25-0.28                            |                                    |                                     |
| XPS, steel ribs   | 0.24                                 | 0.21                  | 0.24-0.27                            |                                    |                                     |
| <b>4 in. thickness</b>                                    |                                      |                       |                                      |                                    |                                     |
| EPS, steel ribs   | 0.23                                 | 0.20                  | 0.23-0.25                            |                                    |                                     |
| XPS, steel ribs   | 0.21                                 | 0.19                  | 0.21-0.24                            |                                    |                                     |
| <b>6 in. thickness</b>                                    |                                      |                       |                                      |                                    |                                     |
| EPS, steel ribs   | 0.20                                 | 0.16                  | 0.20-0.21                            |                                    |                                     |
| XPS, steel ribs   | 0.19                                 | 0.15                  | 0.19-0.21                            |                                    |                                     |
| <b>4 in. thickness</b>                                    |                                      |                       |                                      |                                    |                                     |
| Non-insulated   |                                      |                       |                                      | 1.10                               | 1.23                                |
| Expanded polystyrene                                      |                                      |                       |                                      | 0.25                               | 0.16                                |
| Mineral wool, steel ribs                                  |                                      |                       |                                      | 0.25                               | 0.16                                |
| Extruded polystyrene                                      |                                      |                       |                                      | 0.23                               | 0.15                                |
| <b>6 in. thickness</b>                                    |                                      |                       |                                      |                                    |                                     |
| Non-insulated   |                                      |                       |                                      | 1.10                               | 1.23                                |
| Expanded polystyrene                                      |                                      |                       |                                      | 0.21                               | 0.13                                |
| Mineral wool, steel ribs                                  |                                      |                       |                                      | 0.23                               | 0.13                                |
| Extruded polystyrene                                      |                                      |                       |                                      | 0.20                               | 0.12                                |
| <b>Uninsulated</b>  |                                      |                       |                                      |                                    |                                     |
| All products  | 1.15                                 |                       |                                      |                                    |                                     |

- a. Values are for thermally broken or thermally unbroken doors.
- b. Lower values are for thermally broken doors; upper values are for doors with no thermal break.
- c. Typical size for a small private airplane (single-engine or twin).
- d. Typical hangar door for a midsize commercial jet airliner.
- e. EPS is extruded polystyrene, XPS is expanded polystyrene.

TABLE 10-6D  
 Group R Occupancy: DEFAULT U-FACTORS FOR GLAZED DOORS  
 See Table 10-6C



**TABLE 10-6E**  
**Group R Occupancy: DEFAULT U-FACTORS FOR OVERHEAD GLAZING**

| Glazing Type  | Frame Type                     |                             |   |  |
|---|--------------------------------|-----------------------------|---|--|
|   | Aluminum without Thermal Break | Aluminum with Thermal Break | Reinforced Vinyl/ Aluminum-Clad Wood or Vinyl | Wood or Vinyl-Clad Wood/ Vinyl without Reinforcing |
| Single Glazing<br>glass                             | U-1.58                         | U-1.51                      | U-1.40  | U-1.18   |
|   | U-1.52                         | U-1.45                      | U-1.34  | U-1.11   |
| Double Glazing<br>air                               | U-1.05                         | U-0.89                      | U-0.84  | U-0.67   |
|   | U-1.02                         | U-0.86                      | U-0.80  | U-0.64   |
| Double Glazing, $e = 0.20$<br>air                   | U-0.96                         | U-0.80                      | U-0.75  | U-0.59   |
|   | U-0.91                         | U-0.75                      | U-0.70  | U-0.54   |
| Double Glazing, $e = 0.10$<br>air                   | U-0.94                         | U-0.79                      | U-0.74  | U-0.58   |
|   | U-0.89                         | U-0.73                      | U-0.68  | U-0.52   |
| Double Glazing, $e = 0.05$<br>air                   | U-0.93                         | U-0.78                      | U-0.73  | U-0.56   |
|   | U-0.87                         | U-0.71                      | U-0.66  | U-0.50   |
| Triple Glazing<br>air                               | U-0.90                         | U-0.70                      | U-0.67  | U-0.51   |
|   | U-0.87                         | U-0.69                      | U-0.64  | U-0.48   |
| Triple Glazing, $e = 0.20$<br>air                   | U-0.86                         | U-0.68                      | U-0.63  | U-0.47   |
|   | U-0.82                         | U-0.63                      | U-0.59  | U-0.43   |
| Triple Glazing, $e = 0.20$ on 2 surfaces<br>air     | U-0.82                         | U-0.64                      | U-0.60  | U-0.44   |
|   | U-0.79                         | U-0.60                      | U-0.56  | U-0.40   |
| Triple Glazing, $e = 0.10$ on 2 surfaces<br>air     | U-0.81                         | U-0.62                      | U-0.58  | U-0.42   |
|   | U-0.77                         | U-0.58                      | U-0.54  | U-0.38   |
| Quadruple Glazing, $e = 0.10$ on 2x surfaces<br>air | U-0.78                         | U-0.59                      | U-0.55  | U-0.39   |
|   | U-0.74                         | U-0.56                      | U-0.52  | U-0.36   |
|   | U-0.70                         | U-0.52                      | U-0.48  | U-0.32   |

1. U-factors are applicable to both glass and plastic, flat and domed units, all spacers and gaps.
2. Emissivities shall be less than or equal to the value specified.
3. Gap fill shall be assumed to be air unless there is a minimum of 90% argon or krypton.
4. Aluminum frame with thermal break is as defined in footnote 9 to Table 10-6B.

**AMENDATORY SECTION** (Amending WSR 04-01-106, filed 12/17/03, effective 7/1/04)

**WAC 51-11-1007 Section 1007 Ceilings.**

1007.1 General: Table 10-7 lists heat-loss coefficients for the opaque portion of exterior ceilings below vented

attics, vaulted ceilings, and roof decks in units of Btu/h•ft<sup>2</sup>•°F of ceiling.

They are derived from procedures listed in Standard RS-1, listed in Chapter 7. Ceiling U-factors are modified for the buffering effect of the attic, assuming an indoor temperature of 65° F and an outdoor temperature of 45°F.

**Metal Framed Ceilings:** The nominal R-values in Table 10-5A(2) - EFFECTIVE R-VALUES FOR METAL FRAMING AND CAVITY ONLY may be used for purposes of calculating metal framed ceiling section U-factors in lieu of the ASHRAE zone calculation method as provided in Chapter ((25)) 27 of Standard RS-1.

Metal building roofs have a different construction and are addressed in Table 10-7(F).

1007.2 Component Description: The four types of ceilings are characterized as follows:

**Ceilings Below a Vented Attic:** Attic insulation is assumed to be blown-in, loose-fill fiberglass with a K-value of 2.6 hr • ft<sup>2</sup> • °F/Btu per inch. Full bag count for specified R-value is assumed in all cases. Ceiling dimensions for flat ceiling calculations are forty-five by thirty feet, with a gabled roof having a 4/12 pitch. The attic is assumed to vent naturally at the rate of three air changes per hour through soffit and ridge vents. A void fraction of 0.002 is assumed for all attics with insulation baffles. Standard-framed, unbaffled attics assume a void fraction of 0.008.

Attic framing is either standard or advanced. Standard framing assumes tapering of insulation depth around the perimeter with resultant decrease in thermal resistance. An increased R-value is assumed in the center of the ceiling due to the effect of piling leftover insulation. Advanced framing assumes full and even depth of insulation extending to the outside edge of exterior walls. Advanced framing does not change from the default value.

U-factors for flat ceilings below vented attics with standard framing may be modified with the following table:

| Roof Pitch | U-Factor for Standard Framing |      |
|------------|-------------------------------|------|
|            | R-30                          | R-38 |
| 4/12       | .036                          | .031 |
| 5/12       | .035                          | .030 |
| 6/12       | .034                          | .029 |
| 7/12       | .034                          | .029 |
| 8/12       | .034                          | .028 |
| 9/12       | .034                          | .028 |
| 10/12      | .033                          | .028 |
| 11/12      | .033                          | .027 |
| 12/12      | .033                          | .027 |

Vented scissors truss attics assume a ceiling pitch of 2/12 with a roof pitch of either 4/12 or 5/12. Unbaffled standard framed scissors truss attics are assumed to have a void fraction of 0.016.

**Vaulted Ceilings:** Insulation is assumed to be fiberglass batts installed in roof joist cavities. In the vented case, at least 1.5-inches between the top of the batts and the underside of the roof sheathing is left open for ventilation in each cavity. A ventilation rate of 3.0 air changes per hour is assumed. In the unvented or dense pack case, the ceiling cavity is assumed to be fully packed with insulation, leaving no space for ventilation.

**EXCEPTION:** Where spray polyurethane foam meets the requirements of Section 502.1.6.3 or 1313.2, the cavity shall be filled to the depth to achieve R-value requirements.

**Roof Decks:** Rigid insulation is applied to the top of roof decking with no space left for ventilation. Roofing materials are attached directly on top of the insulation. Framing members are often left exposed on the interior side.

**Metal Truss Framing:** Overall system tested values for the roof/ceiling U<sub>o</sub> for metal framed truss assemblies from approved laboratories shall be used, when such data is acceptable to the building official.

Alternatively, the U<sub>o</sub> for roof/ceiling assemblies using metal truss framing may be obtained from Tables 10-7A, 10-7B, 10-7C, 10-7D and 10-7E.

**Steel Truss Framed Ceiling, Table 10-7A.**

**Steel Truss Framed Ceiling with R-3 Sheathing, Table 10-7B.**

**Steel Truss Framed Ceiling with R-5 Sheathing, Table 10-7C.**

**Steel Truss Framed Ceiling with R-10 Sheathing, Table 10-7D.**

**Steel Truss Framed Ceiling with R-15 Sheathing, Table 10-7E.**

**Metal Building Roof, Table 10-7F:** The base assembly is a roof where the insulation is compressed when installed beneath metal roof panels attached to the steel structure (purlins). Additional assemblies include continuous insulation, uncompressed and uninterrupted by framing.

**Single Layer.** The rated R-value of insulation is for insulation installed perpendicular to and draped over purlins and then compressed when the metal roof panels are attached. A minimum R-3 (R-0.5) thermal spacer block between the purlins and the metal roof panels is, unless compliance is shown by the overall assembly U-factor.

**Double Layer.** The first rated R-value of insulation is for insulation installed perpendicular to and draped over purlins. The second rated R-value of insulation is for unfaced insulation installed above the first layer and parallel to the purlins and then compressed when the metal roof panels are attached. A minimum R-3 (R-0.5) thermal spacer block between the purlins and the metal roof panels is required, unless compliance is shown by the overall assembly U-factor.

**Continuous Insulation.** For continuous insulation (e.g., insulation boards or blankets), it is assumed that the insulation is installed below the purlins and is uninterrupted by framing members. Insulation exposed to the conditioned space or semiheated space shall have a facing, and all insulation seams shall be continuously sealed to provide a continuous air barrier.

**Liner System (Ls).** A continuous membrane is installed below the purlins and uninterrupted by framing members. Uncompressed, unfaced insulation rests on top of the membrane between the purlins. For multilayer installations, the last rated R-value of insulation is for unfaced insulation draped over purlins and then compressed when the metal roof panels are attached. A minimum R-3 (R-0.5) thermal spacer block between the purlins and the metal roof panels is

required, unless compliance is shown by the overall assembly U-factor.

**Filled Cavity.** The first rated R-value of insulation is for faced insulation installed parallel to the purlins. The second rated R-value of insulation is for unfaced insulation installed above the first layer, parallel to and between the purlins and compressed when the metal roof panels are attached. The facer of the first layer of insulation is of sufficient width to be continuously sealed to the top flange of the purlins and to accommodate the full thickness of the second layer of insulation. A supporting structure retains the bottom of the first layer at the prescribed depth required for the full thickness of the second layer of insulation being installed above it. A minimum R-5 (R-0.9) thermal spacer block between the purlins and the metal roof panels is required, unless compliance is shown by the overall assembly U-factor.

**U-factors for Metal Building Roofs.** U-factors for metal building roofs shall be taken from Table 10-7F, pro-

vided the average purlin spacing is at least 52 in. and the R-value of the thermal spacer block is greater than or equal to the thermal spacer block R-value indicated in Table 10-7F for the assembly. It is not acceptable to use the U-factors in Table 10-7F if additional insulated sheathing is not continuous.

**Roofs with Insulation Entirely Above Deck (uninterrupted by framing).** Table 10-7G: The base assembly is continuous insulation over a structural deck. Added insulation is continuous and uninterrupted by framing. For the insulation, the first column lists the R-value for continuous insulation with a uniform thickness; the second column lists the comparable area-weighted average R-value for continuous insulation provided that the insulation thickness is never less than R-5 (except at roof drains) and that the slope is no greater than 1/4 inch per foot.

TABLE 10-7  
DEFAULT U-FACTORS FOR CEILINGS

**Ceilings Below Vented Attics**

|                              | Standard Frame            | Advanced Frame  |
|------------------------------|---------------------------|-----------------|
| <b>Flat Ceiling</b>          | <b>Baffled</b>            |                 |
| R-19                         | 0.049                     | 0.047           |
| R-30                         | 0.036                     | 0.032           |
| R-38                         | 0.031                     | 0.026           |
| R-49                         | 0.027                     | 0.020           |
| R-60                         | 0.025                     | 0.017           |
| <b>Scissors Truss</b>        |                           |                 |
| R-30 (4/12 roof pitch)       | 0.043                     | 0.031           |
| R-38 (4/12 roof pitch)       | 0.040                     | 0.025           |
| R-49 (4/12 roof pitch)       | 0.038                     | 0.020           |
| R-30 (5/12 roof pitch)       | 0.039                     | 0.032           |
| R-38 (5/12 roof pitch)       | 0.035                     | 0.026           |
| R-49 (5/12 roof pitch)       | 0.032                     | 0.020           |
| <b>Vaulted Ceilings</b>      |                           |                 |
|                              | <b>16" O.C.</b>           | <b>24" O.C.</b> |
| <b>Vented</b>                |                           |                 |
| R-19 2x10 joist              | 0.049                     | 0.048           |
| R-30 2x12 joist              | 0.034                     | 0.033           |
| R-38 2x14 joist              | 0.027                     | 0.027           |
| <b>Unvented</b>              |                           |                 |
| R-30 2x10 joist              | 0.034                     | 0.033           |
| R-38 2x12 joist              | 0.029                     | 0.027           |
| R-21 + R-21 2x12 joist       | 0.026                     | 0.025           |
| <b>Roof Deck</b>             |                           |                 |
|                              | <b>4x Beams, 48" O.C.</b> |                 |
| R-12.5 2" Rigid insulation   | 0.064                     |                 |
| R-21.9 3.5" Rigid insulation | 0.040                     |                 |
| R-37.5 6" Rigid insulation   | 0.025                     |                 |
| R-50 8" Rigid insulation     | 0.019                     |                 |

| Table 10-7A<br>Steel Truss <sup>1</sup> Framed Ceiling U <sub>O</sub> |                 |        |        |        |        |        |        |        |        |        |        |        |        |
|---|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Cavity<br>R-value   | Truss Span (ft) |        |        |        |        |        |        |        |        |        |        |        |        |
|   | 12              | 14     | 16     | 18     | 20     | 22     | 24     | 26     | 28     | 30     | 32     | 34     | 36     |
| 19  | 0.1075          | 0.0991 | 0.0928 | 0.0878 | 0.0839 | 0.0807 | 0.0780 | 0.0757 | 0.0737 | 0.0720 | 0.0706 | 0.0693 | 0.0681 |
| 30  | 0.0907          | 0.0823 | 0.0760 | 0.0710 | 0.0671 | 0.0638 | 0.0612 | 0.0589 | 0.0569 | 0.0552 | 0.0538 | 0.0525 | 0.0513 |
| 38  | 0.0844          | 0.0759 | 0.0696 | 0.0647 | 0.0607 | 0.0575 | 0.0548 | 0.0525 | 0.0506 | 0.0489 | 0.0474 | 0.0461 | 0.0449 |
| 49  | 0.0789          | 0.0704 | 0.0641 | 0.0592 | 0.0552 | 0.0520 | 0.0493 | 0.0470 | 0.0451 | 0.0434 | 0.0419 | 0.0406 | 0.0395 |

| Table 10-7B<br>Steel Truss <sup>1</sup> Framed Ceiling U <sub>O</sub> with R-3 Sheathing <sup>2</sup> |                 |        |        |        |        |        |        |        |        |        |        |        |        |
|---|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Cavity<br>R-value   | Truss Span (ft) |        |        |        |        |        |        |        |        |        |        |        |        |
|   | 12              | 14     | 16     | 18     | 20     | 22     | 24     | 26     | 28     | 30     | 32     | 34     | 36     |
| 19  | 0.0809          | 0.0763 | 0.0728 | 0.0701 | 0.0679 | 0.0661 | 0.0647 | 0.0634 | 0.0623 | 0.0614 | 0.0606 | 0.0599 | 0.0592 |
| 30  | 0.0641          | 0.0595 | 0.0560 | 0.0533 | 0.0511 | 0.0493 | 0.0478 | 0.0466 | 0.0455 | 0.0446 | 0.0438 | 0.0431 | 0.0424 |
| 38  | 0.0577          | 0.0531 | 0.0496 | 0.0469 | 0.0447 | 0.0430 | 0.0415 | 0.0402 | 0.0392 | 0.0382 | 0.0374 | 0.0367 | 0.0361 |
| 49  | 0.0523          | 0.0476 | 0.0441 | 0.0414 | 0.0393 | 0.0375 | 0.0360 | 0.0348 | 0.0337 | 0.0328 | 0.0319 | 0.0312 | 0.0306 |

| Table 10-7C<br>Steel Truss <sup>1</sup> Framed Ceiling U <sub>O</sub> with R-5 Sheathing <sup>2</sup> |                 |        |        |        |        |        |        |        |        |        |        |        |        |
|---|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Cavity<br>R-value   | Truss Span (ft) |        |        |        |        |        |        |        |        |        |        |        |        |
|   | 12              | 14     | 16     | 18     | 20     | 22     | 24     | 26     | 28     | 30     | 32     | 34     | 36     |
| 19  | 0.0732          | 0.0697 | 0.0670 | 0.0649 | 0.0633 | 0.0619 | 0.0608 | 0.0598 | 0.0590 | 0.0583 | 0.0577 | 0.0571 | 0.0567 |
| 30  | 0.0564          | 0.0529 | 0.0502 | 0.0481 | 0.0465 | 0.0451 | 0.0440 | 0.0430 | 0.0422 | 0.0415 | 0.0409 | 0.0403 | 0.0399 |
| 38  | 0.0501          | 0.0465 | 0.0438 | 0.0418 | 0.0401 | 0.0388 | 0.0376 | 0.0367 | 0.0359 | 0.0351 | 0.0345 | 0.0340 | 0.0335 |
| 49  | 0.0446          | 0.0410 | 0.0384 | 0.0363 | 0.0346 | 0.0333 | 0.0322 | 0.0312 | 0.0304 | 0.0297 | 0.0291 | 0.0285 | 0.0280 |

| Table 10-7D<br>Steel Truss <sup>1</sup> Framed Ceiling U <sub>O</sub> with R-10 Sheathing <sup>2</sup> |                 |        |        |        |        |        |        |        |        |        |        |        |        |
|--|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Cavity<br>R-value  | Truss Span (ft) |        |        |        |        |        |        |        |        |        |        |        |        |
|  | 12              | 14     | 16     | 18     | 20     | 22     | 24     | 26     | 28     | 30     | 32     | 34     | 36     |
| 19   | 0.0626          | 0.0606 | 0.0590 | 0.0578 | 0.0569 | 0.0561 | 0.0555 | 0.0549 | 0.0545 | 0.0541 | 0.0537 | 0.0534 | 0.0531 |
| 30   | 0.0458          | 0.0437 | 0.0422 | 0.0410 | 0.0401 | 0.0393 | 0.0387 | 0.0381 | 0.0377 | 0.0373 | 0.0369 | 0.0366 | 0.0363 |
| 38   | 0.0394          | 0.0374 | 0.0359 | 0.0347 | 0.0337 | 0.0330 | 0.0323 | 0.0318 | 0.0313 | 0.0309 | 0.0305 | 0.0302 | 0.0299 |
| 49   | 0.0339          | 0.0319 | 0.0304 | 0.0292 | 0.0283 | 0.0275 | 0.0268 | 0.0263 | 0.0258 | 0.0254 | 0.0251 | 0.0247 | 0.0245 |

| Table 10-7E<br>Steel Truss <sup>1</sup> Framed Ceiling U <sub>O</sub> with R-15 Sheathing <sup>2</sup> |                 |        |        |        |        |        |        |        |        |        |        |        |        |
|--|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Cavity<br>R-value  | Truss Span (ft) |        |        |        |        |        |        |        |        |        |        |        |        |
|  | 12              | 14     | 16     | 18     | 20     | 22     | 24     | 26     | 28     | 30     | 32     | 34     | 36     |
| 19   | 0.0561          | 0.0550 | 0.0541 | 0.0535 | 0.0530 | 0.0526 | 0.0522 | 0.0519 | 0.0517 | 0.0515 | 0.0513 | 0.0511 | 0.0509 |
| 30   | 0.0393          | 0.0382 | 0.0373 | 0.0367 | 0.0362 | 0.0358 | 0.0354 | 0.0351 | 0.0349 | 0.0347 | 0.0345 | 0.0343 | 0.0341 |
| 38   | 0.0329          | 0.0318 | 0.0310 | 0.0303 | 0.0298 | 0.0294 | 0.0291 | 0.0288 | 0.0285 | 0.0283 | 0.0281 | 0.0279 | 0.0278 |
| 49   | 0.0274          | 0.0263 | 0.0255 | 0.0249 | 0.0244 | 0.0239 | 0.0236 | 0.0233 | 0.0230 | 0.0228 | 0.0226 | 0.0225 | 0.0223 |

- 1 - Assembly values based on 24 inch on center truss spacing; 11 Truss member connections penetrating insulation (4 at the eaves, 7 in the interior space); 1/2 inch drywall ceiling; all truss members are 2x4 "C" channels with a solid web.
- 2 - Ceiling sheathing installed between bottom chord and drywall.

**TABLE 10-7F  
Default U-Factors for Metal Building Roofs**

| <u>Insulation System</u>  | <u>Rated R-Value of Insulation</u> | <u>Overall U-Factor for Entire Base Roof Assembly</u> | <u>Overall U-Factor for Assembly of Base Roof Plus Continuous Insulation (uninterrupted by framing) Rated R-Value of Continuous Insulation</u> |              |               |              |               |              |
|---|------------------------------------|---|--|--------------|---------------|--------------|---------------|--------------|
|   |                                    |   | <u>R-6.5</u>   | <u>R-13</u>  | <u>R-19.5</u> | <u>R-26</u>  | <u>R-32.5</u> | <u>R-39</u>  |
| <b>Standing Seam Roofs with Thermal Spacer Blocks<sup>a,b</sup></b> |                                    |   |  |              |               |              |               |              |
|   | <u>None</u>                        | <u>1.280</u>  | <u>0.137</u>   | <u>0.073</u> | <u>0.049</u>  | <u>0.037</u> | <u>0.030</u>  | <u>0.025</u> |
|   | <u>R-10</u>                        | <u>0.115</u>  | <u>0.066</u>   | <u>0.046</u> | <u>0.035</u>  | <u>0.029</u> | <u>0.024</u>  | <u>0.021</u> |

| Insulation System | Rated R-Value of Insulation | Overall U-Factor for Entire Base Roof Assembly | Overall U-Factor for Assembly of Base Roof Plus Continuous Insulation (uninterrupted by framing) Rated R-Value of Continuous Insulation |       |        |       |        |       |
|-------------------|-----------------------------|--|---|-------|--------|-------|--------|-------|
|                   |                             |  | R-6.5   | R-13  | R-19.5 | R-26  | R-32.5 | R-39  |
| Single Layer      | R-11                        | 0.107  | 0.063   | 0.045 | 0.035  | 0.028 | 0.024  | 0.021 |
|                   | R-13                        | 0.101  | 0.061   | 0.044 | 0.034  | 0.028 | 0.024  | 0.020 |
|                   | R-16                        | 0.096  | 0.059   | 0.043 | 0.033  | 0.027 | 0.023  | 0.020 |
|                   | R-19                        | 0.082  | 0.053   | 0.040 | 0.031  | 0.026 | 0.022  | 0.020 |
|                   | R-10 + R-10                 | 0.088  | 0.056   | 0.041 | 0.032  | 0.027 | 0.023  | 0.020 |
|                   | R-10 + R-11                 | 0.086  | 0.055   | 0.041 | 0.032  | 0.027 | 0.023  | 0.020 |
|                   | R-11 + R-11                 | 0.085  | 0.055   | 0.040 | 0.032  | 0.026 | 0.023  | 0.020 |
| Double Layer      | R-10 + R-13                 | 0.084  | 0.054   | 0.040 | 0.032  | 0.026 | 0.023  | 0.020 |
|                   | R-11 + R-13                 | 0.082  | 0.053   | 0.040 | 0.032  | 0.026 | 0.022  | 0.020 |
|                   | R-13 + R-13                 | 0.075  | 0.050   | 0.038 | 0.030  | 0.025 | 0.022  | 0.019 |
|                   | R-10 + R-19                 | 0.074  | 0.050   | 0.038 | 0.030  | 0.025 | 0.022  | 0.019 |
|                   | R-11 + R-19                 | 0.072  | 0.049   | 0.037 | 0.030  | 0.025 | 0.022  | 0.019 |
|                   | R-13 + R-19                 | 0.068  | 0.047   | 0.036 | 0.029  | 0.025 | 0.021  | 0.019 |
|                   | R-16 + R-19                 | 0.065  | 0.046   | 0.035 | 0.029  | 0.024 | 0.021  | 0.018 |
| Liner System      | R-19 + R-19                 | 0.060  | 0.043   | 0.034 | 0.028  | 0.023 | 0.020  | 0.018 |
|                   | R-19 + R-11                 | 0.035  |   |       |        |       |        |       |
|                   | R-25 + R-11                 | 0.031  |   |       |        |       |        |       |
| Liner System      | R-30 + R-11                 | 0.029  |   |       |        |       |        |       |
|                   | R-25 + R-11 + R-11          | 0.026  |   |       |        |       |        |       |

**Filled Cavity with Thermal Spacer Blocks<sup>c</sup>**

|             |       |       |       |       |       |       |       |
|-------------|-------|-------|-------|-------|-------|-------|-------|
| R-10 + R-19 | 0.057 | 0.042 | 0.033 | 0.027 | 0.023 | 0.020 | 0.018 |
|-------------|-------|-------|-------|-------|-------|-------|-------|

**Standing Seam Roofs without Thermal Spacer Blocks**

|              |             |       |  |  |  |  |  |
|--------------|-------------|-------|--|--|--|--|--|
| Liner System | R-19 + R-11 | 0.040 |  |  |  |  |  |
|--------------|-------------|-------|--|--|--|--|--|

**Thru-Fastened Roofs without Thermal Spacer Blocks**

|              |             |       |  |  |  |  |  |
|--------------|-------------|-------|--|--|--|--|--|
| Liner System | R-10        | 0.184 |  |  |  |  |  |
|              | R-11        | 0.182 |  |  |  |  |  |
|              | R-13        | 0.174 |  |  |  |  |  |
|              | R-16        | 0.157 |  |  |  |  |  |
|              | R-19        | 0.151 |  |  |  |  |  |
|              | R-19 + R-11 | 0.044 |  |  |  |  |  |

(Multiple R-values are listed in order from inside to outside)

- a. A standing seam roof clip that provides a minimum 1.5 in. distance between the top of the purlins and the underside of the metal roof panels is required.
- b. A minimum R-3 thermal spacer block is required.
- c. A minimum R-5 thermal spacer block is required.

**TABLE 10-7G**  
**Assembly U-Factors for Roofs with Insulation Entirely Above Deck**  
**(uninterrupted by framing)**

| Rated R-Value of Insulation Alone: Minimum Through-out, Unslotted | Rated R-Value of Insulation Alone: Average (R-5 minimum), Sloped (1/4 inch per foot maximum) | Overall U-Factor for Entire Assembly |
|---|--|--------------------------------------|
| R-0   | Not Allowed  | U-1.282                              |
| R-1   | Not Allowed  | U-0.562                              |
| R-2   | Not Allowed  | U-0.360                              |
| R-3   | Not Allowed  | U-0.265                              |

| Rated R-Value of Insulation Alone: Minimum Through-out, Unslotted | Rated R-Value of Insulation Alone: Average (R-5 minimum), Sloped (1/4 inch per foot maximum) | Overall U-Factor for Entire Assembly |
|---|--|--------------------------------------|
| R-4   | Not Allowed  | U-0.209                              |
| R-5   | Not Allowed  | U-0.173                              |
| R-6   | R-7  | U-0.147                              |
| R-7   | R-8  | U-0.129                              |
| R-8   | R-9  | U-0.114                              |
| R-9   | R-10   | U-0.102                              |
| R-10  | R-12   | U-0.093                              |

| <u>Rated R-Value of Insulation Alone: Minimum Through-out, Unslotted</u> | <u>Rated R-Value of Insulation Alone: Average (R-5 minimum), Sloped (1/4 inch per foot maximum)</u> | <u>Overall U-Factor for Entire Assembly</u> |
|--|---|---|
| R-11   | R-13  | U-0.085                                     |
| R-12   | R-15  | U-0.078                                     |
| R-13   | R-16  | U-0.073                                     |
| R-14   | R-18  | U-0.068                                     |
| R-15   | R-20  | U-0.063                                     |
| R-16   | R-22  | U-0.060                                     |
| R-17   | R-23  | U-0.056                                     |
| R-18   | R-25  | U-0.053                                     |
| R-19   | R-27  | U-0.051                                     |
| R-20   | R-29  | U-0.048                                     |
| R-21   | R-31  | U-0.046                                     |
| R-22   | R-33  | U-0.044                                     |
| R-23   | R-35  | U-0.042                                     |
| R-24   | R-37  | U-0.040                                     |
| R-25   | R-39  | U-0.039                                     |
| R-26   | R-41  | U-0.037                                     |
| R-27   | R-43  | U-0.036                                     |
| R-28   | R-46  | U-0.035                                     |
| R-29   | R-48  | U-0.034                                     |
| R-30   | R-50  | U-0.032                                     |
| R-35   | R-61  | U-0.028                                     |
| R-40   | R-73  | U-0.025                                     |
| R-45   | R-86  | U-0.022                                     |
| R-50   | R-99  | U-0.020                                     |
| R-55   | R-112   | U-0.018                                     |
| R-60   | R-126   | U-0.016                                     |

AMENDATORY SECTION (Amending WSR 01-03-010, filed 1/5/01, effective 7/1/01)

**WAC 51-11-1008 Section 1008 Air infiltration.**

1008.1 General: Tables 10-8 and 10-8A list effective air change rates and heat capacities for heat loss due to infiltration for (~~Group R Occupancy~~) Single-Family residential.

Estimated seasonal average infiltration rate in air changes per hour (ACH) is given for standard air-leakage control (see section 502.4 of this code for air leakage requirements for (~~Group R Occupancy~~) Single-Family residential). The effective air-change rate shall be used in calculations for compliance under either the Component Performance or Systems Analysis approaches.

Heat loss due to infiltration shall be computed using the following equation:

$$Q_{infil} = ACH_{eff} * HCP$$

where:  $Q_{infil}$  = Heat loss due to air infiltration

$ACH_{eff}$  = the effective air infiltration rate in Table 10-8

HCP = the Heat Capacity Density Product for the appropriate elevation or climate zone as given below.

**TABLE 10-8**  
ASSUMED EFFECTIVE AIR CHANGES  
PER HOUR

| <u>Air-Leakage Control Package</u> | <u>Air Changes per Hour</u> |                  |
|------------------------------------|-----------------------------|------------------|
|                                    | <u>Natural</u>              | <u>Effective</u> |
| Standard                           | 0.35                        | 0.35             |

**TABLE 10-8A**  
DEFAULT HEAT CAPACITY/DENSITY PRODUCT FOR AIR

| <u>Zone</u> | <u>Average Elevation</u> | <u>Heat Capacity/Density</u> |
|-------------|--------------------------|------------------------------|
| 1           | Mean Sea Level           | 0.0180 Btu/h•°F              |
| 2           | 2000                     | 0.0168 Btu/h•°F              |
| 3           | 3000                     | 0.0162 Btu/h•°F              |

AMENDATORY SECTION (Amending WSR 04-01-106, filed 12/17/03, effective 7/1/04)

**WAC 51-11-1009 Section 1009 Mass.**

1009.1 General: Tables 10-9 and 10-10 list default mass values for concrete masonry construction. Calculations are based on standard ASHRAE values for heat-storage capacity as listed in Standard RS-1, Chapter ((25)) 26.

Thermal capacity of furniture is ignored, as is heat storage beyond the first four inches of mass thickness. All mass is assumed to be in direct contact with the conditioned space. Concrete separated from the heated volume by other materials must multiply the listed concrete mass value by the result of the following formula:

$$\text{Ln(R-value)} \times (-.221) + 0.5$$

Where:

Ln = Natural log

R-value = R-value of material covering concrete

Note: All default values for covered concrete slabs have been adjusted according to this procedure.

1009.2 Mass Description: Mass is divided into two types: Structural and additional.

**Structural Mass:** Includes heat-storage capacity of all standard building components of a typical residential structure, including floors, ceilings, and interior and exterior walls in Btu/ft<sup>2</sup> • °F of floor area. It also assumes exterior wall, interior wall and ceiling surface area approximately equals three times the floor area.

**Additional Mass:** Includes any additional building material not part of the normal structure, which is added specifically to increase the building's thermal-storage capability. This category includes masonry fireplaces, water or trombe walls, and extra layers of sheetrock. Coefficients are in Btu/ft<sup>2</sup> • °F of surface area of material exposed to conditioned space. The coefficient for water is Btu/°F • gallon.

1009.3 Component Description: Light frame assumes one inch thick wood flooring with five-eighths inch sheetrock on ceilings and interior walls, and walls consisting of either five-eighths inch sheetrock or solid logs. Slab assumes a four-inch concrete slab on or below grade, with five-eighths

inch sheetrock on exterior and interior walls and ceiling, and with separate values for interior or exterior wall insulation. Adjustments for slab covering is based on R-value of material. Additional mass values are based on the density multiplied by the specific heat of the material adjusted for listed thickness.

**TABLE 10-9  
HEAT CAPACITY**

|             | <b>Partial Grout</b> | <b>Solid Grout</b> |
|-------------|----------------------|--------------------|
| 8" CMU      | 9.65                 | 15.0               |
| 12" CMU     | 14.5                 | 23.6               |
| 8" Brick    | 10.9                 | 16.4               |
| 6" Concrete | NA                   | 14.4               |

**TABLE 10-10  
DEFAULT MASS VALUES**

| <b>Structural Mass M-value</b>                              | <b>Btu/ft<sup>2</sup> • °F floor area</b> |
|---|---|
| <b>Light Frame:</b>   |   |
| Joisted/post & beam floor, sheetrock walls and ceilings     | 3.0                                       |
| Joisted/post & beam floor, log walls, sheetrock ceilings    | 4.0                                       |
| <b>Slab With Interior Wall Insulation:</b>                  |   |
| Slab, no covering or tile, sheetrock walls and ceilings     | 10.0                                      |
| Slab, hardwood floor covering, sheetrock walls and ceilings | 7.0                                       |
| Slab, carpet and pad, sheetrock walls and ceilings          | 5.0                                       |
| <b>Slab With Exterior Wall Insulation:</b>                  |   |
| Slab, no covering or tile, sheetrock walls and ceilings     | 12.0                                      |
| Slab, hardwood floor covering, sheetrock walls and ceilings | 9.0                                       |
| Slab, carpet and pad, sheetrock walls and ceilings          | 7.0                                       |
| <b>Additional Mass M-Value:</b>                             |   |
| <b>Btu/ft<sup>2</sup>•°F surface area</b>                   |   |
| Gypsum wallboard, 1/2 inch thickness                        | 0.54                                      |
| Gypsum wallboard, 5/8 inch thickness                        | 0.68                                      |
| Hardwood floor  | 1.40                                      |
| Concrete/Brick, 4 inch-thickness                            | 10.30                                     |
| Concrete/Brick, 6 inch-thickness                            | 15.40                                     |
| <b>Btu/°F•gallon</b>  |   |
| Water, 1 gallon   | 8.0                                       |

**AMENDATORY SECTION** (Amending WSR 98-03-003, filed 1/8/98, effective 7/1/98)

**WAC 51-11-1120 Scope.** This Code sets forth minimum requirements for the design and commissioning of new or altered buildings and structures or portions thereof that provide facilities or shelter for public assembly, educational, business, mercantile, institutional, storage, factory, and industrial occupancies by regulating their exterior envelopes and the selection of their ((HVAC)) mechanical systems, ((service)) domestic water ((heating)) systems, electrical distribution and illuminating systems and equipment for efficient use and conservation of energy.

**EXCEPTION:** The provisions of this code do not apply to temporary growing structures used solely for the commercial production of horticultural plants including ornamental plants, flowers, vegetables, and fruits. "Temporary growing structure" means a structure that has the sides and roof covered with polyethylene, polyvinyl, or similar flexible synthetic material and is used to provide plants with either frost protection or increased heat retention. A temporary growing structure is not considered a building for purposes of this code.

**AMENDATORY SECTION** (Amending WSR 93-21-052, filed 10/18/93, effective 4/1/94)

**WAC 51-11-1131 Additions to existing buildings.**

Additions to existing buildings or structures may be constructed without making the entire building or structure comply, provided that the new additions shall conform to the provisions of this Code.

**EXCEPTION:** New additions which do not fully comply with the requirements of this Code and which have a floor area which is less than seven hundred fifty square feet may be approved provided that improvements are made to the existing building to compensate for any deficiencies in the new addition. Compliance shall be demonstrated by either systems analysis per Section 1141.4 or component performance calculations per Sections 1330 through 1334. The nonconforming addition and upgraded, existing building shall have an energy budget or target UA and SHGC that are less than or equal to the unimproved existing building, with the addition designed to comply with this Code. These additions are also exempt from Section 1314.7.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1132 Alterations and repairs.**

Alterations and repairs to buildings or portions thereof originally constructed subject to the requirements of this Code shall conform to the provisions of this Code without the use of the exception in Section 1130. Other alterations and repairs may be made to existing buildings and moved buildings without making the entire building comply with all of the requirements of this Code for new buildings, provided the following requirements are met:

1132.1 Building Envelope: Alterations or repairs shall comply with nominal R-values and glazing requirements in Table 13-1 or 13-2.

- EXCEPTIONS:**
1. Storm windows installed over existing glazing.
  2. Glass replaced in existing sash and frame provided that glazing is of equal or lower U-factor.
  3. For solar heat gain coefficient compliance, glazing with a solar heat gain coefficient equal to or lower than that of the other existing glazing.
  4. Existing roof/ceiling, wall or floor cavities exposed during construction provided that these cavities are insulated to full depth with insulation having a minimum nominal value of R-3.0 per inch installed per Sections 1311 and 1313.

5. Existing walls and floors without framing cavities, provided that any new cavities added to existing walls and floors comply with Exception 4.
6. Existing roofs where the roof membrane is being replaced and
  - a. The roof sheathing or roof insulation is not exposed; or
  - b. If there is existing roof insulation below the deck. In no case shall the energy efficiency of the building be decreased.

1132.2 ((Building)) Mechanical Systems: Those parts of systems which are altered or replaced shall comply with Chapter 14 of this Code. Additions or alterations shall not be made to an existing mechanical system that will cause the existing mechanical system to become out of compliance.

All new systems in existing buildings, including packaged unitary equipment and packaged split systems, shall comply with Chapter 14.

Where mechanical cooling is added to a space that was not previously cooled, the mechanical cooling system shall comply with Sections 1413 and either 1423 or 1433.

- EXCEPTIONS:** These exceptions only apply to situations where mechanical cooling is added to a space that was not previously cooled.
1. Water-cooled refrigeration equipment provided with a water economizer meeting the requirements of Section 1413 need not comply with 1423 or 1433. This exception shall not be used for RS-29 analysis.
  2. Alternate designs that are not in full compliance with this Code may be approved when the building official determines that existing building or occupancy constraints make full compliance impractical or where full compliance would be economically impractical.

Alterations to existing mechanical cooling systems shall not decrease economizer capacity unless the system complies with Sections 1413 and either 1423 or 1433. In addition, for existing mechanical cooling systems that do not comply with Sections 1413 and either 1423 or 1433, including both the individual unit size limits and the total building capacity limits on units without economizer, other alterations shall comply with Table 11-1.

When space cooling equipment is replaced, controls shall be installed to provide for integrated operation with economizer in accordance with Section 1413.3.

Existing equipment currently in use may be relocated within the same floor or same tenant space if removed and reinstalled within the same permit.

**TABLE 11-1: ECONOMIZER COMPLIANCE OPTIONS FOR MECHANICAL ALTERATIONS**

|                   | <b>Option A</b>  | <b>Option B<br/>(alternate to A)</b>  | <b>Option C<br/>(alternate to A)</b>                                   | <b>Option D<br/>(alternate to A)</b>  |
|-------------------|--|---|--|---|
| <b>Unit Type</b>  | <b>Any alteration with new or replacement equipment</b>        | <b>Replacement unit of the same type with the same or smaller output capacity</b> | <b>Replacement unit of the same type with a larger output capacity</b> | <b>New equipment added to existing system or replacement unit of a different type</b> |
| 1. Packaged Units | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2</sup> | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2,3</sup>                  | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2,3</sup>       | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2,4</sup>                      |



TABLE 11-1: ECONOMIZER COMPLIANCE OPTIONS FOR MECHANICAL ALTERATIONS

|   | <b>Option A</b>  | <b>Option B<br/>(alternate to A)</b>   | <b>Option C<br/>(alternate to A)</b>  | <b>Option D<br/>(alternate to A)</b>   |
|---|--|--|---|--|
| <b>Unit Type</b>  | <b>Any alteration with new or replacement equipment</b>        | <b>Replacement unit of the same type with the same or smaller output capacity</b>                                      | <b>Replacement unit of the same type with a larger output capacity</b>  | <b>New equipment added to existing system or replacement unit of a different type</b>  |
| 2. Split Systems  | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2</sup> | Efficiency: + 10/5% <sup>5</sup><br>Economizer: shall not decrease existing economizer capability                      | Only for new units < 54,000 Btu/h replacing unit installed prior to 1991 (one of two):<br>Efficiency: + 10/5% <sup>5</sup><br>Economizer: 50% <sup>6</sup><br><br>For units > 54,000 Btu/h or any units installed after 1991:<br>Option A | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2,4</sup>   |
| 3. Water Source Heat Pump   | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2</sup> | (two of three):<br>Efficiency: + 10/5% <sup>5</sup><br>Flow control valve <sup>7</sup><br>Economizer: 50% <sup>6</sup> | (three of three):<br>Efficiency: + 10/5% <sup>5</sup><br>Flow control valve <sup>7</sup><br>Economizer: 50% <sup>6</sup><br>(except for certain pre-1991 systems <sup>8</sup> )   | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2,4</sup><br>(except for certain pre-1991 systems <sup>8</sup> )  |
| 4. Hydronic Economizer using Air-Cooled Heat Rejection Equipment (Dry Cooler)   | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2</sup> | Efficiency: + 10/5% <sup>5</sup><br>Economizer: shall not decrease existing economizer capacity                        | Option A  | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2,4</sup>   |
| 5. Air-Handling Unit (including fan coil units) where the system has an air-cooled chiller  | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2</sup> | Economizer: shall not decrease existing economizer capacity  | Option A<br>(except for certain pre-1991 systems <sup>8</sup> )   | Option A<br>(except for certain pre-1991 systems <sup>8</sup> )  |
| 6. Air-Handling Unit (including fan coil units) and Water-cooled Process Equipment, where the system has a water-cooled chiller <sup>10</sup> | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2</sup> | Economizer: shall not decrease existing economizer capacity  | Option A<br>(except for certain pre-1991 systems <sup>8</sup> and certain 1991-2004 systems <sup>9</sup> )  | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2,4</sup><br>(except for certain pre-1991 systems <sup>8</sup> and certain 1991-2004 systems <sup>9</sup> ) |
| 7. Cooling Tower  | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2</sup> | No requirements  | Option A  | Option A   |
| 8. Air-Cooled Chiller   | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2</sup> | Efficiency: + 5% <sup>11</sup><br>Economizer: shall not decrease existing economizer capacity                          | Efficiency (two of two): (1) + 10% <sup>12</sup> and (2) multistage<br>Economizer: shall not decrease existing economizer capacity  | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2,4</sup>   |

TABLE 11-1: ECONOMIZER COMPLIANCE OPTIONS FOR MECHANICAL ALTERATIONS

|                         | <b>Option A</b>  | <b>Option B<br/>(alternate to A)</b>  | <b>Option C<br/>(alternate to A)</b>   | <b>Option D<br/>(alternate to A)</b>  |
|-------------------------|--|---|--|---|
| <b>Unit Type</b>        | <b>Any alteration with new or replacement equipment</b>        | <b>Replacement unit of the same type with the same or smaller output capacity</b>   | <b>Replacement unit of the same type with a larger output capacity</b>   | <b>New equipment added to existing system or replacement unit of a different type</b> |
| 9. Water-Cooled Chiller | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2</sup> | Efficiency (one of two): (1) + 10% <sup>13</sup> or (2) plate frame heat exchanger <sup>15</sup><br>Economizer: shall not decrease existing economizer capacity | Efficiency (two of two): (1) + 15% <sup>14</sup> and (2) plate frame heat exchanger <sup>15</sup><br>Economizer: shall not decrease existing economizer capacity | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2,4</sup>                      |
| 10. Boiler              | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2</sup> | Efficiency: + 8% <sup>16</sup><br>Economizer: shall not decrease existing economizer capacity   | Efficiency: + 8% <sup>16</sup><br>Economizer: shall not decrease existing economizer capacity  | Efficiency: min. <sup>1</sup><br>Economizer: 1433 <sup>2,4</sup>                      |

1. Minimum equipment efficiency shall comply with Section 1411.1 and Tables 14-1A through M.
2. System and building shall comply with Section 1433 (including both the individual unit size limits and the total building capacity limits on units without economizer). It is acceptable to comply using one of the exceptions to Section 1433.
3. All equipment replaced in an existing building shall have air economizer complying with Sections 1413 and 1433 unless both the individual unit size and the total capacity of units without air economizer in the building is less than that allowed in Exception 1 to Section 1433.
4. All separate new equipment added to an existing building shall have air economizer complying with Sections 1413 and 1433 unless both the individual unit size and the total capacity of units without air economizer in the building is less than that allowed in Exception 1 to Section 1433.
5. Equipment shall have a capacity-weighted average cooling system efficiency:
  - a. For units with a cooling capacity below 54,000 Btu/h, a minimum of 10% greater than the requirements in Tables 14-1A and 14-1B (1.10 x values in Tables 14-1A and 14-1B).
  - b. For units with a cooling capacity of 54,000 Btu/h and greater, a minimum of 5% greater than the requirements in Tables 14-1A and 14-1B (1.05 x values in Tables 14-1A and 14-1B).
6. Minimum of 50% air economizer that is ducted in a fully enclosed path directly to every heat pump unit in each zone, except that ducts may terminate within 12 inches of the intake to an HVAC unit provided that they are physically fastened so that the outside air duct is directed into the unit intake. If this is an increase in the amount of outside air supplied to this unit, the outside air supply system shall be capable of providing this additional outside air and equipped with economizer control.
7. Have flow control valve to eliminate flow through the heat pumps that are not in operation with variable speed pumping control complying with Section 1432.2.2 for that heat pump.
  - When total capacity of units with flow control valves exceeds 15% of total system capacity, a variable frequency drive shall be installed on the main loop pump.
  - As an alternate to this requirement, have a capacity-weighted average cooling system efficiency that is 5% greater than the requirements in note 5 (i.e., a minimum of 15%/10% greater than the requirements in Tables 14-1A and 14-1B (1.15/1.10 x values in Tables 14-1A and 14-1B).)
8. Systems installed prior to 1991 without fully utilized capacity are allowed to comply with Option B, provided that the individual unit cooling capacity does not exceed 90,000 Btu/h.
9. Economizer not required for systems installed with water economizer plate and frame heat exchanger complying with previous codes between 1991 and June 2004, provided that the total fan coil load does not exceed the existing or added capacity of the heat exchangers.

10. For water-cooled process equipment where the manufacturer's specifications require colder temperatures than available with waterside economizer, that portion of the load is exempt from the economizer requirements.
11. The air-cooled chiller shall have an IPLV efficiency that is a minimum of 5% greater than the IPLV requirements in Table 14-1C (1.05 x IPLV values in Table 14-1C).
12. The air-cooled chiller shall:
  - a. Have an IPLV efficiency that is a minimum of 10% greater than the IPLV requirements in Table 14-1C (1.10 x IPLV values in Table 14-1C), and
  - b. Be multistage with a minimum of two compressors.
13. The water-cooled chiller shall have an NPLV efficiency that is a minimum of 10% greater than the NPLV requirements in Table 14-1K, Table 14-1L, or Table 14-1M (1.10 x NPLV values in Table 14-1K, Table 14-1L, or Table 14-1M).
14. The water-cooled chiller shall have an NPLV efficiency that is a minimum of 15% greater than the NPLV requirements in Table 14-1K, Table 14-1L, or Table 14-1M (1.15 x NPLV values in Table 14-1K, Table 14-1L, or Table 14-1M).
15. Economizer cooling shall be provided by adding a plate-frame heat exchanger on the waterside with a capacity that is a minimum of 20% of the chiller capacity at standard ARI rating conditions.
16. The replacement boiler shall have an efficiency that is a minimum of 8% higher than the value in Table 14-1F (1.08 x value in Table 14-1F), except for electric boilers.

1132.3 Lighting and Motors: Where the use in a space changes from one use in Table 15-1A or Table 15-1B to another use in Table 15-1A or Table 15-1B, the installed lighting wattage shall comply with Section 1521 or 1531.

Other tenant improvements, alterations or repairs where ~~((60))~~ 20 percent or more of the fixtures in a space enclosed by walls or ceiling-height partitions are ~~((new))~~ altered, added or replaced shall comply with Sections 1531 and 1532. (Where this threshold is triggered, the areas of the affected spaces may be combined for lighting code compliance calculations.) This requirement shall also be met for alterations that involve just the lamps plus ballasts. Where less than ~~((60))~~ 20 percent of the fixtures in a space enclosed by walls or ceiling-height partitions are new, the installed lighting wattage shall be maintained or reduced. Where 60 percent or more of the lighting fixtures in a suspended ceiling are new, and the existing insulation is on the suspended ceiling, the roof/ceiling assembly shall be insulated according to the provisions of Chapter 13 Section 1311.2.

Any new lighting control devices shall comply with the requirements of Section 1513. Where new wiring is being installed to serve added fixtures and/or fixtures are being relocated to a new circuit, controls shall comply with Sections 1513.1 through 1513.5 and, as applicable, 1513.7. In addition, office areas less than 300 ft<sup>2</sup> enclosed by walls or ceiling-height partitions, and all meeting and conference rooms, and all school classrooms, shall be equipped with occupancy sensors that comply with Sections 1513.6 and 1513.7. Where a new lighting panel (or a moved lighting panel) with all new raceway and conductor wiring from the panel to the fixtures is being installed, controls shall also comply with the other requirements in Sections 1513.6 and 1513.7.

Where new walls or ceiling-height partitions are added to an existing space and create a new enclosed space, but the lighting fixtures are not being changed, other than being relocated, the new enclosed space shall have controls that comply with Sections 1513.1 through 1513.2, 1513.4, and 1513.6 through 1513.7.

Those motors which are altered or replaced shall comply with Section 1511.

AMENDATORY SECTION (Amending WSR 98-03-003, filed 1/8/98, effective 7/1/98)

**WAC 51-11-1133 Change of occupancy or use.** Changes of occupancy or use shall comply with the following requirements:

a. Any unconditioned space that is altered to become semi-heated, cooled, or fully heated, or any semi-heated space that is altered to become cooled or fully heated space shall be required to be brought into full compliance with this Code.

b. Any ~~((Group R Occupancy))~~ nonresidential space which is converted to multifamily residential space shall be brought into full compliance with this Code.

c. Any multifamily residential space which is converted to ~~((other than a Group R Occupancy))~~ nonresidential space shall be required to comply with all of the provisions of Sections 1130 through 1132 of this Code.

NEW SECTION

**WAC 51-11-1135 Commissioning.** Commissioning in compliance with Sections 1416 and 1513.8 shall be required for new systems or modified portions of systems, with a heating capacity of 600,000 Btu/h or a cooling capacity of 40 tons or more.

AMENDATORY SECTION (Amending WSR 93-21-052, filed 10/18/93, effective 4/1/94)

**WAC 51-11-1141 Plans and specifications.**

1141.1 General: If required by the building official, plans and specifications shall be submitted in support of an application for a building permit. If required by the building official, plans and specifications shall be stamped and authenticated by a registered design professional currently licensed in the state of Washington. All plans and specifications, together

with supporting data, shall be submitted to the building official prior to issuance of a building permit.

1141.2 Details: The plans and specifications shall show in sufficient detail all pertinent data and features of the building and the equipment and systems as herein governed including, but not limited to: Design criteria; exterior envelope component materials, U-factors of the envelope systems, R-values of insulating materials; U-factors and shading coefficients of glazing; area weighted U-factor calculations; efficiency, economizer, size and type of apparatus and equipment; fan system horsepower; equipment and systems controls; lighting fixture schedule with wattages and controls narrative; commissioning requirements for HVAC equipment, HVAC controls, and lighting controls, and other pertinent data to indicate compliance with the requirements of this Code.

1141.3 Alternate Materials and Method of Construction: The provisions of this Code are not intended to prevent the use of any material, method of construction, design or insulating system not specifically prescribed herein, provided that such construction, design or insulating system has been approved by the building official as meeting the intent of this Code. The building official may approve any such alternate provided the proposed alternate meets or exceeds the provisions of this Code and that the material, method, design or work offered is for the purpose intended, at least the equivalent of that prescribed in this Code, in quality, strength, effectiveness, fire-resistance, durability, safety, and energy efficiency. The building official may require that sufficient evidence of proof be submitted to substantiate any claims that may be made regarding performance capabilities.

1141.4 Systems Analysis Approach for the Entire Building: In lieu of using Chapters 12 through 20, compliance may be demonstrated using the systems analysis option in RS-29. When using systems analysis, the proposed building shall

provide equal or better conservation of energy than the standard design as defined in RS-29. If required by the building official, all energy comparison calculations submitted under the provisions of RS-29 shall be stamped and authenticated by an engineer or architect licensed to practice by the state of Washington.

1141.5 Commissioning Details/Specifications: When required by the building official, the plans submitted in support of a building permit shall include a list of the functional tests required to comply with commissioning in accordance with Sections 1416 and 1513.8 as well as the name of the commissioning agent for building over 50,000 square feet.

**CHAPTER 12  
(DEFINITIONS) ENERGY METERING**

~~((Note: For nonresidential definitions, see chapter 2.))~~

NEW SECTION

**WAC 51-11-1200 Section 1201—General.** All buildings shall comply with Chapter 12. Whole building energy supply sources shall be metered to supply energy consumption data to the building owner to effectively manage energy.

- EXCEPTIONS:
1. Group R occupancies.
  2. Tenant spaces with utility-provided meters.

**1202 Whole Building Energy Supply Metering.** Meters with remote metering capability or automatic meter reading (AMR) capability shall be provided to collect energy use data for each energy supply source to the building including gas, electricity and district steam, that exceeds the thresholds listed in Table 12-1. Utility company service entrance/interval meters are allowed to be used provided that they are configured for automatic meter reading (AMR) capability.

**TABLE 12-1  
Energy Source Meter Thresholds**

| <b>Energy Source</b>             | <b>Main Metering Threshold</b>     |
|----------------------------------|------------------------------------|
| Electrical service               | > 500 kVA                          |
| On-site renewable electric power | > 10 kVA (peak)                    |
| Gas and steam service            | > 300 kW (1,000,000 Btu/h)         |
| Geothermal                       | > 300 kW (1,000,000 Btu/h) heating |
| On-site renewable thermal energy | > 10 kW (30,000 Btu/h)             |

Master submetering with remote metering capability (including current sensors or flow meters) shall be provided for the systems that exceed the thresholds in Table 12-1 to collect overall totalized energy use data for each subsystem in accordance with Table 12-2.

**TABLE 12-2  
Component Energy Master Submetering Thresholds**

| <b>Component</b>           | <b>Submetering Threshold</b>             |
|----------------------------|--|
| Chillers/heat pump systems | > 70 kW (240,000 Btu/h) cooling capacity |
| Packaged AC unit systems   | > 70 kW (240,000 Btu/h) cooling capacity |
| HVAC fan systems           | > 15 kW (20 hp)                          |
| Exhaust fan systems        | > 15 kW (20 hp)                          |
| Make-up air fan systems    | > 15 kW (20 hp)                          |

| Component   | Submetering Threshold                       |
|---|---|
| Pump systems  | > 15 kW (20 hp)                             |
| Cooling towers systems                                | > 15 kW (20 hp)                             |
| Boilers, furnaces and other heating equipment systems | > 300 kW (1,000,000 Btu/h) heating capacity |
| General lighting circuits                             | > 15 kVA                                    |
| Miscellaneous electric loads                          | > 15 kVA                                    |

Metering shall be digital-type meters for the main meter. Current sensors or flow meters are allowed for submetering. For subsystems with multiple similar units, such as multicell cooling towers, only one meter is required for the subsystem. Existing buildings are allowed to reuse installed existing analog-type utility company service/interval meters.

**1132.4 Metering:** Where new or replacement systems or equipment is installed that exceeds the threshold in Table 12-1 or Table 12-2, metering shall be installed for that system or equipment in accordance with Section 1201.

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1310 General requirements.** The building envelope shall comply with Sections 1311 through 1314.

1310.1 Conditioned Spaces: The building envelope for conditioned spaces shall also comply with one of the following paths:

- a. Prescriptive Building Envelope Option Sections 1320 through 1323.
- b. Component Performance Building Envelope Option Sections 1330 through 1334.
- c. Systems Analysis. See Section 1141.4.

1310.2 Semi-Heated Spaces: All spaces shall be considered conditioned spaces, and shall comply with the requirements in Section 1310.1 unless they meet the following criteria for semi-heated spaces. The installed heating equipment output, in Climate Zone 1, shall be 3 Btu/(h • ft<sup>2</sup>) or greater but not greater than 8 Btu/(h • ft<sup>2</sup>) and in Climate Zone 2, shall be 5 Btu/(h • ft<sup>2</sup>) or greater but not greater than 12 Btu/(h • ft<sup>2</sup>).

For semi-heated spaces, the building envelope shall comply with the same requirements as that for conditioned spaces in Section 1310.1; however, semi-heated spaces shall be calculated separately from other conditioned spaces for compliance purposes.

EXCEPTION: For semi-heated spaces heated by other fuels only, wall insulation is not required for those walls that separate semi-heated spaces (see definition in Section 201.1) from the exterior provided that the space is heated solely by a heating system controlled by a thermostat with a maximum set point capacity of 45°F, mounted no lower than the heating unit.

1310.3 Cold Storage and Refrigerated Spaces: Exterior and interior surfaces of frozen storage spaces or cold storage spaces in refrigerated warehouses may comply with either the prescriptive or component performance approach using insulation values in Table 13-3. The remainder of refrigerated warehouse area containing conditioned or semi-conditioned

spaces shall comply by using either the prescriptive or component performance approach using Tables 13-1 and 13-2.

- EXCEPTIONS:
1. Areas within refrigerated warehouses that are designed solely for the purpose of quick chilling or freezing of products with design cooling capacities of greater than 240 Btu/hr-ft<sup>2</sup> (2 tons per 100 ft<sup>2</sup>).
  2. Controlled atmosphere storage exterior floor and partition wall insulation.

**Table 13-3  
Refrigerated Warehouse Insulation**

| SPACE                 | SURFACE                         | MINIMUM R-VALUE<br>(°F-hr-ft <sup>2</sup> /Btu) |
|-----------------------|---------------------------------|---|
| Frozen Storage Spaces | Exterior Roof/Ceiling           | R-36  |
|                       | Exterior Wall                   | R-36  |
|                       | Exterior Floor                  | R-36  |
|                       | Interior Partition <sup>1</sup> | R-28  |
| Cold Storage Spaces   | Exterior Roof/Ceiling           | R-28  |
|                       | Exterior Wall                   | R-28  |
|                       | Interior Partition <sup>1</sup> | R-19  |

<sup>1</sup>Interior partitions include any wall, floor, or ceiling that divides frozen storage spaces or cold storage spaces from each other, conditioned spaces, unconditioned spaces, or semi-conditioned spaces.

**Figure 13A  
Building Envelope Compliance Options**

| Section Number | Subject  | Prescriptive Option | Component Performance Option | Systems Analysis Option |
|----------------|--|---------------------|------------------------------|-------------------------|
| 1310           | General Requirements                           | X                   | X                            | X                       |
| 1311           | Insulation                                     | X                   | X                            | X                       |
| 1312           | Glazing and Doors                              | X                   | X                            | X                       |
| 1313           | Moisture Control                               | X                   | X                            | X                       |
| 1314           | Air Leakage                                    | X                   | X                            | X                       |
| 1320           | Prescriptive Building Envelope Option          | X                   |                              |                         |
| 1321           | General  | X                   |                              |                         |
| 1322           | Opaque Envelope                                | X                   |                              |                         |
| 1323           | Glazing  | X                   |                              |                         |
| 1330           | Component Performance Building Envelope Option |                     | X                            |                         |
| 1331           | General  |                     | X                            |                         |
| 1332           | Component U-Factors                            |                     | X                            |                         |
| 1333           | UA Calculations                                |                     | X                            |                         |
| 1334           | Solar Heat Gain Coefficient                    |                     | X                            |                         |
| RS-29          | Systems Analysis                               |                     |                              | X                       |

AMENDATORY SECTION (Amending WSR 93-21-052, filed 10/18/93, effective 4/1/94)

**WAC 51-11-1311 Insulation.**

1311.1 Installation Requirements: All insulation materials shall be installed according to the manufacturer's instructions to achieve proper densities, maintain clearances, and maintain uniform R-values. To the maximum extent possible, insulation shall extend over the full component area to the intended R-value.

1311.2 Roof/Ceiling Insulation: Where two or more layers of rigid board insulation are used in a roof assembly, the vertical joints between each layer shall be staggered. Open-blown or poured loose-fill insulation may be used in attic spaces where the slope of the ceiling is not more than three feet in twelve and there is at least thirty inches of clear distance from the top of the bottom chord of the truss or ceiling joist to the underside of the sheathing at the roof ridge. When eave vents are installed, baffling of the vent openings shall be provided so as to deflect the incoming air above the surface of the insulation.

Where lighting fixtures are recessed into a suspended or exposed grid ceiling, the roof/ceiling assembly shall be insulated in a location other than directly on the suspended ceiling.

EXCEPTION: Type IC rated recessed lighting fixtures.

Where installed in wood framing, faced batt insulation shall be face stapled.

1311.3 Wall Insulation: Exterior wall cavities isolated during framing shall be fully insulated to the levels of the surrounding walls. When installed in wood framing, faced batt insulation shall be face stapled.

Above grade exterior insulation shall be protected.

1311.4 Floor Insulation: Floor insulation shall be installed in a permanent manner in substantial contact with the surface being insulated. Insulation supports shall be installed so spacing is not more than twenty-four inches on center. Installed insulation shall not block the airflow through foundation vents.

1311.5 Slab-On-Grade Floor: Slab-on-grade insulation installed inside the foundation wall shall extend downward from the top of the slab a minimum distance of twenty-four inches or to the top of the footing, whichever is less. Insulation installed outside the foundation shall extend downward a minimum of twenty-four inches or to the frostline, whichever is greater. Above grade insulation shall be protected.

EXCEPTION: For monolithic slabs, the insulation shall extend downward from the top of the slab to the bottom of the footing.

1311.6 Radiant Floors (on or below grade): Slab-on-grade insulation shall extend downward from the top of the slab a minimum distance of thirty-six inches or downward to the top of the footing and horizontal for an aggregate of not less than thirty-six inches.

If required by the building official where soil conditions warrant such insulation, the entire area of a radiant floor shall be thermally isolated from the soil. Where a soil gas control

system is provided below the radiant floor, which results in increased convective flow below the radiant floor, the radiant floor shall be thermally isolated from the sub-floor gravel layer.

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1312 Glazing and doors.**

1312.1 Standard Procedure for Determination of Glazing and Door U-Factors: U-Factors for glazing and doors shall be determined, certified and labeled in accordance with Standard RS-31 by a certified independent agency licensed by the National Fenestration Rating Council (NFRC). Compliance shall be based on the Residential or the Nonresidential Model Size. Product samples used for U-factor determinations shall be production line units or representative of units as purchased by the consumer or contractor. Unlabeled glazing and doors shall be assigned the default U-factor in Table 10-6.

1312.2 Solar Heat Gain Coefficient and Shading Coefficient: Solar Heat Gain Coefficient (SHGC), shall be determined, certified and (~~labeled~~) labeled in accordance with the National Fenestration Rating Council (NFRC) Standard by a certified, independent agency, licensed by the NFRC.

EXCEPTION: Shading coefficients (SC) shall be an acceptable alternate for compliance with solar heat gain coefficient requirements. Shading coefficients for glazing shall be taken from Chapter ~~((34))~~ 15 of RS-1 or from the manufacturer's test data.

AMENDATORY SECTION (Amending WSR 04-01-106, filed 12/17/03, effective 7/1/04)

**WAC 51-11-1313 Moisture control.**

1313.1 Vapor Retarders: Vapor retarders shall be installed on the warm side (in winter) of insulation as required by this section.

EXCEPTION: Vapor retarder installed with not more than 1/3 of the nominal R-value between it and the conditioned space.

1313.2 Roof/Ceiling Assemblies: Roof/ceiling assemblies where the ventilation space above the insulation is less than an average of twelve inches shall be provided with a vapor retarder. (For enclosed attics and enclosed rafter spaces see Section 1203.2 of the International Building Code.) Roof/ceiling assemblies without a vented airspace, allowed only where neither the roof deck nor the roof structure are made of wood, shall provide a continuous vapor retarder with taped seams.

EXCEPTIONS:

1. Vapor retarders need not be provided where all of the insulation is installed between the roof membrane and the structural roof deck.
2. Unvented attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) shall be permitted if all the following conditions are met:
  - 2.1. The unvented attic space is completely contained within the building thermal envelope.
  - 2.2. No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.

2.3. Where wood shingles or shakes are used, a minimum 1/4 inch (6 mm) vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.

2.4. Any air-impermeable insulation shall be a vapor retarder, or shall have a vapor retarder coating or covering in direct contact with the underside of the insulation.

2.5. Either Items a, b or c shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.

a. Air-impermeable insulation only. Insulation shall be applied in direct contact to the underside of the structural roof sheathing.

b. Air-permeable insulation only. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing as specified per WA Climate Zone for condensation control.

i. Climate Zone #1 R-10 minimum rigid board or air-impermeable insulation R-value.

ii. Climate Zone #2 R-25 minimum rigid board or air-impermeable insulation R-value.

c. Air-impermeable and air-permeable insulation. The air-impermeable insulation shall be applied in direct contact to the underside of the structural roof sheathing as specified per WA Climate Zone for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.

i. Climate Zone #1 R-10 minimum rigid board or air-impermeable insulation R-value.

ii. Climate Zone #2 R-25 minimum rigid board or air-impermeable insulation R-value.

1313.3 Walls: Walls separating conditioned space from unconditioned space shall be provided with a vapor retarder.

1313.4 Floors: Floors separating conditioned space from unconditioned space shall be provided with a vapor retarder.

1313.5 Crawl Spaces: A ground cover of six mil (0.006 inch thick) black polyethylene or approved equal shall be laid over the ground within crawl spaces. The ground cover shall be overlapped twelve inches minimum at the joints and shall extend to the foundation wall.

EXCEPTION: The ground cover may be omitted in crawl spaces if the crawl space has a concrete slab floor with a minimum thickness of three and one-half inches.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

#### **WAC 51-11-1314 Air leakage.**

1314.1 Building Envelope Sealing: ~~((The requirements of this section shall apply to building elements separating conditioned from unconditioned spaces. Exterior joints around windows and door frames, openings between walls and foundation, between walls and roof and wall panels; openings at penetrations of utility services through walls, floors, and roofs; and all other openings in the building envelope shall be sealed, caulked, gasketed, or weatherstripped to limit air leakage.))~~ The following areas of the building envelope shall be sealed, caulked, gasketed, or weather-stripped to minimize air leakage:

a. Joints around fenestration and door frames;

b. Joints between walls and foundations, between walls at building corners, between walls and structural floors or roofs, and between walls and roof or roof panels;

c. Openings at penetrations of utility services through the roofs, walls, and floors;

d. Site-built fenestration and doors;

e. Building assemblies used as ducts or plenums;

f. Joints, seams, and penetrations of vapor retarders;

g. All other openings in the building envelope.

1314.2 Glazing and Doors: ~~((Doors and operable glazing separating conditioned from unconditioned space shall be weatherstripped. Fixed windows shall be tight fitting with glass retained by stops with sealant or caulking all around.))~~ Air leakage for fenestration and doors shall be determined in accordance with NFRC 400 or AAMA/WDMA/CSA 101/ I.S.2/A440 or ASTM E283 as specified below. Air leakage shall be determined by a laboratory accredited by a nationally recognized accreditation organization, such as the National Fenestration Rating Council, and shall be labeled and certified by the manufacturer. Air leakage shall not exceed:

a. 1.0 cfm/ft<sup>2</sup> for glazed swinging entrance doors and revolving doors, tested at a pressure of at least 1.57 pounds per square foot (psf) in accordance with NFRC 400, AAMA/WDMA/CSA 101/I.S.2/A440, or ASTM E283.

b. 0.04 cfm/ft<sup>2</sup> for curtain wall and storefront glazing, tested at a pressure of at least 1.57 pounds per square foot (psf) in accordance with NFRC 400, AAMA/WDMA/CSA 101/I.S.2/A440, or ASTM E283.

c. 0.2 cfm/ft<sup>2</sup> for all other products when tested at a pressure of at least 1.57 pounds per square foot (psf) in accordance with NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440, or 0.3 cfm/ft<sup>2</sup> when tested at a pressure of at least 6.24 pounds per square foot (psf) in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.

EXCEPTIONS:

1. Openings that are required to be fire resistant.
2. Field-fabricated fenestration and doors that are weather-stripped or sealed in accordance with Section 1314.1.
3. For garage doors, air leakage determined by test at standard test conditions in accordance with ANSI/DASMA 105 shall be an acceptable alternate for compliance with air leakage requirements.
4. Units without air leakage ratings produced by small business that are weatherstripped or sealed in accordance with Section 1314.1.

1314.3 Building Assemblies Used as Ducts or Plenums: Building assemblies used as ducts or plenums shall be sealed, caulked, and gasketed to limit air leakage.

1314.4 Recessed Lighting Fixtures: When installed in the building envelope, recessed lighting fixtures shall be Type IC rated, and certified under ASTM E283 to have no more than 2.0 cfm air movement from the conditioned space to the ceiling cavity. The lighting fixture shall be tested at 75 Pascals or 1.57 lbs/ft<sup>2</sup> pressure difference and have a label attached, showing compliance with this test method. Recessed lighting fixtures shall be installed with a gasket or caulk between the fixture and ceiling to prevent air leakage.

1314.5 Loading Dock Weatherseals: Cargo doors and loading dock doors shall be equipped with weatherseals to restrict infiltration when vehicles are parked in the doorway.

1314.6 Vestibules: Building entrances that separate conditioned space from the exterior shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. Interior and exterior doors shall have a minimum distance between them of not less than 7 ft. when in the closed position. The exterior envelope of conditioned vestibules shall comply with the requirements for a conditioned space. Either the interior or exterior envelope of unconditioned vestibules shall comply with the requirements for a conditioned space.

EXCEPTIONS:

1. Building entrances with revolving doors.
2. Doors not intended to be used as a building entrance.
3. Building entrances in buildings that are less than 1,000 ft<sup>2</sup> in area.
4. Doors that open directly from a space that is less than 3,000 ft<sup>2</sup> in area and is separate from the building entrance.

1314.7 Continuous Air Barrier: For buildings over five stories, the building envelope shall be designed and constructed with a continuous air barrier to control air leakage into, or out of, the conditioned space. All air barrier components of each envelope assembly shall be clearly identified on construction documents and the joints, interconnections and penetrations of the air barrier components shall be detailed.

1314.7.1 Characteristics: The continuous air barrier shall have the following characteristics:

a. The air barrier component of each assembly shall be joined and sealed in a flexible manner to the air barrier component of adjacent assemblies, allowing for the relative movement of these assemblies and components. This requirement shall not be construed to restrict the materials or methods by which the air barrier is achieved.

b. It shall be capable of withstanding positive and negative combined design wind, fan and stack pressures on the air barrier without damage or displacement, and shall transfer the load to the structure. It shall not displace adjacent materials under full load.

c. It shall be installed in accordance with the manufacturer's instructions and in such a manner as to achieve the performance requirements.

1314.7.2 Compliance: Compliance of the continuous air barrier for the opaque building envelope shall be demonstrated by testing the completed building and demonstrating that the air leakage rate of the building envelope does not exceed 0.40 cfm/ft<sup>2</sup> at a pressure differential of 0.3" w.g. (1.57 psf) as specified below.

a. Whole building testing shall be accomplished in accordance with ASTM E 779 or approved similar test. Tests shall be accomplished using either pressurization or depressurization or both. The building shall not be tested unless it is verified that the continuous air barrier is in place and installed without failures in accordance with installation instructions so that repairs to the continuous air barrier, if needed to comply with the required air leakage rate, can be

done in a timely manner. Following are comments referring to ASTM E 779:

b. Under ASTM E 779 it is permissible to test using the building's HVAC system. In buildings with multistory HVAC systems and shafts it is permissible to test using the building's mechanical system using CAN/CGSB-149.15-96 Determination of the Overall Envelope Airtightness of Buildings by the Fan Pressurization Method Using the Building's Air Handling Systems, Canadian General Standards Board, Ottawa.

c. In lieu of the fan pressurization method described in ASTM E 779, a tracer gas test of the building air change rate in accordance with ASTM E 741 is also allowed. The tracer gas test shall be run with building HVAC fans off.

d. Section 8.1 - For purposes of this test, a multizone building shall be configured as a single zone by opening all interior doors, and otherwise connecting the interior spaces as much as possible. It is also allowed to test a smaller section of the building, provided the test area can be isolated from neighboring conditioned zones by balancing the pressure in adjacent conditioned zones to that in the zone being tested. This can be very difficult to do in buildings with multistory shafts and HVAC systems. If a smaller section of the building is tested, provide a drawing showing the zone(s) tested, the pressure boundaries and a diagram of the testing equipment configuration.

e. Section 8.2 - Seal all intentional functional openings such as exhaust and relief louvers, grilles and dryer vents that are not used in the test to introduce air, using plastic sheeting and duct tape or similar materials. All plumbing traps shall be filled with water.

f. Section 8.10 - The test pressure range shall be from 10 Pa to 80 Pa. If approved by the building official, lower test pressures are acceptable, but the upper limit shall not be less than 50 Pa.

g. Section 9.4 - If both pressurization and depressurization are not tested, plot the air leakage against the corrected  $\Delta P$  for either pressurization or depressurization.

h. Section 9.6.4 - If the pressure exponent  $n$  is less than 0.5 or greater than 1, corrective work shall be performed to the continuous air barrier and the test shall be rerun.

i. Section 10.4 - Report the air leakage rate normalized in cfm/ft<sup>2</sup> at 0.3" w.g. (1.57 psf) over the total area of the building envelope air pressure boundary including the lowest floor, any below-grade walls, above-grade walls, and roof (or ceiling) (including windows and skylights) separating the interior conditioned space from the unconditioned environment.

1314.7.3 Certificate of Occupancy: A final certificate of occupancy shall not be issued for the building, or portion thereof, until such time that the building official determines the building, or portion thereof, has been field tested in accordance with Section 1314.7.2.

AMENDATORY SECTION (Amending WSR 05-01-013, filed 12/2/04, effective 7/1/05)

**WAC 51-11-1322 Opaque envelope.** Roof/ceilings, opaque exterior walls, opaque doors, floors over unconditioned space, below grade walls, slab on grade floors, and



radiant floors enclosing conditioned spaces shall be insulated according to Section 1311 and Tables 13-1 or 13-2. Compliance with nominal R-values shall be demonstrated for the thermal resistance of the added insulation in framing cavities and/or insulated sheathing only. Nominal R-values shall not include the thermal transmittance of other building materials or air films.

For metal frame assemblies used in spaces with electric resistance space heat, compliance shall be demonstrated with the component U-factor for the overall assembly based on the assemblies in Chapter 10.

Area-weighted averaging of the R-value is not allowed. When showing compliance with R-values, the minimum insulation R-value for all areas of the component shall comply with Table 13-1. When calculating compliance using U-factors, area-weighted averaging is allowed. Where insulation is tapered (e.g., roofs), separate assembly U-factors shall be calculated for each four-foot section of tapered insulation.

- EXCEPTIONS:
1. Opaque smoke vents are not required to meet insulation requirements.
  2. For prescriptive compliance only, for glazing areas that are 30% and less of the gross wall area, the insulation of the perimeter edge of an above-grade floor slab which penetrates the exterior wall may be reduced to R-5 provided the glazing U-factor is reduced to U-0.05 below that required in Tables 13-1 and 13-2.
    - (a. ~~For glazing areas that are 30% and less of the gross wall area, the insulation of the perimeter edge of an above-grade floor slab which penetrates the exterior wall may be reduced to R-5 provided the glazing U-factor is reduced by U-0.05 below that required in Tables 13-1 and 13-2.~~
    - b. For glazing areas that exceed 30% of the gross wall area, the perimeter edge of an above-grade floor slab which penetrates the exterior wall may be left uninsulated provided that the glazing U-factor is reduced by U-0.10 below that required in Tables 13-1 and 13-2.)

**AMENDATORY SECTION** (Amending WSR 01-03-010, filed 1/5/01, effective 7/1/01)

**WAC 51-11-1323 Glazing.** Glazing shall comply with Section 1312 and Tables 13-1 or 13-2. All glazing shall be, at a minimum, double glazing. In addition, all glazing assemblies shall have at least one low-emissivity coating unless the glazing assembly has an overall U-factor that complies with the values in Table 13-1.

- EXCEPTIONS:
1. Vertical glazing located on the display side of the street level story of a retail occupancy provided the glazing:
    - a. (i) Is double-glazed with a minimum 1/2 inch air-space and with a low-e coating having a maximum emittance of  $(\leq 0.40)$   $\leq 0.10$  in a nonmetal frame or a metal frame having a thermal break (as defined in footnote 9 to Table 10-6B); or
    - (ii) Has an area weighted U-factor of  $(\leq 0.60)$   $0.50$  or less. (U-factor calculations shall use overall assembly U-factors. When this exception is used, there are no SHGC requirements); and  $(-)$
    - b. Does not exceed 75 percent of the gross exterior wall area of the display side of the street level story, measured from the top of the finished floor at street level. However, if the display side of the street level story exceeds 20 feet in height, then this exception may only be used for the first 20 feet of that story.

When this exception is utilized, separate calculations shall be performed for these sections of the building envelope and these values shall not be averaged with any others for compliance purposes. The 75 percent area may be exceeded on the street level, if the additional glass area is provided from allowances from other areas of the building.

2. Single glazing for ~~(ornamental)~~ security ~~(or architectural)~~ purposes and vestibules and revolving doors shall be included in the percentage of the total glazing area, U-factor calculation and SHGC as allowed in the Tables 13-1 or 13-2. The maximum area allowed for the total of all single glazing is one percent of the gross exterior wall floor area.

1323.1 Area: The percentage of total glazing (vertical and overhead) area relative to the gross exterior wall area shall not be greater than the appropriate value from Tables 13-1 or 13-2 for the vertical glazing U-factor, overhead glazing U-factor and solar heat gain coefficient selected.

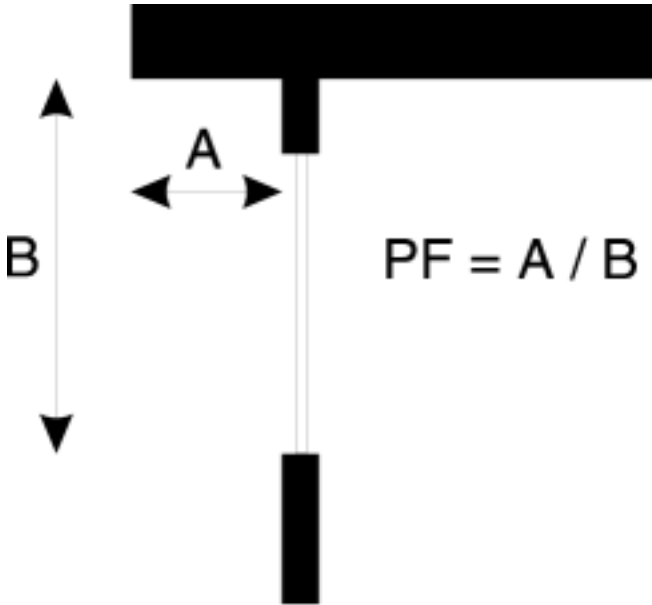
1323.2 U-Factor: The area-weighted average U-factor of vertical glazing shall not be greater than that specified in Tables 13-1 or 13-2 for the appropriate area and solar heat gain coefficient. The area-weighted average U-factor of overhead glazing shall not be greater than that specified in Tables 13-1 or 13-2 for the appropriate area and solar heat gain coefficient. U-factors for glazing shall be determined in accordance with Section 1312.

1323.3 Solar Heat Gain Coefficient: The area-weighted average solar heat gain coefficient of all glazing shall not be greater than that specified in Tables 13-1 or 13-2 for the appropriate area and U-factor.

- EXCEPTIONS:
1. Glazing separating conditioned space from semi-heated space or unconditioned space.
  2. Vertical glazing which is oriented within 45 degrees of north shall be allowed to have a maximum solar heat gain coefficient SHGC-0.05 above that required in Tables 13-1 and 13-2. When this exception is utilized, separate calculations shall be performed for these sections of the building envelope and these values shall not be averaged with any others for compliance purposes.
  3. For demonstrating compliance for vertical glazing for the first SHGC option in Tables 13-1 and 13-2 only, the SHGC in the proposed building shall be allowed to be reduced by using the multipliers in the table below for each glazing product shaded by permanent projections that will last as long as the building itself.

| <b>Projection Factor</b> | <b>SHGC Multiplier (All Orientations Except North-Oriented)</b> | <b>SHGC Multiplier (North-Oriented)</b> |
|--------------------------|---|---|
| 0 - 0.10                 | 1.00  | 1.00                                    |
| <0.10 - 0.20             | 0.91  | 0.95                                    |
| <0.20 - 0.30             | 0.82  | 0.91                                    |
| <0.30 - 0.40             | 0.74  | 0.87                                    |
| <0.40 - 0.50             | 0.67  | 0.84                                    |
| <0.50 - 0.60             | 0.61  | 0.81                                    |
| <0.60 - 0.70             | 0.56  | 0.78                                    |
| <0.70 - 0.80             | 0.51  | 0.76                                    |
| <0.80 - 0.90             | 0.47  | 0.75                                    |
| <0.90 - 1.00             | 0.44  | 0.73                                    |

Projection factor (PF) is the ratio of the horizontal depth of the external shading projection (A) divided by the sum of the height of the fenestration and the distance from the top of the fenestration to the bottom of the farthest point of the external shading projection (B), in consistent units. (See Figure 13B.)



**FIGURE 13B**

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1331 General.** Buildings or structures whose design heat loss rate ( $UA_p$ ) and solar heat gain coefficient rate ( $SHGC \cdot A_p$ ) are less than or equal to the target heat loss rate ( $UA_t$ ) and solar heat gain coefficient rate ( $SHGC \cdot A_t$ ) shall be considered in compliance with this section. The stated U-factor, F-factor or allowable area of any component assembly, listed in Tables 13-1 or 13-2, such as roof/ceiling, opaque wall, opaque door, glazing, floor over conditioned space, slab on grade floor, radiant floor or opaque floor may be increased and the U-factor or F-factor for other components decreased, provided that the total heat

gain or loss for the entire building envelope does not exceed the total resulting from compliance to the U-factors, F-factors or allowable areas specified in this section.

**EXCEPTION:** Compliance is also allowed to be shown using RS-32 for Climate Zone 1 except for buildings containing attic roofs, wood framed walls or vertical fenestration with nonmetal frames, or for Group R occupancies.

**AMENDATORY SECTION** (Amending WSR 04-01-106, filed 12/17/03, effective 7/1/04)

**WAC 51-11-1332 Component U-factors.** The U-factors for typical construction assemblies are included in Chapter 10. These values shall be used for all calculations. Where proposed construction assemblies are not represented in Chapter 10, values shall be calculated in accordance with Chapters ~~((23))~~ 16 through ~~((30))~~ 18 and 25 through 27 in Standard RS-1 listed in Chapter 7, using the framing factors listed in Chapter 10. For envelope assemblies containing metal framing, the U-factor shall be determined by one of the following methods:

1. Results of laboratory measurements according to acceptable methods of test.
2. Standard RS-1, listed in Chapter 7, where the metal framing is bonded on one or both sides to a metal skin or covering.
3. The zone method as provided in Chapter ~~((25))~~ 27 of Standard RS-1, listed in Chapter 7.
4. Effective framing/cavity R-values as provided in Table 10-5A.

When return air ceiling plenums are employed, the roof/ceiling assembly shall:

- a. For thermal transmittance purposes, not include the ceiling proper nor the plenum space as part of the assembly; and
- b. For gross area purposes, be based upon the interior face of the upper plenum surface.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1334 Solar heat gain coefficient rate calculations.** Solar heat gain coefficient shall comply with Section 1323.3. The target  $SHGCA_t$  and the proposed  $SHGCA_p$  shall be calculated using Equation 13-3 and 13-4 and the corresponding areas and SHGCs from Table 13-1 or 13-2.

**Equation 13-1:  
Target  $UA((t))_t$**

|           |   |   |
|-----------|---|---|
| $UA_t$    | = | $U_{rat}A_{rat} + U_{ograt}A_{ograt} + U_{ort}A_{ort} + U_{ogort}A_{ogort} + U_{wt}A_{wt} + U_{vgt}A_{vgt} + U_{dt}A_{dt} + U_{ft}A_{ft} + F_{st}P_{st} + U_{bgwt}A_{bgwt}$ |
| $UA_t$    | = | The target combined specific heat transfer of the gross roof/ceiling assembly, exterior wall and floor area.  |
| Where:    |   |   |
| $U_{rat}$ | = | The thermal transmittance value for roofs over attics found in Table 13-1 or 13-2.  |

|                    |   |   |
|--------------------|---|---|
| $U_{\text{ograt}}$ | = | The thermal transmittance for overhead glazing found in Table 13-1 or 13-2 which corresponds to the proposed total glazing area as a percent of gross exterior wall area.       |
| $U_{\text{ort}}$   | = | The thermal transmittance value for other roofs found in Table 13-1 or 13-2.  |
| $U_{\text{ogort}}$ | = | The thermal transmittance for overhead glazing found in Table 13-1 or 13-2 which corresponds to the proposed total glazing area as a percent of gross exterior wall area.       |
| $U_{\text{wt}}$    | = | The thermal transmittance value for opaque walls found in Table 13-1 or 13-2.   |
| $U_{\text{vgt}}$   | = | The thermal transmittance value for vertical glazing found in Table 13-1 or 13-2 which corresponds to the proposed total glazing area as a percent of gross exterior wall area. |
| $U_{\text{dt}}$    | = | The thermal transmittance value for opaque doors found in Table 13-1 or 13-2.   |
| $U_{\text{ft}}$    | = | The thermal transmittance value for floors over unconditioned space found in Table 13-1 or 13-2.  |
| $F_{\text{st}}$    | = | The F-factor for slab-on-grade and radiant slab floors found in Table 13-1 or 13-2.   |
| $U_{\text{bgwt}}$  | = | The thermal transmittance value for opaque walls found in Table 13-1 or 13-2.   |
| $A_{\text{dt}}$    | = | The proposed opaque door area, $A_{\text{d}}$ .   |
| $A_{\text{ft}}$    | = | The proposed floor over unconditioned space area, $A_{\text{f}}$ .  |
| $P_{\text{st}}$    | = | The proposed linear feet of slab-on-grade and radiant slab floor perimeter, $P_{\text{s}}$ .  |
| $A_{\text{bgwt}}$  | = | The proposed below grade wall area, $A_{\text{bgw}}$ .  |

**and;**

if the total amount of glazing area as a percent of gross exterior wall area does not exceed the maximum allowed in Table 13-1 or 13-2:

|                    |   |  |
|--------------------|---|--|
| $A_{\text{rat}}$   | = | The proposed roof over attic area, $A_{\text{ra}}$ .                         |
| $A_{\text{ograt}}$ | = | The proposed overhead glazing area in roofs over attics, $A_{\text{ogra}}$ . |
| $A_{\text{ort}}$   | = | The proposed other roof area, $A_{\text{or}}$ .                              |
| $A_{\text{ogort}}$ | = | The proposed overhead glazing area in other roofs, $A_{\text{ogor}}$ .       |
| $A_{\text{wt}}$    | = | The proposed opaque above grade wall area, $A_{\text{w}}$ .                  |
| $A_{\text{vgt}}$   | = | The proposed vertical glazing area, $A_{\text{vg}}$ .                        |

or;

if the total amount of glazing area as a percent of gross exterior wall area exceeds the maximum allowed in Table 13-1 or 13-2:

|                    |   |   |
|--------------------|---|---|
| $A_{\text{rat}}$   | = | The greater of:<br>the proposed roof over attic area, and<br>the gross roof over attic area minus $A_{\text{ograt}}$ .  |
| $A_{\text{ograt}}$ | = | The lesser of:<br>proposed overhead glazing area in roofs over attics, and<br>the maximum allowed glazing area from Table 13-1 or 13-2.                                   |
| $A_{\text{ort}}$   | = | The greater of:<br>the proposed other roof area, and<br>the gross other roof area minus $A_{\text{ogort}}$ .  |
| $A_{\text{ogort}}$ | = | The lesser of:<br>the proposed overhead glazing area in other roofs, and<br>the maximum allowed glazing area from Table 13-1 or 13-2 minus $A_{\text{ograt}}$ .           |
| $A_{\text{wt}}$    | = | The greater of:<br>proposed opaque above grade wall area, and<br>the gross exterior above grade wall area minus $A_{\text{dt}}$ minus $A_{\text{vgt}}$ .                  |
| $A_{\text{vgt}}$   | = | The lesser of:<br>the proposed vertical glazing area, and<br>the maximum allowed glazing area from Table 13-1 or 13-2 minus $A_{\text{ograt}}$ minus $A_{\text{ogort}}$ . |

## EQUATION 13-2

Proposed  $UA_p$ 

$$UA_p = U_{ra}A_{ra} + U_{or}A_{or} + U_{og}A_{og} + U_wA_w + U_dA_d + U_{vg}A_{vg} + U_fA_f + F_sP_s + U_{bgw}A_{bgw}$$

Where:

|           |   |  |
|-----------|---|--|
| $UA_p$    | = | The combined proposed specific heat transfer of the gross exterior wall, floor and roof/ceiling assembly area. |
| $U_{ra}$  | = | The thermal transmittance of the roof over attic area.   |
| $A_{ra}$  | = | Opaque roof over attic area.   |
| $U_{or}$  | = | The thermal transmittance of the other roof area.  |
| $A_{or}$  | = | Opaque other roof area.  |
| $U_{og}$  | = | The thermal transmittance for the overhead glazing   |
| $A_{og}$  | = | Overhead glazing area.   |
| $U_w$     | = | The thermal transmittance of the opaque wall area.   |
| $A_w$     | = | Opaque above grade wall area (not including opaque doors).   |
| $U_{vg}$  | = | The thermal transmittance of the vertical glazing area.  |
| $A_{vg}$  | = | Vertical glazing area.   |
| $U_d$     | = | The thermal transmittance value of the opaque door area.   |
| $A_d$     | = | Opaque door area.  |
| $U_f$     | = | The thermal transmittance of the floor over unconditioned space area.  |
| $A_f$     | = | Floor area over unconditioned space.   |
| $F_s$     | = | Slab-on-grade or radiant floor component F-factor.   |
| $P_s$     | = | Lineal feet of slab-on-grade or radiant floor perimeter.   |
| $U_{bgw}$ | = | The thermal transmittance value of the below grade wall area.  |
| $A_{bgw}$ | = | Below grade wall area as defined in Tables 13-1 or 13-2.   |

**NOTE:** Where more than one type of wall, window, roof/ceiling, door and skylight is used, the U and A terms for those items shall be expanded into sub-elements as:

$$U_{w1}A_{w1} + U_{w2}A_{w2} + U_{w3}A_{w3} + \dots \text{etc.}$$

## EQUATION 13-3

Target  $SHGCA_t$ 

$$SHGCA_t = SHGC_t (A_{ograt} + A_{ogort} + A_{vgt})$$

Where:

|           |   |   |
|-----------|---|---|
| $SHGCA_t$ | = | The target combined specific heat gain of the target glazing area.  |
| $SHGC_t$  | = | The solar heat gain coefficient for glazing found in Table 13-1 or 13-2 which corresponds to the proposed total glazing area as a percent of gross exterior wall area, and $A_{ograt}$ , $A_{ogort}$ , and $A_{vgt}$ are defined under Equation 13-1. |

## EQUATION 13-4

Proposed  $SHGCA_p$ 

$$SHGCA_p = SHGC_{og}A_{og} + SHGC_{vg}A_{vg}$$

Where:

|             |   |  |
|-------------|---|--|
| $SHGCA_t$   | = | The combined proposed specific heat gain of the proposed glazing area. |
| $SHGC_{og}$ | = | The solar heat gain coefficient of the overhead glazing.               |
| $A_{og}$    | = | The overhead glazing area.   |
| $SHGC_{vg}$ | = | The solar heat gain coefficient of the vertical glazing.               |
| $A_{vg}$    | = | The vertical glazing area.   |

TABLE 13-1  
BUILDING ENVELOPE REQUIREMENTS FOR CLIMATE ZONE 1  
(MINIMUM INSULATION R-VALUES OR  
MAXIMUM COMPONENT U FACTORS FOR ZONE 1)

**Building Components**

| Space Heat Type                            | Components                    |                              |  |              |                         |                            |
|--|-------------------------------|------------------------------|--|--------------|-------------------------|----------------------------|
|  | Roofs Over Attic <sup>3</sup> | All Other Roofs <sup>3</sup> | Opaque Walls <sup>1,2</sup>  | Opaque Doors | Floor Over Uncond Space | Slab On-Grade <sup>5</sup> |
| 1. Electric resistance heat <sup>**</sup>  | R-38 or U=0.031               | R-30 or U=0.034              | R-19 or U=0.062  | U=0.60       | R-30 or U=0.029         | R-10 or F=0.54             |
| 2. All others including Heat pumps and VAV | R-30 or U=0.036               | R-21 or U=0.046              | (a) Metal framing: R-19 or U=0.109<br>(b) Wood framing and framing other than metal: R-19 or U=0.062 | U=0.60       | R-19 or U=0.056         | R-10 or F=0.54             |

\*\* Compliance with nominal prescriptive R-values requires wood framing.

MAXIMUM GLAZING AREAS AND U-FACTORS AND  
MAXIMUM GLAZING SOLAR HEAT GAIN COEFFICIENTS  
FOR ZONE 1

**Glazing**

| Maximum Glazing Area as % of Wall          | 0% to 30%        |      |                        | ≥30% to 45%                   |      |                        |
|--|------------------|------|------------------------|-------------------------------|------|------------------------|
|  | Maximum U-Factor |      | Max. SHGC <sup>4</sup> | Maximum U-Factor              |      | Max. SHGC <sup>4</sup> |
|  | VG               | OG   |                        | VG                            | OG   |                        |
| 1. Electric resistance heat                | 0.40             | 0.60 | 0.40                   | PRESCRIPTIVE PATH NOT ALLOWED |      |                        |
| 2. All others including heat pumps and VAV | 0.55             | 0.70 | 0.45                   | 0.45                          | 0.60 | 0.40                   |

**Footnotes**

**1. Below-Grade Walls:**

When complying by the prescriptive approach, Section 1322:

- a) Walls insulated on the interior shall use opaque wall values;
- b) Walls insulated on the exterior shall use a minimum of R-10 insulation;
- c) Walls shall be insulated for the first 10 feet below grade. (There shall be no credit for those portions of below grade walls and footings that are more than 10 feet below grade, and those portions below 10 feet shall not be included in the gross exterior wall area).

When complying by the component performance approach, Section 1331:

- a) Walls insulated on the interior shall use the opaque wall values when determining  $U_{bgwt}$ ;
- b) Walls insulated on the exterior shall use a target U-factor of  $U = 0.070$  for  $U_{bgwt}$ ;
- c) The calculations shall include the first 10 feet of walls below grade. (Those portions of below grade walls and footings that are more than 10 feet below grade shall not be included in the gross exterior wall area and shall not be included when determining  $A_{bgwt}$  and  $A_{bgw}$ ).

**2. Concrete Masonry Walls:** If the area-weighted heat capacity of the total opaque above grade wall is a minimum of 9.0 Btu/ft<sup>2</sup>•°F, then:

a. The area-weighted average U-factor may be increased to U-0.15 maximum, or minimum additional R-5.7 continuous insulation uninterrupted by framing; or

b. The wall may be ASTM C90 concrete block walls, ungrouted or partially grouted at 32 in. or less on center vertically and 48 in. or less on center horizontally, with ungrouted cores filled with material having a maximum thermal conductivity of 0.44 Btu-in/h•ft<sup>2</sup>•°F.

—Individual walls with heat capacities less than 9.0 Btu/ft<sup>2</sup>•°F and below grade walls shall meet opaque wall requirements listed above.

—Glazing shall comply with the glazing requirements listed above.

**3. Roof Types:** A roof over attic is where the roof structure has at least 30 inches clear distance from the top of the bottom chord of a truss or ceiling joist to the underside of the sheathing at the roof ridge, and the ceiling is attached to the ceiling joist or the bottom of the truss or ceiling joist. Anything else is considered all other roofs.

**4. SHGC (Solar Heat Gain Coefficient per Section 1312.2):** May substitute Maximum Shading Coefficient (SC) for SHGC (See Chapter 2 for definition of Shading Coefficient).

**5. Radiant Floors:** Where insulation is required under the entire slab, radiant floors shall use a minimum of R-10 insulation or F=0.55 maximum. Where insulation is not required under the entire slab, radiant floors shall use R-10 perimeter insulation according to Section 1311.6 or F=0.78 maximum.)

| <b>Opaque Elements</b>                      | <b>Nonresidential</b>            |   | <b>Residential, Other than Single-Family</b> |                                      |
|---|----------------------------------|---|--|--------------------------------------|
|   | <b>Assembly Max.</b>             | <b>Insulation Min. R-Value</b>          | <b>Assembly Max.</b>                         | <b>Insulation Min. R-Value</b>       |
| <b>Roofs</b>                                |                                  |   |  |                                      |
| Insulation entirely above deck              | U-0.034                          | R-30 c.i.                               | U-0.031                                      | R-38 c.i.                            |
| Metal building                              | U-0.031                          | R-25 + R-11 Ls                          | U-0.031                                      | R-25 + R-11 Ls                       |
| Single-rafter                               | U-0.027                          | R-38                                    | U-0.027                                      | R-38                                 |
| Attic and other                             | U-0.027                          | R-38 adv or R-49                        | U-0.027                                      | R-38 adv or R-49                     |
| <b>Walls, Above Grade</b>                   |                                  |   |  |                                      |
| Mass  | U-0.090                          | R-10 c.i.                               | U-0.057                                      | R-16 c.i.                            |
| Metal building                              | U-0.064                          | R-13 + R-7.5 c.i.                       | U-0.057                                      | R-19 + R-8.5 c.i.                    |
| Steel framed                                | U-0.064                          | R-13 + R-7.5 c.i.                       | U-0.057                                      | R-19 + R-8.5 c.i.                    |
| Wood framed and other                       | U-0.057                          | R-21                                    | U-0.057                                      | R-13 + R-6 c.i.                      |
| <b>Walls, Below Grade</b>                   |                                  |   |  |                                      |
| Below grade wall                            |                                  | Same as above grade                     |  | Same as above grade                  |
| <b>Floors</b>                               |                                  |   |  |                                      |
| Mass  | U-0.029                          | R-30 c.i.                               | U-0.029                                      | R-30 c.i.                            |
| Steel joist                                 | U-0.029                          | R-38 + R-4 c.i.                         | U-0.029                                      | R-38 + R-4 c.i.                      |
| Wood framed and other                       | U-0.029                          | R-30                                    | U-0.029                                      | R-30                                 |
| <b>Slab-on-Grade Floors</b>                 |                                  |   |  |                                      |
| Unheated                                    | F-0.540                          | R-10 for 24 in. (with thermal break)    | F-0.540                                      | R-10 for 24 in. (with thermal break) |
| Heated                                      | F-0.360                          | R-10 c.i. (with thermal break)          | F-0.360                                      | R-10 c.i. (with thermal break)       |
| <b>Opaque Doors</b>                         |                                  |   |  |                                      |
| Swinging                                    | U-0.600                          |   | U-0.400                                      |                                      |
| Nonswinging                                 | U-0.600                          |   | U-0.400                                      |                                      |
| <b>Fenestration 0-40% of Wall</b>           |                                  |   |  |                                      |
|   | <b>Assembly Max. U-Factor</b>    | <b>Assembly Max. SHGC</b>               | <b>Assembly Max. U-Factor</b>                | <b>Assembly Max. SHGC</b>            |
| <b>Vertical Fenestration</b>                | (See sections 1323.4 and 1323.5) |   | (See sections 1323.4 and 1323.5)             |                                      |
| Nonmetal framing: All                       | U-0.32                           | SHGC-0.40 all OR                        | U-0.32                                       |                                      |
| Metal framing: Fixed/operable               | U-0.40                           | SHGC-0.45 all PLUS Permanent PF>0.50 on | U-0.40                                       |                                      |
| Entrance doors                              | U-0.60                           | west, south and east                    | U-0.60                                       |                                      |
| <b>Skylights</b>                            |                                  |   |  |                                      |
| Without curb (i.e., sloped glazing)         | U-0.50                           | SHGC-0.35 all                           | U-0.50                                       | SHGC-0.35 all                        |
| With curb (i.e., individual unit skylights) | U-0.60                           |   | U-0.60                                       |                                      |

c.i. = continuous insulation, Ls = liner system (see definitions).

**TABLE 13-2  
BUILDING ENVELOPE REQUIREMENTS  
FOR CLIMATE ZONE 2  
  
(MINIMUM INSULATION R-VALUES OR  
MAXIMUM COMPONENT U-FACTORS FOR ZONE 2)**

**Building Components**

| Space Heat Type                            | Components                    |                              |   |              |                         |                |
|--|-------------------------------|------------------------------|---|--------------|-------------------------|----------------|
|  | Roofs Over Attic <sup>3</sup> | All Other Roofs <sup>3</sup> | Opaque Walls <sup>1,2</sup>   | Opaque Doors | Floor Over Uncond Space | Slab On-Grade  |
| 1. Electric resistance heat <sup>**</sup>  | R-38 or U=0.031               | R-30 or U=0.034              | R-24 or U=0.044   | U=0.60       | R-30 or U=0.029         | R-10 or F=0.54 |
| 2. All others including Heat pumps and VAV | R-38 or U=0.031               | R-25 or U=0.039              | (a) Metal framing: R-13 cavity-insul. +R-3.8 continuous-insul. or U=0.084<br>(b) Wood framing and framing other than metal: R-19 or U=0.062 | U=0.60       | R-21 or U=0.047         | R-10 or F=0.54 |

\*\* Compliance with nominal prescriptive R-values requires wood framing.

MAXIMUM GLAZING AREAS AND U FACTORS AND  
MAXIMUM GLAZING SOLAR HEAT GAIN COEFFICIENTS  
FOR ZONE 2

Glazing

| Maximum Glazing Area as % of Wall          | 0% to 30%        |      |                        | ≥30% to 45%                   |      |                        |
|--|------------------|------|------------------------|-------------------------------|------|------------------------|
|  | Maximum U-Factor |      | Max. SHGC <sup>4</sup> | Maximum U-Factor              |      | Max. SHGC <sup>4</sup> |
|  | VG               | OG   |                        | VG                            | OG   |                        |
| 1. Electric resistance heat                | 0.40             | 0.60 | 0.40                   | PRESCRIPTIVE PATH NOT ALLOWED |      |                        |
| 2. All others including heat pumps and VAV | 0.55             | 0.70 | 0.45                   | 0.45                          | 0.60 | 0.40                   |

Footnotes

1. Below-Grade Walls:

When complying by the prescriptive approach, Section 1322:

- a) Walls insulated on the interior shall use opaque wall values,
- b) Walls insulated on the exterior shall use a minimum of R-12 insulation,
- c) Walls shall be insulated for the first 10 feet below grade. (There shall be no credit for insulating those portions of below-grade walls and footings that are more than 10 feet below grade, and those portions below 10 feet shall not be included in the gross exterior wall area.)

When complying by the component performance approach, Section 1331:

- a) Walls insulated on the interior shall use the opaque wall values when determining  $U_{bgwt}$ ,
- b) Walls insulated on the exterior shall use a target U-factor of  $U = 0.061$  for  $U_{bgwt}$ ,
- c) The calculations shall include the first 10 feet of walls below grade. (Those portions of below-grade walls and footings that are more than 10 feet below grade shall not be included in the gross exterior wall area and shall not be included when determining  $A_{bgwt}$  and  $A_{bgw}$ .)

2. **Concrete Masonry Walls:** If the area-weighted heat capacity of the total opaque above-grade wall is a minimum of 9.0 Btu/ft<sup>2</sup> • °F, then the U-factor may be increased to 0.123 maximum, or minimum additional R-7.6 continuous insulation uninterrupted by framing.

- Individual walls with heat capacities less than 9.0 Btu/ft<sup>2</sup> • °F and below-grade walls shall meet opaque wall requirements listed above.
- Glazing shall comply with the glazing requirements above.

3. **Roof Types:** A roof over attic is where the roof structure has at least 30 inches clear distance from the top of the bottom chord of a truss or ceiling joist to the underside of the sheathing at the roof ridge, and the ceiling is attached to the ceiling joist or the bottom of the truss or ceiling joist. Anything else is considered all other roofs.

4. **SHGC (Solar Heat Gain Coefficient per Section 1312.2):** May substitute Maximum Shading Coefficient (SC) for SHGC (See Chapter 2 for definition of Shading Coefficient).

5. **Radiant Floors:** Where insulation is required under the entire slab, radiant floors shall use a minimum of R-10 insulation or F=0.55 maximum. Where insulation is not required under the entire slab, radiant floors shall use R-10 perimeter insulation according to Section 1311.6 or F=0.78 maximum.)

| <u>Opaque Elements</u>                      | <u>Nonresidential</u>             |  | <u>Residential, Other than Single-Family</u> |                                      |
|---|-----------------------------------|--|--|--------------------------------------|
|   | <u>Assembly Max.</u>              | <u>Insulation Min. R-Value</u>             | <u>Assembly Max.</u>                         | <u>Insulation Min. R-Value</u>       |
| <b>Roofs</b>                                |                                   |  |  |                                      |
| Insulation entirely above deck              | U-0.034                           | R-30 c.i.                                  | U-0.031                                      | R-38 c.i.                            |
| Metal building                              | U-0.031                           | R-25 + R-11 Ls                             | U-0.031                                      | R-25 + R-11 Ls                       |
| Single-rafter                               | U-0.027                           | R-38                                       | U-0.027                                      | R-38                                 |
| Attic and other                             | U-0.027                           | R-38 adv or R-49                           | U-0.027                                      | R-38 adv or R-49                     |
| <b>Walls, Above Grade</b>                   |                                   |  |  |                                      |
| Mass  | U-0.080                           | R-13.3 c.i.                                | U-0.044                                      | R-21 c.i.                            |
| Metal building                              | U-0.064                           | R-13 + R-7.5 c.i.                          | U-0.044                                      | R-19 + R-16 c.i.                     |
| Steel framed                                | U-0.064                           | R-13 + R-7.5 c.i.                          | U-0.044                                      | R-19 + R-14 c.i.                     |
| Wood framed and other                       | U-0.051                           | R-13 + R-7.5 c.i. OR<br>R-21 + R-2.5 c.i.  | U-0.044                                      | R-21 + R-5 c.i.                      |
| <b>Walls, Below Grade</b>                   |                                   |  |  |                                      |
| Below grade wall                            |                                   | Same as above grade                        |  | Same as above grade                  |
| <b>Floors</b>                               |                                   |  |  |                                      |
| Mass  | U-0.029                           | R-30 c.i.                                  | U-0.029                                      | R-30 c.i.                            |
| Steel joist                                 | U-0.029                           | R-38 + R-4 c.i.                            | U-0.029                                      | R-38 + R-4 c.i.                      |
| Wood framed and other                       | U-0.029                           | R-30                                       | U-0.029                                      | R-30                                 |
| <b>Slab-on-Grade Floors</b>                 |                                   |  |  |                                      |
| Unheated                                    | F-0.540                           | R-10 for 24 in. (with thermal break)       | F-0.540                                      | R-10 for 24 in. (with thermal break) |
| Heated                                      | F-0.360                           | R-10 c.i. (with thermal break)             | F-0.360                                      | R-10 c.i. (with thermal break)       |
| <b>Opaque Doors</b>                         |                                   |  |  |                                      |
| Swinging                                    | U-0.600                           |  | U-0.400                                      |                                      |
| Nonswinging                                 | U-0.600                           |  | U-0.400                                      |                                      |
| <b>Fenestration<br/>0-40% of Wall</b>       | <b>Assembly Max.<br/>U-Factor</b> | <b>Assembly Max. SHGC</b>                  | <b>Assembly Max.<br/>U-Factor</b>            | <b>Assembly Max. SHGC</b>            |
| <b>Vertical Fenestration</b>                |                                   | (See sections 1323.4 and 1323.5)           |  | (See sections 1323.4 and 1323.5)     |
| Nonmetal framing: All                       | U-0.32                            | SHGC-0.40 all OR                           | U-0.32                                       |                                      |
| Metal framing:<br>Fixed/operable            | U-0.40                            | SHGC-0.45 all PLUS Permanent<br>PF>0.50 on | U-0.40                                       |                                      |
| Entrance doors                              | U-0.60                            | west, south and east                       | U-0.60                                       |                                      |
| <b>Skylights</b>                            |                                   |  |  |                                      |
| Without curb (i.e., sloped glazing)         | U-0.50                            | SHGC-0.35 all                              | U-0.50                                       | SHGC-0.35 all                        |
| With curb (i.e., individual unit skylights) | U-0.60                            |  | U-0.60                                       |                                      |

c.i. = continuous insulation, Ls = liner system (see definitions).

**CHAPTER 14  
(~~BUILDING~~) MECHANICAL SYSTEMS**

**AMENDATORY SECTION** (Amending WSR 93-21-052, filed 10/18/93, effective 4/1/94)

**WAC 51-11-1402 Mechanical ventilation.** The minimum requirements for ventilation shall comply with the Washington State (~~Ventilation and Indoor Air Quality~~) **Mechanical Code** (chapter (~~51-43~~) 51-52 WAC).

**AMENDATORY SECTION** (Amending WSR 01-03-010, filed 1/5/01, effective 7/1/01)

**WAC 51-11-1410 General requirements.** The (~~building~~) mechanical system shall comply with Sections 1411 through 1416, Sections 1440 through 1443 and Sections 1450 through 1454, and with one of the following paths:

- a. Simple Systems (Packaged Unitary Equipment) Sections 1420 through 1424.
- b. Complex Systems Sections 1430 through 1439.



c. Systems Analysis. See Section 1141.4.

Systems serving cold storage spaces and frozen storage spaces in refrigerated warehouses shall meet the requirements of Sections 1416, 1437 and 1460.

FIGURE 14A  
Mechanical Systems Compliance Paths

| Section Number | Subject  | Simple Systems Path | Complex Systems Path | Systems Analysis Option |
|----------------|--|---------------------|----------------------|-------------------------|
| 1410           | General Requirements                                 | X                   | X                    | X                       |
| 1411           | HVAC Equipment Performance Requirements              | X                   | X                    | X                       |
| 1412           | Controls   | X                   | X                    | X                       |
| 1413           | Air Economizers                                      | X                   | X                    | X                       |
| 1414           | Ducting Systems                                      | X                   | X                    | X                       |
| 1415           | Piping Systems                                       | X                   | X                    | X                       |
| 1416           | Completion Requirements                              | X                   | X                    | X                       |
| 1420           | Simple Systems (Packaged Unitary Equipment)          | X                   |                      |                         |
| 1421           | System Type  | X                   |                      |                         |
| 1422           | Controls   | X                   |                      |                         |
| 1423           | Economizers  | X                   |                      |                         |
| 1424           | Separate Air Distribution Systems                    | X                   |                      |                         |
| 1430           | Complex Systems                                      |                     | X                    |                         |
| 1431           | System Type  |                     | X                    |                         |
| 1432           | Controls   |                     | X                    |                         |
| 1433           | Economizers  |                     | X                    |                         |
| 1434           | Separate Air Distribution Systems                    |                     | X                    |                         |
| 1435           | Simultaneous Heating and Cooling                     |                     | X                    |                         |
| 1436           | Heat Recovery  |                     | X                    |                         |
| 1437           | Electric Motor Efficiency                            |                     | X                    |                         |
| 1438           | Variable Flow Systems                                |                     | X                    |                         |
| 1439           | Exhaust Hoods  |                     | X                    |                         |
| RS-29          | Systems Analysis                                     |                     |                      | X                       |
| 1440           | <u>((Service)) Domestic Water ((Heating)) System</u> | X                   | X                    | X                       |
| 1441           | Water Heater Installation                            | X                   | X                    | X                       |
| 1442           | Shut Off Controls                                    | X                   | X                    | X                       |
| 1443           | Pipe Insulation                                      | X                   | X                    | X                       |
| <u>1444</u>    | <u>Conservation of Water and Pumping Energy</u>      | <u>X</u>            | <u>X</u>             | <u>X</u>                |
| <u>1445</u>    | <u>Heat Recovery for Domestic Water Systems</u>      | <u>X</u>            | <u>X</u>             | <u>X</u>                |
| <u>1446</u>    | <u>Domestic Hot Water Meters</u>                     | <u>X</u>            | <u>X</u>             | <u>X</u>                |
| 1450           | Heated Pools   | X                   | X                    | X                       |
| 1451           | General  | X                   | X                    | X                       |
| 1452           | Pool Water Heaters                                   | X                   | X                    | X                       |
| 1453           | Controls   | X                   | X                    | X                       |
| 1454           | Pool Covers  | X                   | X                    | X                       |
| <u>1455</u>    | <u>Heat Recovery</u>                                 | <u>X</u>            | <u>X</u>             | <u>X</u>                |
| <u>1460</u>    | <u>Cold Storage</u>                                  | <u>X</u>            | <u>X</u>             | <u>X</u>                |
| <u>1461</u>    | <u>Refrigerated Warehouse Heating and Cooling</u>    | <u>X</u>            | <u>X</u>             | <u>X</u>                |
| <u>1462</u>    | <u>Underslab Heating</u>                             | <u>X</u>            | <u>X</u>             | <u>X</u>                |
| <u>1463</u>    | <u>Evaporators</u>                                   | <u>X</u>            | <u>X</u>             | <u>X</u>                |

FIGURE 14A  
Mechanical Systems Compliance Paths

| Section Number | Subject     | Simple Systems Path | Complex Systems Path | Systems Analysis Option |
|----------------|-------------|---------------------|----------------------|-------------------------|
| 1464           | Condensers  | X                   | X                    | X                       |
| 1465           | Compressors | X                   | X                    | X                       |

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency and appear in the Register pursuant to the requirements of RCW 34.08.040.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1411 HVAC equipment performance requirements.**

1411.1 General: Equipment shall have a minimum performance at the specified rating conditions not less than the values shown in Tables 14-1A through 14-1G. If a nationally recognized certification program exists for a product covered in Tables 14-1A through 14-1G, and it includes provisions for verification and challenge of equipment efficiency ratings, then the product shall be listed in the certification program.

For equipment not within the scope of the standards in Table 14-1A through 14-1G, this Code does not contain any minimum efficiency requirements. However, for any claims of efficiency, such as for calculations using the RS-29 compliance option, data shall be furnished by the equipment manufacturer consisting of a complete report from a test performed by an independent laboratory accredited by a nationally recognized accreditation organization.

Gas-fired and oil-fired forced air furnaces with input ratings ≥ 225,000 Btu/h (65 kW) and all unit heaters shall also have an intermittent ignition or interrupted device (IID), and have either mechanical draft (including power venting) or a flue damper. A vent damper is an acceptable alternative to a flue damper for furnaces where combustion air is drawn from

$$\begin{aligned} \text{Adjusted maximum full-load kW/ton rating} & \equiv \frac{\text{Full load kW/ton from Table 14-1C}}{K_{\text{adj}}} \\ \text{Adjusted maximum NPLV rating} & \equiv \frac{\text{IPLV from Table 14-1C}}{K_{\text{adj}}} \end{aligned}$$

Where:

- $K_{\text{adj}} \equiv 6.174722 - 0.303668(X) + 0.00629466(X)^2 - 0.000045780(X)^3$
- $X \equiv DT_{\text{std}} + \text{LIFT}$
- $DT_{\text{std}} \equiv (24 + [\text{full load kW/ton from Table 14-1C}] \times 6.83) / \text{Flow}$
- $\text{Flow} \equiv \text{Condenser water flow (gpm)} / \text{cooling full load capacity (tons)}$
- $\text{LIFT} \equiv \text{CEWT} - \text{CLWT}$
- $\text{CEWT} \equiv \text{Full load condenser entering water temperature (F)}$
- $\text{CLWT} \equiv \text{Full load condenser leaving chilled water temperature (F)}$

The adjusted full load and NPLV values are only applicable over the following full-load design ranges:

- Minimum leaving chilled water temperature: 38°F;
- Maximum condenser entering water temperature: 102°F;

the conditioned space. All furnaces with input ratings ≥ 225,000 Btu/h (65 kW), including electric furnaces, that are not located within the conditioned space shall have jacket losses not exceeding 0.75% of the input rating.

Chilled water plants and buildings with more than 500 tons total capacity shall not have more than 100 tons provided by air-cooled chillers.

- EXCEPTIONS:**
1. Where the designer demonstrates that the water quality at the building site fails to meet manufacturer's specifications for the use of water-cooled equipment.
  2. Air-cooled chillers with minimum efficiencies at least 10 percent higher than those listed in Table 14-1C.
  3. Replacement of existing equipment.

1411.2 Rating Conditions: Cooling equipment shall be rated at ARI test conditions and procedures when available. Where no applicable procedures exist, data shall be furnished by the equipment manufacturer consisting of a complete report from a test performed by an independent laboratory accredited by a nationally recognized accreditation organization.

1411.2.1 Water-Cooled Centrifugal Water-Chilling Packages—Nonstandard Conditions: Water-cooled centrifugal water-chilling packages that are not designed for operation at AHRI Standard 550/590 test conditions reflected in Table 14-1C (44°F leaving chilled-water temperature and 85°F entering condenser water temperature with 3 gpm/ton condenser water flow) shall have maximum full-load kW/ton and NPLV ratings adjusted using the following equation:

- Condenser water flow: 1 to 6 gpm/ton; and
- X ≥ 39 and ≤ 60.

Chillers designed to operate outside of these ranges or applications utilizing fluids or solutions with secondary cool-

ants (e.g., glycol solutions or brines) with a freeze point of 27°F or lower from freeze protection are not covered by this standard.

1411.3 Combination Space and Service Water Heating: For combination space and service water heaters with a principal function of providing space heat, the Combined Annual Efficiency (CAE) may be calculated by using ASHRAE Standard 124-1991. Storage water heaters used in combination space heat and water heat applications shall have either an Energy Factor (EF) or a Combined Annual Efficiency (CAE) of not less than the following:

|                         | Energy Factor (EF) | Combined Annual Efficiency (CAE) |
|-------------------------|--------------------|----------------------------------|
| < 50 gallon storage     | 0.58               | 0.71                             |
| 50 to 70 gallon storage | 0.57               | 0.71                             |
| > 70 gallon storage     | 0.55               | 0.70                             |

1411.4 Packaged Electric Heating and Cooling Equipment: Packaged electric equipment providing both heating and cooling with a total cooling capacity greater than 20,000 Btu/h shall be a heat pump.

EXCEPTION: Unstaffed equipment shelters or cabinets used solely for personal wireless service facilities.

1411.5 Heating Systems in Unenclosed Spaces: Where comfort heating is provided to unenclosed spaces, only radiant heating systems shall be used unless otherwise approved by the building official. The heating system shall be controlled by an occupancy sensor. An unenclosed space is one that is not substantially surrounded by solid surfaces such as walls, floors, roofs, and openable devices such as doors and operable windows. Warehouses and repair garages are considered enclosed spaces.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1412 Controls.**

1412.1 Temperature Controls: Each system shall be provided with at least one temperature control device. Each zone shall be controlled by individual thermostatic controls responding to temperature within the zone. At a minimum, each floor of a building shall be considered as a separate zone. Controls on systems required to have economizers and serving single zones shall have multiple cooling stage capability and that activate the economizer when appropriate as the first stage of cooling. See Section 1423 or 1433 for further economizer control requirements.

1412.2 Deadband Controls: When used to control both comfort heating and cooling, zone thermostatic controls shall be capable of a deadband of at least 5 degrees F within which the supply of heating and cooling energy to the zone is shut off or reduced to a minimum.

EXCEPTIONS: 1. Special occupancy, special usage, or code requirements where deadband controls are not appropriate.

2. Thermostats that require manual changeover between heating and cooling modes.

1412.3 Humidity Controls: If a system is equipped with a means for adding moisture, a humidistat shall be provided.

1412.4 Setback and Shutoff: HVAC systems shall be equipped with automatic controls capable of accomplishing a reduction of energy use through control setback or equipment shutdown during periods of nonuse or alternate use of the spaces served by the system. The automatic controls shall:

- a. Have a minimum seven-day clock and be capable of being set for seven different day types per week,
- b. Be capable of retaining programming and time setting during loss of power for a period of at least ten hours, and
- c. Include an accessible manual override, or equivalent function (e.g., telephone interface), that allows temporary operation of the system for up to two hours.

- EXCEPTIONS:
- 1. Systems serving areas which require continuous operation at the same temperature setpoint.
  - 2. Equipment with full load demands of 2 Kw (6,826 Btu/h) or less may be controlled by readily accessible manual off-hour controls.
  - 3. Systems controlled by an occupant sensor that is capable of shutting the system off when no occupant is sensed for a period of up to 30 minutes.
  - 4. Systems controlled solely by a manually operated timer capable of operating the system for no more than two hours.

For hotel and motel guest rooms, a minimum of one of the following control technologies shall be required in hotels/motels with over 50 guest rooms such that the space temperature would automatically setback (winter) or set up (summer) by no less than 3°C (5°F) when the occupant is not in the room:

- 1. Controls that are activated by the room occupant via the primary room access method - key, card, deadbolt, etc.
- 2. Occupancy sensor controls that are activated by the occupant's presence in the room.

1412.4.1 Dampers: Outside air intakes, exhaust outlets and relief outlets serving conditioned spaces shall be equipped with motorized dampers which close automatically when the system is off or upon power failure. Return air dampers shall be equipped with motorized dampers. Stair shaft and elevator shaft smoke relief openings shall be equipped with normally open (fails to open upon loss of power) dampers. These dampers shall remain closed until activated by the fire alarm system or other approved smoke detection system.

- EXCEPTIONS:
- 1. Systems serving areas which require continuous operation.
  - 2. Combustion air intakes.
  - 3. Gravity (nonmotorized) relief dampers are acceptable in equipment with less than 5,000 cfm total supply flow when in buildings less than 3 stories in height.
  - 4. ~~((Gravity (nonmotorized) dampers are acceptable in exhaust and relief outlets in the first story and levels below the first story of buildings three or more stories in height.~~
  - 5.) Type 1 grease hoods exhaust.

Dampers installed to comply with this section, including dampers integral to HVAC equipment, shall have a maxi-

imum leakage rate when tested in accordance with AMCA Standard 500 of:

(a) Motorized dampers: 10 cfm/ft<sup>2</sup> of damper area at 1.0 in w.g.

(b) Nonmotorized dampers: 20 cfm/ft<sup>2</sup> of damper area at 1.0 in w.g., except that for nonmotorized dampers smaller than 24 inches in either dimension: 40 cfm/ft<sup>2</sup> of damper area at 1.0 in w.g.

Drawings shall indicate compliance with this section.

1412.4.1.1 Damper Controls: Dampers for outdoor air supply and exhaust shall automatically shut when the systems or spaces served are not in use or during building warm-up, cooldown, and setback. Operation of dampers shall be allowed during ventilation prepurge one hour before expected occupancy and for unoccupied period precooling during the cooling season.

Classrooms, gyms, auditoriums and conference rooms larger than 500 square feet of floor area shall have occupancy sensor control that will either close outside air dampers or turn off serving equipment when the space is unoccupied except where equipped with another means to automatically reduce outside air intake below design rates when spaces are partially occupied.

1412.4.2 Optimum Start Controls: Heating and cooling systems with design supply air capacities exceeding ~~((10,000))~~ 2,000 cfm shall have optimum start controls. Optimum start controls shall be designed to automatically adjust the start time of an HVAC system each day to bring the space to desired occupied temperature levels immediately before scheduled occupancy. The control algorithm shall, as a minimum, be a function of the difference between space temperature and occupied setpoint and the amount of time prior to scheduled occupancy.

1412.5 Heat Pump Controls: Unitary air cooled heat pumps shall include microprocessor controls that minimize supplemental heat usage during start up, set-up, and defrost conditions. These controls shall anticipate need for heat and use compression heating as the first stage of heat. Controls shall indicate when supplemental heating is being used through visual means (e.g., LED indicators). Heat pumps equipped with supplementary heaters shall be installed with controls that prevent supplemental heater operation above 40°F.

1412.6 Combustion Heating Equipment Controls: Combustion heating equipment with a capacity over 225,000 Btu/h shall have modulating or staged combustion control.

EXCEPTIONS: Boilers.  
Radiant heaters.

1412.7 Balancing: Each air supply outlet or air or water terminal device shall have a means for balancing, including but not limited to, dampers, temperature and pressure test connections and balancing valves.

1412.8 Ventilation Controls for High-Occupancy Areas. Demand control ventilation (DCV) is required for spaces that are larger than 500 ft<sup>2</sup>, have ~~((a design occupancy))~~ an occupant density for ventilation of greater than ~~((40))~~ 25 people per 1000 ft<sup>2</sup> of floor area (based on the Default Occupant

Density column of Table 403.3 of the Washington State Mechanical Code), and are served by systems with one or more of the following:

- a. An air-side economizer,
- b. Automatic modulating control of the outdoor air damper, or
- c. A design outdoor ventilation airflow of all systems serving the space combined greater than 3000 cfm.

EXCEPTIONS:

1. Systems with energy recovery complying with Section 1436.
2. ~~((Multiple zone systems without direct digital control of individual zones communicating with a central control panel.~~
3. ~~Systems))~~ Spaces with a combined design outdoor airflow less than ~~((1200))~~ 1000 cfm.
- ~~((4.))~~ 3. Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than ~~((1200))~~ 1000 cfm.

1412.9 Enclosed Loading Dock and Parking Garage Exhaust Ventilation System Control. Mechanical ventilation systems for enclosed loading docks and parking garages shall be designed to exhaust the airflow rates (maximum and minimum) determined in accordance with the State Mechanical Code (chapter 51-52 WAC).

Ventilation systems shall be equipped with a control device that operates the system automatically upon detection of vehicle operation or the presence of occupants by approved automatic detection devices. Each of the following types of controllers shall be capable of shutting off fans or modulating fan speed.

1. Gas sensor controllers used to activate the exhaust ventilation system shall stage or modulate fan speed upon detection of specified gas levels. All equipment used in sensor controlled systems shall be designed for the specific use and installed in accordance with the manufacturer's recommendations. The following are minimum gas sensor system requirements:

a. Garages and loading docks used predominantly by gasoline-powered vehicles shall be equipped with a controller and a full array of carbon monoxide (CO) sensors set to maintain levels of carbon monoxide below 35 parts per million (ppm). Spacing and location of the sensors shall be installed in accordance with manufacturer recommendations.

b. Where more than 20 percent of the vehicles using the garage or loading dock are powered by nongasoline fuels, the area exposed to nongasoline fueled vehicle exhaust shall be equipped with a controller and fuel-appropriate sensors. The set-point for the nongasoline sensors shall be no less than the standard used by OSHA for eight hour exposure. The controller shall activate the ventilation system when sensor set-point is reached. Spacing and location of the sensors shall be installed in accordance with manufacturer recommendations.

2. Automatic time clocks used to activate the system shall activate the system during occupied periods. The time clock shall be capable of scheduling multiple start and stop times for each day of the week, varying the daily schedule, and retaining programming for a 10-hour period during loss of power.

3. Occupant detection sensors used to activate the system shall detect entry into the parking garage along both the vehicle and pedestrian pathways.

1412.9.1 System Activation Devices for Enclosed Loading Docks. Ventilation systems for enclosed loading docks shall be activated by one of the following:

1. Gas sensors; or

2. Time clock and a manual over-ride switch located in the dock area that is accessible to persons in the loading dock area.

1412.9.2 System Activation Devices for Enclosed Parking Garages. Ventilation systems for enclosed parking garages shall be activated by gas sensors.

EXCEPTION: A parking garage ventilation system having a total design capacity under 8,000 cfm may use a time clock or occupant sensors.

AMENDATORY SECTION (Amending WSR 05-01-013, filed 12/2/04, effective 7/1/05)

#### **WAC 51-11-1413 Economizers.**

1413.1 Operation: Air economizers shall be capable of automatically modulating outside and return air dampers to provide 100 percent of the design supply air as outside air to reduce or eliminate the need for mechanical cooling. Systems shall provide a means to relieve excess outdoor air during air economizer operation to prevent overpressurizing the building. Air economizers shall be used for RS-29 analysis base case for all systems without exceptions in Sections 1413, 1423, or 1433. Water economizers, when allowed by Section 1132.2 exception 1 or Section 1433 exceptions 3 and 9, shall be capable of providing the total concurrent cooling load served by the connected terminal equipment lacking airside economizer, at outside air temperatures of ~~((45°F))~~ 50°F dry-bulb/~~((40°F))~~ 45°F wet-bulb and below. For this calculation, all factors including solar and internal load shall be the same as those used for peak load calculations, except for the outside temperatures.

~~((EXCEPTION: Water economizers using air-cooled heat rejection equipment may use a 35°F dry-bulb outside air temperature for this calculation. This exception is limited to a maximum of 20 tons per building.))~~

1413.2 **Documentation:** Water economizer plans submitted for approval shall include the following information:

1. Maximum outside air conditions for which economizer is sized to provide full cooling.
2. Design cooling load to be provided by economizer at this outside air condition.
3. Heat rejection and terminal equipment performance data including model number, flow rate, capacity, entering and leaving temperature in full economizer cooling mode.

1413.3 Integrated Operation: The HVAC system and its controls shall allow economizer operation when mechanical cooling is required simultaneously. Air and water economizers shall be capable of providing partial cooling even when

additional mechanical cooling is required to meet the remainder of the cooling load.

EXCEPTIONS:

1. Individual, direct expansion units that have a rated capacity less than 65,000 Btu/h and use nonintegrated economizer controls that preclude simultaneous operation of the economizer and mechanical cooling.
2. Water-cooled water chillers with waterside economizer.

1413.4 **Humidification:** If an air economizer is required on a cooling system for which humidification equipment is to be provided to maintain minimum indoor humidity levels, then the humidifier shall be of the adiabatic type (direct evaporative media or fog atomization type).

EXCEPTIONS:

1. Health care facilities where WAC 246-320-525 allows only steam injection humidifiers in ductwork downstream of final filters.
2. Systems with water economizer.
3. 100% outside air systems with no provisions for air recirculation to the central supply fan.
4. Nonadiabatic humidifiers cumulatively serving no more than 10% of a building's air economizer capacity as measured in cfm. This refers to the system cfm serving rooms with stand alone or duct mounted humidifiers.

AMENDATORY SECTION (Amending WSR 01-03-010, filed 1/5/01, effective 7/1/01)

#### **WAC 51-11-1414 Ducting systems.**

1414.1 **Duct Sealing and Testing:** Duct work and plenums shall be sealed in accordance with Section 1414.1.1. Additionally, ducts shall be tested in accordance with Sections 1414.1.2 and 1414.1.3 as required.

1414.1.1 **Sealing:** Duct work which is designed to operate at pressures above 1/2 inch water column static pressure shall be sealed ~~((in accordance with Standard RS 18. Extent of sealing required is))~~ as follows:

1. Static pressure ~~((±))~~ 1/2 inch to ~~((±))~~ 3 inches ~~((±))~~: Seal all transverse joints and longitudinal seams. Spiral lock seams in round and flat oval duct work do not require sealing; however, other seams shall be sealed.
2. ~~((Static pressure: 2 inches to 3 inches; seal all transverse joints and longitudinal seams.~~
- 3-)) Static pressure ~~((±))~~ above 3 inches ~~((±))~~: Seal all transverse joints, longitudinal seams and duct wall penetrations.

~~((Duct tape and other pressure sensitive tape shall not be used as the primary sealant where ducts are designed to operate at static pressures of 1 inch W.C. or greater.))~~ All low pressure supply and return air systems not located entirely within the conditioned space, including the unconditioned side of enclosed stud bays or joist cavities/spaces used to transport air, shall be securely fastened and sealed. Duct work shall be sealed using welds, gaskets, mastic, or mastic-plus-embedded-fabric tape. Enclosed stud bays or joist cavities/spaces used to transport air shall be sealed using mastic-plus-embedded-fabric tape, or when drywall is used to enclose the air system, drywall mud and tape. Duct tape is not permitted as a sealant on any ducts.

EXCEPTION: Fibrous glass duct systems installed in accordance with Standard UL 181A and flexible duct systems installed in accordance with Standard UL 181B may use tapes listed for these systems.

1414.1.2 Low Pressure Duct Leak Test: All duct systems shall be sealed to a leakage rate not to exceed 6 percent of the fan flow if the duct system:

- 1. Is connected to a constant volume, single zone, air conditioner, heat pump or furnace; and
- 2. Serves less than 5,000 square feet of floor area; and
- 3. Has more than 25 percent duct surface area located in any unconditioned space.

$$L_{max} \equiv C_L P^{0.65}$$

Where:

- L<sub>max</sub> ≡ Maximum permitted leakage in cfm/100 ft<sup>2</sup> duct surface area.
- C<sub>L</sub> ≡ Duct leakage class, cfm/100 ft<sup>2</sup> at 1 in. w.c.
- C<sub>L</sub> ≡ 6 for rectangular sheet metal, rectangular fibrous, and round flexible ducts.
- C<sub>L</sub> ≡ 3 for round/flat oval sheet metal or fibrous glass ducts.
- P ≡ Test pressure, which shall be equal to the design duct pressure class rating in in. w.c.

1414.2 Insulation: Ducts and plenums that are constructed and function as part of the building envelope, by separating interior space from exterior space, shall meet all applicable requirements of Chapter 13. These requirements include insulation installation, moisture control, air leakage, and building envelope insulation levels. Unheated equipment rooms with combustion air louvers must be isolated from the conditioned space by insulating interior surfaces to a minimum of R-11 and any exterior envelope surfaces per Chapter 13. Outside air ducts serving individual supply air units with less than 2,800 cfm of total supply air capacity shall be insulated to a minimum of R-7 and are not considered building envelope. Other outside air duct runs are considered building envelope until they,

- 1. Connect to the heating or cooling equipment, or
- 2. Are isolated from the exterior with an automatic shut-off damper complying with Section 1412.4.1.

Once outside air ducts meet the above listed requirements, any runs within conditioned space shall comply with Table 14-5 requirements.

Other ducts and plenums shall be thermally insulated per Table 14-5.

- EXCEPTIONS:
- 1. Within the HVAC equipment.
  - 2. Exhaust air ducts not subject to condensation.
  - 3. Exposed ductwork within a zone that serves that zone.

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1416 ((Mechanical systems)) Commissioning and completion requirements.**

~~((1416.1 General: Commissioning is a systematic process of verification and documentation that ensures that the selected building systems have been designed, installed, and function properly, efficiently, and can be maintained in accordance~~

The leakage rate shall be confirmed through field verification and diagnostic testing, in accordance with SMACNA Duct Leakage Test Procedures - 1985.

1414.1.3 High Pressure Duct Leak Test: Duct work that is designed to operate at static pressures in excess of 3 inches water column shall be leak-tested in accordance with SMACNA Duct Leakage Test Procedures - 1985. Representative sections totaling no less than 25 percent of the total installed duct area for the designated pressure class shall be tested. Duct systems with pressure ratings in excess of 3 in. w.c. shall be identified on the drawings. The maximum permitted duct leakage shall be:

~~with the contract documents in order to satisfy the building owner's design intent and operational requirements. Drawing notes shall require commissioning and completion requirements in accordance with Section 1416. Drawing notes may refer to specifications for further requirements.~~

~~1416.1.1 Simple Systems: For simple systems, as defined in Section 1421, and for warehouses and semi-heated spaces, commissioning shall include, as a minimum:~~

- ~~a. A Commissioning Plan;~~
- ~~b. System Testing and Balancing;~~
- ~~c. Controls Functional Performance Testing;~~
- ~~d. A Preliminary Commissioning Report;~~
- ~~e. Post Construction Documentation in the form of O&M and Record Drawing Review, and~~
- ~~f. A Final Commissioning Report.~~

~~1416.1.2 All Other Mechanical Systems: For all other mechanical systems, commissioning shall include, as a minimum:~~

- ~~a. A Commissioning Plan;~~
- ~~b. System Testing and Balancing;~~
- ~~c. Equipment Functional Performance Testing;~~
- ~~d. Controls Functional Performance Testing;~~
- ~~e. A Preliminary Commissioning Report;~~
- ~~f. Post Construction Documentation (all), and~~
- ~~g. A Final Commissioning Report.~~

~~1416.2 Commissioning Requirements:~~

~~1416.2.1 Commissioning Plan: The plans shall require tests mandated by this section be performed and the results recorded. The plans shall require preparation of preliminary and final reports of test procedures and results as described herein. At a minimum, the plans shall identify the following for each test:~~

- ~~a. A detailed explanation of the original design intent,~~

- b. Equipment and systems to be tested, including the extent of tests;
- c. Functions to be tested (for example, calibration, economizer control, etc.);
- d. Conditions under which the test shall be performed (for example, winter and summer design conditions, full outside air, etc.);
- e. Measurable criteria for acceptable performance.

#### 1416.2.2 Systems Balancing.

1416.2.2.1 General: Construction documents shall require that all HVAC systems be balanced in accordance with generally accepted engineering standards. Air and water flow rates shall be measured and adjusted to deliver final flow rates within 10% of design rates, except variable flow distribution systems need not be balanced upstream of the controlling device (for example, VAV box or control valve). Construction documents shall require a written balance report be provided to the owner. Drawing notes may refer to specifications for further systems balancing requirements.

1416.2.2.2 Air System Balancing: Air systems shall be balanced in a manner to first minimize throttling losses then, for fans with system power of greater than 1 hp, fan speed shall be adjusted to meet design flow conditions.

1416.2.2.3 Hydronic System Balancing: Hydronic systems shall be proportionately balanced in a manner to first minimize throttling losses, then the pump impeller shall be trimmed or pump speed shall be adjusted to meet design flow conditions.

EXCEPTIONS:

1. Pumps with pump motors of 10 hp or less.
2. When throttling results in no greater than 5% of the nameplate horsepower draw above that required if the impeller were trimmed.

Each hydronic system shall have either the ability to measure pressure across the pump, or test ports at each side of each pump.

#### 1416.2.3 Functional Performance Testing.

1416.2.3.1 Equipment/Systems Testing: Functional Performance Testing shall demonstrate the correct installation and operation of each component, system, and system-to-system intertie relationship in accordance with approved plans and specifications. This demonstration is to prove the operation, function, and maintenance serviceability for each of the commissioned systems. Testing shall include all modes of operation, including:

- a. All modes as described in the Sequence of Operation,
- b. Redundant or automatic back-up mode,
- c. Performance of alarms, and
- d. Mode of operation upon a loss of power and restored power.

1416.2.3.2 Controls Testing: HVAC control systems shall be tested to ensure that control devices, components, equipment and systems are calibrated, adjusted and operate in accordance with approved plans and specifications. Sequences of operation shall be functionally tested to ensure they operate in accordance with approved plans and specifications.

#### 1416.2.4 Post Construction Commissioning.

1416.2.4.1 General: Construction documents shall require post construction commissioning be provided to the building owner. Drawing notes may refer to specifications for further commissioning requirements. Post construction commissioning shall include, as a minimum, review and approval of Operation and Maintenance Materials, Record Drawings, and Systems Operational Training.

1416.2.4.2 Operation and Maintenance (O&M) Manuals: The O&M manual shall be in accordance with industry accepted standards and shall include, at a minimum, the following:

- a. Submittal data stating equipment size and selected options for each piece of equipment requiring maintenance.
- b. Operation and maintenance manuals for each piece of equipment requiring maintenance, except equipment not furnished as part of the project. Required routine maintenance actions shall be clearly identified.
- c. Names and addresses of at least one service agency.
- d. HVAC controls system maintenance and calibration information, including wiring diagrams, schematics, and control sequence descriptions. Desired or field-determined set points shall be permanently recorded on control drawings at control devices, or, for digital control systems, in programming comments.
- e. A complete narrative of how each system is intended to operate including:
  - i. A detailed explanation of the original design intent.
  - ii. The basis of design (how the design was selected to meet the design intent).
  - iii. A detailed explanation of how new equipment is to interface with existing equipment or systems (where applicable).
  - iv. Suggested set points.

Note: Sequence of Operation is not acceptable as narrative for this requirement.

1416.2.4.3 Record Drawings: Record drawings shall include as a minimum the location and performance data on each piece of equipment, general configuration of duct and pipe distribution system, including sizes, and the terminal air and water design flow rates of the actual installation.

1416.2.4.4 Systems Operational Training: The training of the appropriate maintenance staff for each equipment type and/or system shall include, as a minimum, the following:

- a. System/Equipment overview (what it is, what it does and which other systems and/or equipment does it interface with);
- b. Review of the available O&M materials.
- c. Review of the Record Drawings on the subject system/equipment.
- d. Hands-on demonstration of all normal maintenance procedures, normal operating modes, and all emergency shut down and start-up procedures.

#### 1416.2.5 Commissioning Reports.

1416.2.5.1 Preliminary Commissioning Report: A preliminary report of commissioning test procedures and results shall be completed and provided to the owner. The preliminary commissioning report shall identify:

a. Deficiencies found during testing required by this section which have not been corrected at the time of report preparation and the anticipated date of correction.

b. Deferred tests which cannot be performed at the time of report preparation due to climatic conditions.

c. Climatic conditions required for performance of the deferred tests, and the anticipated date of each deferred test.

1416.2.5.2 Final Commissioning Report: A complete report of test procedures and results shall be prepared and filed with the owner. The Final Commissioning Report shall identify:

a. Results of all Functional Performance Tests.

b. Disposition of all deficiencies found during testing, including details of corrective measures used or proposed.

c. All Functional Performance Test procedures used during the commissioning process including measurable criteria for test acceptance, provided herein for repeatability.

EXCEPTION: Deferred tests which cannot be performed at the time of report preparation due to climatic conditions.

### 1416.3 Acceptance Requirements.

1416.3.1 Acceptance: Buildings or portions thereof, required by this code to comply with this section, shall not be issued a final certificate of occupancy until such time that the building official determines that the preliminary commissioning report required by Section 1416.2.5.1 has been completed.)

1416.1 General. Drawing notes or specifications shall require commissioning and completion requirements in accordance with this section.

1416.2 Commissioning Scope. Commissioning in compliance with this section and Section 1513.7 shall be required for new systems or modified portions of systems, with a heating capacity of 600K Btu/h or a cooling capacity of 40 tons or more.

1416.2.1 Buildings which require commissioning shall go through a commissioning process that includes as a minimum:

1. Commissioning plan;

2. Systems testing and balancing;

3. HVAC equipment and HVAC controls functional testing;

4. Supporting documentation in the form of operation and maintenance and record documents;

5. Commissioning report.

### 1416.3 Commissioning Requirements.

1416.3.1 Commissioning Plan. Commissioning plan shall include:

1. A general description of the commissioning process activities including the systems to be commissioned;

2. The scope of the commissioning process including systems testing and balancing, functional testing, and supporting documentation;

3. Roles and responsibilities of the commissioning team;

4. A schedule of activities including systems testing and balancing, functional testing, and supporting documentation;

5. Functional test procedures and forms.

### 1416.3.2 Systems Testing and Balancing.

1416.3.2.1 General. All HVAC air and hydronic systems shall be balanced in accordance with generally accepted engineering standards.

1416.3.2.2 Air Systems Balancing. Throttling losses shall be minimized by balancing the systems or adjusting the speed of fans with motors greater than 1 hp.

1416.3.2.3 Hydronic Systems Balancing. Throttling losses shall be minimized by balancing the systems, or trimming the pump impeller or adjusting the pump speed.

EXCEPTIONS:

1. Pumps with pump motors of 10 hp or less.
2. Throttling is an acceptable method of balancing only if the power draw does not exceed that of equivalent system with the impeller trimmed by more than 5 percent.

All hydronic heating or cooling coils with design flow exceeding 20 gpm (76 L/m) shall be equipped with dedicated pressure testing ports to enable testing of pressure drop through the coil. All hydronic heating or cooling systems served by pump(s) exceeding 5 hp (3.7 kW) shall be equipped with accessible pressure testing ports to enable testing supply and return pressure near the end of each major hydronic run.

1416.3.3 Functional Testing. Systems, equipment, and controls functional testing. All HVAC systems, equipment, and controls as well as and lighting controls as specified in Section 1513.7 shall be tested to ensure that control devices, components, equipment and systems are calibrated, adjusted and operate in accordance with sequences of operation prescribed in the construction documents. Written procedures which clearly describe the individual systematic test procedures, the expected systems' response or acceptance criteria for each procedure, the actual response or findings, and any pertinent discussion. Optional examples of test methods and forms are provided in Reference Standard 34.

1416.3.4 Supporting Documentation. Supporting documentation shall include, as a minimum:

1416.3.4.1 Systems Documentation. Systems documentation shall be in accordance with industry accepted standards and shall include as a minimum:

1. Submittal data stating equipment size and selected options for each piece of equipment.

2. Operation and maintenance manuals for each piece of equipment requiring maintenance, except equipment not furnished as part of the project. Required routine maintenance actions shall be clearly identified.

3. Names and addresses of at least one HVAC service agency.

4. HVAC controls system maintenance and calibration information, including wiring diagrams, schematics, as-built drawings and control sequence descriptions. Desired or field determined set points shall be permanently recorded on control drawings at control devices, or, for digital control systems, in programming comments.

5. Complete written narrative of how each system and piece of equipment is intended to operate including interface with existing equipment or systems (where applicable).



Sequence of operation is not acceptable as a narrative for this requirement.

**1416.3.4.2 Record Documents.** Construction documents shall be updated to convey a record of the alterations to the original design. Such updates shall include updated mechanical, electrical and control drawings red-lined, or redrawn if specified, that show all changes to size, type and location of components, equipment and assemblies.

**1416.3.4.3 Systems Operation Training.** Training of the maintenance staff for each equipment type and or system shall include as a minimum:

1. Review of systems documentation.
2. Hands-on demonstration of all normal maintenance procedures, normal operating modes, and all emergency shut-down and start-up procedures.
3. Training completion report.

**1416.3.5 Commissioning Report.** The commissioning report shall be completed and provided to the owner. The commissioning report shall include:

1. Completed Functional Test forms including measurable criteria for test acceptance.
2. Issues log of corrected and uncorrected deficiencies with the anticipated date of correction.
3. Deferred tests, which cannot be performed at the time of report preparation due to climatic conditions with anticipated date of completion.
4. Record of progress and completion of operator training.
5. Completed Commissioning Compliance form.

**1416.4 Commissioning Compliance Form.** A commissioning compliance checklist shall be submitted to the building official upon substantial completion of the building. The checklist shall be completed and signed by the building owner or owner's representative. The building official may require that the Commissioning Compliance form components be submitted to verify compliance with Sections 1416 and 1513.8 requirements. Completion of the Commissioning Compliance Checklist (Figure 14B) deems to satisfy this requirement.

**FIGURE 14B  
COMMISSIONING COMPLIANCE CHECKLIST**

|   |   |
|---|---|
| Project Information                               | <b>Project Name:</b>  |
|   | <b>Project Address:</b>   |
|   | <b>Commissioning Authority:</b>   |
| <b>Commissioning Plan</b><br>(Section 1416.3.1)   | <input type="checkbox"/> <b>Commissioning Plan was used during construction and included items below</b> <ul style="list-style-type: none"> <li>• A written schedule including Systems Testing and Balancing, Functional Testing, and Supporting Documentation.</li> <li>• Roles and Responsibilities of the commissioning team.</li> <li>• Functional Test procedures and forms.</li> </ul>  |
| <b>Systems Balancing</b><br>(Section 1416.3.2)    | <input type="checkbox"/> <b>Systems Balancing has been completed</b> <ul style="list-style-type: none"> <li>• Air and Hydronic systems are proportionately balanced in a manner to first minimize throttling losses.</li> <li>• Test ports are provided on each pump for measuring pressure across the pump.</li> </ul>   |
| <b>Functional Testing</b>                         | <input type="checkbox"/> <b>HVAC Systems Functional Testing has been completed</b> (Section 1416.3.3)<br>HVAC systems have been tested to ensure that equipment, components, and subsystems are installed, calibrated, adjusted and operate in accordance with approved plans and specifications.   |
|   | <input type="checkbox"/> <b>HVAC Controls Functional Testing has been completed</b> (Section 1416.3.3)<br>HVAC controls have been tested to ensure that control devices are calibrated, adjusted and operate properly. Sequences of operation have been functionally tested to ensure they operate in accordance with approved plans and specifications.  |
|   | <input type="checkbox"/> <b>Lighting Controls Functional Testing has been completed</b> (Section 1513.7)<br>Lighting controls have been tested to ensure that control devices, components, equipment, and systems are calibrated, adjusted and operate in accordance with approved plans and specifications.  |
| <b>Supporting Documents</b><br>(Section 1416.3.4) | <input type="checkbox"/> <b>Systems documentation, record documents and training have been completed or are scheduled.</b> <ul style="list-style-type: none"> <li>• System documentation has been provided to the owner or scheduled date: _____</li> <li>• Record documents have been submitted to owner or scheduled date: _____</li> <li>• Training has been completed or scheduled date: _____</li> </ul>   |
| <b>Commissioning Report</b><br>(Section 1416.3.5) | <input type="checkbox"/> <b>Commissioning Report submitted to Owner and includes items below.</b> <ul style="list-style-type: none"> <li>• Completed Functional Tests documentation.</li> <li>• Deficiencies found during testing required by this section which have not been corrected at the time of report preparation and the anticipated date of correction.</li> <li>• Deferred tests, which cannot be performed at the time of report preparation due to climatic conditions or other circumstances beyond control of Commissioning Authority.</li> </ul> |

|                      |   |
|----------------------|---|
| Project Information  | <b>Project Name:</b>  |
|                      | <b>Project Address:</b>   |
|                      | <b>Commissioning Authority:</b>   |
| <b>Certification</b> | <input type="checkbox"/> I hereby certify that all requirements for commissioning have been completed in accordance with the Washington State Energy Code, including all items above.<br><br>_____<br>Building Owner or Owner's Representative<br>_____<br>Date |

AMENDATORY SECTION (Amending WSR 98-03-003, filed 1/8/98, effective 7/1/98)

**WAC 51-11-1421 System type.** To qualify as a simple system, systems must have no active humidification or simultaneous heating and cooling and shall be one of the following:

- a. Air cooled, constant volume packaged equipment, which provide heating, cooling or both, and require only external connection to duct work and energy services with cooling capacity of 135,000 Btu/h or less.
- b. Air cooled, constant volume split systems, which provide heating, cooling or both, with cooling capacity of 84,000 Btu/h or less.
- c. Heating only systems which have a capacity of less than ~~((5,000))~~ 1,000 cfm or which have a minimum outside air supply of less than ~~((70))~~ 30 percent of the total air circulation.

The combined airflow rate of all simple systems serving single rooms must be less than 10,000 cfm or they do not qualify as simple systems.

All other systems shall comply with Sections 1430 through 1438.

**1421.1 System Sizing Limits:** Installed space heating equipment output that does not exceed 10 Btu/h per square foot of gross conditioned floor area and installed space cooling equipment output that does not exceed 15 Btu/h per square foot of gross conditioned floor area. No additional safety factor is allowed.

- EXCEPTIONS:
- 1. For equipment which provides both heating and cooling in one package unit, compliance need only be demonstrated for either the space heating or space cooling system size.
  - 2. Equipment sized in accordance with Section 1431.2.

AMENDATORY SECTION (Amending WSR 05-23-103, filed 11/17/05, effective 7/1/06)

**WAC 51-11-1423 Economizers.** ~~((Economizers meeting the requirements of Section 1413 shall be installed on:~~

- ~~a. Cooling units installed outdoors or in a mechanical room adjacent to outdoors having a total cooling capacity greater than 20,000 Btu/h including those serving computer server rooms, electronic equipment, radio equipment, telephone switchgear; and~~
- ~~b. Other cooling units with a total cooling capacity greater than 54,000 Btu/h.))~~ Air economizers meeting the

requirements of Section 1413 shall be provided on all new systems including those serving computer server rooms, electronic equipment, radio equipment, and telephone switchgear.

~~((Exception: For Group R Occupancy, economizers meeting the requirements of Section 1413 shall be installed on single package unitary fan-cooling units having a total cooling capacity greater than 54,000 Btu/h.~~

~~The total capacity of all units without economizers (i.e., those units with a total cooling capacity less than a. and b. above) shall not exceed 240,000 Btu/h per building, or 10% of its aggregate cooling (economizer) capacity, whichever is greater. That portion of the equipment serving Group R Occupancy is not included in determining the total capacity of all units without economizers in a building.))~~

EXCEPTION: Equipment complying with one of the exceptions to Section 1433.

AMENDATORY SECTION (Amending WSR 93-21-052, filed 10/18/93, effective 4/1/94)

**WAC 51-11-1431 System type.** All systems not qualifying for Sections 1420 through 1424 (Simple Systems), including field fabricated and constructed of system components, shall comply with Sections 1430 through 1438. Simple systems may also comply with Sections 1430 through 1438.

**1431.1 Field-Assembled Equipment and Components:** Field-assembled equipment and components from more than one manufacturer shall show compliance with this section and Section 1411 through calculations of total on-site energy input and output. The combined component efficiencies as measured per Section 1411.2, shall be in compliance with the requirements of Section 1411.1.

Total on-site energy input to the equipment shall be determined by combining the energy inputs to all components, elements, and accessories such as compressor(s), internal circulating pump(s), purge devices, viscosity control heaters, and controls.

**1431.2 System Sizing Limits:** Heating and cooling design loads for the purpose of sizing systems shall be determined in accordance with one of the procedures described in Chapter 29 of Standard RS-1 listed in Chapter 7 or an equivalent computation procedure. For interior temperatures, 70°F shall be used for heating and 75°F for cooling, except where different values are specified in the Washington Administrative Code (WAC).

Building mechanical systems for all buildings which provide space heating and/or space cooling shall be sized no

greater than 150 percent of the design load as calculated above, except that cooling towers shall comply with the sizing requirements in Section 1411.1. No additional safety factor is allowed.

For buildings with a total equipment cooling capacity of 300 tons and above, the equipment shall comply with one of the following:

1. No one unit shall have a cooling capacity of more than 2/3 of the total installed cooling equipment capacity;
2. The equipment shall have a variable speed drive; or
3. The equipment shall have multiple compressors.

EXCEPTIONS: The following limited exemptions from the sizing limit shall be allowed, however, in all cases heating and/or cooling design load calculations shall be submitted.

1. For a single piece of equipment which has both heating and cooling capability, only one function, either the heating or the cooling, need meet the requirements of this section. Capacity for the other function shall be, within available equipment options, the smallest size necessary to meet the load.
2. Stand-by equipment may be installed if controls and devices are provided which allow redundant equipment to operate automatically only when the primary equipment is not operating.
3. Multiple units of the same equipment type, such as multiple chillers and boilers, with combined capacities exceeding the design load, or a single unit that is capable of modulating to a part-load capacity of 50 percent of the load or less, may be specified to operate concurrently only if controls are provided that sequence or otherwise optimally control the operation of each unit based on load.
4. Installed space heating equipment output that does not exceed 10 Btu/h per square foot of gross conditioned floor area and installed space cooling equipment output that does not exceed 15 Btu/h per square foot of gross conditioned floor area. No additional safety factor is allowed.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

### WAC 51-11-1432 Controls.

1432.1 Setback and Shutoff: Systems that serve zones with different uses, as defined in Table ~~((45-4))~~ 15-1A or Table 15-1B.

1. Shall be served by separate systems, or
2. Shall include isolation devices and controls to shut off or set back the supply of heating and cooling to each zone independently.

EXCEPTION: Isolation or separate systems are not required for zones expected to operate continuously or expected to be inoperative only when all other zones are inoperative.

### 1432.2 Systems Temperature Reset Controls

1432.2.1 Air Systems for Multiple Zones: Systems supplying heated or cooled air to multiple zones shall include controls which automatically reset supply air temperatures by representative building loads ~~((or by outside air temperature))~~. Temperature shall be reset by at least 25 percent of the design supply-air-to-room-air temperature difference. Interior zones without an exterior wall load impact and high

occupancy areas (per Section 1412.8) shall have maximum airflow sized to meet typical cooling loads with the higher reset air temperature.

- EXCEPTIONS:
1. Where specified humidity levels are required to satisfy process needs, such as computer rooms or museums.
  2. Systems that prevent reheating, recooling, or mixing of heated and cooled air supply.
  3. 75 percent of the energy for reheating is from site-recovered or site solar energy sources.
  4. Zones with peak supply air quantities of 300 cfm or less.
  5. Dedicated outdoor air systems less than 5,000 cfm with separate thermal controls.

1432.2.2 Hydronic Systems: Systems with a design capacity of 300,000 Btu/h or greater supplying heated or mechanically refrigerated water shall include controls which automatically reset supply water temperatures by representative building loads ~~((including return water temperature))~~ or by outside air temperature. Temperature shall be reset by at least 25 percent of the design supply-to-return water temperature differences.

- EXCEPTIONS:
1. ~~((Hydronic systems that use variable flow devices complying with Section 1438 to reduce pumping energy-~~
  - 2.) Steam boilers.
  - ~~((3-))~~ 2. Systems that provide heating with 100°F or lower supply temperature (e.g., water source heat pump loops).

To limit the heat loss from the heat rejection device (cooling tower), for hydronic heat pumps connected to a common heat pump water loop with central devices for heat rejection (e.g., cooling tower):

- a. If a closed-circuit tower (fluid cooler) is used, either an automatic valve shall be installed to bypass all but a minimal flow of water around the tower (for freeze protection), or low leakage positive closure dampers shall be provided.
- b. If an open-circuit tower is used directly in the heat pump loop, an automatic valve shall be installed to bypass all heat pump water flow around the tower.
- c. If an open-circuit tower is used in conjunction with a separate heat exchanger to isolate the tower from the heat pump loop, then heat loss shall be controlled by shutting down the circulation pump on the cooling tower loop.

For hydronic heat pumps connected to a common heat pump water loop with central devices for heat rejection (e.g., cooling tower) and having a total pump system power exceeding 10 hp, each hydronic heat pump shall have:

- a. A two-position two-way (but not three-way) valve, or
- b. A variable head pressure two-way (water regulating) control valve or pump.

For the purposes of this section, pump system power is the sum of the nominal power demand (i.e., nameplate horsepower at nominal motor efficiency) of motors of all pumps that are required to operate at design conditions to supply fluid from the heating or cooling source to all heat transfer devices (e.g., coils, heat exchanger) and return it to the source. This converts the system into a variable flow system and, as such, the primary circulation pumps shall comply with the variable flow requirements in Section 1438.

### 1432.3 Hydronic System Valves and Piping.

1432.3.1 Hydronic Flow Criteria: HVAC chilled water, condenser water, and hot water pumping shall be designed for variable fluid flow and shall be capable of reducing pump flow rates to no more than the larger of 50 percent or less of the design flow rate, or the minimum flow required by the equipment manufacturer for proper operation of equipment served by the system.

EXCEPTIONS:

1. Heating, chilled, and heat pump water systems that include three or fewer control valves and have a total pump system power less than or equal to 3 hp (2.2 kW).
2. Systems having a total pump system power less than or equal to 1-1/2 hp (1.1 kW).
3. Condenser water systems for chillers.

1432.3.1.1 Variable Flow controls: Individual pumps requiring variable speed control per Section 1438 shall be controlled in one of the following manners:

1. For systems having a combined pump motor horsepower less than or equal to 20 hp (15 kW) and without direct digital control of individual coils, pump speed shall be a function of either:

- a. Required differential pressure; or
- b. Reset directly based on zone hydronic demand, or other zone load indicators; or
- c. Reset directly based on pump power and pump differential pressure.

2. For systems having a combined pump motor horsepower that exceeds 20 hp (15 kW) or smaller systems with direct digital control, pump speed shall be a function of either:

- a. The static pressure set point as reset based on the valve requiring the most pressure; or
- b. Directly controlled based on zone hydronic demand.

1432.3.2 Heat Rejection Device Isolation: To limit the heat loss from the heat rejection device (cooling tower), for hydronic heat pumps connected to a common heat pump water loop with central devices for heat rejection (e.g., cooling tower):

a. If a closed-circuit tower (fluid cooler) is used, either an automatic valve shall be installed to bypass all but a minimal flow of water around the tower (for freeze protection), or low leakage positive closure dampers shall be provided.

b. If an open-circuit tower is used directly in the heat pump loop, an automatic valve shall be installed to bypass all heat pump water flow around the tower.

c. If an open-circuit tower is used in conjunction with a separate heat exchanger to isolate the tower from the heat pump loop, then heat loss shall be controlled by shutting down the circulation pump on the cooling tower loop.

1432.3.3 Hydronic Heat Pump Isolation: For hydronic heat pumps connected to a common heat pump water loop with central devices for heat rejection (e.g., cooling tower) and having a total pump system power exceeding 10 hp, each hydronic heat pump shall have:

- a. A two-position two-way (but not three-way) valve; or
- b. A variable head pressure two-way (water regulating) control valve or pump.

For the purposes of this section, pump system power is the sum of the nominal power demand (i.e., nameplate horse-

power at nominal motor efficiency) of motors of all pumps that are required to operate at design conditions to supply fluid from the heating or cooling source to all heat transfer devices (e.g., coils, heat exchanger) and return it to the source. This converts the system into a variable flow system and, as such, the primary circulation pumps shall comply with the variable flow requirements in Section 1438.

1432.3.4 Chiller Isolation: When a chilled water plant includes more than one chiller, provisions shall be made so that flow through any chiller is automatically shut off when that chiller is shut off while still maintaining flow through other operating chiller(s). Chillers that are piped in series for the purpose of increased temperature differential shall be considered as one chiller.

EXCEPTION: Chillers that are piped in series for the purpose of increased temperature differential.

1432.3.5 Boiler Isolation: When a hot water plant includes more than one boiler, provisions shall be made so that flow through any boiler is automatically shut off when that boiler is shut off while still maintaining flow through other operating boiler(s).

1432.4 Direct Digital Control System Capabilities: All complex systems equipped with direct digital control (DDC) systems and all buildings with total cooling capacity exceeding 780,000 Btu/hr (2,662 kW) shall have the following capability:

a. Trending: All control system input and output points shall be accessible and programmed for trending, and a graphic trending package shall be provided with the control system.

b. Demand Response Setpoint Adjustment: Control logic shall increase the cooling zone set points by at least 2°F (1°C) and reduce the heating zone set points by at least 2°F (1°C) when activated by a demand response signal. The demand response signal shall be a binary input to the control system or other interface approved by the serving electric utility.

1432.5 Variable Air Volume System Static Pressure Reset Controls: The static pressure set point shall be reset to the lowest point possible while still providing the required air flow to the zones with the greatest demand.

EXCEPTION: Systems where fan speed is reset directly based on zone airflows or other zone load indicators.

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1433 Economizers.** Air economizers meeting the requirements of Section 1413 shall be provided on all new systems including those serving computer server rooms, electronic equipment, radio equipment, telephone switchgear.

EXCEPTIONS:

1. Qualifying small equipment: This exception shall not be used for unitary cooling equipment installed outdoors or in a mechanical room adjacent to the outdoors. This exception is allowed to be used for other cooling units and split systems with a total cooling capacity rated in accordance with Section 1411.2 of less than 33,000 Btu/h (hereafter referred to as quali-

~~ifying small systems) provided that these are high-efficiency cooling ((units)) equipment with SEER and EER values more than ((40)) 15% higher than minimum efficiencies listed in Tables 14-1A, 14-1B and 14-1D, in the appropriate size category, using the same test procedures. Equipment shall be listed in the appropriate certification program to qualify for this exception. The total capacity of all ((systems)) qualifying small equipment without economizers shall not exceed ((480,000)) 72,000 Btu/h per building, or ((20)) 5% of its air economizer capacity, whichever is greater. That portion of the equipment serving Group R Occupancy is not included in determining the total capacity of all units without economizers in a building. Redundant units are not counted in the capacity limitations. This exception shall not be used for the shell-and-core permit or for the initial tenant improvement or for RS-29 analysis ((nor include unitary cooling equipment installed outdoors nor in a mechanical room adjacent to outdoors)).~~

2. Chilled water terminal units connected to systems with chilled water generation equipment with ((COP and)) IPLV values more than ((40)) 25% higher than minimum part load efficiencies listed in Table 14-1C, in the appropriate size category, using the same test procedures. Equipment shall be listed in the appropriate certification program to qualify for this exception. The total capacity of all systems without economizers shall not exceed 480,000 Btu/h per building, or 20% of its air economizer capacity, whichever is greater. That portion of the equipment serving Group R Occupancy is not included in determining the total capacity of all units without economizers in a building. This exception shall not be used for the shell-and-core permit or for the initial tenant improvement or for RS-29 analysis.

3. Water-cooled refrigeration equipment servicing chilled beams and chilled ceilings space cooling systems only which are provided with a water economizer meeting the requirements of Section 1413. Water economizer capacity per building shall not exceed 500 tons. This exception shall not be used for RS-29 analysis.

4. Systems for which at least 75% of the annual energy used for mechanical cooling is provided from site-recovery or site-solar energy source.

5. Systems where special outside air filtration and treatment, for the reduction and treatment of unusual outdoor contaminants, makes an air economizer infeasible.

6. Systems with dehumidification that affect other systems ~~((such as dehumidification and supermarket refrigeration systems))~~ so as to increase the overall building energy consumption. New humidification equipment shall comply with Section 1413.4.

7. Systems complying with all of the following criteria:

a. Consist of multiple water source heat pumps connected to a common water loop;

b. Have a minimum of 60% air economizer;

c. Have water source heat pumps with an EER at least 15% higher for cooling and a COP at least 15% higher for heating than that specified in Section 1411;

d. Where provided, have a central boiler or furnace efficiency of ((: i. 90% minimum for units up to 199,000 Btu/h; and ii. 85% minimum for units above 199,000 Btu/h input; and)) 90 percent minimum; and

e. Provide heat recovery with a minimum 50% heat recovery effectiveness as defined in Section 1436 to preheat the outside air supply.

8. For Group R Occupancy, cooling units installed outdoors or in a mechanical room adjacent to outdoors with a total cooling capacity less than 20,000 Btu/h and other cooling units with a total cooling capacity less than 54,000 Btu/h provided that these are high-efficiency cooling equipment with SEER and EER values more than 15 percent higher than minimum efficiencies listed in Tables 14-1A, 14-1B and 14-1D, in the appropriate size category, using the same test procedures. Equipment shall be listed in the appropriate certification program to qualify for this exception. For split-systems, compliance is based on the cooling capacity of individual fan coil units.

9. Equipment used to cool any dedicated server room, electronic equipment room or telecom switch room provided that they completely comply with option 9a, 9b, or 9c in the table below. The total capacity of all systems without economizers shall not exceed 240,000 Btu/h per building or 10 percent of its air economizer capacity, whichever is greater. This exception shall not be used for RS-29 analysis.

10. Variable refrigerant flow (VRF) systems, multiple-zone split-system heat pumps, consisting of multiple, individually metered indoor units with multiple-speed fan motors, served on a single common refrigeration circuit with an exterior reverse-cycle heat pump with variable speed compressor(s) and variable speed condenser fan(s). These systems shall also be capable of providing simultaneous heating and cooling operation, where recovered energy from the indoor units operating in one mode can be transferred to one or more indoor units operating in the other mode, and shall serve at least 20 percent internal (no perimeter wall within 12') and 20 percent perimeter zones (as determined by conditioned floor area) and the outdoor unit shall be at least 65,000 Btu/h in total capacity. Systems utilizing this exception shall have 50 percent heat recovery effectiveness on the outside air. For the purposes of this exception, dedicated server rooms, electronic equipment rooms or telecom switch rooms are not considered perimeter zones. This exception shall be limited to buildings of 60,000 square feet and less.

|                  | <b>Equipment Type</b>                    | <b>Higher Equipment Efficiency</b> | <b>Part-Load Control</b>                | <b>Economizer</b>    |
|------------------|--|------------------------------------|---|----------------------|
| <b>Option 9a</b> | Table 14-1A and Table 14-1B <sup>a</sup> | + 15% <sup>b</sup>                 | Required over 85,000 Btu/h <sup>c</sup> | None required        |
| <b>Option 9b</b> | Table 14-1A and Table 14-1B <sup>a</sup> | +5% <sup>d</sup>                   | Required over 85,000 Btu/h <sup>c</sup> | Waterside economizer |
| <b>Option 9c</b> | ASHRAE Standard 127 <sup>e</sup>         | + 0% <sup>g</sup>                  | Required over 85,000 Btu/h <sup>c</sup> | Waterside economizer |

a. For a system where all of the cooling equipment is subject to the AHRI standards listed in Tables 14-1A and 14-1B, the system shall comply with all of the following (note that if the system contains any cooling equipment that exceeds the capacity limits in Table 14-1A or 14-1B, or if the system contains any cooling equipment that is not included in Table 14-1A or 14-1B, then the system is not allowed to use this option).

b. The cooling equipment shall have an EER value and an IPLV value that is a minimum of 15 percent greater than the value listed in Tables 14-1A and 14-1B (1.15 x values in Tables 14-1A and 14-1B).

c. For units with a total cooling capacity over 85,000 Btu/h, the system shall utilize part-load capacity control schemes that are able to modulate to a part-load capacity of 50 percent of the load or less that results in the compressor operating at the same or higher EER at part loads than at full load (e.g., minimum of two-stages of compressor unloading such as cylinder unloading, two-stage scrolls, dual tandem scrolls, but hot gas bypass is not credited as a compressor unloading system).

- d. The cooling equipment shall have an EER value and an IPLV value that is a minimum of 5 percent greater than the value listed in Tables 14-1A and 14-1B (1.05 x values in Tables 14-1A and 14-1B).
- e. The system shall include a water economizer in lieu of air economizer. Water economizers shall be capable of providing the total concurrent cooling load served by the connected terminal equipment lacking airside economizer, at outside air temperatures of 50°F dry-bulb/45°F wet-bulb and below. For this calculation, all factors including solar and internal load shall be the same as those used for peak load calculations, except for the outside temperatures. The equipment shall be served by a dedicated condenser water system unless a nondedicated condenser water system exists that can provide appropriate water temperatures during hours when waterside economizer cooling is available.
- f. For a system where all cooling equipment is subject to ASHRAE Standard 127-2007.
- g. The cooling equipment subject to the ASHRAE Standard 127-2007 shall have an EER value and an IPLV value that is equal or greater than the value listed in Tables 14-1A and 14-1B when determined in accordance with the rating conditions ASHRAE Standard 127-2007 (i.e., not the rating conditions in ARI Standard 210/240 or 340/360). This information shall be provided by an independent third party.

**AMENDATORY SECTION** (Amending WSR 01-03-010, filed 1/5/01, effective 7/1/01)

**WAC 51-11-1435 Simultaneous heating and cooling.**

Systems which provide heating and cooling simultaneously to a zone are prohibited. Zone thermostatic and humidistatic controls shall be capable of operating in sequence the supply of heating and cooling energy to the zone. Such controls shall prevent:

- a. Reheating for temperature control.
- b. Recooling for temperature control.
- c. Mixing or simultaneous supply of air that has been previously mechanically heated and air that has been previously cooled, either by economizer systems, ground water, or by mechanical refrigeration.
- d. Other simultaneous operation of heating and cooling systems to the same zone.
- e. Reheating for humidity control.

EXCEPTIONS: 1. ((Zones for which the volume of air that is reheated, re-cooled, or mixed is no greater than the larger of the following:

i. The volume of air required to meet the ventilation requirements of the Washington State Ventilation and Indoor Air Quality Code for the zone.

ii. 0.4 cfm/ft<sup>2</sup> of the zone conditioned floor area, provided that the temperature of the primary system air is, by design or through reset controls, 0-12°F below the design space heating temperature when outside air temperatures are below 60°F for reheat systems and the cold deck of mixing systems and 0-12°F above design space temperature when outside air temperatures are above 60°F for recooling systems and the hot deck of mixing systems. For multiple zone systems, each zone need not comply with this exception provided the average of all zones served by the system that have both heating and cooling ability comply.

iii. 300 cfm. This exception is for zones whose peak flow rate totals no more than 10% of the total fan system flow rate.

iv. Any higher rate that can be demonstrated, to the satisfaction of the building official, to reduce overall system annual energy usage by offsetting reheat/recool energy losses through a reduction in outdoor air intake in accordance with the multiple space requirements defined in ASHRAE Standard 62)) Variable air volume (VAV) systems which, during periods of occupancy are designed and controlled:

1.1 To reduce the primary air supply to each zone to a minimum air volume when the zone temperature is in a 5°F (3°C) zone temperature dead band after cooling is no longer required and before reheating, recooling or mixing takes place. This minimum volume shall be no greater than the larger of the following:

1.1.1 Twenty percent of the peak supply volume; or

1.1.2 The volume of outdoor air required to meet zone ventilation requirements, unless increasing the volume to critical zones (zones with the highest ratio of outside air to total

supply air) beyond the minimum ventilation requirements results in a decrease in overall outside air required by the HVAC system. An increase beyond minimum ventilation rates shall not be applied to more than 20 percent of the zones with reheat on any one system excluding zones equipped with ventilation controls for high occupancy areas required by Section 1317.2.2.

1.2 So the volume of air that is reheated, re-cooled, or mixed in peak heating demand shall be less than 50 percent of the zone design peak supply rate.

1.3 So the airflow between dead band and full heating or full cooling shall be modulated.

1.4 So the control logic of each system shall have means preventing changes in setpoint(s) from inducting simultaneous heating and cooling (including economizer cooling) except for humidity control or zone controls operating as described under exception 1.1.

2. Zones where special pressurization relationships, cross-contamination requirements, or code-required minimum circulation rates are such that variable air volume systems are impractical, such as some areas of hospitals and laboratories. Systems which use this exception and supply heated or cooled air to multiple zones shall include:

2.1 Controls that automatically reset supply air temperatures by representative building loads or by outside air temperature unless it can be shown that supply air temperature reset increases overall building annual energy costs.

2.2 Variable speed drives for supply and return fans, zone dampers on all zones, specified occupied and unoccupied or low occupancy airflows, and have controls which reduce airflow in response to changes in occupancy levels.

3. Zones where at least 75% of the energy for reheating or for providing warm air in mixing systems is provided from a site-recovered (including condenser heat) or site solar energy source.

4. Zones where specific humidity levels are required to satisfy process needs, such as computer rooms, museums, surgical suites, and buildings with refrigerating systems, such as supermarkets, refrigerated warehouses, and ice arenas.

5. Zones with a peak supply air quantity of 300 cfm (142 L/s) or less.

6. Three deck multizone systems that mix economizer-cooled (mixed) air with heated or cooled air where the temperature of the economizer-cooled air is reset based on weighted zone heating and cooling loads and zone airflow is reduced to a minimum of 20% design airflow or the volume of outdoor air required to meet zone ventilation requirements before mixing is allowed.

**AMENDATORY SECTION** (Amending WSR 93-21-052, filed 10/18/93, effective 4/1/94)

**WAC 51-11-1436 Heat recovery.**

**1436.1 Fan Systems:** Fan systems which have ((~~both~~) a minimum outdoor air capacity of 5,000 cfm or greater ((~~and which have a minimum outside air supply of 70 percent or greater of the total air circulation~~)) shall have a heat recovery

system with at least 50 percent recovery effectiveness. Fifty percent heat recovery effectiveness shall mean an increase in the outside air supply temperature at design heating conditions of one half the difference between the outdoor design air temperature and 65 degrees F. Provision shall be made to bypass or control the heat recovery system to permit air economizer operation as required by Section 1433. Heat recovery energy may be provided from any site-recovered or site-solar source. Where a single room or space is supplied by multiple

units, the aggregate ventilation (cfm) of those units shall be used in applying this requirement.

EXCEPTIONS: These exceptions only apply to the particular exhaust subsystems. The remaining cfm of the main supply system is subject to the energy recovery requirements.

1. Laboratory systems equipped with both variable air volume supply and variable air volume or two-speed exhaust fume hoods provided that an instruction label is placed on the face of the hood that provides the information in Exhibit 14-1.

#### Exhibit 14-1

##### INSTRUCTIONS TO OPERATOR

To be in compliance with the Energy Code, this fume hood is designed to operate as variable air volume (VAV) by adjusting the sash or controller. Maintain sash in the minimum position during use and close totally when the fume hood is not in use.

2. Systems serving spaces heated to less than 60 degrees F.
3. Systems which can be shown to use as much energy with the addition of heat recovery equipment as without it.
4. Systems exhausting toxic, flammable, paint exhaust or corrosive fumes making the installation of heat recovery equipment impractical.
5. Type I commercial kitchen hoods.
6. Systems that only provide cooling.
7. Cooling only air handling units or air conditioning units where the minimum outdoor air is less than 70 percent of total supply air.

1436.2 Condensate Systems: On-site steam heating systems shall have condensate water recovery. On-site includes a system that is located within or adjacent to one or more buildings within the boundary of a contiguous area or campus under one ownership and which serves one or more of those buildings.

Buildings using steam generated off-site with steam heating systems which do not have condensate water recovery shall have condensate water recovery.

1436.3 Heat Recovery for Service Water Heating: Condenser water heat recovery systems shall be installed for heating or preheating of service hot water provided all of the following are true:

- a. The facility operates 24 hours a day.
- b. The total installed heat rejection capacity of the water-cooled systems exceeds 1,500,000 Btu/h of heat rejection.
- c. The capacity of service water heating equipment exceeds 250,000 Btu/h.

The required heat recovery system shall have the capacity to provide the smaller of:

- a. 60 percent of the peak heat rejection load at design conditions; or
- b. Preheat of the peak service hot water draw to 85°F; or
- c. 50 percent of the service water heating load.

EXCEPTIONS: 1. Facilities that employ condenser heat recovery for space heating with a heat recovery design exceeding 30 percent of the peak water-cooled condenser load at design conditions.  
2. Facilities that provide 60 percent of their service water heating from site solar or site recovered energy or from other sources.

1436.4 Condenser Heat Recovery: Facilities having food service, meat or deli departments and having 500,000 Btu/h or greater of remote refrigeration condensers shall have condenser waste heat recovery from freezers and coolers and shall use the waste heat for service water heating, space heat-

ing or for dehumidification reheat. Facilities having a gross conditioned floor area of 40,000 ft<sup>2</sup> or greater and 1,000,000 Btu/h or greater of remote refrigeration shall have condenser waste heat recovery from freezers and coolers and shall use the waste heat for service water heating, and either for space heating or for dehumidification reheat for maintaining low space humidity.

AMENDATORY SECTION (Amending WSR 02-01-112, filed 12/18/01, effective 7/1/02)

**WAC 51-11-1437 Electric motor efficiency.** Design A & B squirrel-cage, T-frame induction permanently wired polyphase motors of 1 hp or more having synchronous speeds of 3,600, 1,800 and 1,200 rpm shall have a nominal full-load motor efficiency no less than the corresponding values for energy efficient motors provided in Table 14-4.

EXCEPTIONS: 

1. Motors used in systems designed to use more than one speed of a multispeed motor.
2. Motors used as a component of the equipment meeting the minimum equipment efficiency requirements of Section 1411 and Tables 14-1A through 14-1G provided that the motor input is included when determining the equipment efficiency.
3. Motors that are an integral part of specialized process equipment.
4. Where the motor is integral to a listed piece of equipment for which no complying motor has been approved.

Fan motors less than 1 hp in series terminal units shall be electronically commutated motors, or shall have a minimum motor efficiency of 65% when rated in accordance with NEMA Standard MG-1 at full load rating conditions.

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1438 ((Variable flow systems and)) System criteria.** For fans and pumps ((greater than 10)) 7.5 horsepower((, where the application involves variable flow, and water source heat pump loops subject to the requirements of Section 1432.2.2)) and greater including custom and packaged air handlers serving variable air volume fan systems, constant volume fans, heating and cooling hydronic pumping systems, pool and service water pumping systems, domestic water pressure boosting systems, cooling tower fan, and other

pumps or fans where variable flows are required, there shall be:

a. Variable speed drives, or

b. Other controls and devices that will result in fan and pump motor demand of no more than 30% of design wattage at 50% of design air volume for fans when static pressure set point equals 1/3 the total design static pressure, and 50% of design water flow for pumps, based on manufacturer's certified test data. Variable inlet vanes, throttling valves (dampers), scroll dampers or bypass circuits shall not be allowed.

~~((Static pressure sensors used to control variable air volume fans shall be placed in a position such that the controller set point is no greater than 1/3 the total design fan static pressure.~~

~~For systems with direct digital control of individual zone boxes reporting to the central control panel, there shall be static pressure reset controls and the static pressure set point shall be reset based on the zone requiring the most pressure; i.e., the set point is reset lower until one zone damper is nearly wide open.))~~

EXCEPTION: Variable speed devices are not required for motors that serve:

1. Fans or pumps in packaged equipment where variable speed drives are not available as a factory option from the equipment manufacturer.

2. Fans or pumps that are required to operate only for emergency fire-life-safety events (e.g., stairwell pressurization fans, elevator pressurization fans, fire pumps, etc.).

~~1438.1 ((Cooling Towers: All cooling towers with a total fan motor horsepower greater than 10 hp shall be equipped with a variable speed drive or with a pony motor of a rated hp no greater than 1/3 of the hp of the primary motor. For pony motors, the cooling tower control shall provide two-stage operation of fans and shall bring on the pony motor to operate without the primary motor while meeting the condenser water setpoint.)) Heat rejection equipment: The requirements of this section apply to heat rejection equipment used in comfort cooling systems such as air-cooled condensers, open cooling towers, closed-circuit cooling towers, and evaporative condensers.~~

EXCEPTION: Heat rejection devices included as an integral part of equipment listed in Tables 14-1A through 14-1D.

Heat rejection equipment shall have a minimum efficiency performance not less than values specified in Table 14-1G. These requirements apply to all propeller, axial fan and centrifugal fan cooling towers. Table 14-1G specifies requirements for air-cooled condensers that are within rating conditions specified within the table.

1438.1.1 Variable flow controls: Cooling tower fans 7.5 hp and greater shall have control devices that vary flow by controlling leaving fluid temperature or condenser temperature/pressure of the heat rejection device.

1438.1.2 Limitation on centrifugal fan cooling towers: Open cooling towers with a combined rated capacity of 1,100 gpm and greater at 95°F condenser water return, 85°F condenser water supply and 75°F outdoor wet-bulb temperature shall meet the energy efficiency requirement for axial fan open circuit cooling towers.

EXCEPTION: Open circuit cooling towers that are ducted (inlet or discharge) or have external sound attenuation that requires external static pressure capability.

1438.2 Hot gas bypass limitation: Cooling equipment with direct expansion coils rated at greater than 95,000 Btu/h total cooling capacity shall have a minimum of 2 stages of cooling capacity or capacity modulation other than hot gas bypass that is capable of reducing input and output by at least 50%.

1438.3 Large volume fan systems: Single or multiple fan systems serving a zone or adjacent zones without separating walls with total air flow over 10,000 cfm (3,540 L/s) are required to reduce airflow based on space thermostat heating and cooling demand. A variable speed drive shall reduce airflow to a maximum 75% of peak airflow or minimum ventilation air requirement as required by Section 403 of the IMC, whichever is greater.

EXCEPTIONS: 1. Systems where the function of the supply air is for purposes other than temperature control, such as maintaining specific humidity levels or supplying an exhaust system.

2. Dedicated outdoor air supply unit(s) with heat recovery where airflow is equal to the minimum ventilation requirements and other fans cycle off unless heating or cooling is required.

3. An area served by multiple units where designated ventilation units have 50% or less of total area airflow and nonventilation unit fans cycle off when heating or cooling is not required.

AMENDATORY SECTION (Amending WSR 01-03-010, filed 1/5/01, effective 7/1/01)

**WAC 51-11-1439 Exhaust ((hoods)) systems.**

1439.1 Kitchen Hoods. ((Individual)) Each kitchen area with total exhaust ((hoods)) capacity larger than ((5000)) 2000 cfm shall be provided with make-up air sized so that at least 50% of exhaust air volume be (a) unheated or heated to no more than 60°F and (b) uncooled or cooled without the use of mechanical cooling.

EXCEPTIONS: 1. Where hoods are used to exhaust ventilation air which would otherwise exfiltrate or be exhausted by other fan systems. A detailed accounting of exhaust airflows shall be provided on the plans that accounts for the impact of any required demand controlled ventilation.

2. Certified grease extractor hoods that require a face velocity no greater than 60 fpm.

1439.2 ((Fume Hoods)) Laboratory Exhaust Systems. ((Each fume hood in buildings with fume hood systems having a total exhaust rate greater than 15,000 cfm shall include at least one of the following features:

(a)) Buildings with laboratory exhaust systems having a total exhaust rate greater than 5,000 cfm (2,360 L/s) shall include heat recovery systems to precondition makeup air from laboratory exhaust. The heat recovery system shall be capable of increasing the outside air supply temperature at design heating conditions by 25°F (13.9°C) in Climate Zone 1 and 35°F (19.4°C) in Climate Zone 2. A provision shall be made to bypass or control the heat recovery system to permit air economizer operation as required by Section 1433.



**EXCEPTIONS:** 1. Variable air volume (~~hood~~) laboratory exhaust and room supply systems capable of reducing exhaust and make-up air volume to 50% or less of design values((- (b))): or  
 2. Direct make-up (auxiliary) air supply equal to at least 75% of the exhaust rate, heated no warmer than 2°F (1.1°C) below room set point, cooled to no cooler than 3°F (1.7°C) above room set point, no humidification added, and no simultaneous heating and cooling used for dehumidification control((-  
 (e) ~~Heat recovery systems to precondition make-up air in accordance with Section 1436, without using any exception.~~

~~(d) Constant volume fume hood designed and installed to operate at less than 50 fpm face velocity); or~~  
 3. Combined Energy Reduction Method: VAV exhaust and room supply system capable of reducing exhaust and makeup air volumes and a heat recovery system to precondition makeup air from laboratory exhaust that when combined will produce the same energy reduction as achieved by a heat recovery system with a 50% sensible recovery effectiveness as required above. For calculation purposes the heat recovery component can be assumed to include the maximum design supply airflow rate at design conditions. The combined energy reduction (Q<sub>ER</sub>) shall meet the following:

$$Q_{ER} \geq Q_{MIN}$$

$$Q_{MIN} = CFM_s \cdot (T_R - T_O) \cdot 1.1 \cdot 0.6$$

$$Q_{ER} = CFM_s \cdot (T_R - T_O) \cdot 1.1(A + B)/100$$

Where:

- Q<sub>MIN</sub> = Energy recovery at 60% sensible effectiveness (Btu/hr).
- Q<sub>ER</sub> = Combined energy reduction (Btu/hr).
- CFM<sub>s</sub> = The maximum design supply airflow rate to conditioned spaces served by the system in cubic feet per minute.
- T<sub>R</sub> = Space return air dry bulb at winter design conditions.
- T<sub>O</sub> = Outdoor air dry bulb at winter design conditions.
- A = Percentage that the exhaust and makeup air volumes can be reduced from design conditions.
- B = Percentage sensible heat recovery effectiveness.

**AMENDATORY SECTION** (Amending WSR 93-21-052, filed 10/18/93, effective 4/1/94)

**WAC 51-11-1440 ((Service)) Domestic water ((heat-ing)) systems.** Service water heating equipment shall comply with the applicable efficiencies in Tables 14-1A through 14-1G.

**NEW SECTION**

**WAC 51-11-1444 Conservation of water and pump-ing energy.** Pumps for all domestic water systems shall comply with Section 1438.

**NEW SECTION**

**WAC 51-11-1445 Heat recovery for domestic water systems.** Condenser water heat recovery systems shall be installed for heating or preheating of service hot water provided all of the following are true:

1. The total installed heat rejection capacity of the water-cooled systems exceeds 1,500,000 Btu/h of heat rejection; and
2. The capacity of service water heating equipment exceeds 250,000 Btu/h.

The required heat recovery system shall have the capacity to provide the smaller of:

1. 60% of the peak heat rejection load at design conditions; or
2. Preheat of the peak service hot water draw to 85°F; or
3. 50% of the service water heating load.

**EXCEPTIONS:** 1. Facilities that employ condenser heat recovery for space heating with a heat recovery design exceeding 30% of the peak water-cooled condenser load at design conditions.  
 2. Facilities that provide 60% of their service water heating from site solar or site recovered energy or from other sources.

**NEW SECTION**

**WAC 51-11-1446 Domestic hot water meters.** Each individual dwelling unit in a Group R-2 Multi-Family residential occupancy with central service shall be provided with a domestic hot water meter to allow for domestic hot water billing based on actual domestic hot water usage.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1454 Pool covers and insulation.** Heated pools shall be equipped with a vapor retardant pool cover on or at the water surface. Pools heated to more than 90 degrees F shall have a pool cover with a minimum insulation value of R-12, and the sides and bottom of the pool shall also have a minimum insulation value of R-12.

**1455 Heat Recovery.** Heated indoor swimming pools, spas or hot tubs with water surface area greater than 200 square feet shall provide for energy conservation by an exhaust air heat recovery system that heats ventilation air, pool water or domestic hot water. The heat recovery system shall be capable of decreasing the exhaust air temperature at design heating conditions (80°F indoor) by 36°F (10.0°C) in Climate Zone 1 and 48°F (26.7°C) in Climate Zone 2.

**EXCEPTION:** Pools, spas or hot tubs that include system(s) that provide equivalent recovered energy on an annual basis through one of the following methods:

1. Renewable energy;
2. Dehumidification heat recovery;
3. Waste heat recovery; or
4. A combination of these system(s) sources capable of providing at least 70 percent of the heating energy required over an operating season.

**Table 14-1A**  
**Unitary Air Conditioners and Condensing Units, Electrically Operated, Minimum Efficiency Requirements**

| Equipment Type                                   | Size Category                       | Sub-Category or Rating Condition  | Minimum Efficiency <sup>b</sup>  | Test Procedure <sup>a</sup>            |
|--|-------------------------------------|---|--|--|
| Air Conditioners, Air Cooled                     | < 65,000 Btu/h <sup>d</sup>         | Split System  | 13.0 SEER  | <del>((ARI))</del> <u>AHRI 210/240</u> |
|  |                                     | Single Package  | 13.0 SEER  |  |
|  | ≥ 65,000 Btu/h and < 135,000 Btu/h  | Split System and Single Package<br><del>((On or after Jan 1, 2010<sup>e</sup>))</del> | <del>((10.3 EER<sup>e</sup> 10.6 IPLV<sup>e</sup>))</del><br>11.2 EER <sup>c</sup><br><u>11.4 IEER<sup>c</sup></u> | <u>AHRI 340/360</u>                    |
|  | ≥ 135,000 Btu/h and < 240,000 Btu/h | Split System and Single Package<br><del>((On or after Jan 1, 2010<sup>e</sup>))</del> | <del>((9.7 EER<sup>e</sup> 9.9 IPLV<sup>e</sup>))</del><br>11.0 EER <sup>c</sup><br><u>11.2 IEER<sup>c</sup></u>   | <del>ARI 340/360))</del>               |
|  | ≥ 240,000 Btu/h and < 760,000 Btu/h | Split System and Single Package<br><del>((On or after Jan 1, 2010<sup>e</sup>))</del> | <del>((9.5 EER<sup>e</sup> 9.7 IPLV<sup>e</sup>))</del><br>10.0 EER <sup>c</sup><br><u>10.1 IEER<sup>c</sup></u>   |  |
|  | ≥ 760,000 Btu/h                     | Split System and Single Package<br><del>((On or after Jan 1, 2010<sup>e</sup>))</del> | <del>((9.2 EER<sup>e</sup> 9.4 IPLV<sup>e</sup>))</del><br>9.7 EER <sup>c</sup><br><u>9.8 IEER<sup>c</sup></u>     |  |
| Through-the-Wall, Air Cooled                     | < 30,000 Btu/h <sup>d</sup>         | Split System<br><del>((On or after January 23, 2010<sup>e</sup>))</del>               | <del>((10.9 SEER))</del><br>12.0 SEER  | <del>((ARI))</del> <u>AHRI 210/240</u> |
|  |                                     | Single Package<br><del>((On or after January 23, 2010<sup>e</sup>))</del>             | <del>((10.6 SEER))</del><br>12.0 SEER  |  |
| Small-Duct High-Velocity, Air Cooled             | < 65,000 Btu/h <sup>d</sup>         | Split System  | 10.0 SEER  | <del>((ARI))</del> <u>AHRI 210/240</u> |
| Air Conditioners, Water and Evaporatively Cooled | < 65,000 Btu/h                      | Split System and Single Package   | 12.1 EER <sup>c</sup><br><u>12.3 IEER<sup>c</sup></u>  | <del>((ARI))</del> <u>AHRI 210/240</u> |
|  | ≥ 65,000 Btu/h and < 135,000 Btu/h  | Split System and Single Package   | 11.5 EER <sup>c</sup><br><u>11.7 IEER<sup>c</sup></u>  |  |
|  | ≥ 135,000 Btu/h and ≤ 240,000 Btu/h | Split System and Single Package   | 11.0 EER <sup>c</sup><br><u>11.2 IEER<sup>c</sup></u>  | <del>((ARI-340/360))</del>             |
|  | > 240,000 Btu/h                     | Split System and Single Package   | 11.0 EER <sup>c</sup><br><del>((10.3 IPLV<sup>e</sup>))</del><br><u>11.1 IEER<sup>c</sup></u>                      |  |
| Condensing Units, Air Cooled                     | ≥ 135,000 Btu/h                     |   | 10.1 EER<br>11.2 IPLV  | <del>((ARI))</del> <u>AHRI 365</u>     |
| Condensing Units, Water or Evaporatively Cooled  | ≥ 135,000 Btu/h                     |   | 13.1 EER<br>13.1 IPLV  |  |

<sup>a</sup> Reserved.  
<sup>b</sup> IPLVs are only applicable to equipment with capacity modulation.  
<sup>c</sup> Deduct 0.2 from the required EERs and ~~((IPLVs))~~ IEERs for units with a heating section other than electric resistance heat.  
<sup>d</sup> Applies to all units, including single-phase and three-phase. For single-phase air-cooled air-conditioners < 65,000 Btu/h, SEER values are those set by NAECA.  
<sup>e</sup> ~~((Date of manufacture, as regulated by NAECA.))~~ Reserved.

**Table 14-1B**  
**Unitary and Applied Heat Pumps, Electrically Operated, Minimum Efficiency Requirements**

| Equipment Type                                      | Size Category   | Sub-Category or Rating Condition   | Minimum Efficiency <sup>b</sup>  | Test Procedure <sup>a</sup>                |
|---|---|--|--|--|
| Air Cooled, (Cooling Mode)                          | < 65,000 Btu/h <sup>d</sup>                           | Split System   | 13.0 SEER  | <del>((ARI))</del> <u>AHRI 210/240</u>     |
|   |   | Single Package   | 13.0 SEER  |  |
|   | ≥ 65,000 Btu/h and < 135,000 Btu/h                    | Split System and Single Package<br><del>((On or after Jan 1, 2010<sup>e</sup>))</del>                                | <del>((10.1 EER<sup>e</sup> / 10.4 IPLV<sup>e</sup>))</del><br>11.0 EER <sup>c</sup><br><u>11.2 IEER<sup>c</sup></u> | <u>AHRI 340/360</u>                        |
|   | ≥ 135,000 Btu/h and < 240,000 Btu/h                   | Split System and Single Package<br><del>((On or after Jan 1, 2010<sup>e</sup>))</del>                                | <del>((9.3 EER<sup>e</sup> / 9.5 IPLV<sup>e</sup>))</del><br>10.6 EER <sup>c</sup><br><u>10.7 IEER<sup>c</sup></u>   | <del>((ARI 340/360))</del>                 |
|   |   | Split System and Single Package<br><del>((On or after Jan 1, 2010<sup>e</sup>))</del>                                | <del>((9.0 EER<sup>e</sup> / 9.2 IPLV<sup>e</sup>))</del><br>9.5 EER <sup>c</sup><br><u>9.6 IEER<sup>c</sup></u>     |  |
| Through-the-Wall (Air Cooled, Cooling Mode)         | < 30,000 Btu/h <sup>d</sup>                           | Split System<br><del>((On or after January 23, 2010<sup>e</sup>))</del>  | <del>((10.9 SEER))</del><br>12.0 SEER  | <del>((ARI))</del> <u>AHRI 210/240</u>     |
|   |   | Single Package<br><del>((On or after January 23, 2010<sup>e</sup>))</del>  | <del>((10.6 SEER))</del><br>12.0 SEER  |  |
| Small-Duct High-Velocity (Air Cooled, Cooling Mode) | < 65,000 Btu/h <sup>d</sup>                           | Split System   | 10.0 SEER  | <del>((ARI))</del> <u>AHRI 210/240</u>     |
| Water-Source (Cooling Mode)                         | < 17,000 Btu/h  | 86°F Entering Water  | 11.2 EER   | <del>((ARI))</del> <u>AHRI/ISO-13256-1</u> |
|   | ≥ 17,000 Btu/h and < 65,000 Btu/h                     | 86°F Entering Water  | 12.0 EER   | <del>((ARI))</del> <u>AHRI/ISO-13256-1</u> |
|   | ≥ 65,000 Btu/h and < 135,000 Btu/h                    | 86°F Entering Water  | 12.0 EER   | <del>((ARI))</del> <u>AHRI/ISO-13256-1</u> |
| Groundwater-Source (Cooling Mode)                   | < 135,000 Btu/h                                       | 59°F Entering Water  | 16.2 EER   | <del>((ARI))</del> <u>AHRI/ISO-13256-1</u> |
| Ground Source (Cooling Mode)                        | < 135,000 Btu/h                                       | 77°F Entering Water  | 13.4 EER   | <del>((ARI))</del> <u>AHRI/ISO-13256-1</u> |
| Air Cooled (Heating Mode)                           | < 65,000 Btu/h <sup>d</sup> (Cooling Capacity)        | Split System   | <del>((HSPF))</del><br>7.7 HSPF  | <del>((ARI))</del> <u>AHRI 210/240</u>     |
|   |   | Single Package   | 7.7 HSPF   |  |
|   | ≥ 65,000 Btu/h and < 135,000 Btu/h (Cooling Capacity) | 47°F db/43°F wb Outdoor Air<br><del>((On or after January 1, 2010<sup>e</sup>))</del><br>17°F db/15°F wb Outdoor Air | <del>((3.2 COP))</del><br>3.3 COP<br><u>2.25 COP</u>   | <u>AHRI 340/360</u>                        |

| Equipment Type                                      | Size Category                         | Sub-Category or Rating Condition                                   | Minimum Efficiency <sup>b</sup>                   | Test Procedure <sup>a</sup>           |
|---|---------------------------------------|--|---|---------------------------------------|
|   | ≥ 135,000 Btu/h<br>(Cooling Capacity) | 47°F db/43°F wb Outdoor Air<br><br>17°F db/15°F wb Outdoor Air     | <del>((3.1 COP))</del><br>3.2 COP<br><br>2.05 COP | <del>((ARI))</del> AHRI 340/360       |
| Through-the-Wall (Air Cooled, Heating Mode)         | < 30,000 Btu/h <sup>d</sup>           | Split System<br><br><del>((On or after January 23, 2010*))</del>   | <del>((7.1 HSPF))</del><br>7.4 HSPF               | <del>((ARI))</del> AHRI 210/240       |
|   |                                       | Single Package<br><br><del>((On or after January 23, 2010*))</del> | <del>((7.0 HSPF))</del><br>7.4 HSPF               |                                       |
| Small-Duct High-Velocity (Air Cooled, Heating Mode) | < 65,000 Btu/h <sup>d</sup>           | Split System   | 6.8 HSPF  | <del>((ARI))</del> AHRI 210/240       |
| Water-Source (Heating Mode)                         | < 135,000 Btu/h<br>(Cooling Capacity) | 68°F Entering Water  | 4.2 COP   | <del>((ARI))</del> AHRI I/ISO-13256-1 |
| Groundwater-Source (Heating Mode)                   | < 135,000 Btu/h<br>(Cooling Capacity) | 50°F Entering Water  | 3.6 COP   | <del>((ARI))</del> AHRI/ISO-13256-1   |
| Ground Source (Heating Mode)                        | < 135,000 Btu/h<br>(Cooling Capacity) | 32°F Entering Water  | 3.1 COP   | <del>((ARI))</del> AHRI/ISO-13256-1   |

<sup>a</sup> Reserved.

<sup>b</sup> IPLVs and part load rating conditions are only applicable to equipment with capacity modulation.

<sup>c</sup> Deduct 0.2 from the required EERs and ~~((IPLVs))~~ IEERs for units with a heating section other than electric resistance heat.

<sup>d</sup> Applies to all units, including single-phase and three-phase. For single-phase air-cooled heat pumps < 65,000 Btu/h, SEER and HSPF values are those set by NAECA.

<sup>e</sup> ~~((Date of manufacture, as regulated by NAECA.))~~ Reserved.

**Table 14-1C  
Water Chilling Packages, Minimum Efficiency Requirements<sup>a</sup>**

| <del>((Equipment Type</del>   | <del>Size Category</del>                | <del>Sub-Category or Rating Condition</del> | <del>Minimum Efficiency<sup>b</sup></del> | <del>Test Procedure<sup>a</sup></del> |
|---|---|---|---|---------------------------------------|
| <del>Air Cooled, With Condenser, Electrically Operated</del>                                    | <del>All Capacities</del>               |   | <del>2.80 COP<br/>3.05 IPLV</del>         | <del>ARI 550/590</del>                |
| <del>Air Cooled, Without Condenser, Electrically Operated</del>                                 | <del>All Capacities</del>               |   | <del>3.10 COP<br/>3.45 IPLV</del>         |                                       |
| <del>Water Cooled, Electrically Operated, Positive Displacement (Reciprocating)</del>           | <del>All Capacities</del>               |   | <del>4.20 COP<br/>5.05 IPLV</del>         | <del>ARI 550/590</del>                |
| <del>Water Cooled, Electrically Operated, Positive Displacement (Rotary Screw and Scroll)</del> | <del>&lt; 150 Tons</del>                |   | <del>4.45 COP<br/>5.20 IPLV</del>         | <del>ARI 550/590</del>                |
|   | <del>≥ 150 Tons and &lt; 300 Tons</del> |   | <del>4.90 COP<br/>5.60 IPLV</del>         |                                       |
|   | <del>≥ 300 Tons</del>                   |   | <del>5.50 COP<br/>6.15 IPLV</del>         |                                       |

| (Equipment Type                                   | Size Category           | Sub-Category or Rating Condition | Minimum Efficiency <sup>b</sup> | Test Procedure <sup>a</sup> |
|---|-------------------------|----------------------------------|---------------------------------|-----------------------------|
| Air-Cooled, With Condenser, Electrically Operated | All Capacities          |                                  | 2.80 COP<br>3.05 IPLV           | ARI 550/590                 |
| Water-Cooled, Electrically Operated, Centrifugal  | <150 Tons               |                                  | 5.00 COP<br>5.25 IPLV           | ARI 550/590                 |
|   | ≥150 Tons and <300 Tons |                                  | 5.55 COP<br>5.90 IPLV           |                             |
|   | ≥300 Tons               |                                  | 6.10 COP<br>6.40 IPLV           |                             |
| Air-Cooled Absorption Single Effect               | All Capacities          |                                  | 0.60 COP                        | ARI 560                     |
| Water-Cooled Absorption Single Effect             | All Capacities          |                                  | 0.70 COP                        |                             |
| Absorption Double Effect, Indirect Fired          | All Capacities          |                                  | 1.00 COP<br>1.05 IPLV           |                             |
| Absorption Double Effect, Direct Fired            | All Capacities          |                                  | 1.00 COP<br>1.00 IPLV           |                             |

<sup>a</sup>-Reserved.

<sup>b</sup>The chiller equipment requirements do not apply for chillers used in low temperature applications where the design leaving fluid temperature is less than or equal to 40°F.)

| Equipment Type   | Size Category           | Units  | PATH A <sup>b</sup> |                 | PATH B <sup>b</sup> |                 | Test Procedure <sup>a</sup> |
|--|-------------------------|--|---------------------|-----------------|---------------------|-----------------|-----------------------------|
|  |                         |  | Full Load           | IPLV            | Full Load           | IPLV            |                             |
| Air-Cooled Chillers <sup>c</sup>                                 | <150 tons               | EER  | ≥9.562              | ≥12.500         | NA <sup>c</sup>     | NA <sup>c</sup> | AHRI 550/590-03             |
|  | ≥150 tons               | EER  | ≥9.562              | ≥12.750         | NA <sup>c</sup>     | NA <sup>c</sup> |                             |
| Air-Cooled Without Condenser, Electrically Operated <sup>c</sup> | All Capacities          | Air-cooled chillers without condensers must be rated with matching condensers and comply with the air-cooled chiller efficiency requirements |                     |                 |                     |                 |                             |
| Water-Cooled, Electrically Operated, Positive Displacement       | All Capacities          | Reciprocating units must comply with water cooled positive displacement efficiency requirements  |                     |                 |                     |                 |                             |
| Water-Cooled, Electrically Operated, Positive Displacement       | <75 tons                | kW/ton   | ≤0.780              | ≤0.630          | ≤0.800              | ≤0.600          |                             |
|  | ≥75 tons and <150 tons  | kW/ton   | ≤0.775              | ≤0.615          | ≤0.790              | ≤0.586          |                             |
|  | ≥150 tons and <300 tons | kW/ton   | ≤0.680              | ≤0.580          | ≤0.718              | ≤0.540          |                             |
|  | ≥300 tons               | kW/ton   | ≤0.620              | ≤0.540          | ≤0.639              | ≤0.490          |                             |
| Water-Cooled, Electrically Operated, Centrifugal                 | <150 tons               | kW/ton   | ≤0.634              | ≤0.596          | ≤0.639              | ≤0.450          |                             |
|  | ≥150 tons and <300 tons | kW/ton   | ≤0.634              | ≤0.596          | ≤0.639              | ≤0.450          |                             |
|  | ≥300 tons and <600 tons | kW/ton   | ≤0.576              | ≤0.549          | ≤0.600              | ≤0.400          |                             |
|  | ≥600 tons               | kW/ton   | ≤0.570              | ≤0.539          | ≤0.590              | ≤0.400          |                             |
| Air-Cooled Absorption Single Effect                              | All Capacities          | COP  | ≥0.600              | NR <sup>d</sup> | NA <sup>c</sup>     | NA <sup>c</sup> | AHRI                        |
| Water-Cooled Absorption Single Effect                            | All Capacities          | COP  | ≥0.700              | NR <sup>d</sup> | NA <sup>c</sup>     | NA <sup>c</sup> | 560-92                      |
| Absorption Double Effect   | All Capacities          | COP  | ≥1.000              | ≥1.050          | NA <sup>c</sup>     | NA <sup>c</sup> |                             |

| <u>Equipment Type</u>                 | <u>Size Category</u> | <u>Units</u> | <u>PATH A<sup>b</sup></u> |             | <u>PATH B<sup>b</sup></u> |                 | <u>Test Procedure<sup>a</sup></u> |
|---------------------------------------|----------------------|--------------|---------------------------|-------------|---------------------------|-----------------|-----------------------------------|
|                                       |                      |              | <u>Full Load</u>          | <u>IPLV</u> | <u>Full Load</u>          | <u>IPLV</u>     |                                   |
| Absorption Double Effect Direct Fired | All Capacities       | COP          | >1.000                    | >1.000      | NA <sup>c</sup>           | NA <sup>c</sup> |                                   |

For IS: 1 Btu/hr = 0.2931 W

<sup>a</sup> The chiller equipment requirements do not apply for chillers used in low temperature applications where the design leaving fluid temperature is <38°F.

<sup>b</sup> Compliance with this standard can be obtained by meeting the minimum requirements of Path A or Path B. However, both the full and IPLV must be met to fulfill the requirements of Path A or Path B.

<sup>c</sup> NA means that this requirement is not applicable and cannot be used for compliance.

<sup>d</sup> NR means that there are no minimum requirements for this category.

<sup>e</sup> Chilled water plants and buildings with more than 500 tons total capacity shall not have more than 100 tons provided by air-cooled chillers.

**Table 14-1D**

**Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps, Room Air Conditioners, and Room Air Conditioner Heat Pumps, Electrically Operated, Minimum Efficiency Requirements**

| Equipment Type  | Size Category (Input)                                 | Sub-Category or Rating Condition   | Minimum Efficiency <sup>b</sup>            | Test Procedure <sup>a</sup>            |
|---|---|------------------------------------|--|--|
| PTAC (Cooling Mode) <del>((New Construction))</del> <u>Standard Size</u>                        | All Capacities  | 95°F db Outdoor Air                | 12.5 - (0.213 x Cap/1000) <sup>b</sup> EER | <del>((ARI))</del> <u>AHRI 310/380</u> |
| PTAC (Cooling Mode) <del>((Replacements<sup>e</sup>))</del> <u>Nonstandard Size<sup>c</sup></u> | All Capacities  | 95°F db Outdoor Air                | 10.9 - (0.213 x Cap/1000) <sup>b</sup> EER |  |
| PTHP (Cooling Mode) <del>((New Construction))</del> <u>Standard Size</u>                        | All Capacities  | 95°F db Outdoor Air                | 12.3 - (0.213 x Cap/1000) <sup>b</sup> EER |  |
| PTHP (Cooling Mode) <del>((Replacements<sup>e</sup>))</del> <u>Nonstandard Size<sup>c</sup></u> | All Capacities  | 95°F db Outdoor Air                | 10.8 - (0.213 x Cap/1000) <sup>b</sup> EER |  |
| PTHP (Heating Mode) New Construction  | All Capacities  |                                    | 3.2 - (0.026 x Cap/1000) <sup>b</sup> COP  |  |
| PTHP (Heating Mode) Replacements <sup>c</sup>   | All Capacities  |                                    | 2.9 - (0.026 x Cap/1000) <sup>b</sup> COP  |  |
| SPVAC (Cooling Mode)  | <del>((All Capacities))</del> <u>&lt;65,000 Btu/h</u> | 95°F db/75°F wb Outdoor Air        | <del>((8-6))</del> <u>9.0 EER</u>          | <del>((ARI))</del> <u>AHRI-390</u>     |
|   | <u>≥65,000 Btu/h and &lt;135,000 Btu/h</u>            | <u>95°F db/75°F wb Outdoor Air</u> | <u>8.9 EER</u>                             |  |
|   | <u>≥135,000 Btu/h and &lt;240,000 Btu/h</u>           | <u>95°F db/75°F wb Outdoor Air</u> | <u>8.6 EER</u>                             |  |
| SPVHP (Cooling Mode)  | <del>((All Capacities))</del> <u>&lt;65,000 Btu/h</u> | 95°F db/75°F wb Outdoor Air        | <del>((8-6))</del> <u>9.0 EER</u>          | <u>AHRI-390</u>                        |
|   | <u>≥65,000 Btu/h and &lt;135,000 Btu/h</u>            | <u>95°F db/75°F wb Outdoor Air</u> | <u>8.9 EER</u>                             |  |
|   | <u>≥135,000 Btu/h and &lt;240,000 Btu/h</u>           | <u>95°F db/75°F wb Outdoor Air</u> | <u>8.6 EER</u>                             |  |
| SPVAC (Heating Mode)  | <del>((All Capacities))</del> <u>&lt;65,000 Btu/h</u> | 47°F db/43°F wb Outdoor Air        | <del>((2-7))</del> <u>3.0 COP</u>          | <u>AHRI-390</u>                        |
|   | <u>≥65,000 Btu/h and &lt;135,000 Btu/h</u>            | <u>47°F db/43°F wb Outdoor Air</u> | <u>3.0 COP</u>                             |  |

| Equipment Type   | Size Category (Input)                      | Sub-Category or Rating Condition | Minimum Efficiency <sup>b</sup> | Test Procedure <sup>a</sup> |
|--|--|----------------------------------|---------------------------------|-----------------------------|
|  | $\geq 135,000$ Btu/h and $< 240,000$ Btu/h | 47°F db/43°F wb Out-door Air     | 2.9 COP                         |                             |
| Room Air Conditioners, with Louvered Sides             | $< 6,000$ Btu/h                            |                                  | 9.7 EER                         | ANSI/AHAM RAC-1             |
|  | $\geq 6,000$ Btu/h and $< 8,000$ Btu/h     |                                  | 9.7 EER                         |                             |
|  | $\geq 8,000$ Btu/h and $< 14,000$ Btu/h    |                                  | 9.8 EER                         |                             |
|  | $\geq 14,000$ Btu/h and $< 20,000$ Btu/h   |                                  | 9.7 EER                         |                             |
|  | $\geq 20,000$ Btu/h                        |                                  | 8.5 EER                         |                             |
| Room Air Conditioners, without Louvered Sides          | $< 8,000$ Btu/h                            |                                  | 9.0 EER                         |                             |
|  | $\geq 8,000$ Btu/h and $< 20,000$ Btu/h    |                                  | 8.5 EER                         |                             |
|  | $\geq 20,000$ Btu/h                        |                                  | 8.5 EER                         |                             |
| Room Air Conditioner Heat Pumps with Louvered Sides    | $< 20,000$ Btu/h                           |                                  | 9.0 EER                         |                             |
|  | $\geq 20,000$ Btu/h                        |                                  | 8.5 EER                         |                             |
| Room Air Conditioner Heat Pumps without Louvered Sides | $< 14,000$ Btu/h                           |                                  | 8.5 EER                         |                             |
|  | $\geq 14,000$ Btu/h                        |                                  | 8.0 EER                         |                             |
| Room Air Conditioner, Casement Only                    | All Capacities                             |                                  | 8.7 EER                         |                             |
| Room Air Conditioner, Casement –Slider                 | All Capacities                             |                                  | 9.5 EER                         |                             |

<sup>a</sup> Reserved.

<sup>b</sup> Cap means the rated cooling capacity of the product in Btu/h. If the unit's capacity is less than 7000 Btu/h, use 7000 Btu/h in the calculation. If the unit's capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculation.

<sup>c</sup> ((~~Replacement~~)) Nonstandard size units must be factory labeled as follows: "MANUFACTURED FOR ((~~REPLACEMENT~~)) NON-STANDARD SIZE APPLICATIONS ONLY; NOT TO BE INSTALLED IN NEW CONSTRUCTION PROJECTS." ((~~Replacement~~)) Nonstandard size efficiencies apply only to units ((~~with~~)) being installed in existing sleeves having an external wall opening of less than 16-in. high ((~~and~~)) or less than 42-in. wide, and having a cross-sectional area less than 670 in<sup>2</sup>.

<sup>d</sup> Casement room air conditioners are not separate product classes under current minimum efficiency column.

<sup>e</sup> New room air conditioner standards, covered by NAECA became effective October 1, 2000.

**Table 14-1E**

**Warm Air Furnaces and Combination Warm Air Furnaces/Air-Conditioning Units, Warm Air Duct Furnaces and Unit Heaters, Minimum Efficiency Requirements**

| Equipment Type              | Size Category (Input)        | Sub-Category or Rating Condition                               | Minimum Efficiency <sup>b</sup>             | Test Procedure <sup>a</sup>        |
|-----------------------------|------------------------------|--|---|------------------------------------|
| Warm Air Furnace, Gas-Fired | $< 225,000$ Btu/h (66 kW)    |  | 78% AFUE or 80% E <sub>c</sub> <sup>c</sup> | DOE 10 CFR Part 430 or ANSI Z21.47 |
|                             | $\geq 225,000$ Btu/h (66 kW) | Maximum Capacity <sup>c</sup><br>Minimum Capacity <sup>c</sup> | 80% E <sub>c</sub> <sup>f</sup>             | ANSI Z21.47                        |
| Warm Air Furnace, Oil-Fired | $< 225,000$ Btu/h (66 kW)    |  | 78% AFUE or 80% E <sub>c</sub> <sup>c</sup> | DOE 10 CFR Part 430 or UL 727      |

| Equipment Type                    | Size Category (Input)   | Sub-Category or Rating Condition                               | Minimum Efficiency <sup>b</sup>  | Test Procedure <sup>a</sup> |
|-----------------------------------|-------------------------|--|--|-----------------------------|
|                                   | ≥ 225,000 Btu/h (66 kW) | Maximum Capacity <sup>b</sup><br>Minimum Capacity <sup>b</sup> | 81% E <sub>t</sub> <sup>g</sup><br>—                                   | UL 727                      |
| Warm Air Duct Furnaces, Gas-Fired | All Capacities          | Maximum Capacity <sup>b</sup><br>Minimum Capacity <sup>b</sup> | 80% E <sub>c</sub> <sup>e</sup><br>—                                   | ANSI Z83.9                  |
| Warm Air Unit Heaters, Gas-Fired  | All Capacities          | Maximum Capacity <sup>b</sup><br>Minimum Capacity <sup>b</sup> | 80% ((E <sub>c</sub> <sup>e</sup> ) E <sub>c</sub> <sup>h</sup> )<br>— | ANSI Z83.8                  |
| Warm Air Unit Heaters, Oil-Fired  | All Capacities          | Maximum Capacity <sup>b</sup><br>Minimum Capacity <sup>b</sup> | 80% ((E <sub>c</sub> <sup>e</sup> ) E <sub>c</sub> <sup>h</sup> )<br>— | UL 731                      |

<sup>a</sup> Reserved.

<sup>b</sup> Minimum and maximum ratings as provided for and allowed by the unit's controls.

<sup>c</sup> Combination units not covered by NAECA (3-phase power or cooling capacity greater than or equal to 65,000 Btu/h [19 kW]) may comply with either rating.

<sup>d</sup> E<sub>t</sub> = Thermal efficiency. See test procedure for detailed discussion.

<sup>e</sup> E<sub>c</sub> = Combustion efficiency (100% less flue losses). See test procedure for detailed discussion.

<sup>f</sup> E<sub>c</sub> = Combustion efficiency. Units must also include an IID, have jacket losses not exceeding 0.75% of the input rating, and have either power venting or a flue damper. A vent damper is an acceptable alternative to a flue damper for those furnaces where combustion air is drawn from the conditioned space.

<sup>g</sup> E<sub>t</sub> = Thermal efficiency. Units must also include an IID, have jacket losses not exceeding 0.75% of the input rating, and have either power venting or a flue damper. A vent damper is an acceptable alternative to a flue damper for those furnaces where combustion air is drawn from the conditioned space.

<sup>h</sup> E<sub>c</sub> = Combustion efficiency. Units must also include an IID, and have either power venting or a flue damper. A vent damper is an acceptable alternative to a flue damper for those unit heaters where combustion air is drawn from the conditioned space.

**Table 14-1F  
Boilers, Gas- and Oil-Fired, Minimum Efficiency Requirements**

| Equipment Type <sup>f</sup>   | ((Size Category)) SubCategory         | ((Sub-Category or Rating Condition)) Size Category <sup>b</sup> | Minimum Efficiency <sup>b</sup>           | Test Procedure      |
|-------------------------------|---------------------------------------|---|---|---------------------|
| <del>Boilers, Gas-Fired</del> | < 300,000 Btu/h                       | Hot Water   | 80% AFUE                                  | DOE 10 CFR Part 430 |
|                               |                                       | Steam   | 75% AFUE                                  |                     |
|                               | ≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h | Maximum Capacity <sup>b</sup>                                   | 75% E <sub>t</sub> and 80% E <sub>c</sub> | DOE 10 CFR Part 431 |
|                               |                                       | > 2,500,000 Btu/h <sup>a</sup>                                  | Hot Water                                 |                     |
| Boilers, Oil-Fired            | < 300,000 Btu/h                       |   | 80% AFUE                                  | DOE 10 CFR Part 430 |
|                               |                                       | Maximum Capacity <sup>b</sup>                                   | 78% E <sub>t</sub> and 83% E <sub>c</sub> |                     |
|                               | ≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h | > 2,500,000 Btu/h <sup>a</sup>                                  | Hot Water                                 | 83% E <sub>c</sub>  |
|                               |                                       | > 2,500,000 Btu/h <sup>a</sup>                                  | Steam                                     | 83% E <sub>c</sub>  |
| Oil-Fired (Residual)          | ≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h | Maximum Capacity <sup>b</sup>                                   | 78% E <sub>t</sub> and 83% E <sub>c</sub> | DOE 10 CFR Part 431 |
|                               |                                       | > 2,500,000 Btu/h <sup>a</sup>                                  | Hot Water                                 |                     |
|                               | > 2,500,000 Btu/h <sup>a</sup>        | Steam   | 83% E <sub>c</sub> )                      |                     |



| Equipment Type <sup>f</sup> | ((Size Category))<br>SubCategory                    | ((Sub-Category or Rating-Condition)) Size<br>Category <sup>b</sup> | Minimum<br>Efficiency <sup>b</sup> | Test<br>Procedure          |
|-----------------------------|---|--|------------------------------------|----------------------------|
| <u>Boilers, Hot Water</u>   | <u>Gas-fired</u>                                    | <300,000 Btu/h   | 80% AFUE                           | <u>DOE 10 CFR Part 430</u> |
|                             |   | ≥300,000 Btu/h and<br>≤2,500,000 Btu/h                             | 80% E <sub>t</sub>                 | <u>DOE 10 CFR Part 431</u> |
|                             |   | >2,500,000 Btu/h <sup>a</sup>                                      | 82% E <sub>c</sub>                 |                            |
|                             | <u>Oil-fired<sup>c</sup></u>                        | <300,000 Btu/h   | 80% AFUE                           | <u>DOE 10 CFR Part 430</u> |
|                             |   | ≥300,000 Btu/h and<br>≤2,500,000 Btu/h                             | 82% E <sub>t</sub>                 | <u>DOE 10 CFR Part 431</u> |
|                             |   | >2,500,000 Btu/h <sup>a</sup>                                      | 84% E <sub>c</sub>                 |                            |
| <u>Boilers, Steam</u>       | <u>Gas - Fired</u>                                  | <300,000 Btu/h   | 75% AFUE                           | <u>DOE 10 CFR Part 430</u> |
|                             | <u>Gas-fired – all except<br/>natural<br/>draft</u> | ≥300,000 Btu/h and<br>≤2,500,000 Btu/h                             | 79% E <sub>t</sub>                 | <u>DOE 10 CFR Part 431</u> |
|                             |   | >2,500,000 Btu/h <sup>a</sup>                                      | 79% E <sub>c</sub>                 |                            |
|                             | <u>Gas-fired - natural<br/>draft</u>                | ≥300,000 Btu/h and<br>≤2,500,000 Btu/h                             | 77% E <sub>t</sub>                 | <u>DOE 10 CFR Part 431</u> |
|                             |   | >2,500,000 Btu/h <sup>a</sup>                                      | 77% E <sub>c</sub>                 |                            |
|                             | <u>Oil-fired<sup>c</sup></u>                        | <300,000 Btu/h   | 80% AFUE                           | <u>DOE 10 CFR Part 430</u> |
|                             |   | ≥300,000 Btu/h and<br>≤2,500,000 Btu/h                             | 81% E <sub>t</sub>                 | <u>DOE 10 CFR Part 431</u> |
|                             |   | >2,500,000 Btu/h <sup>a</sup>                                      | 81% E <sub>c</sub>                 |                            |

<sup>a</sup> These requirements apply to boilers with rated input of 8,000,000 Btu/h or less that are not packaged boilers, and to all packaged boilers. Minimum efficiency requirements for boilers cover all capacities of packaged boilers.

<sup>b</sup> Maximum capacity - Minimum and maximum ratings as provided for and allowed by the unit's controls.

<sup>c</sup> Includes oil-fired (residual).

E<sub>c</sub> = Combustion efficiency (100% less flue losses). See reference document for detailed information.

E<sub>t</sub> = Thermal efficiency. See reference document for detailed information.

**Table 14-1G  
Performance Requirements for Heat Rejection Equipment**

| Equipment Type   | Total System Heat<br>Rejection Capacity at<br>Rated Conditions | Sub-Category or<br>Rating Condition  | Minimum<br>Efficiency <sup>b</sup> | Test<br>Procedure <sup>c</sup>              |
|--|--|--|------------------------------------|---|
| <u>Propeller or<br/>Axial Fan, Open<br/>Circuit Cooling<br/>Towers</u>   | All  | 95°F (35°C) Entering Water<br>85°F (29°C) Leaving Water<br>75°F (24°C) wb Outdoor Air  | ≥ 38.2 gpm/hp<br>(3.23 L/s-kW)     | <u>CTI ATC-105<br/>and<br/>CTI STD-201</u>  |
| <u>Centrifugal Fan,<br/>Open Circuit<br/>Cooling Towers</u>              | All  | 95°F (35°C) Entering Water<br>85°F (29°C) Leaving Water<br>75°F (24°C) wb Outdoor Air  | ≥ 20.0 gpm/hp<br>(1.7 L/s-kW)      | <u>CTI ATC-105<br/>and<br/>CTI STD-201</u>  |
| <u>Propeller or<br/>Axial Fan,<br/>Closed Circuit<br/>Cooling Towers</u> | All  | 102°F (39°C) Entering Water<br>90°F (32°C) Leaving Water<br>75°F (24°C) wb Outdoor Air | ≥14.0 gpm/hp                       | <u>CTI ATC-105S<br/>and<br/>CTI STD-201</u> |
| <u>Centrifugal Fan,<br/>Closed Circuit<br/>Cooling Towers</u>            | All  | 102°F (39°C) Entering Water<br>90°F (32°C) Leaving Water<br>75°F (24°C) wb Outdoor Air | ≥7.0 gpm/hp                        | <u>CTI ATC-105S<br/>and<br/>CTI STD-201</u> |

| Equipment Type        | Total System Heat Rejection Capacity at Rated Conditions | Sub-Category or Rating Condition  | Minimum Efficiency <sup>b</sup> | Test Procedure <sup>c</sup> |
|-----------------------|--|---|---------------------------------|-----------------------------|
| Air Cooled Condensers | All  | 125°F (52°C) Condensing Temperature<br>R22 Test Fluid<br>190°F (88°C) Entering Gas Temperature<br>15°F (8°C) Subcooling<br>95°F (35°C) Entering Drybulb | ≥ 176,000 Btu/h•hp              | <del>((ARI))</del> AHRI 460 |

<sup>a</sup> For purposes of this table, open circuit cooling tower performance is defined as the ((maximum flow rating of the tower)) process water flow rating of tower at thermal rating conditions listed in this table divided by the fan nameplate rated motor power.

<sup>b</sup> For purposes of this table ~~((air-cooled condenser performance is defined as the heat rejected from the refrigerant divided by the fan nameplate rated motor power))~~, closed circuit cooling tower performance is defined as the process water flow rating of tower at thermal conditions listed in this table divided by the sum of fan motor nameplate power.

<sup>c</sup> ~~((Reserved.))~~ For purposes of this table air-cooled condenser performance is defined as the heat rejected from the refrigerant divided by the fan nameplate rated motor power.

TABLE 14-2 RESERVED

TABLE 14-3 RESERVED

TABLE 14-4A  
Energy Efficient Electric Motors  
Minimum Nominal Full-Load Efficiency

| Synchronous Speed (RPM) | ((Open Motors |            |            | Closed Motors |            |            |
|-------------------------|---------------|------------|------------|---------------|------------|------------|
|                         | 3,600         | 1,800      | 1,200      | 3,600         | 1,800      | 1,200      |
| HP                      | Efficiency    | Efficiency | Efficiency | Efficiency    | Efficiency | Efficiency |
| 1.0                     | -             | 82.5       | 80.0       | 75.5          | 82.5       | 80.0       |
| 1.5                     | 82.5          | 84.0       | 84.0       | 82.5          | 84.0       | 85.5       |
| 2.0                     | 84.0          | 84.0       | 85.5       | 84.0          | 84.0       | 86.5       |
| 3.0                     | 84.0          | 86.5       | 86.5       | 85.5          | 87.5       | 87.5       |
| 5.0                     | 85.5          | 87.5       | 87.5       | 87.5          | 87.5       | 87.5       |
| 7.5                     | 87.5          | 88.5       | 88.5       | 88.5          | 89.5       | 89.5       |
| 10.0                    | 88.5          | 89.5       | 90.2       | 89.5          | 89.5       | 89.5       |
| 15.0                    | 89.5          | 91.0       | 90.2       | 90.2          | 91.0       | 90.2       |
| 20.0                    | 90.2          | 91.0       | 91.0       | 90.2          | 91.0       | 90.2       |
| 25.0                    | 91.0          | 91.7       | 91.7       | 91.0          | 92.4       | 91.7       |
| 30.0                    | 91.0          | 92.4       | 92.4       | 91.0          | 92.4       | 91.7       |
| 40.0                    | 91.7          | 93.0       | 93.0       | 91.7          | 93.0       | 93.0       |
| 50.0                    | 92.4          | 93.0       | 93.0       | 92.4          | 93.0       | 93.0       |
| 60.0                    | 93.0          | 93.6       | 93.6       | 93.0          | 93.6       | 93.6       |
| 75.0                    | 93.0          | 94.1       | 93.6       | 93.0          | 94.1       | 93.6       |
| 100.0                   | 93.0          | 94.1       | 94.1       | 93.6          | 94.5       | 94.1       |
| 125.0                   | 93.6          | 94.5       | 94.1       | 94.5          | 94.5       | 94.1       |
| 150.0                   | 93.6          | 95.0       | 94.5       | 94.5          | 95.0       | 95.0       |
| 200.0                   | 94.5          | 95.0       | 94.5       | 95.0          | 95.0       | 95.0))     |

|                           | Minimum Nominal Full-Load Efficiencies (%) before 12/19/2010 |      |      |                 |      |      |
|---------------------------|--|------|------|-----------------|------|------|
|                           | Open Motors  |      |      | Enclosed Motors |      |      |
| Number of Poles ⇒         | 2  | 4    | 6    | 2               | 4    | 6    |
| Synchronous Speed (RPM) ⇒ | 3600   | 1800 | 1200 | 3600            | 1800 | 1200 |
| Motor Horsepower          |  |      |      |                 |      |      |
| 1                         | ---  | 82.5 | 80.0 | 75.5            | 82.5 | 80.0 |
| 1.5                       | 82.5   | 84.0 | 84.0 | 82.5            | 84.0 | 85.5 |
| 2                         | 84.0   | 84.0 | 85.5 | 84.0            | 84.0 | 86.5 |
| 3                         | 84.0   | 86.5 | 86.5 | 85.5            | 87.5 | 87.5 |
| 5                         | 85.5   | 87.5 | 87.5 | 87.5            | 87.5 | 87.5 |
| 7.5                       | 87.5   | 88.5 | 88.5 | 88.5            | 89.5 | 89.5 |
| 10                        | 88.5   | 89.5 | 90.2 | 89.5            | 89.5 | 89.5 |
| 15                        | 89.2   | 91.0 | 90.2 | 90.2            | 91.0 | 90.2 |
| 20                        | 90.2   | 91.0 | 91.0 | 90.2            | 91.0 | 90.2 |
| 25                        | 91.0   | 91.7 | 91.7 | 91.0            | 92.4 | 91.7 |
| 30                        | 91.0   | 92.4 | 92.4 | 91.0            | 92.4 | 91.7 |
| 40                        | 91.7   | 93.0 | 93.0 | 91.7            | 93.0 | 93.0 |
| 50                        | 92.4   | 93.0 | 93.0 | 92.4            | 93.0 | 93.0 |
| 60                        | 93.0   | 93.6 | 93.6 | 93.0            | 93.6 | 93.6 |
| 75                        | 93.0   | 94.1 | 93.6 | 93.0            | 94.1 | 93.6 |
| 100                       | 93.0   | 94.1 | 94.1 | 93.6            | 94.5 | 94.1 |
| 125                       | 93.6   | 94.5 | 94.1 | 94.5            | 94.5 | 94.1 |
| 150                       | 93.6   | 95.0 | 94.5 | 94.5            | 95.0 | 95.0 |
| 200                       | 94.5   | 95.0 | 94.5 | 95.0            | 95.0 | 95.0 |

Nominal efficiencies shall be established in accordance with NEMA Standard MC1. Designs A and B are National Electric Manufacturers Association (NEMA) design class designations for fixed frequency small and medium AC squirrel-cage induction motors.

**TABLE 14-4B**  
**Energy Efficient Electric Motors**  
**Minimum Nominal Full-Load Efficiency**

|                           | Minimum Nominal Full-Load Efficiencies (%) as of 12/19/2010 |      |      |                 |      |      |
|---------------------------|---|------|------|-----------------|------|------|
|                           | Open Motors   |      |      | Enclosed Motors |      |      |
| Number of Poles ⇒         | 2   | 4    | 6    | 2               | 4    | 6    |
| Synchronous Speed (RPM) ⇒ | 3600  | 1800 | 1200 | 3600            | 1800 | 1200 |
| Motor Horsepower          |   |      |      |                 |      |      |
| 1                         | 77.0  | 85.5 | 82.5 | 77.0            | 85.5 | 82.5 |
| 1.5                       | 84.0  | 86.5 | 86.5 | 84.0            | 86.5 | 87.5 |
| 2                         | 85.5  | 86.5 | 87.5 | 85.5            | 86.5 | 88.5 |
| 3                         | 85.5  | 89.5 | 88.5 | 86.5            | 89.5 | 89.5 |
| 5                         | 86.5  | 89.5 | 89.5 | 88.5            | 89.5 | 89.5 |
| 7.5                       | 88.5  | 91.0 | 90.2 | 89.5            | 91.7 | 91.0 |
| 10                        | 89.5  | 91.7 | 91.7 | 90.2            | 91.7 | 91.0 |
| 15                        | 90.2  | 93.0 | 91.7 | 91.0            | 92.4 | 91.7 |
| 20                        | 91.0  | 93.0 | 92.4 | 91.0            | 93.0 | 91.7 |
| 25                        | 91.7  | 93.6 | 93.0 | 91.7            | 93.6 | 93.0 |
| 30                        | 91.7  | 94.1 | 93.6 | 91.7            | 93.6 | 93.0 |
| 40                        | 92.4  | 94.1 | 94.1 | 92.4            | 94.1 | 94.1 |

|                           | Minimum Nominal Full-Load Efficiencies (%) as of 12/19/2010 |      |      |                 |      |      |
|---------------------------|---|------|------|-----------------|------|------|
|                           | Open Motors   |      |      | Enclosed Motors |      |      |
| Number of Poles ⇒         | 2   | 4    | 6    | 2               | 4    | 6    |
| Synchronous Speed (RPM) ⇒ | 3600  | 1800 | 1200 | 3600            | 1800 | 1200 |
| Motor Horsepower          |   |      |      |                 |      |      |
| 50                        | 93.0  | 94.5 | 94.1 | 93.0            | 94.5 | 94.1 |
| 60                        | 93.6  | 95.0 | 94.5 | 93.6            | 95.0 | 94.5 |
| 75                        | 93.6  | 95.0 | 94.5 | 93.6            | 95.4 | 95.4 |
| 100                       | 93.6  | 95.4 | 95.0 | 94.1            | 95.4 | 95.0 |
| 125                       | 94.1  | 95.4 | 95.0 | 95.0            | 95.4 | 95.0 |
| 150                       | 94.1  | 95.8 | 95.4 | 95.0            | 95.8 | 95.8 |
| 200                       | 95.0  | 95.8 | 95.4 | 95.4            | 96.2 | 95.8 |
| 250                       | 95.0  | 95.8 | 95.4 | 95.8            | 96.2 | 95.8 |
| 300                       | 95.4  | 95.8 | 95.4 | 95.8            | 96.2 | 95.8 |
| 350                       | 95.4  | 95.8 | 95.4 | 95.8            | 96.2 | 95.8 |
| 400                       | 95.8  | 95.8 | 95.8 | 95.8            | 96.2 | 95.8 |
| 450                       | 95.8  | 96.2 | 96.2 | 95.8            | 96.2 | 95.8 |
| 500                       | 95.8  | 96.2 | 96.2 | 95.8            | 96.2 | 95.8 |

Nominal efficiencies shall be established in accordance with NEMA Standard MC1. Designs A and B are National Electric Manufacturers Association (NEMA) design class designations for fixed frequency small and medium AC squirrel-cage induction motors.

TABLE 14-5  
Duct Insulation

| Duct Type  | Duct Location   | Insulation R-Value | Other Requirements             |
|--|---|--------------------|--------------------------------|
| Supply, Return                                       | Not within conditioned space: On exterior of building, on roof, in attic, in enclosed ceiling space, in walls, in garage, in crawl spaces | R-7                | Approved weather proof barrier |
| Outside air intake                                   | Within conditioned space  | R-7                | See Section 1414.2             |
| Supply, Return, Outside air intake                   | Not within conditioned space: in concrete, in ground  | R-5.3              |                                |
| Supply with supply air temperature < 55°F or > 105°F | Within conditioned space  | R-3.3              |                                |

Note: Requirements apply to the duct type listed, whether heated or mechanically cooled. Mechanically cooled ducts requiring insulation shall have a vapor retarder, with a perm rating not greater than 0.5 and all joints sealed.

TABLE 14-6  
((Minimum Pipe Insulation (inches)\*))

| ((Fluid Design Operating Temp. Range, °F                   | Insulation Conductivity                                |                      | Nominal Pipe Diameter (in.)  |            |         |         |         |     |
|--|--|----------------------|------------------------------|------------|---------|---------|---------|-----|
|  | Conductivity Range Btu•in./ (h • ft <sup>2</sup> • °F) | Mean Rating Temp. °F | Runouts <sup>2</sup> up to 2 | 1 and less | >1 to 2 | >2 to 4 | >4 to 6 | >6  |
| Heating systems (Steam, Steam Condensate[,] and Hot water) |  |                      | Nominal Insulation Thickness |            |         |         |         |     |
| Above 350  | 0.32-0.34  | 250                  | 1.5                          | 2.5        | 2.5     | 3.0     | 3.5     | 3.5 |
| 251-350  | 0.29-0.31  | 200                  | 1.5                          | 2.0        | 2.5     | 2.5     | 3.5     | 3.5 |
| 201-250  | 0.27-0.30  | 150                  | 1.0                          | 1.5        | 1.5     | 2.0     | 2.0     | 3.5 |
| 141-200  | 0.25-0.29  | 125                  | 0.5                          | 1.5        | 1.5     | 1.5     | 1.5     | 1.5 |
| 105-140  | 0.24-0.28  | 100                  | 0.5                          | 1.0        | 1.0     | 1.0     | 1.5     | 1.5 |
| Domestic and Service Hot Water Systems                     |  |                      |                              |            |         |         |         |     |
| 105 and Greater  | 0.24-0.28  | 100                  | 0.5                          | 1.0        | 1.0     | 1.5     | 1.5     | 1.5 |
| Cooling Systems (Chilled Water, Brine[,] and Refrigerant)  |  |                      |                              |            |         |         |         |     |

| ((Fluid-Design Operating Temp.-Range, °F | Insulation-Conductivity                                   |                         | Nominal Pipe Diameter (in.)     |               |          |         |          |     |
|--|---|-------------------------|---------------------------------|---------------|----------|---------|----------|-----|
|  | Conductivity-Range<br>Btu•in./ (h • ft <sup>2</sup> • °F) | Mean-Rating<br>Temp. °F | Runouts <sup>2</sup><br>up to 2 | 4-and<br>less | > 1 to 2 | >2 to 4 | > 4 to 6 | >6  |
| 40-55                                    | 0.23-0.27   | 75                      | 0.5                             | 0.5           | 0.75     | 1.0     | 1.0      | 1.0 |
| Below 40                                 | 0.23-0.27   | 75                      | 1.0                             | 1.0           | 1.5      | 1.5     | 1.5      | 1.5 |

1. ~~Alternative Insulation Types. Insulation thicknesses in Table 14-6 are based on insulation with thermal conductivities within the range listed in Table 14-6 for each fluid operating temperature range, rated in accordance with ASTM C 335-84 at the mean temperature listed in the table. For insulation that has a conductivity outside the range shown in Table 14-6 for the applicable fluid operating temperature range at the mean rating temperature shown (when rounded to the nearest 0.01 Btu•in./ (h • ft<sup>2</sup> • °F)), the minimum thickness shall be determined in accordance with the following equation:~~

$$T = PR[(1 + t/PR)^{K/k} - 1]$$

Where

- T= Minimum insulation thickness for material with conductivity K, inches.  
 PR= Pipe actual outside radius, inches.  
 t= Insulation thickness from Table 14-6, inches  
 K= conductivity of alternate material at the mean rating temperature indicated in Table 14-6 for the applicable fluid temperature range, Btu • in./ (h • ft<sup>2</sup> • °F)  
 k= the lower value of the conductivity range listed in Table 14-6 for the applicable fluid temperature range, Btu • in./ (h • ft<sup>2</sup> • °F)  
 2: Runouts to individual terminal units not exceeding 12 ft. in length.))

**MINIMUM PIPE INSULATION THICKNESS<sup>1</sup>**

| Fluid Design Operating Temp. Range, °F                                     | Insulation Conductivity                                |                         | Normal Pipe or Tube Size (in.) |                 |               |         |     |
|--|--|-------------------------|--------------------------------|-----------------|---------------|---------|-----|
|  | Conductivity Range<br>Btu•in./ (h•ft <sup>2</sup> •°F) | Mean Rating<br>Temp. °F | <1                             | 1 to <1-<br>1/2 | 1-1/2<br>to 4 | 4 to <8 | > 8 |
| <u>Heating systems (Steam, Steam Condensate and Hot water)<sup>2</sup></u> |  |                         |                                |                 |               |         |     |
| ≥ 350  | 0.32-0.34  | 250                     | 3.0                            | 3.5             | 3.5           | 4.5     | 4.5 |
| 251-350  | 0.29-0.32  | 200                     | 2.0                            | 3.0             | 3.5           | 3.5     | 3.5 |
| 201-250  | 0.27-0.30  | 150                     | 2.0                            | 2.0             | 2.5           | 2.5     | 2.5 |
| 141-200  | 0.25-0.29  | 125                     | 1.5                            | 1.5             | 1.5           | 2.0     | 2.0 |
| 105-140  | 0.24-0.28  | 100                     | 1.0                            | 1.0             | 1.5           | 1.5     | 1.5 |
| <u>Domestic and Service Hot Water Systems</u>                              |  |                         |                                |                 |               |         |     |
| ≥105   | 0.22-0.28  | 100                     | 1.0                            | 1.0             | 1.5           | 1.5     | 1.5 |
| <u>Cooling Systems (Chilled Water, Brine and Refrigerant)</u>              |  |                         |                                |                 |               |         |     |
| 40-55  | 0.22-0.28  | 100                     | 1.0                            | 1.0             | 1.5           | 1.5     | 1.5 |
| <40  | 0.22-0.28  | 100                     | 1.0                            | 1.5             | 1.5           | 1.5     | 2.0 |

1. For insulation outside the stated conductivity range, the minimum thickness (T) shall be determined as follows:

$$T = r \{ (1 + t/r) K/k - 1 \}$$

Where:

- T = Minimum insulation thickness, inches.  
 r = Actual outside radius of pipe, inches.  
 t = Insulation thickness from Table 5-12 for applicable fluid temperature and pipe size.  
 K = Conductivity of alternate material at the mean rating temperature indicated for the applicable fluid temperature, Btu•in (h•ft<sup>2</sup>•°F).  
 k = The upper value of the conductivity range listed in Table 5-12 for the applicable fluid temperature.

2. Piping insulation is not required between the control valve and coil on run-outs when the control valve is located within 4 feet of the coil and the pipe size is 1 inch or less.

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency and appear in the Register pursuant to the requirements of RCW 34.08.040.

NEW SECTION**WAC 51-11-1460 Cold storage.**

1461 Refrigerated warehouse heating and cooling. Heating and cooling systems that supply cold storage spaces and frozen storage spaces in refrigerated warehouses shall meet the requirements of this section.

1462 Underslab heating. Electric resistance heat shall not be used for the purposes of underslab heating.

EXCEPTION: Underslab heating systems controlled such that the electric resistance heat is thermostatically controlled and provided with a digital input or other interface approved by the local utility that allows heat to be disabled during on-peak periods defined by the local electric utility.

1463 Evaporators. Fan-powered evaporators used in coolers and freezers shall conform to the following:

1. Single phase fan motors less than 1 horsepower and less than 460 volts shall be electronically commutated motors.

2. Evaporator fans shall be variable speed and the speed shall be controlled in response to space conditions.

EXCEPTION: Evaporators served by a single compressor without unloading capability.

1464 Condensers. Fan-powered condensers shall conform to the following:

1. Condensers for systems utilizing ammonia shall be evaporatively cooled.

2. Condensing temperatures for evaporative condensers under design conditions, including, but not limited to, condensers served by cooling towers shall be less than or equal to:

a. The design wetbulb temperature plus 20°F in locations where the design wetbulb temperature is less than or equal to 76°F;

b. The design wetbulb temperature plus 19°F in locations where the design wetbulb temperature is between 76°F and 78°F; or

c. The design wetbulb temperature plus 18°F in locations where the design wetbulb temperature is greater than or equal to 78°F.

3. Condensing temperatures for air-cooled condensers under design conditions shall be less than or equal to the design drybulb temperature plus 10°F for systems serving frozen storage and shall be less than or equal to the design drybulb temperature plus 15°F for systems serving cold storage.

EXCEPTION: Unitary condensing units.

4. All condenser fans for evaporative condensers shall be continuously variable speed, and the condensing temperature control system shall control the speed of all condenser fans serving a common condenser loop in unison. The minimum condensing temperature setpoint shall be less than or equal to 70°F.

5. All condenser fans for air-cooled condensers shall be continuously variable speed and the condensing temperature or pressure control system shall control the speed of all con-

denser fans serving a common condenser loop in unison. The minimum condensing temperature setpoint shall be less than or equal to 70°F, or reset in response to ambient drybulb temperature or refrigeration system load.

6. All single phase condenser fan motors less than 1 horsepower and less than 460 V shall be either permanent split capacitor or electronically commutated motors.

1465 Compressors. Compressor systems utilized in refrigerated warehouses shall conform to the following:

1. Compressors shall be designed to operate at a minimum condensing temperature of 70°F or less.

2. The compressor speed of a screw compressor greater than 50 hp shall be controllable in response to the refrigeration load or the input power to the compressor shall be controlled to be less than or equal to 60% of full load input power when operated at 50% of full refrigeration capacity.

EXCEPTION: Refrigeration plants with more than one dedicated compressor per suction group.

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1510 General requirements.** Lighting and motors shall comply with Sections 1511 through 1514. Lighting systems shall comply with one of the following paths:

- a. Prescriptive Standards: Interior Section 1521, or Exterior Section 1522.
- b. Component Performance: Interior Section 1531, or Exterior Section 1532.
- c. Systems Analysis. See Section 1141.4.

The compliance path selected for interior and exterior lighting need not be the same. However, interior and exterior lighting cannot be traded.

Transformers shall comply with Section 1540.

Figure 15A  
Lighting, Motor and Transformer Compliance Options

| Section Number | Subject                                     | Prescriptive Option | Lighting Power Allowance Option | Systems Analysis Option |
|----------------|---|---------------------|---------------------------------|-------------------------|
| 1510           | General Requirements                        | X                   | X                               | X                       |
| 1511           | Electric Motors                             | X                   | X                               | X                       |
| 1512           | Exempt Lighting                             | X                   | X                               | X                       |
| 1513           | Lighting Controls                           | X                   | X                               | X                       |
| 1514           | Exit Signs                                  | X                   | X                               | X                       |
| 1520           | Prescriptive Lighting Option                | X                   |                                 |                         |
| 1521           | Prescriptive Interior Lighting Requirements | X                   |                                 |                         |
| 1522           | Prescriptive Exterior Lighting Requirements | Sec. 1532           |                                 |                         |
| 1530           | Lighting Power Allowance Option             |                     | X                               |                         |
| 1531           | Interior Lighting Power Allowance           |                     | X                               |                         |
| 1532           | Exterior Lighting Power Allowance           |                     | X                               |                         |
| 1540           | Transformers                                | X                   | X                               | X                       |
| <u>1550</u>    | <u>Energy Consuming Mechanisms</u>          | <u>X</u>            | <u>X</u>                        | <u>X</u>                |
| RS-29          | Systems Analysis                            |                     |                                 | X                       |

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1512 Exempt lighting.** The use of these exemptions is at the applicant's option.

1512.1 Exempt Spaces: The following rooms, spaces, and areas, are exempt from the (~~lighting power~~) requirements in Sections 1520 through 1522 and 1530 through 1532 but shall comply with all other requirements of this chapter.

1. ~~(Areas in which medical or dental tasks are performed.~~
- ~~2.))~~ High risk security areas or any area identified by building officials as requiring additional lighting.
- ~~((3.))~~ 2. Spaces designed for primary use by the visually impaired, or hard of hearing (lip-reading) (~~or by senior citizens~~).
- ~~((4.~~ 3. ~~Food preparation areas.~~
- ~~5.))~~ 3. Electrical/mechanical equipment rooms.
- ~~((6.~~ 4. ~~Inspection and restoration areas in galleries and museums.~~
- ~~7.))~~ 4. The sanctuary portion of a house of worship, defined as the space or room where the worship service takes place. Classrooms, meeting rooms, offices and multi-purpose rooms that are part of the same facility are not exempt.

1512.2 Exempt Lighting Equipment: The following lighting equipment and tasks are exempt from the lighting requirements of Sections 1520 through 1522 and need not be included when calculating the installed lighting power under Sections 1530 through 1532 but shall comply with all other requirements of this chapter. All other lighting in areas that are not exempted by Section 1512.2, where exempt tasks and

equipment are used, shall comply with all of the requirements of this chapter.

1. Special lighting needs for research.
2. Emergency lighting that is automatically OFF during normal building operation.
3. Lighting that is part of machines, equipment or furniture.
4. Lighting that is used solely for indoor plant growth during the hours of 10:00 p.m. to 6:00 a.m. However, such lighting shall not be exempt unless it is in addition to general area lighting, is located in a separate fixture, and is controlled by an independent control device.
5. Lighting for theatrical productions, television broadcasting (including sports facilities), (~~audio-visual presentations,~~) and special effects lighting for stage areas and dance floors in entertainment facilities. However, such lighting shall not be exempt unless it is in addition to general area lighting, is located in a separate fixture, and is controlled by an independent control device.
6. Lighting in galleries, museums and in main building entry lobbies for (~~art~~) exhibits, (~~nonretail displays, portable plug-in display fixtures, and show case lighting~~) inspection, and restoration. However, such lighting shall not be exempt unless it is in addition to general area lighting, is located in a separate fixture, and is controlled by an independent control device.
7. Lighting specifically designed for use during medical or dental procedures and lighting integral to medical equipment. However, such lighting shall not be exempt unless it is in addition to general area lighting, is located in a separate fixture, and is controlled by an independent control device. Use of a portion of the lamps in a multilamp fixture, provided those lamps have an independent control device, shall be permitted.

8. Lighting integral to food warming equipment or specifically for food preparation. However, such lighting shall not be exempt unless it is in addition to general area lighting, is located in a separate fixture, and is controlled by an independent control device.
9. Audio-visual and video-conferencing lighting with multilevel or dimming controls in rooms with permanently installed audio-visual equipment or video-conferencing equipment.
10. Permanently installed undershelf or undercabinet lighting that has an automatic shutoff control device integral to or is directly attached to the luminaires or is automatically controlled by a wall-mounted control device that turns off the lighting whenever that particular space is unoccupied. Other permanently installed undershelf or undercabinet lighting that is not automatically controlled is not exempt and other partition-mounted lighting that is providing general illumination is not exempt and shall be included when determining compliance with the lighting requirements of Sections 1520 through 1522 and Sections 1530 through 1532.
11. Lighting used for aircraft painting.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1513 Lighting controls.** Lighting, including exempt lighting in Section 1512, shall comply with this section. Where occupancy sensors are cited, they shall have the features listed in Section 1513.6.1. Where automatic time switches are cited, they shall have the features listed in Section 1513.6.2.

**1513.1 Local Control and Accessibility:** Each space, enclosed by walls or ceiling-height partitions, shall be provided with lighting controls located within that space. The lighting controls, whether one or more, shall be capable of turning off all lights within the space. The controls shall be readily accessible, at the point of entry/exit, to personnel occupying or using the space.

**EXCEPTIONS:** The following lighting controls may be centralized in remote locations:

1. Lighting controls for spaces which must be used as a whole.
2. Automatic controls.
3. Controls requiring trained operators.
4. Controls for safety hazards and security.

**1513.2 Area Controls:** The maximum lighting power that may be controlled from a single switch or automatic control shall not exceed that which is provided by a twenty ampere circuit loaded to not more than eighty percent. A master control may be installed provided the individual switches retain their capability to function independently. Circuit breakers may not be used as the sole means of switching.

**EXCEPTIONS:**

1. Industrial or manufacturing process areas, as may be required for production.
2. Areas less than five percent of footprint for footprints over 100,000 square feet.

**1513.3 Daylight Zone Control:** All daylighted zones, as defined in Chapter 2, both under overhead glazing and adjacent to vertical glazing, shall be provided with individual

controls, or daylight-or occupant-sensing automatic controls, which control the lights independent of general area lighting.

In all areas with skylights, monitors or other fenestration at or above ceiling level and in all areas with windows, all permanently luminaires in the daylighted zone shall be controlled by automatic daylight sensing controls. The primary daylighted zone shall be controlled separately from the secondary daylighted zone.

Automatic daylight sensing controls shall:

1. Be capable of reducing the light output of the controlled luminaires while maintaining a uniform level of illuminance by either:

- a. Continuous dimming to at least 20% light output; or
- b. Step switching of each lamp in individual luminaires (noncontinuous dimming devices shall have adjustable separation (deadband) of on and off points to prevent short cycling) and provide an automatic OFF control, switching alternate luminaires is not permitted except with single lamp luminaires; or
- c. Step dimming by reducing the output of all of the lamps in individual luminaires by at least 50% and provide an automatic OFF control.

2. Control only luminaires within the daylighted area.

3. Incorporate time-delay circuits to prevent cycling of light level changes of less than three minutes.

Any switching devices installed to override the automatic daylighting control shall comply with the criteria in Section 1513.6.2 items a through e.

Contiguous daylight zones adjacent to vertical glazing are allowed to be controlled by a single controlling device provided that they do not include zones facing more than two adjacent cardinal orientations (i.e., north, east, south, west). Daylight zones under overhead glazing (~~(more than 15 feet from the perimeter)~~) shall be controlled separately from daylight zones adjacent to vertical glazing.

**EXCEPTIONS:** ((Daylight spaces enclosed by walls or ceiling-height partitions and containing 2 or fewer light fixtures are not required to have a separate switch for general area lighting.)) The following are exempt from the requirements for automatic daylighting controls in Section 1513.3:

1. Retail spaces adjacent to vertical glazing (retail spaces under overhead glazing are not exempt).
2. Lighting exempted by Section 1512.
3. Display, exhibition and specialty lighting complying with Section 1513.4.
4. The following spaces are exempt from the requirements for automatic daylighting controls in Section 1513.3.2 provided that they have occupancy sensor controls that comply with Section 1513.6.1:
  - a. Small spaces in the daylighted zone that are normally unoccupied (such as a storage room with a window or restrooms);
  - b. Rooms less than 300 square feet; and
  - c. Conference rooms 300 square feet and larger that have a lighting control system with at least four scene options and an occupancy sensor control that complies with Section 1513.6.1.
5. HID lamps with automatic controls that are capable of reducing the power consumption by at least 50%.
6. HID lamps 100 watts or less.

**1513.4 Display, Exhibition, and Specialty Lighting Controls:** All display, exhibition, or specialty lighting shall be controlled independently of general area lighting.



1513.5 Automatic Shut-Off Controls, Exterior: Lighting for all exterior applications shall have automatic controls capable of turning off exterior lighting when sufficient daylight is available or when the lighting is not required during nighttime hours. Lighting not designated for dusk-to-dawn operation shall be controlled by either:

- a. A combination of a photosensor and a time switch; or
- b. An astronomical time switch.

Lighting designated for dusk-to-dawn operation shall be controlled by an astronomical time switch or photosensor. All time switches shall be capable of retaining programming and the time setting during loss of power for a period of at least 10 hours.

EXCEPTION: Lighting for covered vehicle entrances or exits from buildings or parking structures where required for safety, security, or eye adaptation.

1513.6 Automatic Shut-Off Controls, Interior: All buildings ((greater than 5,000 sq. ft. and all school classrooms)) shall be equipped with separate automatic controls to shut off the lighting in all spaces during unoccupied hours. Within these buildings, all office areas less than 300 ft<sup>2</sup> enclosed by walls or ceiling-height partitions, and all meeting and conference rooms, and all school classrooms, and warehouse and storage spaces shall be equipped with occupancy sensors that comply with Section 1513.6.1. For other spaces, automatic controls may be an occupancy sensor, time switch, or other device capable of automatically shutting off lighting. (For hotel and motel guestrooms, see Section 1513.7.)

EXCEPTIONS:

1. Areas that must be continuously illuminated (e.g., 24-hour convenience stores), or illuminated in a manner requiring manual operation of the lighting.
2. Emergency lighting ((systems)) and means of egress illumination as required by code that are automatically OFF during normal building operation.
3. Switching for industrial or manufacturing process facilities as may be required for production.
4. 24-hour occupancy areas in hospitals and laboratory spaces.
5. Areas in which medical or dental tasks are performed are exempt from the occupancy sensor requirement.
6. Dwelling units.

1513.6.1 Occupancy Sensors: Occupancy sensors shall be capable of automatically turning off all the lights in an area, no more than 30 minutes after the area has been vacated. Light fixtures controlled by occupancy sensors shall have a wall-mounted, manual switch capable of turning off lights when the space is occupied.

EXCEPTION: Occupancy sensors in stairwells are allowed to have two step lighting (high-light and low-light) provided the control fails in the high-light position.

1513.6.2 Automatic Time Switches: Automatic time switches shall have a minimum 7 day clock and be capable of being set for 7 different day types per week and incorporate an automatic holiday "shut-off" feature, which turns off all loads for at least 24 hours and then resumes normally scheduled operations. Automatic time switches shall also have program back-up capabilities, which prevent the loss of program and time settings for at least 10 hours, if power is interrupted.

Automatic time switches shall incorporate an over-ride switching device which:

- a. Is readily accessible;
- b. Is located so that a person using the device can see the lights or the areas controlled by the switch, or so that the area being illuminated is annunciated; and
- c. Is manually operated;
- d. Allows the lighting to remain on for no more than two hours when an over-ride is initiated; and
- e. Controls an area not exceeding 5,000 square feet or 5 percent of footprint for footprints over 100,000 square feet, whichever is greater.

1513.7 Lighting Controls: Hotel and motel guest rooms and guest suites shall have a master control device at the main room entry that controls all permanently installed luminaires and switched receptacles. In addition, a minimum of one of the following control technologies shall be required in hotel/motel guest rooms with over 50 guest rooms such that all the power to the lights and switched outlets in a hotel or motel guest room would be turned off when the occupant is not in the room and the space temperature would automatically setback (winter) or set up (summer) by no less than 3°C (5°F):

1. Controls that are activated by the room occupant via the primary room access method - key, card, deadbolt, etc.

2. Occupancy sensor controls that are activated by the occupant's presence in the room.

~~((1513.7))~~ 1513.8 Commissioning Requirements: For lighting controls which include daylight or occupant sensing automatic controls, automatic shut-off controls, occupancy sensors, or automatic time switches, the lighting controls shall be tested to ensure that control devices, components, equipment and systems are calibrated, adjusted and operate in accordance with approved plans and specifications. Sequences of operation shall be functionally tested to ensure they operate in accordance with approved plans and specifications. ((A complete report of test procedures and results shall be prepared and filed with the owner. Drawing notes shall require commissioning in accordance with this paragraph.)) See Section 1416 for complete requirements. Optional examples of test methods and forms are provided in Reference Standard 34.

#### NEW SECTION

**WAC 51-11-1515 Egress lighting.** Emergency lighting and means of egress illumination that is normally ON during normal building operation shall, during periods that the building space served by the means of egress is unoccupied, be shut off and controlled by a combination of listed emergency relay and occupancy sensors.

AMENDATORY SECTION (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1521 Prescriptive interior lighting requirements.** Spaces for which the Unit Lighting Power Allowance in Table 15-1A or 15-1B is 0.8 watts per square foot or greater may use unlimited numbers of lighting fixtures and lighting energy, provided that the installed lighting fixtures comply with all four of the following criteria:

- a. One- or two-lamp (but not three- or more lamp);
- b. Luminaires have a reflector or louver assembly to direct the light (bare lamp strip or industrial fixtures do not comply with this section);
- c. Fitted with type T-1, T-2, T-4, T-5, T-8 or compact fluorescent lamps from 5 to 60 watts (but not T-10 or T-12 lamps); and
- d. Hard-wired fluorescent electronic dimming ballasts with photocell or programmable dimming control for all lamps in all zones (nondimming electronic ballasts and electronic ballasts that screw into medium base sockets do not comply with this section).

Track lighting is not allowed under this path.

- EXCEPTIONS:
- 1. Up to a total of 5 percent of installed lighting fixtures may use any type of ballasted lamp and do not require dimming controls.
  - 2. Clear safety lenses are allowed in food prep and serving areas and patient care areas in otherwise compliant fixtures.
  - 3. LED lights.
  - 4. Metal halide lighting which complies with all three of the following criteria:
    - i. Luminaires or lamps which have a reflector or louver assembly to direct the light;
    - ii. Fixtures are fitted with ceramic metal halide lamps not exceeding 150 watts; and
    - iii. Electronic ballasts.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1530 Lighting power allowance option.**

The installed lighting wattage shall not exceed the lighting power allowance. Lighting wattage includes lamp and ballast wattage.

Luminaire wattage incorporated into the installed interior and exterior lighting power shall be determined in accordance with the following criteria:

- a. The wattage of line-voltage incandescent or tungsten-halogen luminaires (~~(with medium screw base sockets and)~~) not containing permanently installed ballasts shall be the maximum labeled wattage of the luminaire.
- b. The wattage of luminaires with permanently installed or remote ballasts or transformers shall be the operating input wattage of the maximum lamp/auxiliary combination based on values from the auxiliary manufacturer's literature or recognized testing laboratories or shall be the maximum labeled wattage of the luminaire.
- c. For line voltage track and plugin busway, designed to allow the addition and/or relocation of luminaires without altering the wiring of the system, the wattage shall be:
  - 1. The specified wattage of the luminaires included in the system with a minimum of 50 watts per lineal foot of track or actual luminaire wattage, whichever is greater, or
  - 2. The wattage limit of permanent current limiting device(s) on the system.
- d. The wattage of low-voltage lighting track, cable conductor, rail conductor, and other flexible lighting systems that allow the addition and/or relocation of luminaires without altering the wiring of the system shall be the specified wattage of the transformer supplying the system.

e. The wattage of all other miscellaneous lighting equipment shall be the specified wattage of the lighting equipment.

No credit towards compliance with the lighting power allowances shall be given for the use of any controls, automatic or otherwise.

**AMENDATORY SECTION** (Amending WSR 01-03-010, filed 1/5/01, effective 7/1/01)

**WAC 51-11-1531 Interior lighting power allowance.**

The interior lighting power allowance shall be calculated by multiplying the gross interior floor area, in square feet, by the appropriate unit lighting power allowance, in watts per square foot, for the use as specified in Table 15-1A or 15-1B. only one table may be used for compliance. Accessory uses, including corridors, lobbies and toilet facilities shall be included with the primary use when using Table 15-1A.

The lighting power allowance for each use shall be separately calculated and summed to obtain the interior lighting power allowance.

In cases where a lighting plan for only a portion of a building is submitted, the interior lighting power allowance shall be based on the gross interior floor area covered by the plan. Plans submitted for common areas only, including corridors, lobbies and toilet facilities shall use the lighting power allowance for common areas in Table 15-1A or 15-1B.

~~((When insufficient information is known about the specific use of the space, the allowance shall be based on the apparent intended use of the space.))~~

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-1532 Exterior lighting power allowance.**

All exterior building grounds luminaires that operate at greater than 100 watts shall contain lamps having a minimum efficacy of 60 lm/W unless the luminaire is controlled by a motion sensor or qualifies for one of the following exceptions.

The total exterior lighting power allowance for all exterior building applications is the sum of the base site allowance plus the individual ((lighting power densities)) allowances for areas that are designated on the buildings plans to be illuminated and are permitted in Table 15-2B for ((these applications)) the applicable lighting zone. Trade-offs are allowed only among exterior lighting applications listed in the Table 15-2B "Tradable Surfaces" section. The lighting zone for building exterior is determined from Table 15-2A unless otherwise specified by the local jurisdiction.

EXCEPTION: Lighting used for the following exterior applications is exempt when equipped with a control device independent of the control of the nonexempt lighting:

- a. Specialized signal, directional, and marker lighting associated with transportation.
- b. Lighting integral to signs.
- c. Lighting integral to equipment or instrumentation and installed by its manufacturer.
- d. Lighting for theatrical purposes, including performance, stage, film production, and video production.
- e. Lighting for athletic playing areas.

- f. Temporary lighting.
- g. Lighting for industrial production.
- h. Theme elements in theme/amusement parks.
- i. Lighting used to highlight features of public monuments.
- j. Group U Occupancy accessory to Group R-3 or R-4 Occupancy.

1540 Transformers. The minimum efficiency of a low voltage dry-type distribution transformer shall be the Class I Efficiency Levels for distribution transformers specified in Table 4-2 of the "Guide for Determining Energy Efficiency for Distribution Transformers" published by the National Electrical Manufacturers Association (NEMA TP-1-2002).

1550 Energy Consuming Mechanisms.

1551 General. This section establishes criteria for the control of energy consuming mechanisms, other than those covered elsewhere by this Code, that serve commercial buildings.

1552 Pedestrian Escalators and Moving Pedestrian Walkways. Each pedestrian escalator or moving pedestrian walkway shall be equipped with an automatic control device to prevent operation of escalators and moving walkways when the mechanisms are unoccupied.

**TABLE 15-1A**  
Unit Lighting Power Allowance (LPA)

| Use <sup>1</sup>  | LPA <sup>2</sup><br>(watts/sq. ft.) |
|---|-------------------------------------|
| Automotive facility   | ((0-9)) 0.77                        |
| Convention center   | ((1-2)) 0.99                        |
| Court house   | ((1-2)) 0.95                        |
| Cafeterias, fast food establishments <sup>5</sup> , restaurants/bars <sup>5</sup>   | ((1-3)) 1.03                        |
| Dormitory   | ((1-0)) 0.63                        |
| Dwelling units  | 1.00                                |
| Exercise center   | ((1-0)) 0.89                        |
| Gymnasia <sup>(9)</sup> , assembly spaces <sup>(9)</sup>  | ((1-0)) 0.86                        |
| Health care clinic  | ((1-0)) 0.84                        |
| Hospital, nursing homes, and other Group I-1 and I-2 Occupancies  | ((1-2)) 1.09                        |
| Hotel/motel   | ((1-0)) 1.00                        |
| ((Hotel banquet/conference/exhibition hall <sup>3-4</sup>   | 2-0))                               |
| Laboratory spaces (all spaces not classified "laboratory" shall meet office and other appropriate categories)   | ((1-8)) 1.62                        |
| Laundries   | ((1-2)) 1.20                        |
| Libraries <sup>5</sup>  | ((1-3)) 1.10                        |
| Manufacturing facility  | ((1-3)) 0.97                        |
| Museum  | ((1-1)) 0.87                        |
| Office buildings, office/administrative areas in facilities of other use types (including but not limited to schools, hospitals, institutions, museums, banks, churches) <sup>5((7,11))</sup> | ((1-0)) 0.86                        |
| Parking garages   | ((0-2)) 0.15                        |
| Penitentiary and other Group I-3 Occupancies  | ((1-0)) 0.86                        |
| Police and fire stations <sup>(8)</sup>   | ((1-0)) 0.84                        |
| Post office   | ((1-1)) 1.02                        |
| Retail <sup>10</sup> , retail banking, mall concourses, wholesale stores (pallet rack shelving)   | ((1-5)) 1.33                        |
| School buildings (Group E Occupancy only), school classrooms, day care centers  | ((1-2)) 0.97                        |
| Theater, motion picture   | ((1-2)) 0.84                        |
| Theater, performing arts  | ((1-6)) 1.25                        |

| Use <sup>1</sup>   | LPA <sup>2</sup><br>(watts/sq. ft.) |
|--|-------------------------------------|
| Transportation   | ((1-0)) 0.80                        |
| Warehouses <sup>(11, storage areas))</sup>   | ((0-5)) 0.66                        |
| Workshop   | ((1-4)) 1.20                        |
| <b>Plans Submitted for Common Areas Only<sup>7</sup></b>   |                                     |
| Main floor building lobbies <sup>3</sup> (except mall concourses)  | ((1-2)) 1.09                        |
| All building common areas, corridors, toilet facilities and washrooms, elevator lobbies, including Group R-1 and R-2 Occupancies | ((0-8)) 0.70                        |

**TABLE 15-1B**  
**Space-By-Space Method Maximum Allowable Lighting Power Density (LPD)**

| Common Space Types                                   | LPD <sup>2</sup> (W/ft <sup>2</sup> )     |
|--|---|
| <u>Atrium - First Three Floors</u>                   | 0.62                                      |
| <u>Atrium - Each Additional Floor</u>                | 0.16                                      |
| <u>Audience/Seating Area</u>                         | 0.92                                      |
| <u>For gymnasium</u>                                 | 0.40                                      |
| <u>For exercise center</u>                           | 0.26                                      |
| <u>For convention center</u>                         | 0.67                                      |
| <u>For sports complex</u>                            | 0.40                                      |
| <u>For performing arts theater</u>                   | 2.01                                      |
| <u>For motion picture theater</u>                    | 0.83                                      |
| <u>Classroom/Lecture/Training</u>                    | 1.23                                      |
| <u>Conference/Meeting/Multipurpose</u>               | 1.03                                      |
| <u>Corridor/Transition</u>                           | 0.47                                      |
| <u>Dining Area (fast food/cafeteria)<sup>5</sup></u> | 0.74                                      |
| <u>For motel<sup>5</sup></u>                         | 1.07                                      |
| <u>For bar lounge/leisure dining<sup>5</sup></u>     | 1.09                                      |
| <u>For family dining<sup>5</sup></u>                 | 1.58                                      |
| <u>Dressing/Locker Room</u>                          | 0.52                                      |
| <u>Electrical/Mechanical</u>                         | 1.24                                      |
| <u>Food Preparation</u>                              | 1.07                                      |
| <u>Lobby</u>   | 1.09                                      |
| <u>For performing arts theater</u>                   | 1.94                                      |
| <u>Laboratory<sup>5</sup></u>                        | 1.32                                      |
| <u>Office - Enclosed<sup>5</sup></u>                 | 0.89                                      |
| <u>Office - Open Plan</u>                            | 0.89                                      |
| <u>Public/Staff Lounge</u>                           | 0.73                                      |
| <u>Restrooms</u>                                     | 0.82                                      |
| <u>Stairs - Active</u>                               | 0.49                                      |
| <u>Storage</u>                                       |   |
| <u>Active</u>  | 0.64                                      |
| <u>Inactive</u>                                      | 0.26                                      |
| <u>Workshop</u>                                      | 1.64                                      |
| <b>Building Specific Space Types</b>                 | <b>LPD<sup>2</sup> (W/ft<sup>2</sup>)</b> |
| <u>Automotive - Service/repair</u>                   | 0.66                                      |
| <u>Bank/Office - Banking Activity Area</u>           | 1.30                                      |
| <u>Convention Center - Exhibit Space</u>             | 1.21                                      |

| <u>Building Specific Space Types</u>        | <u>LPD<sup>2</sup> (W/ft<sup>2</sup>)</u> |
|---|---|
| <u>Courthouse/Police Station</u>            |   |
| <u>Courtroom</u>                            | <u>1.34</u>                               |
| <u>Judges chambers</u>                      | <u>1.22</u>                               |
| <u>Confinement cells</u>                    | <u>0.80</u>                               |
| <u>Dormitory - Living Quarters</u>          | <u>0.39</u>                               |
| <u>Fire Station Engine Room</u>             | <u>0.79</u>                               |
| <u>Gymnasium/Exercise Center</u>            |   |
| <u>Playing area</u>                         | <u>0.93</u>                               |
| <u>Exercise area</u>                        | <u>0.98</u>                               |
| <u>Hospital</u>                             |   |
| <u>Active storage</u>                       | <u>0.77</u>                               |
| <u>Corridor w/patient waiting/exam</u>      | <u>0.93</u>                               |
| <u>Emergency</u>                            | <u>2.30</u>                               |
| <u>Recovery</u>                             | <u>0.74</u>                               |
| <u>Nurse station</u>                        | <u>0.87</u>                               |
| <u>Exam/treatment</u>                       | <u>1.30</u>                               |
| <u>Pharmacy</u>                             | <u>1.00</u>                               |
| <u>Patient room</u>                         | <u>0.70</u>                               |
| <u>Operating room</u>                       | <u>1.88</u>                               |
| <u>Nursery</u>                              | <u>0.84</u>                               |
| <u>Medical supply</u>                       | <u>1.20</u>                               |
| <u>Physical therapy</u>                     | <u>0.78</u>                               |
| <u>Radiology</u>                            | <u>0.35</u>                               |
| <u>Laundry - washing</u>                    | <u>0.46</u>                               |
| <u>Hotel/Motel Guest Rooms</u>              | <u>1.10</u>                               |
| <u>Library<sup>5</sup></u>                  |   |
| <u>Card file and cataloging</u>             | <u>0.96</u>                               |
| <u>Stacks</u>                               | <u>1.47</u>                               |
| <u>Reading area</u>                         | <u>0.91</u>                               |
| <u>Manufacturing</u>                        |   |
| <u>Low bay (&lt;25 ft. ceiling height)</u>  | <u>0.79</u>                               |
| <u>High bay (&gt;25 ft. ceiling height)</u> | <u>1.39</u>                               |
| <u>Detailed manufacturing</u>               | <u>1.79</u>                               |
| <u>Equipment room</u>                       | <u>0.98</u>                               |
| <u>Control room</u>                         | <u>0.89</u>                               |
| <u>Corridor</u>                             | <u>0.41</u>                               |
| <u>Museum</u>                               |   |
| <u>Storage</u>                              | <u>0.64</u>                               |
| <u>General exhibition</u>                   | <u>0.70</u>                               |
| <u>Restoration</u>                          | <u>0.91</u>                               |
| <u>Parking garage - Garage Area</u>         | <u>0.13</u>                               |
| <u>Post office - Sorting Area</u>           | <u>1.31</u>                               |
| <u>Religious Buildings</u>                  |   |
| <u>Fellowship hall</u>                      | <u>0.70</u>                               |
| <u>Retail</u>                               |   |
| <u>Sales area</u>                           | <u>1.15</u>                               |

| <u>Building Specific Space Types</u> | <u>LPD<sup>2</sup> (W/ft<sup>2</sup>)</u> |
|--------------------------------------|---|
| <u>Mall concourse</u>                | <u>1.63</u>                               |
| <u>Dressing/fitting room</u>         | <u>1.07</u>                               |
| <u>Sports Complex</u>                |   |
| <u>Ring sports area</u>              | <u>1.85</u>                               |
| <u>Court sports area</u>             | <u>2.46</u>                               |
| <u>Indoor playing field area</u>     | <u>0.93</u>                               |
| <u>Transportation</u>                |   |
| <u>Airport - concourse</u>           | <u>0.57</u>                               |
| <u>Air/train/bus - baggage area</u>  | <u>0.86</u>                               |
| <u>Terminal - ticket counter</u>     | <u>1.31</u>                               |
| <u>Seating area</u>                  | <u>0.46</u>                               |
| <u>Warehouse</u>                     |   |
| <u>Fine material storage</u>         | <u>0.85</u>                               |
| <u>Medium/bulky material storage</u> | <u>0.60</u>                               |

**Footnotes for Tables 15-1A and 15-1B**

1. In cases in which a general use and a specific use are listed, the specific use shall apply. In cases in which a use is not mentioned specifically, the *Unit Power Allowance* shall be determined by the building official. This determination shall be based upon the most comparable use specified in the table. See Section 1512 for exempt areas.
2. The watts per square foot may be increased, by two percent per foot of ceiling height above twenty feet, unless specifically directed otherwise by subsequent footnotes.
3. Watts per square foot of room may be increased by two percent per foot of ceiling height above twelve feet.
4. ~~((For all other spaces, such as seating and common areas, use the *Unit Light Power Allowance* for assembly.))~~ Reserved.
5. Watts per square foot of room may be increased by two percent per foot of ceiling height above nine feet.
6. Reserved.
7. ~~((For conference rooms and offices less than 150 ft<sup>2</sup> with full height partitions, a *Unit Lighting Power Allowance* of 1.1 W/ft<sup>2</sup> may be used.))~~ Reserved.
8. Reserved.
9. ~~((For indoor sport tournament courts with adjacent spectator seating over 5,000, the *Unit Lighting Power Allowance* for the court area is 2.6 watts per square foot.))~~ Reserved.
10. Display window illumination installed within 2 feet of the window, provided that the display window is separated from the retail space by walls or at least three-quarter-height partitions (transparent or opaque) and lighting for free-standing display where the lighting moves with the display are exempt.  
An additional ~~((1.5 w/ft<sup>2</sup> of merchandise display luminaires are exempt provided that they comply with all three of the following))~~ lighting power allowance is allowed for merchandise display luminaires installed in retail sales area that are specifically designed and

directed to highlight merchandise. The following additional wattages apply:

i. 0.6 watts per square foot of sales floor area not listed in items ii or iii below;

ii. 1.4 watts per square foot of furniture, clothing, cosmetics or artwork floor area; or

iii. 2.5 watts per square foot of jewelry, crystal, or china floor area.

The specified floor area for items i, ii, or iii above, and the adjoining circulation paths shall be identified and specified on building plans. Calculate the additional power allowance by multiplying the above LPDs by the sales floor area for each department excluding major circulation paths. The total additional lighting power allowance is the sum of allowances for sales categories i, ii, or iii plus an additional 1,000 watts for each separate tenant larger than 250 square feet in area.

The additional wattage is allowed only if the merchandise display luminaires comply with all of the following:

(a) Located on ceiling-mounted track or directly on or recessed into the ceiling itself (not on the wall).

(b) Adjustable in both the horizontal and vertical axes (vertical axis only is acceptable for fluorescent and other fixtures with two points of track attachment).

((c) Fitted with LED, tungsten halogen, fluorescent, or high intensity discharge lamps-))

This additional lighting power is allowed only if the lighting is actually installed and automatically controlled, separately from the general lighting, to be turned off during nonbusiness hours. This additional power shall be used only for the specified luminaires and shall not be used for any other purpose.

((1. Provided that a floor plan, indicating rack location and height, is submitted, the square footage for a warehouse may be defined, for computing the interior Unit Lighting Power Allowance, as the floor area not covered by racks plus the vertical face area (access side only) of the racks. The height allowance defined in footnote 2 applies only to the floor area not covered by racks-))

**TABLE 15-2A**  
**Exterior Lighting Zones**

| Lighting Zone | Description  |
|---------------|--|
| 1             | Developed areas of national parks, state parks, forest   |
| 2             | Areas predominantly consisting of residential zoning, neighborhood business districts, light industrial with limited nighttime use and residential mixed areas |
| 3             | All other areas  |
| 4             | High activity commercial districts in major metropolitan areas as designated by the local jurisdiction   |

**TABLE 15-2B**  
**Lighting Power Densities for Building Exteriors**

| <p><del>(Tradable Surfaces</del><br/>(Lighting power densities for uncovered parking areas, building grounds, building entrances and exits, canopies and overhangs and outdoor sales areas may be traded.)</p> | <del>Uncovered Parking Areas</del>                  |                                |
|--|---|--------------------------------|
|  | Parking lots and drives                             | 0.15 W/ft <sup>2</sup>         |
|  | <del>Building Grounds</del>                         |                                |
|  | Walkways less than 10 feet wide                     | 1.0 W/linear foot              |
|  | Walkways 10 feet wide or greater                    | 0.2 W/ft <sup>2</sup>          |
|  | Plaza areas   |                                |
|  | Special feature areas                               |                                |
|  | Stairways   | 1.0 W/ft <sup>2</sup>          |
|  | <del>Building Entrances and Exits</del>             |                                |
|  | Main entries  | 30 W/linear foot of door width |
|  | Other doors   | 20 W/linear foot of door width |
|  | <del>Canopies and Overhangs</del>                   |                                |
|  | Canopies (free standing and attached and overhangs) | 1.25 W/ft <sup>2</sup>         |
| <del>Outdoor Sales</del>   |   |                                |
| Open areas (including vehicle sales lots)  | 0.5 W/ft <sup>2</sup>                               |                                |
| Street frontage for vehicle sales lots in addition to "open area" allowance  | 20 W/linear foot                                    |                                |

|  |  |   |
|--|--|---|
| <b>Nontradable Surfaces</b><br>(Lighting power density calculations for the following applications can be used only for the specific application and cannot be traded between surfaces or with other exterior lighting. The following allowances are in addition to any allowance otherwise permitted in the "tradable surfaces" section of this table.) | <b>Building facades</b>  | <b>0.2 W/ft<sup>2</sup></b> for each illuminated wall or surface or<br><b>5.0 W/linear foot</b> for each illuminated wall or surface length |
|  | <b>Automated teller machines and night depositories</b>  | <b>270 W</b> per location plus<br><b>90 W</b> per additional ATM per location   |
|  | <b>Entrances and gatehouse inspection stations at guarded facilities</b>                       | <b>1.25 W/ft<sup>2</sup></b> of uncovered area (covered areas are included in the "Canopies and Overhangs" section of "Tradable Surfaces")  |
|  | <b>Loading areas for law enforcement, fire, ambulance and other emergency service vehicles</b> | <b>0.5 W/ft<sup>2</sup></b> of uncovered area (covered areas are included in the "Canopies and Overhangs" section of "Tradable Surfaces")   |
|  | <b>Material handling and associated storage</b>  | <b>0.5 W/ft<sup>2</sup></b>   |
|  | <b>Drive-up windows at fast food restaurants</b>   | <b>400 W</b> per drive-through  |
|  | <b>Parking near 24-hour retail entrances</b>   | <b>800 W</b> per main entry))   |

| Specific area description  |   | Zone 1   | Zone 2  | Zone 3   | Zone 4  |
|--|---|--|---|--|---|
| <b>Base site allowance<sup>1</sup></b>   |   | 500 W  | 600 W   | 750 W  | 1300 W  |
| <b>Tradable Surfaces<sup>2</sup></b>   |   |  |   |  |   |
| <b>Uncovered Parking Areas</b>   | Parking lots and drives   | 0.04 W/ft <sup>2</sup>                               | 0.06 W/ft <sup>2</sup>  | 0.10 W/ft <sup>2</sup>   | 0.13 W/ft <sup>2</sup>  |
| <b>Building Grounds</b>  | Walkways less than 10 ft wide   | 0.7 W/linear foot                                    | 0.7 W/linear foot   | 0.8 W/linear foot  | 1.0 W/linear foot   |
|  | Walkways 10 ft wide or greater  | 0.14 W/ft <sup>2</sup>                               | 0.14 W/ft <sup>2</sup>  | 0.16 W/ft <sup>2</sup>   | 0.2 W/ft <sup>2</sup>   |
|  | Plaza areas   |  |   |  |   |
|  | Special feature areas   |  |   |  |   |
|  | Exterior stairways  | 0.75 W/ft <sup>2</sup>                               | 1.0 W/ft <sup>2</sup>   | 1.0 W/ft <sup>2</sup>  | 1.0 W/ft <sup>2</sup>   |
|  | Pedestrian tunnel   | 0.15 W/ft <sup>2</sup>                               | 0.15 W/ft <sup>2</sup>  | 0.2 W/ft <sup>2</sup>  | 0.3 W/ft <sup>2</sup>   |
|  | Landscaping   | 0.04 W/ft <sup>2</sup>                               | 0.05 W/ft <sup>2</sup>  | 0.05 W/ft <sup>2</sup>   | 0.05 W/ft <sup>2</sup>  |
| <b>Building Entrances and Exits</b>  | Main entries  | 20 W/linear foot of door width                       | 20 W/linear foot of door width  | 30 W/linear foot of door width   | 30 W/linear foot of door width  |
|  | Other doors   | 20 W/linear foot of door width                       | 20 W/linear foot of door width  | 20 W/linear foot of door width   | 20 W/linear foot of door width  |
|  | Entry canopies  | 0.25 W/ft <sup>2</sup>                               | 0.25 W/ft <sup>2</sup>  | 0.4 W/ft <sup>2</sup>  | 0.4 W/ft <sup>2</sup>   |
| <b>Sales Canopies</b>  | Free standing and attached  | 0.6 W/ft <sup>2</sup>                                | 0.6 W/ft <sup>2</sup>   | 0.8 W/ft <sup>2</sup>  | 1.0 W/ft <sup>2</sup>   |
| <b>Outdoor Sales</b>   | Open areas <sup>3</sup>   | 0.25 W/ft <sup>2</sup>                               | 0.25 W/ft <sup>2</sup>  | 0.5 W/ft <sup>2</sup>  | 0.7 W/ft <sup>2</sup>   |
|  | Street frontage for vehicle sales lots in addition to "open area" allowance | No Allowance   | 10 W/linear foot  | 10 W/linear foot   | 30 W/linear foot  |
| <b>Nontradable Surfaces<sup>4</sup></b>  |   |  |   |  |   |
| <b>Building Facades</b>  |   | No Allowance   | 0.1 W/ft <sup>2</sup> for each illuminated wall or surface <sup>5</sup> | 0.15 W/ft <sup>2</sup> for each illuminated wall or surface <sup>6</sup> | 0.2 W/ft <sup>2</sup> for each illuminated wall or surface <sup>7</sup> |
| <b>Automated Teller Machines and Night Depositories</b>  |   | 270 W per location <sup>8</sup>                      | 270 W per location <sup>8</sup>   | 270 W per location <sup>8</sup>  | 270 W per location <sup>8</sup>   |
| <b>Entrances and Gatehouse Inspection Stations at Guarded Facilities</b>                       |   | 0.75 W/ft <sup>2</sup> of covered and uncovered area | 0.75 W/ft <sup>2</sup> of covered and uncovered area                    | 0.75 W/ft <sup>2</sup> of covered and uncovered area                     | 0.75 W/ft <sup>2</sup> of covered and uncovered area                    |
| <b>Loading Areas for Law Enforcement, Fire, Ambulance and Other Emergency Service Vehicles</b> |   | 0.5 W/ft <sup>2</sup> of covered and uncovered area  | 0.5 W/ft <sup>2</sup> of covered and uncovered area                     | 0.5 W/ft <sup>2</sup> of covered and uncovered area                      | 0.5 W/ft <sup>2</sup> of covered and uncovered area                     |

| <u>Specific area description</u>                | <u>Zone 1</u>           | <u>Zone 2</u>           | <u>Zone 3</u>           | <u>Zone 4</u>           |
|---|-------------------------|-------------------------|-------------------------|-------------------------|
| <b>Base site allowance<sup>1</sup></b>          | 500 W                   | 600 W                   | 750 W                   | 1300 W                  |
| <b>Tradable Surfaces<sup>2</sup></b>            |                         |                         |                         |                         |
| <b>Material Handling and Associated Storage</b> |                         |                         |                         | 0.5 W/ft <sup>2</sup>   |
| <b>Drive-up Windows and Doors</b>               | 400 W per drive-through | 400 W per drive-through | 400 W per drive-through | 400 W per drive-through |
| <b>Parking Near 24-hour Retail Entrances</b>    | 800 W per main entry    | 800 W per main entry    | 800 W per main entry    | 800 W per main entry    |

FOOTNOTES FOR TABLE 15-2B:

1. Base site allowance may be used in tradable or nontradable surfaces.
2. Lighting power densities for uncovered parking areas, building grounds, building entrances and exits, canopies and overhangs and outdoor sales areas may be traded.
3. Including vehicle sales lots.
4. Lighting power density calculations for the following applications can be used only for the specific application and cannot be traded between surfaces or with other exterior lighting. The following allowances are in addition to any allowance otherwise permitted in the "Tradable Surfaces" section of this table.
5. May alternately use 2.5 watts per lineal foot for each wall or surface length.
6. May alternately use 3.75 watts per lineal foot for each wall or surface length.
7. May alternately use 5 watts per lineal foot for each wall or surface length.
8. An additional 90 watts is allowed per additional ATM location.

**AMENDATORY SECTION** (Amending WSR 93-21-052, filed 10/18/93, effective 4/1/94)

**WAC 51-11-99901 Section 1—((Scope)) General.**

NOTE: Washington State Energy Code Reference Standard 29 (RS-29) is a modified version of Appendix G from ASHRAE/IESNA Standard 90.1-2007.

The following definitions apply to use of RS-29:

**Baseline building design:** A computer representation of a hypothetical design based on the proposed building project. This representation is used as the basis for calculating the baseline building performance for rating above-standard design.

**Baseline building performance:** The annual energy consumption for a building design intended for use as a baseline for rating above-standard design.

**Proposed building performance:** The annual energy consumption calculated for a proposed design.

$$\text{Percentage improvement} \quad \equiv \quad 100 \times (\text{Baseline building performance} - \text{Proposed building performance}) / \text{Baseline building performance}$$

A "proposed building" designed in accordance with this standard will be deemed as complying with this Code, if the calculated annual energy consumption is 5% LESS than that of a corresponding "baseline building."

- NOTES:
1. Both the proposed building performance and the baseline building performance shall include all end-use load components, such as receptacle and process loads.
  2. Neither the proposed building performance nor the baseline building performance are predictions of actual energy

**Proposed design:** A computer representation of the actual proposed building design or portion thereof used as the basis for calculating the proposed building performance.

**1.1 General:** This Standard establishes design criteria in terms of total energy consumption of a building, including all of its systems. ((General principles and requirements are outlined in Section 2. Specific modeling assumptions are listed in Section 3.))

The building permit application for projects utilizing this Standard shall include in one submittal all building and mechanical drawings and all information necessary to verify that the building envelope and mechanical design for the project corresponds with the annual energy analysis. If credit is proposed to be taken for lighting energy savings, then an electrical ((drawings)) permit application shall also be ((included with)) submitted and approved prior to the issuance of the building permit ((application.

Due to the various assumptions that are necessary, the results of the analysis shall not be construed as a guarantee of the actual energy performance of the project)). If credit is proposed to be taken for energy savings from other components, then the corresponding permit application (e.g., plumbing, boiler, etc.) shall also be submitted and approved prior to the building permit application. Otherwise, components of the project that would not be approved as part of a building permit application shall be modeled the same in both the proposed building and the baseline building and shall comply with the requirements of the Washington State Energy Code.

**1.2 Performance Rating.** This performance rating method requires conformance with the following provisions:

All requirements of Sections 1310 through 1314, 1410 through 1416, 1440 through 1443, 1450 through 1454, 1510 through 1514, and 1540 are met. These sections contain the mandatory provisions of the standard and are prerequisites for this rating method. The improved performance of the proposed building design is calculated in accordance with provisions of this appendix using the following formula:

consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this procedure, changes in energy rates between design of the building and occupancy, and the precision of the calculation tool.

**1.3 Trade-Off Limits.** When the proposed modifications apply to less than the whole building, only parameters related to the systems to be modified shall be allowed to vary.

Parameters relating to unmodified existing conditions or to future building components shall be identical for determining both the baseline building performance and the proposed building performance. Future building components shall meet the requirements of Sections 1320 through 1334, 1420 through 1439, and 1530 through 1532.

**1.4 Documentation Requirements.** Simulated performance shall be documented, and documentation shall be submitted to the building official. The information submitted shall include the following:

a. Calculated values for the baseline building performance, the proposed building performance, and the percentage improvement.

b. A list of the energy-related features that are included in the design and on which the performance rating is based. This list shall document all energy features that differ between the models used in the baseline building performance and proposed building performance calculations.

c. Input and output report(s) from the simulation program or compliance software including a breakdown of energy usage by at least the following components: Lights, internal equipment loads, service water heating equipment, space heating equipment, space cooling and heat rejection equipment, fans, and other HVAC equipment (such as pumps). The output reports shall also show the amount of time any loads are not met by the HVAC system for both the proposed design and baseline building design.

d. An explanation of any error messages noted in the simulation program output.

**AMENDATORY SECTION** (Amending WSR 07-01-089, filed 12/19/06, effective 7/1/07)

**WAC 51-11-99902 Section 2—Simulation general ((principles and)) requirements.**

**((2.1 Energy Analysis:** Compliance with this Standard will require an analysis of the annual energy usage, hereinafter called an annual energy analysis.

A building designed in accordance with this Standard will be deemed as complying with this Code, if

~~a. The calculated annual energy consumption is not greater than that of a corresponding "standard design," as defined below and in Section 3;~~

and;

~~b. Whose enclosure elements and energy-consuming systems comply with Sections 1310 through 1314, 1410 through 1416, 1440 through 1443, 1450 through 1454, 1510 through 1514 and 1540. Buildings shall only vary from those requirements in Sections 1330 through 1334, 1432 through 1439 and 1530 through 1532 where those variations have been accurately and completely modeled. Where variations are not specifically analyzed, the building shall comply with these requirements.~~

For a proposed building design to be considered similar to a "standard design," it shall utilize the same energy source(s) for the same functions and have equal floor area and the same ratio of envelope area to floor area, environ-

mental requirements, occupancy, climate data and usage operational schedule. Inputs to the energy analysis relating to occupancy and usage shall correspond to the expected occupancy and usage of the building.

Except as noted below, the systems identified, and, to the extent possible, the assumptions made in assigning energy inputs to each system, shall be the same for the standard design and the proposed design. When electrically driven heat pumps, other than multiple units connected to a common water loop, are employed to provide all or part of the heat for the proposed design, the standard design shall also, for the purposes of the analysis, assume that electrically driven heat pump, in conformance with Chapter 14 of the Code and having capacity at least as great as those used in the proposed design are employed.

**2.2 Design:** The standard design and the proposed design shall be designed on a common basis as specified herein:

a. The comparison shall be expressed as kBtu input per square foot of conditioned floor area per year at the building site. Buildings which use electricity as the only fuel source, comparisons may be expressed in kWh. When converting electricity in kWh to kBtu a multiplier of 3.413 kWh/kBtu shall be used.

b. If the proposed design results in an increase in consumption of one energy source and a decrease in another energy source, even though similar sources are used for similar purposes, the difference in each energy source shall be converted to equivalent energy units for purposes of comparing the total energy used.

**2.3 Analysis Procedure:** The analysis of the annual energy usage of the standard and the proposed building and system design shall meet the following criteria:

a. The building heating/cooling load calculation procedure used for annual energy consumption analysis shall be detailed to permit the evaluation of effect of factors specified in Section 2.4.

b. The calculation procedure used to simulate the operation of the building and its service systems through a full year operating period shall be detailed to permit the evaluation of the effect of system design, climatic factors, operational characteristics and mechanical equipment on annual energy usage. Manufacturer's data or comparable field test data shall be used when available in the simulation of systems and equipment. The calculation procedure shall be based upon 8,760 hours of operation of the building and its service systems and shall utilize the design methods, specified in Standard RS-1 listed in Chapter 7 of the Code or in other programs approved by the building official.

**2.4 Calculation Procedure:** The calculation procedure shall cover the following items:

a. Design requirements—Design heating conditions and design cooling conditions as defined in Chapter 2 of the Code.

b. Climatic data—Coincident hourly data for temperatures, solar radiation, wind and humidity of typical days in the year representing seasonal variation.

c. Building data—Orientation, size, shape, mass, air and heat transfer characteristics.



d. Operational characteristics—Temperature, humidity, ventilation, illumination and control mode for occupied and unoccupied hours.

e. Mechanical equipment—Design capacity and part load profile.

f. Building loads—Internal heat generation, lighting, equipment and number of people during occupied and unoccupied periods.

**2.5 Documentation:** All analyses submitted shall be accompanied by an energy analysis comparison report. The report shall provide technical detail on the two building and system designs and on the data used in and resulting from the comparative analysis to verify that both the analysis and the designs meet the criteria of Section 1.

The calculation procedure for the standard design and the proposed design shall separately identify the calculated annual energy consumption for each different occupancy type, if possible, for each of the following end uses:

- a. Interior lighting;
- b. Parking lighting;
- e. Exterior lighting;
- d. Space heating;
- e. Space cooling;
- f. Interior ventilation/fans;
- g. Parking ventilation/fans;
- h. Exhaust fans;
- i. Service water heating;
- j. Elevators;
- k. Appliances.

Energy consumption of the following items shall be included but is not required to be separated out by each individual item:

- a. Office equipment;
- b. Refrigeration other than comfort cooling;
- e. Cooking; and
- d. Any other energy-consuming equipment.

The specifications of the proposed building project used in the analysis shall be as similar as is reasonably practical to those in the plans submitted for a building permit.) **2.1 Performance Calculations.** The proposed building performance and baseline building performance shall be calculated using the following:

- a. The same simulation program.
- b. The same weather data.

**2.2 Simulation Program.** The simulation program shall be a computer-based program for the analysis of energy consumption in buildings (a program such as, but not limited to, DOE-2, BLAST, or EnergyPlus). The simulation program shall include calculation methodologies for the building components being modeled. For components that cannot be modeled by the simulation program, the exceptional calculation methods requirements in Section 2.5 may be used.

**2.2.1** The simulation program shall be approved by the building official and shall, at a minimum, have the ability to explicitly model all of the following:

- a. 8760 hours per year.

b. Hourly variations in occupancy, lighting power, miscellaneous equipment power, thermostat set points, and HVAC system operation, defined separately for each day of the week and holidays.

c. Thermal mass effects.

d. Ten or more thermal zones.

e. Part-load performance curves for mechanical equipment.

f. Capacity and efficiency correction curves for mechanical heating and cooling equipment.

g. Air-side economizers with integrated control.

h. Baseline building design characteristics specified in Section 3.

**2.2.2** The simulation program shall have the ability to either: (1) Directly determine the proposed building performance and baseline building performance; or (2) produce hourly reports of energy use by an energy source suitable for determining the proposed building performance and baseline building performance using a separate calculation engine.

**2.2.3** The simulation program shall be capable of performing design load calculations to determine required HVAC equipment capacities and air and water flow rates in accordance with generally accepted engineering standards and handbooks (for example, ASHRAE Handbook-Fundamentals) for both the proposed design and baseline building design.

**2.2.4** The simulation program shall be tested according to ASHRAE Standard 140.

**2.3 Climatic Data.** The simulation program shall perform the simulation using hourly values of climatic data, such as temperature and humidity from representative climatic data, for the site in which the proposed design is to be located. For cities or urban regions with several climatic data entries, and for locations where weather data are not available, the designer shall select available weather data that best represent the climate at the construction site. The selected weather data shall be approved by the building official.

**2.4 Energy Conversion.** The comparison between the baseline building and proposed design shall be expressed as kBtu input per square foot of conditioned floor area per year at the building site. Buildings which use electricity as the only fuel source, comparisons may be expressed in kWh. When converting electricity in kWh to kBtu a multiplier of 3.413 kWh/kBtu shall be used.

**EXCEPTION:** On-site renewable energy sources or site-recovered energy shall not be considered to be consumed energy and shall not be included in the proposed building performance. Where on-site renewable or site-recovered sources are used, the baseline building performance shall be based on the energy source used as the backup energy source or on the use of electricity if no backup energy source has been specified.

**2.5 Exceptional Calculation Methods.** Where no simulation program is available that adequately models a design, material, or device, the building official may approve an exceptional calculation method to demonstrate above-standard performance using this method.

Applications for approval of an exceptional method shall include documentation of the calculations performed and the-

oretical and/or empirical information supporting the accuracy of the method.

**AMENDATORY SECTION** (Amending WSR 01-03-010, filed 1/5/01, effective 7/1/01)

**WAC 51-11-99903 Section 3—((Specific modeling assumptions)) Calculation of the proposed and baseline building performance.**

((The specific modeling assumptions consist of methods and assumptions for calculating the standard energy consumption for the standard building and the proposed energy consumption of the proposed design. In order to maintain consistency between the standard and the proposed design energy consumptions, the input assumptions in this section shall be used.

"Prescribed" assumptions shall be used without variation. "Default" assumptions shall be used unless the designer can demonstrate that a different assumption better characterizes the building's use over its expected life. Any modification of a default assumption shall be used in modeling both the standard building and the proposed design unless the designer demonstrates a clear cause to do otherwise.

**3.1 Orientation and Shape:** The standard building shall consist of the same number of stories and gross floor area for each story as the proposed design. Each floor shall be oriented exactly as the proposed design. The geometric form shall be the same as the proposed design.

**3.2 Internal Loads:** Internal loads shall be modeled as noted in the following parts of Section 3.2. The systems specified for calculating the standard energy consumption in Section 3.2 are intended only as constraints in calculating the consumption. They are not intended as requirements or recommendations for systems to be used in the proposed building or for the calculation of the proposed energy consumption.

**3.2.1 Occupancy:** Occupancy schedules shall be default assumptions. The same assumptions shall be made in computing proposed energy consumption as were used in calculating the standard energy consumption. Occupancy levels vary by building type and time of day. Table 3-1 establishes the density presented as ft<sup>2</sup>/person of conditioned floor area that will be used by each building type. Table 3-2 establishes the percentage of the people that are in the building by hours of the day for each building type.

**3.2.2 Lighting:** The interior and exterior lighting power allowance for calculating the standard energy consumption shall be determined from Sections 1531 and 1532. The lighting power used to calculate the proposed energy consumption shall be the actual lighting power of the proposed lighting design. Exempt lighting in the standard design shall be equal to the exempt lighting in the proposed design.

Lighting levels in buildings vary based on the type of uses within buildings, by area and by time of day. Table 3-2 contains the lighting energy profiles which establish the percentage of the lighting load that is switched ON in each prototype or reference building by hour of the day. These profiles are default assumptions and can be changed if required

when calculating the standard energy consumption to provide, for example, a 12 hour rather than an 8 hour work day or to reflect the use of automatic lighting controls. The lighting schedules used in the standard and proposed designs shall be identical and shall reflect the type of controls to be installed in the proposed design. The controls in the proposed design shall comply with the requirements in Section 1513 and no credit shall be given for the use of any additional controls, automatic or otherwise.

**3.2.3 Receptacle:** Receptacle loads and profiles are default assumptions. The same assumptions shall be made in calculating proposed energy consumption as were used in calculating the standard energy consumption. Receptacle loads include all general service loads that are typical in a building. These loads should include additional process electrical usage but exclude HVAC primary or auxiliary electrical usage. Table 3-1 establishes the density in W/ft<sup>2</sup> to be used. The receptacle energy profiles shall be the same as the lighting energy profiles in Table 3-2. This profile establishes the percentage of the receptacle load that is switched ON by hour of the day and by building type.

**3.3 Envelope**

**3.3.1 Insulation and Glazing:** Glazing area and U-factor of the standard building envelope shall be determined by using the Target UA requirements of Equation 13-1 and U-factor values in Table 13-1 or 13-2. The glazing solar heat gain coefficient (SHGC) or shading coefficient of the standard building shall be the lesser of 0.65 and the SHGC required by Table 13-1 or 13-2 for the vertical or overhead glazing area for the appropriate wall type. The opaque area U-factors of the standard building shall be determined by using the Target UA requirements from Equation 13-1 including the appropriate mass for walls. The insulation characteristics and glazing area are prescribed assumptions for the standard building for calculating the standard energy consumption. In the calculation of the proposed energy consumption of the proposed design, the envelope characteristics of the proposed design shall be used. The standard design shall use the maximum glazing areas listed in Tables 13-1 or 13-2 for the appropriate use. The distribution of vertical glazing in the gross wall area of the standard design shall be equal to the distribution of vertical glazing in the proposed design or shall constitute an equal percentage of gross wall area on all sides of the standard building. The distribution of overhead glazing in the gross roof/ceiling area of the standard design shall be equal to the distribution of overhead glazing in the proposed design. The distribution of doors in the gross opaque wall area of the standard design shall be identical to the distribution of doors in the proposed design.

**3.3.2 Infiltration:** For standard and proposed buildings, infiltration assumptions shall be equal.

**3.3.3 Envelope and Ground Absorptivities:** For the standard building, absorptivity assumptions shall be default assumptions for computing the standard energy consumption and default assumptions for computing the proposed energy consumption. The solar absorptivity of opaque elements of the building envelope shall be assumed to be 70 percent. The

solar absorptivity of ground surfaces shall be assumed to be 80 percent (20 percent reflectivity).

**3.3.4 Window Treatment:** No draperies or blinds shall be modeled for the standard or proposed building.

**3.3.5 Shading:** For standard building and the proposed design, shading by permanent structures and terrain shall be taken into account for computing energy consumption whether or not these features are located on the building site. A permanent fixture is one that is likely to remain for the life of the proposed design. Credit may be taken for external shading devices that are part of the proposed design.

**3.4 HVAC Systems and Equipment:** For the standard building, the HVAC system used shall be the system type used in the proposed design. If the proposed HVAC system type does not comply with Sections 1432 through 1439, the standard design system shall comply in all respects with those sections.

**EXCEPTION:** When approved by the building official, a prototype HVAC system may be used, if the proposed design system cannot be modified to comply with Sections 1422 and 1432 through 1439, as a standard design. Use of prototype HVAC systems shall only be permitted for the building types listed below. For mixed-use buildings, the floor space of each building type is allocated within the floor space of the standard building. The specifications and requirements for the HVAC systems of prototype buildings shall be those in Table 3-3.

- |                         |                         |
|-------------------------|-------------------------|
| 1. assembly             | 6. restaurant           |
| 2. health/institutional | 7. retail (mercantile)  |
| 3. hotel/motel          | 8. school (educational) |
| 4. light manufacturing  | 9. warehouse (storage)  |
| 5. office (business)    |                         |

**3.4.1 HVAC Zones:** HVAC zones for calculating the standard energy consumption and proposed energy consumption shall consist of at least four perimeter and one interior zone per floor, with at least one perimeter zone facing each orientation. The perimeter zones shall be fifteen feet in width or one third the narrow dimension of the building when this dimension is between 30 and 45 feet inclusive or half the narrow dimension of the building when this dimension is less than thirty feet.

**EXCEPTIONS:**

1. Building types such as assembly or warehouse may be modeled as a single zone if there is only one space.
2. Thermally similar zones, such as those facing one orientation on different floors, may be grouped together for the purposes of either the standard or proposed building simulation.

**3.4.2 Process Equipment Sizing:** Process sensible and latent loads shall be equal in calculating both the standard energy consumption and the proposed energy consumption. The designer shall document the installation of process equipment and the size of process loads.

**3.4.3 HVAC Equipment Sizing:** The equipment shall be sized to include the capacity to meet the process loads. For calculating the proposed energy consumption, actual air flow rates and installed equipment size shall be used in the simulation. Equipment sizing in the simulation of the proposed design shall correspond to the equipment intended to be

selected for the design and the designer shall not use equipment-sized automatically by the simulation tool.

Equipment sizing for the standard design shall be based on the same as the proposed design or lesser sizing ratio of installed system capacity to the design load for heating and for cooling.

Chilled water systems for the standard building shall be modeled using a reciprocating chiller for systems with total cooling capacities less than 175 tons, and centrifugal chillers for systems with cooling capacities of 175 tons or greater. For systems with cooling capacities of 600 tons or more the standard energy consumption shall be calculated using two centrifugal chillers, lead/lag controlled. Chilled water shall be assumed to be controlled at a constant 44 degree F temperature rise, from 44 degrees F to 56 degrees F, operating at 65 percent combined impeller and motor efficiency. Condenser water pumps shall be sized using a 10 degree F temperature rise, operating at 60 percent combined impeller and motor efficiency. The cooling tower shall be an open circuit, centrifugal blower type sized for the larger of 85 degrees F leaving water temperature or 10 degrees F approach to design wet-bulb temperature. The tower shall be controlled to provide a 65 degrees F leaving water temperature whenever weather conditions permit, floating up to design leaving water temperature at design conditions.

**3.4.4 Fans:** The power of the combined fan system per air volume at design conditions (w/cfm) of the proposed design shall be equal to that of the standard design.

Variable air volume fan systems in the standard building shall be variable speed.

**3.5 Service Water Heating:** The service water heating loads for prototype buildings are defined in terms of Btu/person-hour in Table 3-1. The values in the table refer to energy content of the heated water. The service water heating loads from Table 3-1 are default for all buildings. The same service water heating load assumptions shall be made in calculating proposed energy consumption as were used in calculating the standard energy consumption. The service water heating system for the standard building shall be modeled as closely as possible as if it were designed in accordance with RS-11 and meeting all the requirements of Sections 1440 through 1443.

**3.6 Controls**

**3.6.1:** All occupied conditioned spaces in standard and proposed design buildings in all climates shall be simulated as being both heated and cooled.

**EXCEPTIONS:**

1. If a building or portion of a building is to be provided with only heating or cooling, both the standard building and the proposed design shall be simulated using the same assumptions.
2. If warehouses are not intended to be mechanically cooled, both the standard and proposed energy consumption shall be modeled assuming no mechanical cooling.

**3.6.2:** Space temperature controls for the standard building, shall be set at 70 degrees F for space heating and 75 degrees F for space cooling, with a deadband in accordance with Section 1412.2. The system shall be OFF during off hours

according to the appropriate schedule in Table 3-2, except that the heating system shall cycle ON if any space should drop below the night setback setting 55 degrees F. There shall be no similar setpoint during the cooling season. Lesser deadband ranges may be used in calculating the proposed energy consumption.

- EXCEPTIONS:
1. Setback shall not be modeled in determining either the standard or proposed energy consumption if setback is not realistic for the proposed design such as a facility being operated 24 hours/day. For instance, health facilities need not have night setback during the heating season.
  2. If deadband controls are not to be installed, the proposed energy consumption shall be calculated with both heating and cooling thermostat setpoints set to the same value between 70 degrees F and 75 degrees F inclusive, assumed to be constant for the year.

~~3.6.3:~~ When providing for outdoor air ventilation when calculating the standard energy consumption, controls shall be assumed to close the outside air intake to reduce the flow of outside air to 0.0 cfm during "setback" and "unoccupied" periods. Ventilation using inside air may still be required to maintain scheduled setback temperature. Outside air ventilation, during occupied periods, shall be as required by the Washington State Ventilation and Indoor Air Quality Code chapter 51-13 WAC.

~~3.6.4:~~ If humidification is to be used in the proposed design, the same level of humidification and system type shall be used in the standard building.

**TABLE 3-1**  
~~Acceptable Occupancy Densities, Receptacle Power Densities and Service Hot Water Consumption<sup>1</sup>~~

| <b>Building Type</b> | <b>Occupancy Density<sup>2</sup>-Sq-Ft./Person (Btu/h-ft<sup>2</sup>)</b> | <b>Receptacle Power Density<sup>3</sup> Watts/Sq-Ft. (Btu/h-ft<sup>2</sup>)</b> | <b>Service Hot Water Quantities<sup>4</sup> Btu/h-person</b> |
|----------------------|---|---|--|
| Assembly             | 50 (4.60)   | 0.25 (0.85)   | 215  |
| Health/Institutional | 200 (1.15)  | 1.00 (3.41)   | 135  |
| Hotel/Motel          | 250 (0.92)  | 0.25 (0.85)   | 1,110  |
| Light Manufacturing  | 750 (0.31)  | 0.20 (0.68)   | 225  |
| Office               | 275 (0.84)  | 0.75 (2.56)   | 175  |
| Parking Garage       | N.A.  | N.A.  | N.A.   |
| Restaurant           | 100 (2.30)  | 0.10 (0.34)   | 390  |
| Retail               | 300 (0.77)  | 0.25 (0.85)   | 135  |
| School               | 75 (3.07)   | 0.50 (1.71)   | 215  |
| Warehouse            | 15,000 (0.02)   | 0.10 (0.34)   | 225  |

1. The occupancy densities, receptacle power densities and service hot water consumption values are from ASHRAE Standard 90.1-1989 and addenda.
2. Values are in square feet of conditioned floor area per person. Heat generation in Btu per person per hour is 230 sensible and 190 latent. Figures in parentheses are equivalent Btu per hour per square foot.
3. Values are in Watts per square foot of conditioned floor area. Figures in parentheses are equivalent Btu per hour per square foot. These values are the minimum acceptable. If other process loads are not input (such as for computers, cooking, refrigeration, etc.), it is recommended that receptacle power densities be increased until total process energy consumption is equivalent to 25% of the total.
4. Values are in Btu per person per hour.)

**3.1 Building Performance Calculations.** The simulation model for calculating the proposed and baseline building performance shall be developed in accordance with the requirements in Table 3.1.

For the baseline building and the proposed building, shading by permanent structures and terrain shall be taken into account for computing energy consumption whether or not these features are located on the building site. A permanent fixture is one that is likely to remain for the life of the proposed design.

**3.1.1 Baseline HVAC System Type and Description.** HVAC systems in the baseline building design shall be based on usage, number of floors, conditioned floor area, and heating source as specified in Table 3.1.1A and shall conform with the system descriptions in Table 3.1.1B. For systems 1, 2, 3, and 4, each thermal block shall be modeled with its own HVAC system. For systems 5, 6, 7, and 8, each floor shall be modeled with a separate HVAC system. Floors with identical thermal blocks can be grouped for modeling purposes.

- EXCEPTIONS:
1. Use additional system type(s) for nonpredominant conditions (i.e., residential/nonresidential or heating source) if those conditions apply to more than 20,000 ft<sup>2</sup> of conditioned floor area.
  2. If the baseline HVAC system type is 5, 6, 7, or 8, use separate single-zone systems conforming with the requirements of system 3 or system 4 (depending on building heating source) for any spaces that have occupancy or process loads or schedules that differ significantly from the rest of the building. Peak thermal loads that differ by 10 Btu/h-ft<sup>2</sup> or more from the average of other spaces served by the system or schedules that differ by more than 40 equivalent full-load hours per week from other spaces served by the system are considered to differ significantly. Examples where this exception may be applicable include, but are not limited to, computer server rooms, natatoriums, and continually occupied security areas.
  3. If the baseline HVAC system type is 5, 6, 7, or 8, use separate single-zone systems conforming with the requirements of system 3 or system 4 (depending on building heat source) for any zones having special pressurization relationships, cross-contamination requirements, or code-required minimum circulation rates.
  4. For laboratory spaces with a minimum of 5000 cfm of exhaust, use system type 5 or 7 that reduce the exhaust and makeup air volume to 50% of design values during unoccupied periods. For all-electric buildings, the heating shall be electric resistance.

**3.1.1.1 Purchased Heat.** For systems using purchased hot water or steam on-site boilers shall not be modeled in the baseline building design.

**3.1.2 General Baseline HVAC System Requirements.** HVAC systems in the baseline building design shall conform with the general provisions in this section.

**3.1.2.1 Equipment Efficiencies.** All HVAC equipment in the baseline building design shall be modeled at the minimum efficiency levels, both part load and full load, in accordance with Section 1411. Where efficiency ratings, such as EER and COP, include fan energy, the descriptor shall be broken down into its components so that supply fan energy can be modeled separately.

**3.1.2.2 Equipment Capacities.** The equipment capacities for the baseline building design shall be based on sizing runs for each orientation (per Table 3.1, No. 5a) and shall be oversized by 15% for cooling and 25% for heating, i.e., the ratio between the capacities used in the annual simulations and the capacities determined by the sizing runs shall be 1.15 for cooling and 1.25 for heating. Unmet load hours for the proposed design or baseline building designs shall not exceed 300 (of the 8760 hours simulated), and unmet load hours for the proposed design shall not exceed the number of unmet load hours for the baseline building design by more than 50. If unmet load hours in the proposed design exceed the unmet load hours in the baseline building by more than 50, simulated capacities in the baseline building shall be decreased incrementally and the building resimulated until the unmet load hours are within 50 of the unmet load hours of the proposed design. If unmet load hours for the proposed design or baseline building design exceed 300, simulated capacities shall be increased incrementally, and the building with unmet loads resimulated until unmet load hours are reduced to 300 or less. Alternatively, unmet load hours exceeding these limits may be accepted at the discretion of the building official provided that sufficient justification is given indicating that the accuracy of the simulation is not significantly compromised by these unmet loads.

**3.1.2.2.1 Sizing Runs.** Weather conditions used in sizing runs to determine baseline equipment capacities may be based either on hourly historical weather files containing typical peak conditions or on design days developed using 99.6% heating design temperatures and 1% dry-bulb and 1% wet-bulb cooling design temperatures.

**3.1.2.3 Preheat Coils.** If the HVAC system in the proposed design has a preheat coil and a preheat coil can be modeled in the baseline system, the baseline system shall be modeled with a preheat coil controlled in the same manner as the proposed design.

**3.1.2.4 Fan System Operation.** Supply and return fans shall operate continuously whenever spaces are occupied and shall be cycled to meet heating and cooling loads during unoccupied hours. If the supply fan is modeled as cycling and fan energy is included in the energy-efficiency rating of the equipment, fan energy shall not be modeled explicitly. Supply, return, and/or exhaust fans will remain on during occupied and unoccupied hours in spaces that have health and safety mandated minimum ventilation requirements during unoccupied hours.

**3.1.2.5 Ventilation.** Minimum outdoor air ventilation rates shall be the same for the proposed and baseline building designs.

**EXCEPTION:** When modeling demand-control ventilation in the proposed design when its use is not required by Section 1412.8.

**3.1.2.6 Economizers.** Outdoor air economizers shall not be included in baseline HVAC Systems 1 and 2 where not required by Section 1433. Outdoor air economizers shall be included in baseline HVAC Systems 3 through 8.

**EXCEPTION:** Economizers shall not be included for systems meeting one or more of the exceptions listed below.

1. Systems that include gas-phase air cleaning to meet the requirements of Section 6.1.2 in Standard 62.1. This exception shall be used only if the system in the proposed design does not match the building design.
2. Where the use of outdoor air for cooling will affect supermarket open refrigerated casework systems. This exception shall only be used if the system in the proposed design does not use an economizer. If the exception is used, an economizer shall not be included in the baseline building design.

**3.1.2.7 Economizer High-Limit Shutoff.** The high-limit shutoff shall be a dry-bulb switch with 75°F setpoint temperatures.

**3.1.2.8 Design Airflow Rates.** System design supply airflow rates for the baseline building design shall be based on a supply-air-to-room-air temperature difference of 20°F or the required ventilation air or makeup air, whichever is greater. If return or relief fans are specified in the proposed design, the baseline building design shall also be modeled with fans serving the same functions and sized for the baseline system supply fan air quantity less the minimum outdoor air, or 90% of the supply fan air quantity, whichever is larger.

**3.1.2.9 System Fan Power.** System fan electrical power for supply, return, exhaust, and relief (excluding power to fan-powered VAV boxes) shall be calculated using the following formulas:

For Systems 1 and 2,

$$P_{\text{fan}} = \text{CFM}_s \times 0.3.$$

For Systems 3 through 8,

$$P_{\text{fan}} = \text{bhp} \times 746 / \text{Fan Motor Efficiency.}$$

Where:

|                      |   |   |
|----------------------|---|---|
| $P_{\text{fan}}$     | = | Electric power to fan motor (watts) and   |
| bhp                  | = | Brake horsepower of baseline fan motor from Table 3.1.2.9.  |
| Fan Motor Efficiency | = | The efficiency from Table 14-4 for the next motor size greater than the bhp using the enclosed motor at 1800 rpm. |
| $\text{CFM}_s$       | = | The baseline system maximum design supply fan airflow rate in cfm.  |

**3.1.2.10 Exhaust Air Energy Recovery.** Systems shall conform with the provisions of Chapter 14.

**3.1.3 System-Specific Baseline HVAC System Requirements.** Baseline HVAC systems shall conform with provisions in this section, where applicable, to the specified baseline system types as indicated in section headings.

**3.1.3.1 Heat Pumps (Systems 2 and 4).** Electric air-source heat pumps shall be modeled with electric auxiliary heat. The systems shall be controlled with multistage space thermostats and an outdoor air thermostat wired to energize auxiliary heat only on the last thermostat stage and when outdoor air temperature is less than 40°F.

**3.1.3.2 Type and Number of Boilers (Systems 1, 5, and 7).** The boiler plant shall use the same fuel as the proposed design and shall be natural draft, except as noted in Section

3.1.1.1. The baseline building design boiler plant shall be modeled as having a single boiler if the baseline building design plant serves a conditioned floor area of 15,000 ft<sup>2</sup> or less and as having two equally sized boilers for plants serving more than 15,000 ft<sup>2</sup>. Boilers shall be staged as required by the load.

**3.1.3.3 Hot-Water Supply Temperature (Systems 1, 5, and 7).** Hot-water design supply temperature shall be modeled as 180°F and design return temperature as 130°F.

**3.1.3.4 Hot-Water Supply Temperature Reset (Systems 1, 5, and 7).** Hot-water supply temperature shall be reset based on outdoor dry-bulb temperature using the following schedule: 180°F at 20°F and below, 150°F at 50°F and above, and ramped linearly between 180°F and 150°F at temperatures between 20°F and 50°F.

**3.1.3.5 Hot-Water Pumps (Systems 1, 5, and 7).** The baseline building design hot-water pump power shall be 19 W/gpm. The pumping system shall be modeled as primary-only with continuous variable flow. Hot-water systems serving 120,000 ft<sup>2</sup> or more shall be modeled with variable-speed drives, and systems serving less than 120,000 ft<sup>2</sup> shall be modeled as riding the pump curve.

**3.1.3.6 Piping Losses (Systems 1, 5, 7, and 8).** Piping losses shall not be modeled in either the proposed or baseline building designs for hot water, chilled water, or steam piping.

**3.1.3.7 Type and Number of Chillers (Systems 7 and 8).** Electric chillers shall be used in the baseline building design regardless of the cooling energy source, e.g., direct-fired absorption, absorption from purchased steam, or purchased chilled water. The baseline building design's chiller plant shall be modeled with chillers having the number and type as indicated in Table 3.1.3.7 as a function of building peak cooling load.

**3.1.3.8 Chilled-Water Design Supply Temperature (Systems 7 and 8).** Chilled-water design supply temperature shall be modeled at 44°F and return water temperature at 56°F.

**3.1.3.9 Chilled-Water Supply Temperature Reset (Systems 7 and 8).** Chilled-water supply temperature shall be reset based on outdoor dry-bulb temperature using the following schedule: 44°F at 80°F and above, 54°F at 60°F and below, and ramped linearly between 44°F and 54°F at temperatures between 80°F and 60°F.

**3.1.3.10 Chilled-Water Pumps (Systems 7 and 8).** The baseline building design pump power shall be 22 W/gpm. Chilled-water systems with a cooling capacity of 300 tons or more shall be modeled as primary/secondary systems with variable-speed drives on the secondary pumping loop. Chilled-water pumps in systems serving less than 300 tons cooling capacity shall be modeled as primary/secondary systems with secondary pump riding the pump curve.

**3.1.3.11 Heat Rejection (Systems 7 and 8).** The heat rejection device shall be an axial fan cooling tower with two-speed fans. Condenser water design supply temperature shall be

85°F or 10°F approaching design wet-bulb temperature, whichever is lower, with a design temperature rise of 10°F. The tower shall be controlled to maintain a 70°F leaving water temperature where weather permits, floating up to leaving water temperature at design conditions. The baseline building design condenser-water pump power shall be 19 W/gpm. Each chiller shall be modeled with separate condenser water and chilled-water pumps interlocked to operate with the associated chiller.

**3.1.3.12 Supply Air Temperature Reset (Systems 5 through 8).** The air temperature for cooling shall be reset higher by 5°F under the minimum cooling load conditions.

**3.1.3.13 VAV Minimum Flow Setpoints (Systems 5 and 7).** Minimum volume setpoints for VAV reheat boxes shall be 0.4 cfm/ft<sup>2</sup> of floor area served or the minimum ventilation rate, whichever is larger.

**3.1.3.14 Fan Power (Systems 6 and 8).** Fans in parallel VAV fan-powered boxes shall be sized for 50% of the peak design flow rate and shall be modeled with 0.35 W/cfm fan power. Minimum volume setpoints for fan-powered boxes shall be equal to 30% of peak design flow rate or the rate required to meet the minimum outdoor air ventilation requirement, whichever is larger. The supply air temperature setpoint shall be constant at the design condition.

**3.1.3.15 VAV Fan Part-Load Performance (Systems 5 through 8).** VAV system supply fans shall have variable-speed drives, and their part-load performance characteristics shall be modeled using either Method 1 or Method 2 specified in Table 3.1.3.15.

**TABLE 3.1**  
**Modeling Requirements for Calculating Proposed and Baseline Building Performance**

| <b>No.</b>                          | <b>Proposed Building Performance</b>   | <b>Baseline Building Performance</b>  |
|-------------------------------------|--|---|
| <b>1. Design Model</b>              | <p>a. <u>The simulation model of the proposed design shall be consistent with the design documents, including proper accounting of fenestration and opaque envelope types and areas; interior lighting power and controls; HVAC system types, sizes, and controls; and service water heating systems and controls. All end-use load components within and associated with the building shall be modeled, including, but not limited to, exhaust fans, parking garage ventilation fans, snow-melt and freeze-protection equipment, facade lighting, swimming pool heaters and pumps, elevators and escalators, refrigeration, and cooking. Where the simulation program does not specifically model the functionality of the installed system, spreadsheets or other documentation of the assumptions shall be used to generate the power demand and operating schedule of the systems.</u></p> <p>b. <u>All conditioned spaces in the proposed design shall be simulated as being both heated and cooled even if no heating or cooling system is to be installed, and temperature and humidity control setpoints and schedules shall be the same for proposed and baseline building designs.</u></p> <p>c. <u>When the performance rating method is applied to buildings in which energy-related features have not yet been designed (e.g., a lighting system), those yet-to-be-designed features shall be described in the proposed design exactly as they are defined in the baseline building design. Where the space classification for a space is not known, the space shall be categorized as an office space.</u></p> | <p><u>The baseline building design shall be modeled with the same number of floors and identical conditioned floor area as the proposed design.</u></p>   |
| <b>2. Additions and Alterations</b> | <p><u>It is acceptable to predict performance using building models that exclude parts of the existing building provided that all of the following conditions are met:</u></p> <p>a. <u>Work to be performed in excluded parts of the building shall meet the requirements of Chapters 11 through 15.</u></p> <p>b. <u>Excluded parts of the building are served by HVAC systems that are entirely separate from those serving parts of the building that are included in the building model.</u></p> <p>c. <u>Design space temperature and HVAC system operating setpoints and schedules on either side of the boundary between included and excluded parts of the building are essentially the same.</u></p> <p>d. <u>If a declining block or similar utility rate is being used in the analysis and the excluded and included parts of the building are on the same utility meter, the rate shall reflect the utility block or rate for the building plus the addition.</u></p>   | <p><u>Same as Proposed Design</u></p>   |
| <b>3. Space Use Classification</b>  | <p><u>Usage shall be specified using the building type or space type lighting classifications in accordance with Sections 1530 through 1531. The user shall specify the space use classifications using either the building type or space type categories but shall not combine the two types of categories. More than one building type category may be used in a building if it is a mixed-use facility. If space type categories are used, the user may simplify the placement of the various space types within the building model, provided that building-total areas for each space type are accurate.</u></p>   | <p><u>Same as Proposed Design</u></p>   |
| <b>4. Schedules</b>                 | <p><u>Schedules capable of modeling hourly variations in occupancy, lighting power, miscellaneous equipment power, thermostat setpoints, and HVAC system operation shall be used. The schedules shall be typical of the proposed building type as determined by the designer and approved by the building official.</u></p> <p><u>Default schedules are included in Tables 3.3A through 3.3J.</u></p> <p><u>HVAC Fan Schedules. Schedules for HVAC fans that provide outdoor air for ventilation shall run continuously whenever spaces are occupied and shall be cycled on and off to meet heating and cooling loads during unoccupied hours.</u></p> <p><u>Exceptions:</u></p> <p>a. <u>Where no heating and/or cooling system is to be installed and a heating or cooling system is being simulated only to meet the requirements described in this table, heating and/or cooling system fans shall not be simulated as running continuously during occupied hours but shall be cycled on and off to meet heating and cooling loads during all hours.</u></p> <p>b. <u>HVAC fans shall remain on during occupied and unoccupied hours in spaces that have health and safety mandated minimum ventilation requirements during unoccupied hours.</u></p>  | <p><u>Same as Proposed Design</u></p> <p><u>Exception: Schedules may be allowed to differ between proposed design and baseline building design when necessary to model nonstandard efficiency measures, provided that the revised schedules have the approval of the building official. Measures that may warrant use of different schedules include, but are not limited to, lighting controls, natural ventilation, demand control ventilation, and measures that reduce service water heating loads.</u></p> |
| <b>5. Building Envelope</b>         | <p><u>All components of the building envelope in the proposed design shall be modeled as shown on architectural drawings or as built for existing building envelopes.</u></p> <p><u>Exceptions: The following building elements are permitted to differ from architectural drawings.</u></p> <p>a. <u>All uninsulated assemblies (e.g., projecting balconies, perimeter edges of intermediate floor slabs, concrete floor beams over parking garages, roof parapet) shall be separately modeled using either of the following techniques:</u></p>  | <p><u>Equivalent dimensions shall be assumed for each exterior envelope component type as in the proposed design; i.e., the total gross area of exterior walls shall be the same in the proposed and baseline building designs. The same shall be true for the areas of roofs, floors, and doors, and the</u></p>   |

**No.****Proposed Building Performance**

1. Separate model of each of these assemblies within the energy simulation model.
  2. Separate calculation of the U-factor for each of these assemblies. The U-factors of these assemblies are then averaged with larger adjacent surfaces using an area-weighted average method. This average U-factor is modeled within the energy simulation model.
- Any other envelope assembly that covers less than 5% of the total area of that assembly type (e.g., exterior walls) need not be separately described provided that it is similar to an assembly being modeled. If not separately described, the area of an envelope assembly shall be added to the area of an assembly of that same type with the same orientation and thermal properties.

- b. Exterior surfaces whose azimuth orientation and tilt differ by less than 45 degrees and are otherwise the same may be described as either a single surface or by using multipliers.
- c. For exterior roofs, the roof surface may be modeled with a reflectance of 0.45 if the reflectance of the proposed design roof is greater than 0.70 and its emittance is greater than 0.75 or has a minimum SRI of 82. Reflectance values shall be based on testing in accordance with ASTM C1549, ASTM E903, or ASTM E1918, and emittance values shall be based on testing in accordance with ASTM C1371 or ASTM E408, and SRI shall be based on ASTM E1980 calculated at medium wind speed. All other roof surfaces shall be modeled with a reflectance of 0.30.
- d. Manual fenestration shading devices such as blinds or shades shall not be modeled. Automatically controlled fenestration shades or blinds may be modeled. Permanent shading devices such as fins, overhangs, and light shelves may be modeled.

**Baseline Building Performance**

exposed perimeters of concrete slabs on grade shall also be the same in the proposed and baseline building designs. The following additional requirements shall apply to the modeling of the baseline building design:

- a. **Orientation.** The baseline building performance shall be generated by simulating the building with its actual orientation and again after rotating the entire building 90, 180, and 270 degrees, then averaging the results. The building shall be modeled so that it does not shade itself.
- b. **Opaque Assemblies.** Opaque assemblies used for new buildings or additions shall conform with the following common, lightweight assembly types and shall match the appropriate assembly maximum U-factors in Tables 13-1 and 13-2:
  - Roofs—Insulation entirely above deck
  - Above-grade walls—Steel-framed
  - Floors—Steel-joist
  - Opaque door types shall match the proposed design and conform to the U-factor requirements from the same tables.
  - Slab-on-grade floors shall match the F-factor for unheated slabs from the same tables.Opaque assemblies used for alterations shall conform with Section 1132.1.

c. **Vertical Fenestration.** Vertical fenestration areas for new buildings and additions shall equal that in the proposed design or 40% of gross above-grade wall area, whichever is smaller, and shall be distributed on each face of the building in the same proportions in the proposed design.

Fenestration U-factors and SHGC shall match the appropriate requirements in Tables 13-1 and 13-2. All vertical glazing shall be assumed to be flush with the exterior wall, and no shading projections shall be modeled. Manual window shading devices such as blinds or shades shall not be modeled. The fenestration areas for envelope alterations shall reflect the limitations on area, U-factor, and SHGC as described in Section 1132.1.

d. **Skylights and Glazed Smoke Vents.** Skylight area shall be equal to that in the proposed building design or 5% of the gross roof area that is part of the building envelope, whichever is smaller. If the skylight area of the proposed building design is greater than 5% of the gross roof area, baseline skylight area shall be decreased by an identical percentage in all roof components in which skylights are located to reach the 5% skylight-to-roof ratio. Skylight orientation and tilt shall be the same as in the proposed building design. Skylight U-factor and SHGC properties shall match the appropriate requirements in Tables 13-1 and 13-2.

e. **Roof albedo.** All roof surfaces shall be modeled with a reflectivity of 0.30.

f. **Existing Buildings.** For existing building envelopes, the baseline building design shall reflect existing conditions prior to any revisions that are part of the scope of work being evaluated.



| No.  | Proposed Building Performance  | Baseline Building Performance  |
|--|--|--|
| <b>6. Lighting</b>   | <p>Lighting power in the proposed design shall be determined as follows:</p> <p>a. Where a complete lighting system exists, the actual lighting power for each thermal block shall be used in the model.</p> <p>b. Where a lighting system has been designed, lighting power shall be determined in accordance with Chapter 15.</p> <p>c. Where lighting neither exists nor is specified, lighting power shall be determined in accordance with the building area method for the appropriate building type.</p> <p>d. Lighting system power shall include all lighting system components shown or provided for on the plans (including lamps and ballasts and task and furniture-mounted fixtures).</p> <p><u>Exception: For multifamily dwelling units, hotel/motel guest rooms, and other spaces in which lighting systems are connected via receptacles and are not shown or provided for on building plans, assume identical lighting power for the proposed and baseline building designs in the simulations.</u></p> <p>e. Lighting power for parking garages and building facades shall be modeled.</p> <p>f. Credit may be taken for the use of automatic controls for daylight utilization not otherwise required by Section 1513 but only if their operation is either modeled directly in the building simulation or modeled in the building simulation through schedule adjustments determined by a separate daylighting analysis approved by the building official.</p> <p>g. For automatic lighting controls in addition to those required for minimum code compliance under Section 1513, credit may be taken for automatically controlled systems by reducing the connected lighting power by the applicable percentages listed in Table 3.2. Alternatively, credit may be taken for these devices by modifying the lighting schedules used for the proposed design, provided that credible technical documentation for the modifications are provided to the building official.</p> | <p>Lighting power in the baseline building design shall be determined using the same categorization procedure and categories as the proposed design with lighting power set equal to the maximum allowed for the corresponding method and category in Chapter 15. Automatic lighting controls (e.g., programmable controls or automatic controls for daylight utilization) shall be modeled in the baseline building design as required by Section 1513.</p> |
| <b>7. Thermal Blocks—HVAC Zones Designed</b>               | <p>Where HVAC zones are defined on HVAC design drawings, each HVAC zone shall be modeled as a separate thermal block.</p> <p><u>Exception: Different HVAC zones may be combined to create a single thermal block or identical thermal blocks to which multipliers are applied, provided that all of the following conditions are met:</u></p> <p>a. The space use classification is the same throughout the thermal block.</p> <p>b. All HVAC zones in the thermal block that are adjacent to glazed exterior walls face the same orientation or their orientations vary by less than 45 degrees.</p> <p>c. All of the zones are served by the same HVAC system or by the same kind of HVAC system.</p>  | Same as Proposed Design  |
| <b>8. Thermal Blocks—HVAC Zones Not Designed</b>           | <p>Where the HVAC zones and systems have not yet been designed, thermal blocks shall be defined based on similar internal load densities, occupancy, lighting, thermal and space temperature schedules, and in combination with the following guidelines:</p> <p>a. Separate thermal blocks shall be assumed for interior and perimeter spaces. Interior spaces shall be those located greater than 15 ft from an exterior wall. Perimeter spaces shall be those located within 15 ft of an exterior wall.</p> <p>b. Separate thermal blocks shall be assumed for spaces adjacent to glazed exterior walls; a separate zone shall be provided for each orientation, except that orientations that differ by less than 45 degrees may be considered to be the same orientation. Each zone shall include all floor area that is 15 ft or less from a glazed perimeter wall, except that floor area within 15 ft of glazed perimeter walls having more than one orientation shall be divided proportionately between zones.</p> <p>c. Separate thermal blocks shall be assumed for spaces having floors that are in contact with the ground or exposed to ambient conditions from zones that do not share these features.</p> <p>d. Separate thermal blocks shall be assumed for spaces having exterior ceiling or roof assemblies from zones that do not share these features.</p>   | Same as Proposed Design.   |
| <b>9. Thermal Blocks—Multifamily Residential Buildings</b> | <p>Residential spaces shall be modeled using at least one thermal block per dwelling unit, except that those units facing the same orientations may be combined into one thermal block. Corner units and units with roof or floor loads shall only be combined with units sharing these features.</p>  | Same as Proposed Design.   |
| <b>10. HVAC Systems</b>                                    | <p>The HVAC system type and all related performance parameters in the proposed design, such as equipment capacities and efficiencies, shall be determined as follows:</p> <p>a. Where a complete HVAC system exists, the model shall reflect the actual system type using actual component capacities and efficiencies.</p> <p>b. Where an HVAC system has been designed, the HVAC model shall be consistent with design documents. Mechanical equipment efficiencies shall be adjusted from actual design conditions to the standard rating conditions specified in Section 1411 if required by the simulation model.</p>   | <p>The HVAC system(s) in the baseline building design shall be of the type and description specified in Section 3.1.1, shall meet the general HVAC system requirements specified in Section 3.1.2, and shall meet any system-specific requirements in Section 3.1.3 that are applicable to the baseline HVAC system type(s).</p>   |

**No.****Proposed Building Performance****Baseline Building Performance**

c. Where no heating system exists or no heating system has been specified, the heating system classification shall be assumed to be electric, and the system characteristics shall be identical to the system modeled in the baseline building design.

d. Where no cooling system exists or no cooling system has been specified, the cooling system shall be identical to the system modeled in the baseline building design.

**11. Service Hot-Water Systems**

The service hot-water system type and all related performance parameters, such as equipment capacities and efficiencies, in the proposed design shall be determined as follows:

a. Where a complete service hot-water system exists, the proposed design shall reflect the actual system type using actual component capacities and efficiencies.

b. Where a service hot-water system has been specified, the service hot-water model shall be consistent with design documents.

c. Where no service hot-water system exists or has been specified but the building will have service hot-water loads, a service hot-water system shall be modeled that matches the system in the baseline building design and serves the same hot-water loads.

d. For buildings that will have no service hot-water loads, no service hot-water system shall be modeled.

The service hot-water system in the baseline building design shall use the same energy source as the corresponding system in the proposed design and shall conform with the following conditions:

a. Where the complete service hot-water system exists, the baseline building design shall reflect the actual system type using the actual component capacities and efficiencies.

b. Where a new service hot-water system has been specified, the system shall be sized using the same methods and values as the proposed design and the equipment shall match the minimum efficiency requirements in Chapter 14. Where the energy source is electricity, the heating method shall be electrical resistance.

c. Where no service hot-water system exists or has been specified but the building will have service hot-water loads, a service water system(s) using electrical-resistance heat and matching minimum efficiency requirements of Chapter 14 shall be assumed and modeled identically in the proposed and baseline building designs.

d. For buildings that will have no service hot-water loads, no service hot-water heating shall be modeled.

e. Where a combined system has been specified to meet both space heating and service water heating loads, the baseline building system shall use separate systems meeting the minimum efficiency requirements applicable to each system individually.

f. For large, 24-hour-per-day facilities that meet the prescriptive criteria for use of condenser heat recovery systems described in Section 1436.3, a system meeting the requirements of that section shall be included in the baseline building design regardless of the exceptions to Section 1436.3.

Exception: If a condenser heat recovery system meeting the requirements described in Section 1436.3 cannot be modeled, the requirement for including such a system in the actual building shall be met as a prescriptive requirement in accordance with Section 1436.3, and no heat-recovery system shall be included in the proposed or baseline building designs.

g. Service hot-water energy consumption shall be calculated explicitly based upon the volume of service hot water required and the entering makeup water and the leaving service hot-water temperatures. Entering water temperatures shall be estimated based upon the location. Leaving temperatures shall be based upon the end-use requirements.

h. Where recirculation pumps are used to ensure prompt availability of service hot water at the end use, the energy consumption of such pumps shall be calculated explicitly.

No.Proposed Building PerformanceBaseline Building Performance

i. Service water loads and usage shall be the same for both the baseline building design and the proposed design and shall be documented by the calculation procedures recommended by the manufacturer's specifications or generally accepted engineering methods.

Exceptions:

1. Appliances that are not built-in (e.g., washing machines) and plumbing fixtures (e.g., faucets and low-flow showerheads) shall be modeled the same for both the baseline building design and the proposed design. Other service hot-water usage can be demonstrated to be reduced by documented water conservation measures that reduce the physical volume of service water required. Such reduction shall be demonstrated by calculations.

2. Service hot-water energy consumption can be demonstrated to be reduced by reducing the required temperature of service mixed water, by increasing the temperature, or by increasing the temperature of the entering makeup water. Examples include alternative sanitizing technologies for dishwashing and heat recovery to entering makeup water. Such reduction shall be demonstrated by calculations.

3. Service hot-water usage can be demonstrated to be reduced by reducing the hot fraction of mixed water to achieve required operational temperature. Examples include shower or laundry heat recovery to incoming cold-water supply, reducing the hot-water fraction required to meet required mixed-water temperature. Such reduction shall be demonstrated by calculations.

**12. Receptacle and Other Loads**

Receptacle and process loads where not otherwise covered by this code, such as those for office and other equipment, shall be estimated based on the building type or space type category and shall be assumed to be identical in the proposed and baseline building designs. These loads shall be included in simulations of the building and shall be included when calculating the baseline building performance and proposed building performance.

Default process loads are included in Table 4.

Other systems, such as motors covered by Sections 1437, 1438 and 1511, and miscellaneous loads shall be modeled as identical to those in the proposed design including schedules of operation and control of the equipment. Where there are specific efficiency requirements in Sections 1437, 1438 and 1511, these systems or components shall be modeled as having the lowest efficiency allowed by those requirements. Where no efficiency requirements exist, power and energy rating or capacity of the equipment shall be identical between the baseline building and the proposed design with the following exception: Variations of the power requirements, schedules, or control sequences of the equipment modeled in the baseline building from those in the proposed design may be allowed by the building official based upon documentation that the equipment installed in the proposed design represents a significant verifiable departure from documented conventional practice. The burden of this documentation is to demonstrate that accepted conventional practice would result in baseline building equipment different from that installed in the proposed design. Occupancy and occupancy schedules may not be changed. Process loads must represent a minimum of 25% of the total baseline building energy consumption. For buildings where the process energy is less than 25% of the baseline building energy

|            |                                      |  |
|------------|--------------------------------------|--|
| <u>No.</u> | <u>Proposed Building Performance</u> | <u>Baseline Building Performance</u><br>usage, the permit submittal must include supporting documentation substantiating that process energy inputs are appropriate. |
|------------|--------------------------------------|--|

**13. Modeling Limitations to the Simulation Program**

If the simulation program cannot model a component or system included in the proposed design explicitly, substitute a thermodynamically similar component model that can approximate the expected performance of the component that cannot be modeled explicitly. Same as Proposed Design.

**TABLE 3.1.1A**  
**Baseline HVAC System Types**

| <u>Building Type</u>   | <u>Fossil Fuel, Fossil/Electric Hybrid, and Purchased Heat</u> | <u>Electric and Other</u> |
|--|--|---------------------------|
| Residential  | System 1—PTAC  | System 2—PTHP             |
| Nonresidential and 3 Floors or Less and <25,000 ft <sup>2</sup>        | System 3—PSZ-AC  | System 4—PSZ-HP           |
| Nonresidential and 4 or 5 Floors and <25,000 ft <sup>2</sup> or        | System 5—Packaged  | System 6—Packaged VAV     |
| 5 Floors or Less and 25,000 ft <sup>2</sup> to 150,000 ft <sup>2</sup> | VAV with Reheat  | with PFP Boxes            |
| Nonresidential and More than 5 Floors or                               | System 7—VAV   | System 8—VAV              |
| >150,000 ft <sup>2</sup>   | with Reheat  | with PFP Boxes            |

**Notes:**

Residential building types include dormitory, hotel, motel, and multifamily. Residential space types include guest rooms, living quarters, private living space, and sleeping quarters. Other building and space types are considered nonresidential.  
 Where no heating system is to be provided or no heating energy source is specified, use the "Electric and Other" heating source classification.  
 Where attributes make a building eligible for more than one baseline system type, use the predominant condition to determine the system type for the entire building.  
 For laboratory spaces with a minimum of 5000 cfm of exhaust, use system type 5 or 7 and reduce the exhaust and makeup air volume to 50% of design values during unoccupied periods. For all-electric buildings, the heating shall be electric resistance.

**TABLE 3.1.1B**  
**Baseline System Descriptions**

| <u>System No.</u>              | <u>System Type</u>                | <u>Fan Control</u> | <u>Cooling Type</u> | <u>Heating Type<sup>1</sup></u> |
|--------------------------------|-----------------------------------|--------------------|---------------------|---------------------------------|
| 1. PTAC                        | Packaged terminal air conditioner | Constant volume    | Direct expansion    | Hot-water fossil fuel boiler    |
| 2. PTHP                        | Packaged terminal heat pump       | Constant volume    | Direct expansion    | Electric heat pump              |
| 3. PSZ-AC                      | Packaged rooftop air conditioner  | Constant volume    | Direct expansion    | Fossil fuel furnace             |
| 4. PSZ-HP                      | Packaged rooftop heat pump        | Constant volume    | Direct expansion    | Electric heat pump              |
| 5. Packaged VAV with Reheat    | Packaged rooftop VAV with reheat  | VAV                | Direct expansion    | Hot-water fossil fuel boiler    |
| 6. Packaged VAV with PFP Boxes | Packaged rooftop VAV with reheat  | VAV                | Direct expansion    | Electric resistance             |
| 7. VAV with Reheat             | Packaged rooftop VAV with reheat  | VAV                | Chilled water       | Hot-water fossil fuel boiler    |
| 8. VAV with PFP Boxes          | VAV with reheat                   | VAV                | Chilled water       | Electric resistance             |

**TABLE 3.1.2.9B**  
**Fan Power Limitation Pressure Drop Adjustment**

| <u>Device</u>   | <u>Adjustment</u>  |
|---|--|
| <u>Credits</u>  |  |
| <u>Fully ducted return and/or exhaust air systems</u>   | 0.5 in. w.c.   |
| <u>Return and/or exhaust airflow control devices</u>  | 0.5 in. w.c.   |
| <u>Exhaust filters, scrubbers, or other exhaust treatment</u>                                 | The pressure drop of device calculated at fan system design condition                    |
| <u>Particulate Filtration Credit: MERV 9 through 12</u>                                       | 0.5 in. w.c.   |
| <u>Particulate Filtration Credit: MERV 13 through 15</u>                                      | 0.9 in. w.c.   |
| <u>Particulate Filtration Credit: MERV 16 and greater and electronically enhanced filters</u> | Pressure drop calculated at 2× clean filter pressure drop at fan system design condition |
| <u>Carbon and other gas-phase air cleaners</u>  | Clean filter pressure drop at fan system design condition                                |
| <u>Heat recovery device</u>   | Pressure drop of device at fan system design condition                                   |
| <u>Evaporative humidifier/cooler in series with another cooling coil</u>                      | Pressure drop of device at fan system design condition                                   |

|  |                   |
|--|-------------------|
| <u>Device</u>  | <u>Adjustment</u> |
| Sound Attenuation Section  | 0.15 in. w.c.     |
| Deductions   |                   |
| Fume Hood Exhaust Exception (required if 6.5.3.1.1 Exception [c] is taken) | -1.0 in. w.c.     |

<sup>1</sup>Heating fuel source for the baseline system shall match the proposed system in all cases for both primary and supplemental heat.

**TABLE 3.1.2.9 Baseline Fan Brake Horsepower**

| <u>Baseline Fan Motor Brake Horsepower</u>  |   |
|---|---|
| <u>Constant Volume Systems 3-4</u>  | <u>Variable Volume Systems 5-8</u>  |
| $CFM_s \times 0.00094 + A$  | $CFM_s \times 0.0013 + A$   |
| Where A is calculated as follows using the pressure drop adjustment from the proposed building design and the design flow rate of the baseline building system. |   |
| A   | ≡ Sum of [PD x CFM <sub>D</sub> /4131] where:   |
| PD  | ≡ Each applicable pressure drop adjustment from the table below in in. w.c.                         |
| CFM <sub>D</sub>  | ≡ The design air flow through each applicable device from the table below in cubic feet per minute. |

Do not include pressure drop adjustments for evaporative coolers or heat recovery devices that are not required in the baseline building system by Section 3.1.2.10.

**TABLE 3.1.3.7 Type and Number of Chillers**

| Building Peak Cooling Load | Number and Type of Chiller(s)   |
|----------------------------|---|
| <300 tons                  | 1 water-cooled screw chiller  |
| >300 tons, <600 tons       | 2 water-cooled screw chillers sized equally   |
| >600 tons                  | 2 water-cooled centrifugal chillers minimum with chillers added so that no chiller is larger than 800 tons, all sized equally |

**TABLE 3.1.3.15 Part-Load Performance for VAV Fan Systems**

| <u>Method 1—Part-Load Fan Power Data</u> |                                    |
|--|------------------------------------|
| <u>Fan Part-Load Ratio</u>               | <u>Fraction of Full-Load Power</u> |
| 0.00                                     | 0.00                               |
| 0.10                                     | 0.03                               |
| 0.20                                     | 0.07                               |
| 0.30                                     | 0.13                               |
| 0.40                                     | 0.21                               |
| 0.50                                     | 0.30                               |
| 0.60                                     | 0.41                               |
| 0.70                                     | 0.54                               |
| 0.80                                     | 0.68                               |
| 0.90                                     | 0.83                               |
| 1.00                                     | 1.00                               |

**Method 2—Part-Load Fan Power Equation**

$$P_{fan} \equiv 0.0013 + 0.1470 \times PLR_{fan} + 0.9506 \times (PLR_{fan})^2 - 0.0998 \times (PLR_{fan})^3$$

where:

- P<sub>fan</sub> ≡ Fraction of full-load fan power and
- PLR<sub>fan</sub> ≡ Fan part-load ratio (current cfm/design cfm).

**TABLE 3.2**

**Power Adjustment Percentages for Automatic Lighting Controls**

| <u>Automatic Control Device(s)</u>                  | <u>Exterior Lighting</u> |
|---|--------------------------|
| 1. Programmable timing control                      | 0%                       |
| 2. Occupancy sensor                                 | 10%                      |
| 3. Occupancy sensor and programmable timing control | 10%                      |

**TABLE ((3-2A)) 3.3A Assembly Occupancy<sup>1</sup>**

| Hour of Day (time) | Schedule for Occupancy  |     |     | Schedule for Lighting Receptacle |     |     | Schedule for HVAC System |     |     | Schedule for Service Hot Water |     |     | Schedule for Elevator   |     |     |
|--------------------|-------------------------|-----|-----|----------------------------------|-----|-----|--------------------------|-----|-----|--------------------------------|-----|-----|-------------------------|-----|-----|
|                    | Percent of Maximum Load |     |     | Percent of Maximum Load          |     |     | Percent of Maximum Load  |     |     | Percent of Maximum Load        |     |     | Percent of Maximum Load |     |     |
|                    | Wk                      | Sat | Sun | Wk                               | Sat | Sun | Wk                       | Sat | Sun | Wk                             | Sat | Sun | Wk                      | Sat | Sun |
| 1 (12-1am)         | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 0                              | 0   | 0   | 0                       | 0   | 0   |
| 2 (1-2am)          | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 0                              | 0   | 0   | 0                       | 0   | 0   |
| 3 (2-3am)          | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 0                              | 0   | 0   | 0                       | 0   | 0   |
| 4 (3-4am)          | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 0                              | 0   | 0   | 0                       | 0   | 0   |
| 5 (4-5am)          | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 0                              | 0   | 0   | 0                       | 0   | 0   |
| 6 (5-6am)          | 0                       | 0   | 0   | 5                                | 5   | 5   | on                       | off | off | 0                              | 0   | 0   | 0                       | 0   | 0   |
| 7 (6-7am)          | 0                       | 0   | 0   | 40                               | 5   | 5   | on                       | on  | on  | 0                              | 0   | 0   | 0                       | 0   | 0   |
| 8 (7-8am)          | 0                       | 0   | 0   | 40                               | 30  | 30  | on                       | on  | on  | 0                              | 0   | 0   | 0                       | 0   | 0   |
| 9 (8-9am)          | 20                      | 20  | 10  | 40                               | 30  | 30  | on                       | on  | on  | 0                              | 0   | 0   | 0                       | 0   | 0   |
| 10 (9-10am)        | 20                      | 20  | 10  | 75                               | 50  | 30  | on                       | on  | on  | 5                              | 5   | 5   | 0                       | 0   | 0   |
| 11 (10-11am)       | 20                      | 20  | 10  | 75                               | 50  | 30  | on                       | on  | on  | 5                              | 5   | 5   | 0                       | 0   | 0   |
| 12 (11-12pm)       | 80                      | 60  | 10  | 75                               | 50  | 30  | on                       | on  | on  | 35                             | 20  | 10  | 0                       | 0   | 0   |

| Hour of Day<br>(time) | Schedule for Occupancy  |       |       | Schedule for Lighting Receptacle |       |       | Schedule for HVAC System |      |      | Schedule for Service Hot Water |     |       | Schedule for Elevator   |       |     |
|-----------------------|-------------------------|-------|-------|----------------------------------|-------|-------|--------------------------|------|------|--------------------------------|-----|-------|-------------------------|-------|-----|
|                       | Percent of Maximum Load |       |       | Percent of Maximum Load          |       |       |                          |      |      | Percent of Maximum Load        |     |       | Percent of Maximum Load |       |     |
|                       | Wk                      | Sat   | Sun   | Wk                               | Sat   | Sun   | Wk                       | Sat  | Sun  | Wk                             | Sat | Sun   | Wk                      | Sat   | Sun |
| 13 (12-1pm)           | 80                      | 60    | 10    | 75                               | 50    | 65    | on                       | on   | on   | 5                              | 0   | 0     | 0                       | 0     | 0   |
| 14 (1-2pm)            | 80                      | 60    | 70    | 75                               | 50    | 65    | on                       | on   | on   | 5                              | 0   | 0     | 0                       | 0     | 0   |
| 15 (2-3pm)            | 80                      | 60    | 70    | 75                               | 50    | 65    | on                       | on   | on   | 5                              | 0   | 0     | 0                       | 0     | 0   |
| 16 (3-4pm)            | 80                      | 60    | 70    | 75                               | 50    | 65    | on                       | on   | on   | 5                              | 0   | 0     | 0                       | 0     | 0   |
| 17 (4-5pm)            | 80                      | 60    | 70    | 75                               | 50    | 65    | on                       | on   | on   | 5                              | 0   | 0     | 0                       | 0     | 0   |
| 18 (5-6pm)            | 80                      | 60    | 70    | 75                               | 50    | 65    | on                       | on   | on   | 0                              | 0   | 0     | 0                       | 0     | 0   |
| 19 (6-7pm)            | 20                      | 60    | 70    | 75                               | 50    | 65    | on                       | on   | on   | 0                              | 0   | 0     | 0                       | 0     | 0   |
| 20 (7-8pm)            | 20                      | 60    | 70    | 75                               | 50    | 65    | on                       | on   | on   | 0                              | 65  | 65    | 0                       | 0     | 0   |
| 21 (8-9pm)            | 20                      | 60    | 70    | 75                               | 50    | 65    | on                       | on   | on   | 0                              | 30  | 30    | 0                       | 0     | 0   |
| 22 (9-10pm)           | 20                      | 80    | 70    | 75                               | 50    | 65    | on                       | on   | on   | 0                              | 0   | 0     | 0                       | 0     | 0   |
| 23 (10-11pm)          | 10                      | 10    | 20    | 25                               | 50    | 5     | on                       | on   | on   | 0                              | 0   | 0     | 0                       | 0     | 0   |
| 24 (11-12am)          | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off  | off  | 0                              | 0   | 0     | 0                       | 0     | 0   |
| Total/Day             | 710                     | 750   | 700   | 1155                             | 800   | 845   | 1800                     | 1700 | 1700 | 70                             | 125 | 115   | 0                       | 0     | 0   |
| Total/Week            |                         | 50.50 | hours |                                  | 74.20 | hours |                          |      | 124  | hours                          | 5.9 | hours | 0                       | hours |     |
| Total/Year            |                         | 2633  | hours |                                  | 3869  | hours |                          |      | 6465 | hours                          | 308 | hours | 0                       | hours |     |

Wk = Weekday

- Schedules for occupancy, lighting, receptacle, HVAC system and service hot water are from ASHRAE Standard 90.1-1989 and addendums, except that 5% emergency lighting has been added for all off hours. Elevator schedules, except for restaurants, are from the U.S. Department of Energy Standard Evaluation Techniques except changed to 0% when occupancy is 0%. THESE VALUES MAY BE USED ONLY IF ACTUAL SCHEDULES ARE NOT KNOWN.

**TABLE ((3-2B)) 3.3B**  
**Health Occupancy<sup>1</sup>**

| Hour of Day<br>(time) | Schedule for Occupancy  |     |     | Schedule for Lighting Receptacle |     |     | Schedule for HVAC System |     |     | Schedule for Service Hot Water |     |     | Schedule for Elevator   |     |     |
|-----------------------|-------------------------|-----|-----|----------------------------------|-----|-----|--------------------------|-----|-----|--------------------------------|-----|-----|-------------------------|-----|-----|
|                       | Percent of Maximum Load |     |     | Percent of Maximum Load          |     |     |                          |     |     | Percent of Maximum Load        |     |     | Percent of Maximum Load |     |     |
|                       | Wk                      | Sat | Sun | Wk                               | Sat | Sun | Wk                       | Sat | Sun | Wk                             | Sat | Sun | Wk                      | Sat | Sun |
| 1 (12-1am)            | 0                       | 0   | 0   | 10                               | 10  | 5   | on                       | on  | on  | 1                              | 1   | 1   | 0                       | 0   | 0   |
| 2 (1-2am)             | 0                       | 0   | 0   | 10                               | 10  | 5   | on                       | on  | on  | 1                              | 1   | 1   | 0                       | 0   | 0   |
| 3 (2-3am)             | 0                       | 0   | 0   | 10                               | 10  | 5   | on                       | on  | on  | 1                              | 1   | 1   | 0                       | 0   | 0   |
| 4 (3-4am)             | 0                       | 0   | 0   | 10                               | 10  | 5   | on                       | on  | on  | 1                              | 1   | 1   | 0                       | 0   | 0   |
| 5 (4-5am)             | 0                       | 0   | 0   | 10                               | 10  | 5   | on                       | on  | on  | 1                              | 1   | 1   | 0                       | 0   | 0   |
| 6 (5-6am)             | 0                       | 0   | 0   | 10                               | 10  | 5   | on                       | on  | on  | 1                              | 1   | 1   | 0                       | 0   | 0   |
| 7 (6-7am)             | 0                       | 0   | 0   | 10                               | 10  | 5   | on                       | on  | on  | 1                              | 1   | 1   | 0                       | 0   | 0   |
| 8 (7-8am)             | 10                      | 10  | 0   | 50                               | 20  | 5   | on                       | on  | on  | 17                             | 1   | 1   | 2                       | 2   | 0   |
| 9 (8-9am)             | 50                      | 30  | 5   | 90                               | 40  | 10  | on                       | on  | on  | 58                             | 20  | 1   | 75                      | 46  | 2   |
| 10 (9-10am)           | 80                      | 40  | 5   | 90                               | 40  | 10  | on                       | on  | on  | 66                             | 28  | 1   | 100                     | 70  | 2   |
| 11 (10-11am)          | 80                      | 40  | 5   | 90                               | 40  | 10  | on                       | on  | on  | 78                             | 30  | 1   | 100                     | 70  | 2   |
| 12 (11-12pm)          | 80                      | 40  | 5   | 90                               | 40  | 10  | on                       | on  | on  | 82                             | 30  | 1   | 100                     | 70  | 2   |
| 13 (12-1pm)           | 80                      | 40  | 5   | 90                               | 40  | 10  | on                       | on  | on  | 71                             | 24  | 1   | 75                      | 51  | 2   |
| 14 (1-2pm)            | 80                      | 40  | 5   | 90                               | 40  | 10  | on                       | on  | on  | 82                             | 24  | 1   | 100                     | 51  | 2   |
| 15 (2-3pm)            | 80                      | 40  | 5   | 90                               | 40  | 10  | on                       | on  | on  | 78                             | 23  | 1   | 100                     | 51  | 2   |
| 16 (3-4pm)            | 80                      | 40  | 5   | 90                               | 40  | 10  | on                       | on  | on  | 74                             | 23  | 1   | 100                     | 51  | 2   |
| 17 (4-5pm)            | 80                      | 40  | 0   | 30                               | 40  | 5   | on                       | on  | on  | 63                             | 23  | 1   | 100                     | 51  | 0   |
| 18 (5-6pm)            | 50                      | 10  | 0   | 30                               | 40  | 5   | on                       | on  | on  | 41                             | 10  | 1   | 100                     | 25  | 0   |
| 19 (6-7pm)            | 30                      | 10  | 0   | 30                               | 10  | 5   | on                       | on  | on  | 18                             | 1   | 1   | 52                      | 2   | 0   |
| 20 (7-8pm)            | 30                      | 0   | 0   | 30                               | 10  | 5   | on                       | on  | on  | 18                             | 1   | 1   | 52                      | 0   | 0   |
| 21 (8-9pm)            | 20                      | 0   | 0   | 30                               | 10  | 5   | on                       | on  | on  | 18                             | 1   | 1   | 52                      | 0   | 0   |
| 22 (9-10pm)           | 20                      | 0   | 0   | 30                               | 10  | 5   | on                       | on  | on  | 10                             | 1   | 1   | 28                      | 0   | 0   |
| 23 (10-11pm)          | 0                       | 0   | 0   | 30                               | 10  | 5   | on                       | on  | on  | 1                              | 1   | 1   | 0                       | 0   | 0   |

| Hour of Day<br>(time) | Schedule for Occupancy  |       |       | Schedule for Lighting Receptacle |       |       | Schedule for HVAC System |      |       | Schedule for Service Hot Water |       |       | Schedule for Elevator   |       |       |
|-----------------------|-------------------------|-------|-------|----------------------------------|-------|-------|--------------------------|------|-------|--------------------------------|-------|-------|-------------------------|-------|-------|
|                       | Percent of Maximum Load |       |       | Percent of Maximum Load          |       |       | Percent of Maximum Load  |      |       | Percent of Maximum Load        |       |       | Percent of Maximum Load |       |       |
|                       | Wk                      | Sat   | Sun   | Wk                               | Sat   | Sun   | Wk                       | Sat  | Sun   | Wk                             | Sat   | Sun   | Wk                      | Sat   | Sun   |
| 24 (11-12am)          | 0                       | 0     | 0     | 10                               | 10    | 5     | on                       | on   | on    | 1                              | 1     | 1     | 0                       | 0     | 0     |
| Total/Day             | 850                     | 380   | 40    | 1060                             | 550   | 160   | 2400                     | 2400 | 2400  | 783                            | 249   | 24    | 1136                    | 540   | 16    |
| Total/Week            |                         | 46.70 | hours |                                  | 60.10 | hours |                          | 168  | hours |                                | 41.88 | hours |                         | 62.36 | hours |
| Total/Year            |                         | 2435  | hours |                                  | 3134  | hours |                          | 8760 | hours |                                | 2148  | hours |                         | 3251  | hours |

Wk = Weekday

- Schedules for occupancy, lighting, receptacle, HVAC system and service hot water are from ASHRAE Standard 90.1-1989 and addendums, except that 5% emergency lighting has been added for all off hours. Elevator schedules, except for restaurants, are from the U.S. Department of Energy Standard Evaluation Techniques except changed to 0% when occupancy is 0%. THESE VALUES MAY BE USED ONLY IF ACTUAL SCHEDULES ARE NOT KNOWN.

**TABLE ((3-2C)) 3.3C  
Hotel/Motel Occupancy<sup>1</sup>**

| Hour of Day<br>(time) | Schedule for Occupancy  |       |       | Schedule for Lighting Receptacle |       |       | Schedule for HVAC System |       |       | Schedule for Service Hot Water |       |       | Schedule for Elevator   |       |       |
|-----------------------|-------------------------|-------|-------|----------------------------------|-------|-------|--------------------------|-------|-------|--------------------------------|-------|-------|-------------------------|-------|-------|
|                       | Percent of Maximum Load |       |       | Percent of Maximum Load          |       |       | Percent of Maximum Load  |       |       | Percent of Maximum Load        |       |       | Percent of Maximum Load |       |       |
|                       | Wk                      | Sat   | Sun   | Wk                               | Sat   | Sun   | Wk                       | Sat   | Sun   | Wk                             | Sat   | Sun   | Wk                      | Sat   | Sun   |
| 1 (12-1am)            | 90                      | 90    | 70    | 20                               | 20    | 30    | on                       | on    | on    | 20                             | 20    | 25    | 40                      | 44    | 55    |
| 2 (1-2am)             | 90                      | 90    | 70    | 15                               | 20    | 30    | on                       | on    | on    | 15                             | 15    | 20    | 33                      | 35    | 55    |
| 3 (2-3am)             | 90                      | 90    | 70    | 10                               | 10    | 20    | on                       | on    | on    | 15                             | 15    | 20    | 33                      | 35    | 43    |
| 4 (3-4am)             | 90                      | 90    | 70    | 10                               | 10    | 20    | on                       | on    | on    | 15                             | 15    | 20    | 33                      | 35    | 43    |
| 5 (4-5am)             | 90                      | 90    | 70    | 10                               | 10    | 20    | on                       | on    | on    | 20                             | 20    | 20    | 33                      | 35    | 43    |
| 6 (5-6am)             | 90                      | 90    | 70    | 20                               | 10    | 20    | on                       | on    | on    | 25                             | 25    | 30    | 33                      | 35    | 43    |
| 7 (6-7am)             | 70                      | 70    | 70    | 40                               | 30    | 30    | on                       | on    | on    | 50                             | 40    | 50    | 42                      | 40    | 52    |
| 8 (7-8am)             | 40                      | 50    | 70    | 50                               | 30    | 40    | on                       | on    | on    | 60                             | 50    | 50    | 42                      | 32    | 52    |
| 9 (8-9am)             | 40                      | 50    | 50    | 40                               | 40    | 40    | on                       | on    | on    | 55                             | 50    | 50    | 52                      | 45    | 65    |
| 10 (9-10am)           | 20                      | 30    | 50    | 40                               | 40    | 30    | on                       | on    | on    | 45                             | 50    | 55    | 52                      | 45    | 65    |
| 11 (10-11am)          | 20                      | 30    | 50    | 25                               | 30    | 30    | on                       | on    | on    | 40                             | 45    | 50    | 40                      | 42    | 53    |
| 12 (11-12pm)          | 20                      | 30    | 30    | 25                               | 25    | 30    | on                       | on    | on    | 45                             | 50    | 50    | 51                      | 60    | 60    |
| 13 (12-1pm)           | 20                      | 30    | 30    | 25                               | 25    | 30    | on                       | on    | on    | 40                             | 50    | 40    | 51                      | 65    | 53    |
| 14 (1-2pm)            | 20                      | 30    | 20    | 25                               | 25    | 20    | on                       | on    | on    | 35                             | 45    | 40    | 51                      | 65    | 51    |
| 15 (2-3pm)            | 20                      | 30    | 20    | 25                               | 25    | 20    | on                       | on    | on    | 30                             | 40    | 30    | 51                      | 65    | 50    |
| 16 (3-4pm)            | 30                      | 30    | 20    | 25                               | 25    | 20    | on                       | on    | on    | 30                             | 40    | 30    | 51                      | 65    | 44    |
| 17 (4-5pm)            | 50                      | 30    | 30    | 25                               | 25    | 20    | on                       | on    | on    | 30                             | 35    | 30    | 63                      | 65    | 64    |
| 18 (5-6pm)            | 50                      | 50    | 40    | 25                               | 25    | 20    | on                       | on    | on    | 40                             | 40    | 40    | 80                      | 75    | 62    |
| 19 (6-7pm)            | 50                      | 60    | 40    | 60                               | 60    | 50    | on                       | on    | on    | 55                             | 55    | 50    | 86                      | 80    | 65    |
| 20 (7-8pm)            | 70                      | 60    | 60    | 80                               | 70    | 70    | on                       | on    | on    | 60                             | 55    | 50    | 70                      | 80    | 63    |
| 21 (8-9pm)            | 70                      | 60    | 60    | 90                               | 70    | 80    | on                       | on    | on    | 50                             | 50    | 40    | 70                      | 75    | 63    |
| 22 (9-10pm)           | 80                      | 70    | 80    | 80                               | 70    | 60    | on                       | on    | on    | 55                             | 55    | 50    | 70                      | 75    | 63    |
| 23 (10-11pm)          | 90                      | 70    | 80    | 60                               | 60    | 50    | on                       | on    | on    | 45                             | 40    | 40    | 45                      | 55    | 40    |
| 24 (11-12am)          | 90                      | 70    | 80    | 30                               | 30    | 30    | on                       | on    | on    | 25                             | 30    | 20    | 45                      | 55    | 40    |
| Total/Day             | 1390                    | 1390  | 1300  | 855                              | 785   | 810   | 2400                     | 2400  | 2400  | 915                            | 930   | 900   | 1217                    | 1303  | 1287  |
| Total/Week            |                         | 96.40 | hours |                                  | 58.70 | hours |                          | 168.0 | hours |                                | 64.05 | hours |                         | 86.75 | hours |
| Total/Year            |                         | 5026  | hours |                                  | 3061  | hours |                          | 8760  | hours |                                | 3340  | hours |                         | 4523  | hours |

Wk = Weekday

- Schedules for occupancy, lighting, receptacle, HVAC system and service hot water are from ASHRAE Standard 90.1-1989 and addendums, except that 5% emergency lighting has been added for all off hours. Elevator schedules, except for restaurants, are from the U.S. Department of Energy Standard Evaluation Techniques except changed to 0% when occupancy is 0%. THESE VALUES MAY BE USED ONLY IF ACTUAL SCHEDULES ARE NOT KNOWN.

**TABLE ((3-2D)) 3.3D**  
**Light Manufacturing Occupancy<sup>1</sup>**

| Hour of Day<br>(time) | Schedule for Occupancy  |       |       | Schedule for Lighting Receptacle |       |       | Schedule for HVAC System |       |       | Schedule for Service Hot Water |       |       | Schedule for Elevator   |       |       |
|-----------------------|-------------------------|-------|-------|----------------------------------|-------|-------|--------------------------|-------|-------|--------------------------------|-------|-------|-------------------------|-------|-------|
|                       | Percent of Maximum Load |       |       | Percent of Maximum Load          |       |       |                          |       |       | Percent of Maximum Load        |       |       | Percent of Maximum Load |       |       |
|                       | Wk                      | Sat   | Sun   | Wk                               | Sat   | Sun   | Wk                       | Sat   | Sun   | Wk                             | Sat   | Sun   | Wk                      | Sat   | Sun   |
| 1 (12-1am)            | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 5                              | 5     | 4     | 0                       | 0     | 0     |
| 2 (1-2am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 5                              | 5     | 4     | 0                       | 0     | 0     |
| 3 (2-3am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 5                              | 5     | 4     | 0                       | 0     | 0     |
| 4 (3-4am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 5                              | 5     | 4     | 0                       | 0     | 0     |
| 5 (4-5am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 5                              | 5     | 4     | 0                       | 0     | 0     |
| 6 (5-6am)             | 0                       | 0     | 0     | 10                               | 5     | 5     | off                      | off   | off   | 8                              | 8     | 7     | 0                       | 0     | 0     |
| 7 (6-7am)             | 10                      | 10    | 5     | 10                               | 10    | 5     | on                       | on    | off   | 7                              | 7     | 4     | 0                       | 0     | 0     |
| 8 (7-8am)             | 20                      | 10    | 5     | 30                               | 10    | 5     | on                       | on    | off   | 19                             | 11    | 4     | 35                      | 16    | 0     |
| 9 (8-9am)             | 95                      | 30    | 5     | 90                               | 30    | 5     | on                       | on    | off   | 35                             | 15    | 4     | 69                      | 14    | 0     |
| 10 (9-10am)           | 95                      | 30    | 5     | 90                               | 30    | 5     | on                       | on    | off   | 38                             | 21    | 4     | 43                      | 21    | 0     |
| 11 (10-11am)          | 95                      | 30    | 5     | 90                               | 30    | 5     | on                       | on    | off   | 39                             | 19    | 4     | 37                      | 18    | 0     |
| 12 (11-12pm)          | 95                      | 30    | 5     | 90                               | 30    | 5     | on                       | on    | off   | 47                             | 23    | 6     | 43                      | 25    | 0     |
| 13 (12-1pm)           | 50                      | 10    | 5     | 80                               | 15    | 5     | on                       | on    | off   | 57                             | 20    | 6     | 58                      | 21    | 0     |
| 14 (1-2pm)            | 95                      | 10    | 5     | 90                               | 15    | 5     | on                       | on    | off   | 54                             | 19    | 9     | 48                      | 13    | 0     |
| 15 (2-3pm)            | 95                      | 10    | 5     | 90                               | 15    | 5     | on                       | on    | off   | 34                             | 15    | 6     | 37                      | 8     | 0     |
| 16 (3-4pm)            | 95                      | 10    | 5     | 90                               | 15    | 5     | on                       | on    | off   | 33                             | 12    | 4     | 37                      | 4     | 0     |
| 17 (4-5pm)            | 95                      | 10    | 5     | 90                               | 15    | 5     | on                       | on    | off   | 44                             | 14    | 4     | 46                      | 5     | 0     |
| 18 (5-6pm)            | 30                      | 5     | 5     | 50                               | 5     | 5     | on                       | on    | off   | 26                             | 7     | 4     | 62                      | 6     | 0     |
| 19 (6-7pm)            | 10                      | 5     | 0     | 30                               | 5     | 5     | on                       | off   | off   | 21                             | 7     | 4     | 20                      | 0     | 0     |
| 20 (7-8pm)            | 10                      | 0     | 0     | 30                               | 5     | 5     | on                       | off   | off   | 15                             | 7     | 4     | 12                      | 0     | 0     |
| 21 (8-9pm)            | 10                      | 0     | 0     | 20                               | 5     | 5     | on                       | off   | off   | 17                             | 7     | 4     | 4                       | 0     | 0     |
| 22 (9-10pm)           | 10                      | 0     | 0     | 20                               | 5     | 5     | on                       | off   | off   | 8                              | 9     | 7     | 4                       | 0     | 0     |
| 23 (10-11pm)          | 5                       | 0     | 0     | 10                               | 5     | 5     | off                      | off   | off   | 5                              | 5     | 4     | 0                       | 0     | 0     |
| 24 (11-12am)          | 5                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 5                              | 5     | 4     | 0                       | 0     | 0     |
| Total/Day             | 920                     | 200   | 60    | 1040                             | 280   | 120   | 1600                     | 1200  | 0     | 537                            | 256   | 113   | 555                     | 151   | 0     |
| Total/Week            |                         | 48.60 | hours |                                  | 56.00 | hours |                          | 92.00 | hours |                                | 30.54 | hours |                         | 29.26 | hours |
| Total/Year            |                         | 2534  | hours |                                  | 2920  | hours |                          | 4797  | hours |                                | 1592  | hours |                         | 1526  | hours |

Wk = Weekday

- Schedules for occupancy, lighting, receptacle, HVAC system and service hot water are from ASHRAE Standard 90.1-1989 and addendums, except that 5% emergency lighting has been added for all off hours. Elevator schedules, except for restaurants, are from the U.S. Department of Energy Standard Evaluation Techniques except changed to 0% when occupancy is 0%. THESE VALUES MAY BE USED ONLY IF ACTUAL SCHEDULES ARE NOT KNOWN.

**TABLE ((3-2E)) 3.3E**  
**Office Occupancy<sup>1</sup>**

| Hour of Day<br>(time) | Schedule for Occupancy  |     |     | Schedule for Lighting Receptacle |     |     | Schedule for HVAC System |     |     | Schedule for Service Hot Water |     |     | Schedule for Elevator   |     |     |
|-----------------------|-------------------------|-----|-----|----------------------------------|-----|-----|--------------------------|-----|-----|--------------------------------|-----|-----|-------------------------|-----|-----|
|                       | Percent of Maximum Load |     |     | Percent of Maximum Load          |     |     |                          |     |     | Percent of Maximum Load        |     |     | Percent of Maximum Load |     |     |
|                       | Wk                      | Sat | Sun | Wk                               | Sat | Sun | Wk                       | Sat | Sun | Wk                             | Sat | Sun | Wk                      | Sat | Sun |
| 1 (12-1am)            | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 5   | 4   | 0                       | 0   | 0   |
| 2 (1-2am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 5   | 4   | 0                       | 0   | 0   |
| 3 (2-3am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 5   | 4   | 0                       | 0   | 0   |
| 4 (3-4am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 5   | 4   | 0                       | 0   | 0   |
| 5 (4-5am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 5   | 4   | 0                       | 0   | 0   |
| 6 (5-6am)             | 0                       | 0   | 0   | 10                               | 5   | 5   | off                      | off | off | 8                              | 8   | 7   | 0                       | 0   | 0   |
| 7 (6-7am)             | 10                      | 10  | 5   | 10                               | 10  | 5   | on                       | on  | off | 7                              | 7   | 4   | 0                       | 0   | 0   |
| 8 (7-8am)             | 20                      | 10  | 5   | 30                               | 10  | 5   | on                       | on  | off | 19                             | 11  | 4   | 35                      | 16  | 0   |



| Hour of Day<br>(time) | Schedule for Occupancy  |       |       | Schedule for Lighting Receptacle |       |       | Schedule for HVAC System |       |       | Schedule for Service Hot Water |       |       | Schedule for Elevator   |       |       |
|-----------------------|-------------------------|-------|-------|----------------------------------|-------|-------|--------------------------|-------|-------|--------------------------------|-------|-------|-------------------------|-------|-------|
|                       | Percent of Maximum Load |       |       | Percent of Maximum Load          |       |       | Percent of Maximum Load  |       |       | Percent of Maximum Load        |       |       | Percent of Maximum Load |       |       |
|                       | Wk                      | Sat   | Sun   | Wk                               | Sat   | Sun   | Wk                       | Sat   | Sun   | Wk                             | Sat   | Sun   | Wk                      | Sat   | Sun   |
| 9 (8-9am)             | 95                      | 30    | 5     | 90                               | 30    | 5     | on                       | on    | off   | 35                             | 15    | 4     | 69                      | 14    | 0     |
| 10 (9-10am)           | 95                      | 30    | 5     | 90                               | 30    | 5     | on                       | on    | off   | 38                             | 21    | 4     | 43                      | 21    | 0     |
| 11 (10-11am)          | 95                      | 30    | 5     | 90                               | 30    | 5     | on                       | on    | off   | 39                             | 19    | 4     | 37                      | 18    | 0     |
| 12 (11-12pm)          | 95                      | 30    | 5     | 90                               | 30    | 5     | on                       | on    | off   | 47                             | 23    | 6     | 43                      | 25    | 0     |
| 13 (12-1pm)           | 50                      | 10    | 5     | 80                               | 15    | 5     | on                       | on    | off   | 57                             | 20    | 6     | 58                      | 21    | 0     |
| 14 (1-2pm)            | 95                      | 10    | 5     | 90                               | 15    | 5     | on                       | on    | off   | 54                             | 19    | 9     | 48                      | 13    | 0     |
| 15 (2-3pm)            | 95                      | 10    | 5     | 90                               | 15    | 5     | on                       | on    | off   | 34                             | 15    | 6     | 37                      | 8     | 0     |
| 16 (3-4pm)            | 95                      | 10    | 5     | 90                               | 15    | 5     | on                       | on    | off   | 33                             | 12    | 4     | 37                      | 4     | 0     |
| 17 (4-5pm)            | 95                      | 10    | 5     | 90                               | 15    | 5     | on                       | on    | off   | 44                             | 14    | 4     | 46                      | 5     | 0     |
| 18 (5-6pm)            | 30                      | 5     | 5     | 50                               | 5     | 5     | on                       | on    | off   | 26                             | 7     | 4     | 62                      | 6     | 0     |
| 19 (6-7pm)            | 10                      | 5     | 0     | 30                               | 5     | 5     | on                       | off   | off   | 21                             | 7     | 4     | 20                      | 0     | 0     |
| 20 (7-8pm)            | 10                      | 0     | 0     | 30                               | 5     | 5     | on                       | off   | off   | 15                             | 7     | 4     | 12                      | 0     | 0     |
| 21 (8-9pm)            | 10                      | 0     | 0     | 20                               | 5     | 5     | on                       | off   | off   | 17                             | 7     | 4     | 4                       | 0     | 0     |
| 22 (9-10pm)           | 10                      | 0     | 0     | 20                               | 5     | 5     | on                       | off   | off   | 8                              | 9     | 7     | 4                       | 0     | 0     |
| 23 (10-11pm)          | 5                       | 0     | 0     | 10                               | 5     | 5     | off                      | off   | off   | 5                              | 5     | 4     | 0                       | 0     | 0     |
| 24 (11-12am)          | 5                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 5                              | 5     | 4     | 0                       | 0     | 0     |
| Total/Day             | 920                     | 200   | 60    | 1040                             | 280   | 120   | 1600                     | 1200  | 0     | 537                            | 256   | 113   | 555                     | 151   | 0     |
| Total/Week            |                         | 48.60 | hours |                                  | 56.00 | hours |                          | 92.00 | hours |                                | 30.54 | hours |                         | 29.26 | hours |
| Total/Year            |                         | 2534  | hours |                                  | 2920  | hours |                          | 4797  | hours |                                | 1592  | hours |                         | 1526  | hours |

Wk = Weekday

- Schedules for occupancy, lighting, receptacle, HVAC system and service hot water are from ASHRAE Standard 90.1-1989 and addendums, except that 5% emergency lighting has been added for all off hours. Elevator schedules, except for restaurants, are from the U.S. Department of Energy Standard Evaluation Techniques except changed to 0% when occupancy is 0%. THESE VALUES MAY BE USED ONLY IF ACTUAL SCHEDULES ARE NOT KNOWN.

**TABLE ((3-2F)) 3.3F**  
**Parking Garage Occupancy<sup>1</sup>**

| Hour of Day<br>(time) | Schedule for Occupancy  |     |     | Schedule for Lighting Receptacle |     |     | Schedule for HVAC System |     |     | Schedule for Service Hot Water |     |     | Schedule for Elevator   |     |     |
|-----------------------|-------------------------|-----|-----|----------------------------------|-----|-----|--------------------------|-----|-----|--------------------------------|-----|-----|-------------------------|-----|-----|
|                       | Percent of Maximum Load |     |     | Percent of Maximum Load          |     |     | Percent of Maximum Load  |     |     | Percent of Maximum Load        |     |     | Percent of Maximum Load |     |     |
|                       | Wk                      | Sat | Sun | Wk                               | Sat | Sun | Wk                       | Sat | Sun | Wk                             | Sat | Sun | Wk                      | Sat | Sun |
| 1 (12-1am)            |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 2 (1-2am)             |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 3 (2-3am)             |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 4 (3-4am)             |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 5 (4-5am)             |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 6 (5-6am)             |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 7 (6-7am)             |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 8 (7-8am)             |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 9 (8-9am)             |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 10 (9-10am)           |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 11 (10-11am)          |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 12 (11-12pm)          |                         | N/A |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 13 (12-1pm)           |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 14 (1-2pm)            |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 15 (2-3pm)            |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 16 (3-4pm)            |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 17 (4-5pm)            |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |
| 18 (5-6pm)            |                         |     |     | 100                              | 100 | 100 |                          |     |     |                                |     |     |                         |     |     |

| Hour of Day<br>(time) | Schedule for Occupancy  |     |     | Schedule for Lighting Receptacle |      |       | Schedule for HVAC System |     |     | Schedule for Service Hot Water |     |     | Schedule for Elevator   |     |     |
|-----------------------|-------------------------|-----|-----|----------------------------------|------|-------|--------------------------|-----|-----|--------------------------------|-----|-----|-------------------------|-----|-----|
|                       | Percent of Maximum Load |     |     | Percent of Maximum Load          |      |       |                          |     |     | Percent of Maximum Load        |     |     | Percent of Maximum Load |     |     |
|                       | Wk                      | Sat | Sun | Wk                               | Sat  | Sun   | Wk                       | Sat | Sun | Wk                             | Sat | Sun | Wk                      | Sat | Sun |
| 19 (6-7pm)            |                         |     |     | 100                              | 100  | 100   |                          |     |     |                                |     |     |                         |     |     |
| 20 (7-8pm)            |                         |     |     | 100                              | 100  | 100   |                          |     |     |                                |     |     |                         |     |     |
| 21 (8-9pm)            |                         |     |     | 100                              | 100  | 100   |                          |     |     |                                |     |     |                         |     |     |
| 22 (9-10pm)           |                         |     |     | 100                              | 100  | 100   |                          |     |     |                                |     |     |                         |     |     |
| 23 (10-11pm)          |                         |     |     | 100                              | 100  | 100   |                          |     |     |                                |     |     |                         |     |     |
| 24 (11-12am)          |                         |     |     | 100                              | 100  | 100   |                          |     |     |                                |     |     |                         |     |     |
| Total/Day             |                         |     |     | 2400                             | 2400 | 2400  |                          |     |     |                                |     |     |                         |     |     |
| Total/Week            |                         |     |     |                                  | 168  | hours |                          |     |     |                                |     |     |                         |     |     |
| Total/Year            |                         |     |     |                                  | 8760 | hours |                          |     |     |                                |     |     |                         |     |     |

Wk = Weekday

- Schedules for occupancy, lighting, receptacle, HVAC system and service hot water are from ASHRAE Standard 90.1-1989 and addendums, except that 5% emergency lighting has been added for all off hours. Elevator schedules, except for restaurants, are from the U.S. Department of Energy Standard Evaluation Techniques except changed to 0% when occupancy is 0%. THESE VALUES MAY BE USED ONLY IF ACTUAL SCHEDULES ARE NOT KNOWN.

**TABLE ((3-2G)) 3.3G  
Restaurant Occupancy<sup>1</sup>**

| Hour of Day<br>(time) | Schedule for Occupancy  |       |       | Schedule for Lighting Receptacle |       |       | Schedule for HVAC System |      |       | Schedule for Service Hot Water |       |       | Schedule for Elevator   |     |       |
|-----------------------|-------------------------|-------|-------|----------------------------------|-------|-------|--------------------------|------|-------|--------------------------------|-------|-------|-------------------------|-----|-------|
|                       | Percent of Maximum Load |       |       | Percent of Maximum Load          |       |       |                          |      |       | Percent of Maximum Load        |       |       | Percent of Maximum Load |     |       |
|                       | Wk                      | Sat   | Sun   | Wk                               | Sat   | Sun   | Wk                       | Sat  | Sun   | Wk                             | Sat   | Sun   | Wk                      | Sat | Sun   |
| 1 (12-1am)            | 15                      | 30    | 20    | 15                               | 20    | 20    | on                       | on   | on    | 20                             | 20    | 25    | 0                       | 0   | 0     |
| 2 (1-2am)             | 15                      | 25    | 20    | 15                               | 15    | 15    | on                       | on   | on    | 15                             | 15    | 20    | 0                       | 0   | 0     |
| 3 (2-3am)             | 5                       | 5     | 5     | 15                               | 15    | 15    | on                       | on   | on    | 15                             | 15    | 20    | 0                       | 0   | 0     |
| 4 (3-4am)             | 0                       | 0     | 0     | 15                               | 15    | 15    | off                      | off  | off   | 0                              | 0     | 0     | 0                       | 0   | 0     |
| 5 (4-5am)             | 0                       | 0     | 0     | 15                               | 15    | 15    | off                      | off  | off   | 0                              | 0     | 0     | 0                       | 0   | 0     |
| 6 (5-6am)             | 0                       | 0     | 0     | 20                               | 15    | 15    | off                      | off  | off   | 0                              | 0     | 0     | 0                       | 0   | 0     |
| 7 (6-7am)             | 0                       | 0     | 0     | 40                               | 30    | 30    | off                      | off  | off   | 0                              | 0     | 0     | 0                       | 0   | 0     |
| 8 (7-8am)             | 5                       | 0     | 0     | 40                               | 30    | 30    | on                       | off  | off   | 60                             | 0     | 0     | 0                       | 0   | 0     |
| 9 (8-9am)             | 5                       | 0     | 0     | 60                               | 60    | 50    | on                       | off  | off   | 55                             | 0     | 0     | 0                       | 0   | 0     |
| 10 (9-10am)           | 5                       | 5     | 0     | 60                               | 60    | 50    | on                       | on   | off   | 45                             | 50    | 0     | 0                       | 0   | 0     |
| 11 (10-11am)          | 20                      | 20    | 10    | 90                               | 80    | 70    | on                       | on   | on    | 40                             | 45    | 50    | 0                       | 0   | 0     |
| 12 (11-12pm)          | 50                      | 45    | 20    | 90                               | 80    | 70    | on                       | on   | on    | 45                             | 50    | 50    | 0                       | 0   | 0     |
| 13 (12-1pm)           | 80                      | 50    | 25    | 90                               | 80    | 70    | on                       | on   | on    | 40                             | 50    | 40    | 0                       | 0   | 0     |
| 14 (1-2pm)            | 70                      | 50    | 25    | 90                               | 80    | 70    | on                       | on   | on    | 35                             | 45    | 40    | 0                       | 0   | 0     |
| 15 (2-3pm)            | 40                      | 35    | 15    | 90                               | 80    | 70    | on                       | on   | on    | 30                             | 40    | 30    | 0                       | 0   | 0     |
| 16 (3-4pm)            | 20                      | 30    | 20    | 90                               | 80    | 70    | on                       | on   | on    | 30                             | 40    | 30    | 0                       | 0   | 0     |
| 17 (4-5pm)            | 25                      | 30    | 25    | 90                               | 80    | 60    | on                       | on   | on    | 30                             | 35    | 30    | 0                       | 0   | 0     |
| 18 (5-6pm)            | 50                      | 30    | 35    | 90                               | 90    | 60    | on                       | on   | on    | 40                             | 40    | 40    | 0                       | 0   | 0     |
| 19 (6-7pm)            | 80                      | 70    | 55    | 90                               | 90    | 60    | on                       | on   | on    | 55                             | 55    | 50    | 0                       | 0   | 0     |
| 20 (7-8pm)            | 80                      | 90    | 65    | 90                               | 90    | 60    | on                       | on   | on    | 60                             | 55    | 50    | 0                       | 0   | 0     |
| 21 (8-9pm)            | 80                      | 70    | 70    | 90                               | 90    | 60    | on                       | on   | on    | 50                             | 50    | 40    | 0                       | 0   | 0     |
| 22 (9-10pm)           | 50                      | 65    | 35    | 90                               | 90    | 60    | on                       | on   | on    | 55                             | 55    | 50    | 0                       | 0   | 0     |
| 23 (10-11pm)          | 35                      | 55    | 20    | 50                               | 50    | 50    | on                       | on   | on    | 45                             | 40    | 40    | 0                       | 0   | 0     |
| 24 (11-12am)          | 20                      | 35    | 20    | 30                               | 30    | 30    | on                       | on   | on    | 25                             | 30    | 20    | 0                       | 0   | 0     |
| Total/Day             | 750                     | 740   | 485   | 1455                             | 1365  | 1115  | 2000                     | 1800 | 1700  | 790                            | 730   | 625   | 0                       | 0   | 0     |
| Total/Week            |                         | 49.75 | hours |                                  | 97.55 | hours |                          | 135  | hours |                                | 53.05 | hours |                         | 0   | hours |
| Total/Year            |                         | 2594  | hours |                                  | 5086  | hours |                          | 7039 | hours |                                | 2766  | hours |                         | 0   | hours |

Wk = Weekday

- Schedules for occupancy, lighting, receptacle, HVAC system and service hot water are from ASHRAE Standard 90.1-1989 and addendums, except that 5% emergency lighting has been added for all off hours. Elevator schedules, except for restaurants, are from the U.S. Department of Energy Standard Evaluation Techniques except changed to 0% when occupancy is 0%. THESE VALUES MAY BE USED ONLY IF ACTUAL SCHEDULES ARE NOT KNOWN.

**TABLE ((3-2H)) 3.3H**  
Retail Occupancy<sup>1</sup>

| Hour of Day<br>(time) | Schedule for Occupancy  |       |       | Schedule for Lighting Receptacle |       |       | Schedule for HVAC System |      |       | Schedule for Service Hot Water |       |       | Schedule for Elevator   |       |       |
|-----------------------|-------------------------|-------|-------|----------------------------------|-------|-------|--------------------------|------|-------|--------------------------------|-------|-------|-------------------------|-------|-------|
|                       | Percent of Maximum Load |       |       | Percent of Maximum Load          |       |       |                          |      |       | Percent of Maximum Load        |       |       | Percent of Maximum Load |       |       |
|                       | Wk                      | Sat   | Sun   | Wk                               | Sat   | Sun   | Wk                       | Sat  | Sun   | Wk                             | Sat   | Sun   | Wk                      | Sat   | Sun   |
| 1 (12-1am)            | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off  | off   | 4                              | 11    | 7     | 0                       | 0     | 0     |
| 2 (1-2am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off  | off   | 5                              | 10    | 7     | 0                       | 0     | 0     |
| 3 (2-3am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off  | off   | 5                              | 8     | 7     | 0                       | 0     | 0     |
| 4 (3-4am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off  | off   | 4                              | 6     | 6     | 0                       | 0     | 0     |
| 5 (4-5am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off  | off   | 4                              | 6     | 6     | 0                       | 0     | 0     |
| 6 (5-6am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off  | off   | 4                              | 6     | 6     | 0                       | 0     | 0     |
| 7 (6-7am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | on                       | on   | off   | 4                              | 7     | 7     | 0                       | 0     | 0     |
| 8 (7-8am)             | 10                      | 10    | 0     | 20                               | 10    | 5     | on                       | on   | off   | 15                             | 20    | 10    | 12                      | 9     | 0     |
| 9 (8-9am)             | 20                      | 20    | 0     | 50                               | 30    | 10    | on                       | on   | on    | 23                             | 24    | 12    | 22                      | 21    | 0     |
| 10 (9-10am)           | 50                      | 50    | 10    | 90                               | 60    | 10    | on                       | on   | on    | 32                             | 27    | 14    | 64                      | 56    | 11    |
| 11 (10-11am)          | 50                      | 60    | 20    | 90                               | 90    | 40    | on                       | on   | on    | 41                             | 42    | 29    | 74                      | 66    | 13    |
| 12 (11-12pm)          | 70                      | 80    | 20    | 90                               | 90    | 40    | on                       | on   | on    | 57                             | 54    | 31    | 68                      | 68    | 35    |
| 13 (12-1pm)           | 70                      | 80    | 40    | 90                               | 90    | 60    | on                       | on   | on    | 62                             | 59    | 36    | 68                      | 68    | 37    |
| 14 (1-2pm)            | 70                      | 80    | 40    | 90                               | 90    | 60    | on                       | on   | on    | 61                             | 60    | 36    | 71                      | 69    | 37    |
| 15 (2-3pm)            | 70                      | 80    | 40    | 90                               | 90    | 60    | on                       | on   | on    | 50                             | 49    | 34    | 72                      | 70    | 39    |
| 16 (3-4pm)            | 80                      | 80    | 40    | 90                               | 90    | 60    | on                       | on   | on    | 45                             | 48    | 35    | 72                      | 69    | 41    |
| 17 (4-5pm)            | 70                      | 80    | 40    | 90                               | 90    | 60    | on                       | on   | on    | 46                             | 47    | 37    | 73                      | 66    | 38    |
| 18 (5-6pm)            | 50                      | 60    | 20    | 90                               | 90    | 40    | on                       | on   | off   | 47                             | 46    | 34    | 68                      | 58    | 34    |
| 19 (6-7pm)            | 50                      | 20    | 10    | 60                               | 50    | 20    | on                       | on   | off   | 42                             | 44    | 25    | 68                      | 47    | 3     |
| 20 (7-8pm)            | 30                      | 20    | 0     | 60                               | 30    | 5     | on                       | on   | off   | 34                             | 36    | 27    | 58                      | 43    | 0     |
| 21 (8-9pm)            | 30                      | 20    | 0     | 50                               | 30    | 5     | on                       | on   | off   | 33                             | 29    | 21    | 54                      | 43    | 0     |
| 22 (9-10pm)           | 0                       | 10    | 0     | 20                               | 10    | 5     | off                      | on   | off   | 23                             | 22    | 16    | 0                       | 8     | 0     |
| 23 (10-11pm)          | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off  | off   | 13                             | 16    | 10    | 0                       | 0     | 0     |
| 24 (11-12am)          | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off  | off   | 8                              | 13    | 6     | 0                       | 0     | 0     |
| Total/Day             | 720                     | 750   | 280   | 1115                             | 985   | 525   | 1500                     | 1600 | 900   | 662                            | 690   | 459   | 844                     | 761   | 288   |
| Total/Week            |                         | 46.30 | hours |                                  | 70.85 | hours |                          | 100  | hours |                                | 44.59 | hours |                         | 52.69 | hours |
| Total/Year            |                         | 2414  | hours |                                  | 3694  | hours |                          | 5214 | hours |                                | 2325  | hours |                         | 2747  | hours |

Wk = Weekday

- Schedules for occupancy, lighting, receptacle, HVAC system and service hot water are from ASHRAE Standard 90.1-1989 and addendums, except that 5% emergency lighting has been added for all off hours. Elevator schedules, except for restaurants, are from the U.S. Department of Energy Standard Evaluation Techniques except changed to 0% when occupancy is 0%. THESE VALUES MAY BE USED ONLY IF ACTUAL SCHEDULES ARE NOT KNOWN.

**TABLE ((3-2I)) 3.3I**  
School Occupancy<sup>1</sup>

| Hour of Day<br>(time) | Schedule for Occupancy  |     |     | Schedule for Lighting Receptacle |     |     | Schedule for HVAC System |     |     | Schedule for Service Hot Water |     |     | Schedule for Elevator   |     |     |
|-----------------------|-------------------------|-----|-----|----------------------------------|-----|-----|--------------------------|-----|-----|--------------------------------|-----|-----|-------------------------|-----|-----|
|                       | Percent of Maximum Load |     |     | Percent of Maximum Load          |     |     |                          |     |     | Percent of Maximum Load        |     |     | Percent of Maximum Load |     |     |
|                       | Wk                      | Sat | Sun | Wk                               | Sat | Sun | Wk                       | Sat | Sun | Wk                             | Sat | Sun | Wk                      | Sat | Sun |
| 1 (12-1am)            | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 3   | 3   | 0                       | 0   | 0   |
| 2 (1-2am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 3   | 3   | 0                       | 0   | 0   |
| 3 (2-3am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 3   | 3   | 0                       | 0   | 0   |
| 4 (3-4am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 3   | 3   | 0                       | 0   | 0   |
| 5 (4-5am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 3   | 3   | 0                       | 0   | 0   |

| Hour of Day<br>(time) | Schedule for Occupancy  |       |       | Schedule for Lighting Receptacle |       |       | Schedule for HVAC System |       |       | Schedule for Service Hot Water |       |       | Schedule for Elevator   |       |       |
|-----------------------|-------------------------|-------|-------|----------------------------------|-------|-------|--------------------------|-------|-------|--------------------------------|-------|-------|-------------------------|-------|-------|
|                       | Percent of Maximum Load |       |       | Percent of Maximum Load          |       |       |                          |       |       | Percent of Maximum Load        |       |       | Percent of Maximum Load |       |       |
|                       | Wk                      | Sat   | Sun   | Wk                               | Sat   | Sun   | Wk                       | Sat   | Sun   | Wk                             | Sat   | Sun   | Wk                      | Sat   | Sun   |
| 6 (5-6am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 5                              | 3     | 3     | 0                       | 0     | 0     |
| 7 (6-7am)             | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 5                              | 3     | 3     | 0                       | 0     | 0     |
| 8 (7-8am)             | 5                       | 0     | 0     | 30                               | 5     | 5     | on                       | off   | off   | 10                             | 3     | 3     | 0                       | 0     | 0     |
| 9 (8-9am)             | 75                      | 10    | 0     | 85                               | 15    | 5     | on                       | on    | off   | 34                             | 3     | 5     | 30                      | 0     | 0     |
| 10 (9-10am)           | 90                      | 10    | 0     | 95                               | 15    | 5     | on                       | on    | off   | 60                             | 5     | 5     | 30                      | 0     | 0     |
| 11 (10-11am)          | 90                      | 10    | 0     | 95                               | 15    | 5     | on                       | on    | off   | 63                             | 5     | 5     | 30                      | 0     | 0     |
| 12 (11-12pm)          | 80                      | 10    | 0     | 95                               | 15    | 5     | on                       | on    | off   | 72                             | 5     | 5     | 30                      | 0     | 0     |
| 13 (12-1pm)           | 80                      | 10    | 0     | 80                               | 15    | 5     | on                       | on    | off   | 79                             | 5     | 5     | 30                      | 0     | 0     |
| 14 (1-2pm)            | 80                      | 0     | 0     | 80                               | 5     | 5     | on                       | off   | off   | 83                             | 3     | 5     | 30                      | 0     | 0     |
| 15 (2-3pm)            | 80                      | 0     | 0     | 80                               | 5     | 5     | on                       | off   | off   | 61                             | 3     | 3     | 30                      | 0     | 0     |
| 16 (3-4pm)            | 45                      | 0     | 0     | 70                               | 5     | 5     | on                       | off   | off   | 65                             | 3     | 3     | 15                      | 0     | 0     |
| 17 (4-5pm)            | 15                      | 0     | 0     | 50                               | 5     | 5     | on                       | off   | off   | 10                             | 3     | 3     | 0                       | 0     | 0     |
| 18 (5-6pm)            | 5                       | 0     | 0     | 50                               | 5     | 5     | on                       | off   | off   | 10                             | 3     | 3     | 0                       | 0     | 0     |
| 19 (6-7pm)            | 15                      | 0     | 0     | 35                               | 5     | 5     | on                       | off   | off   | 19                             | 3     | 3     | 0                       | 0     | 0     |
| 20 (7-8pm)            | 20                      | 0     | 0     | 35                               | 5     | 5     | on                       | off   | off   | 25                             | 3     | 3     | 0                       | 0     | 0     |
| 21 (8-9pm)            | 20                      | 0     | 0     | 35                               | 5     | 5     | on                       | off   | off   | 22                             | 3     | 3     | 0                       | 0     | 0     |
| 22 (9-10pm)           | 10                      | 0     | 0     | 30                               | 5     | 5     | on                       | off   | off   | 22                             | 3     | 3     | 0                       | 0     | 0     |
| 23 (10-11pm)          | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 12                             | 3     | 3     | 0                       | 0     | 0     |
| 24 (11-12am)          | 0                       | 0     | 0     | 5                                | 5     | 5     | off                      | off   | off   | 9                              | 3     | 3     | 0                       | 0     | 0     |
| Total/Day             | 710                     | 50    | 0     | 990                              | 170   | 120   | 1500                     | 500   | 0     | 691                            | 80    | 84    | 285                     | 0     | 0     |
| Total/Week            |                         | 36.00 | hours |                                  | 52.40 | hours |                          | 80.00 | hours |                                | 36.19 | hours |                         | 14.25 | hours |
| Total/Year            |                         | 1877  | hours |                                  | 2732  | hours |                          | 4171  | hours |                                | 1887  | hours |                         | 743   | hours |

Wk = Weekday

- Schedules for occupancy, lighting, receptacle, HVAC system and service hot water are from ASHRAE Standard 90.1-1989 and addendums, except that 5% emergency lighting has been added for all off hours. Elevator schedules, except for restaurants, are from the U.S. Department of Energy Standard Evaluation Techniques except changed to 0% when occupancy is 0%. THESE VALUES MAY BE USED ONLY IF ACTUAL SCHEDULES ARE NOT KNOWN.

**TABLE ((3-24)) 3.3J**  
**Warehouse Occupancy<sup>1</sup>**

| Hour of Day<br>(time) | Schedule for Occupancy  |     |     | Schedule for Lighting Receptacle |     |     | Schedule for HVAC System |     |     | Schedule for Service Hot Water |     |     | Schedule for Elevator   |     |     |
|-----------------------|-------------------------|-----|-----|----------------------------------|-----|-----|--------------------------|-----|-----|--------------------------------|-----|-----|-------------------------|-----|-----|
|                       | Percent of Maximum Load |     |     | Percent of Maximum Load          |     |     |                          |     |     | Percent of Maximum Load        |     |     | Percent of Maximum Load |     |     |
|                       | Wk                      | Sat | Sun | Wk                               | Sat | Sun | Wk                       | Sat | Sun | Wk                             | Sat | Sun | Wk                      | Sat | Sun |
| 1 (12-1am)            | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 2                              | 2   | 2   | 0                       | 0   | 0   |
| 2 (1-2am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 2                              | 2   | 2   | 0                       | 0   | 0   |
| 3 (2-3am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 2                              | 2   | 2   | 0                       | 0   | 0   |
| 4 (3-4am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 2                              | 2   | 2   | 0                       | 0   | 0   |
| 5 (4-5am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 5                              | 2   | 2   | 0                       | 0   | 0   |
| 6 (5-6am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 7                              | 2   | 2   | 0                       | 0   | 0   |
| 7 (6-7am)             | 0                       | 0   | 0   | 5                                | 5   | 5   | off                      | off | off | 7                              | 2   | 2   | 0                       | 0   | 0   |
| 8 (7-8am)             | 15                      | 0   | 0   | 40                               | 5   | 5   | on                       | off | off | 10                             | 2   | 2   | 0                       | 0   | 0   |
| 9 (8-9am)             | 70                      | 20  | 0   | 70                               | 8   | 5   | on                       | on  | off | 30                             | 6   | 2   | 0                       | 0   | 0   |
| 10 (9-10am)           | 90                      | 20  | 0   | 90                               | 24  | 5   | on                       | on  | off | 36                             | 12  | 2   | 0                       | 0   | 0   |
| 11 (10-11am)          | 90                      | 20  | 0   | 90                               | 24  | 5   | on                       | on  | off | 36                             | 12  | 2   | 30                      | 0   | 0   |
| 12 (11-12pm)          | 90                      | 20  | 0   | 90                               | 24  | 5   | on                       | on  | off | 46                             | 17  | 2   | 0                       | 0   | 0   |
| 13 (12-1pm)           | 50                      | 10  | 0   | 80                               | 5   | 5   | on                       | on  | off | 57                             | 4   | 4   | 0                       | 0   | 0   |
| 14 (1-2pm)            | 85                      | 10  | 0   | 90                               | 5   | 5   | on                       | on  | off | 43                             | 4   | 4   | 0                       | 0   | 0   |
| 15 (2-3pm)            | 85                      | 10  | 0   | 90                               | 5   | 5   | on                       | on  | off | 38                             | 2   | 2   | 0                       | 0   | 0   |
| 16 (3-4pm)            | 85                      | 10  | 0   | 90                               | 5   | 5   | on                       | on  | off | 40                             | 2   | 2   | 40                      | 0   | 0   |

| Hour of Day<br>(time) | Schedule for<br>Occupancy  |       |       | Schedule for<br>Lighting<br>Receptacle |       |       | Schedule for<br>HVAC System |       |       | Schedule for<br>Service Hot<br>Water |       |       | Schedule for<br>Elevator   |      |       |
|-----------------------|----------------------------|-------|-------|--|-------|-------|-----------------------------|-------|-------|--------------------------------------|-------|-------|----------------------------|------|-------|
|                       | Percent of<br>Maximum Load |       |       | Percent of<br>Maximum Load             |       |       |                             |       |       | Percent of<br>Maximum Load           |       |       | Percent of<br>Maximum Load |      |       |
|                       | Wk                         | Sat   | Sun   | Wk                                     | Sat   | Sun   | Wk                          | Sat   | Sun   | Wk                                   | Sat   | Sun   | Wk                         | Sat  | Sun   |
| 17 (4-5pm)            | 20                         | 0     | 0     | 90                                     | 5     | 5     | on                          | off   | off   | 30                                   | 2     | 2     | 0                          | 0    | 0     |
| 18 (5-6pm)            | 0                          | 0     | 0     | 30                                     | 5     | 5     | off                         | off   | off   | 18                                   | 2     | 2     | 0                          | 0    | 0     |
| 19 (6-7pm)            | 0                          | 0     | 0     | 5                                      | 5     | 5     | off                         | off   | off   | 3                                    | 2     | 2     | 0                          | 0    | 0     |
| 20 (7-8pm)            | 0                          | 0     | 0     | 5                                      | 5     | 5     | off                         | off   | off   | 3                                    | 2     | 2     | 0                          | 0    | 0     |
| 21 (8-9pm)            | 0                          | 0     | 0     | 5                                      | 5     | 5     | off                         | off   | off   | 3                                    | 2     | 2     | 0                          | 0    | 0     |
| 22 (9-10pm)           | 0                          | 0     | 0     | 5                                      | 5     | 5     | off                         | off   | off   | 3                                    | 2     | 2     | 0                          | 0    | 0     |
| 23 (10-11pm)          | 0                          | 0     | 0     | 5                                      | 5     | 5     | off                         | off   | off   | 3                                    | 2     | 2     | 0                          | 0    | 0     |
| 24 (11-12am)          | 0                          | 0     | 0     | 5                                      | 5     | 5     | off                         | off   | off   | 3                                    | 2     | 2     | 0                          | 0    | 0     |
| Total/Day             | 680                        | 120   | 0     | 915                                    | 180   | 120   | 1000                        | 800   | 0     | 429                                  | 91    | 52    | 70                         | 0    | 0     |
| Total/Week            |                            | 35.20 | hours |  | 48.75 | hours |                             | 58.00 | hours |                                      | 22.88 | hours |                            | 3.50 | hours |
| Total/Year            |                            | 1835  | hours |  | 2542  | hours |                             | 3024  | hours |                                      | 1193  | hours |                            | 182  | hours |

Wk = Weekday

- Schedules for occupancy, lighting, receptacle, HVAC system and service hot water are from ASHRAE Standard 90.1-1989 and addendums, except that 5% emergency lighting has been added for all off hours. Elevator schedules, except for restaurants, are from the U.S. Department of Energy Standard Evaluation Techniques except changed to 0% when occupancy is 0%. THESE VALUES MAY BE USED ONLY IF ACTUAL SCHEDULES ARE NOT KNOWN.

(TABLE 3-3

HVAC Systems of Prototype Buildings<sup>3</sup>

| Use  | System # | Remarks  |
|--|----------|----------|
| 1. Assembly  |          |          |
| a. Churches (any size)   | 1        |          |
| b. ≤ 50,000 ft <sup>2</sup> or ≤ 3 floors  | 1 or 3   | Note 2   |
| c. > 50,000 ft <sup>2</sup> or > 3 floors  | 3        |          |
| 2. Health  |          |          |
| a. Nursing Home (any size)   | 2        |          |
| b. ≤ 15,000 ft <sup>2</sup>  | 1        |          |
| c. > 15,000 ft <sup>2</sup> and ≤ 50,000 ft <sup>2</sup>                           | 4        | Note 3   |
| d. > 50,000 ft <sup>2</sup>  | 5        | Note 3,4 |
| 3. Hotel/Motel   |          |          |
| a. ≤ 3 Stories   | 2        | Note 6   |
| b. > 3 Stories   | 6        | Note 7   |
| 4. Light Manufacturing   | 1 or 3   |          |
| 5. Office  |          |          |
| a. ≤ 20,000 ft <sup>2</sup>  | 1        |          |
| b. > 20,000 ft <sup>2</sup> and either<br>— ≤ 3 floors or ≤ 75,000 ft <sup>2</sup> | 4        |          |
| c. > 75,000 ft <sup>2</sup> or > 3 floors  | 5        |          |
| 6. Restaurant  | 1 or 3   | Note 2   |
| 7. Retail  |          |          |
| a. ≤ 50,000 ft <sup>2</sup>  | 1 or 3   | Note 2   |
| b. > 50,000 ft <sup>2</sup>  | 4 or 5   | Note 2   |
| 8. Schools   |          |          |
| a. ≤ 75,000 ft <sup>2</sup> or ≤ 3 floors  | 1        |          |
| b. > 75,000 ft <sup>2</sup> or > 3 floors  | 3        |          |
| 9. Warehouse   |          | Note 5   |

Footnote to TABLE 3-3: The system and energy types presented in this table are not intended as requirements or recommendations for the proposed design. Floors areas in the table are the total conditioned floor areas for the listed use in the building. The number of floors indicated in the table is the total number of occupied floors for the listed use.

TABLE 3-3 (cont.)

HVAC System Descriptions for Prototype Buildings<sup>3</sup>

| HVAC Component                 | System #1   | System #2   |
|--------------------------------|---|---|
| System Description             | Packaged rooftop single-zone, one unit per zone.                                | Packaged terminal air conditioner with space heater or heat pump, heating or cooling unit per zone. |
| Fan System                     |   |   |
| Design Supply Circulation Rate | Note 10   | Note 11   |
| Supply Fan Control             | Constant volume.  | Fan cycles with call for heating or cooling.  |
| Return Fan Control             | N.A.  | N.A.  |
| Cooling System                 | Direct expansion air-cooled.  | Direct expansion air-cooled.  |
| Heating System                 | Furnace, heat pump, or electric resistance.                                     | Heat pump with electric resistance auxiliary or air conditioner with space heater.                  |
| Remarks                        | Drybulb economizer per Section 1433, heat recovery if required by Section 1436. | No economizer, if not required by Section 1433.   |

TABLE 3-3 (cont.)

HVAC Systems Descriptions for Prototype Buildings<sup>3</sup>

| HVAC Component                 | System #3                                | System #4  |
|--------------------------------|--|--|
| System Description             | Air handler per zone with central plant. | Packaged rooftop VAV with perimeter reheat and fan-powered terminal units. |
| Fan System                     |  |  |
| Design Supply Circulation Rate | Note 10                                  | Note 10  |

| HVAC Component     | System #3   | System #4  |
|--------------------|---|--|
| Supply Fan Control | Constant volume.  | VAV with forward-curved centrifugal fan and variable inlet fans.   |
| Return Fan Control | Constant volume.  | VAV with forward-curved centrifugal fan and discharge dampers.   |
| Cooling System     | Chilled water (Note 12)   | Direct expansion air cooled.   |
| Heating System     | Hot water (Note 13)   | Hot water (Note 13) or electric resistance.  |
| Remarks            | Drybulb economizer per Section 1433, heat recovery if required by Section 1436. | Drybulb economizer per Section 1433. Minimum VAV setting per Section 1435-Exception 1, Supply air reset by zone of greatest cooling demand, heat recovery if required by Section 1436. |

TABLE 3-3 (cont.)

HVAC System Descriptions for Prototype Buildings<sup>1</sup>

| HVAC Component                 | System #5  | System #6                                       |
|--------------------------------|--|---|
| System Description             | Built-up central VAV with perimeter reheat and fan-powered terminal units  | Four-pipe fan-coil per zone with central plant. |
| Fan System                     |  |   |
| Design Supply Circulation Rate | Note 10  | Note 10   |
| Supply Fan Control             | VAV with air-foil centrifugal fan and AC frequency variable speed drive.   | Fan cycles with call for heating or cooling.    |
| Return Fan Control             | VAV with air-foil centrifugal fan and AC frequency variable speed drive.   | NA  |
| Cooling System                 | Chilled water (Note 12)  | Chilled water (Note 12)                         |
| Heating System                 | Hot water (Note 13) or electric resistance.  | Hot water (Note 13) or electric resistance.     |
| Remarks                        | Drybulb economizer per Section 1433. Minimum VAV setting per Section 1435-Exception 1, Supply air reset by zone of greatest cooling demand, heat recovery if required by Section 1436. | No economizer, if not required by Section 1433. |

Numbered Footnotes for TABLE 3-3

HVAC System Descriptions for Prototype Buildings

1. The systems and energy types presented in this Table are not intended as requirements or recommendations for the proposed design.
2. For occupancies such as restaurants, assembly and retail that are part of a mixed use building which, according to Table 3-3, includes a central chilled water

3. plant (systems 3, 5, or 6), chilled water system type 3 or 5 shall be used as indicated in the table.
3. Constant volume may be used in zones where pressurization relationships must be maintained by code. Where constant volume is used, the system shall have heat recovery if required by Section 1436. VAV shall be used in all other areas, in accordance with Sections 1432 through 1439.
4. Provide run-around heat recovery systems for all fan systems with a minimum outside air intake greater than 70%. Recovery effectiveness shall be 0.50.
5. If a warehouse is not intended to be mechanically cooled, both the standard and proposed designs shall be calculated assuming no mechanical cooling.
6. The system listed is for guest rooms only. Areas such as public areas and back-of-house areas shall be served by system 4. Other areas such as offices and retail shall be served by systems listed in Table 3-3 for these occupancy types.
7. The system listed is for guest rooms only. Areas such as public areas and back-of-house areas shall be served by system 5. Other areas such as offices and retail shall be served by systems listed in Table 3-3 for these occupancy types.
8. Reserved.
9. Reserved.
10. Design supply air circulation rate shall be based on a supply air to room air temperature difference of 20°F. A higher supply air temperature may be used if required to maintain a minimum circulation rate of 4.5 air changes per hour or 15 cfm per person to each zone served by the system, at design conditions. If return fans are specified, they shall be sized for the supply fan capacity less the required minimum ventilation with outside air, or 75% of the supply fan capacity, whichever is larger. Except where noted, supply and return fans shall be operated continuously during occupied hours.
11. Fan energy when included in the efficiency rating of the unit as defined in Section 1411, need not be modeled explicitly for this system. The fan shall cycle with calls for heating or cooling.
12. Chilled water systems shall be modeled using a reciprocating chiller for systems with total cooling capacities less than 175 tons, and centrifugal chillers for systems with cooling capacities of 175 tons or greater. For systems with cooling capacities of 600 tons or more, the standard design energy consumption shall be calculated using two centrifugal chillers, lead/lag controlled. Chilled water shall be assumed to be controlled at a constant 44°F. Chiller water pumps shall be sized using a 12°F temperature rise, from 44°F to 56°F, operating at 65% combined impeller and motor efficiency. Condenser water pumps shall be sized using a 10°F temperature rise, operating at 60% combined impeller and motor efficiency. The cooling tower shall be an open circuit, centrifugal blower type sized for the larger of 85°F leaving water temperature or 10°F approach to design wetbulb temperature. The tower shall be controlled to provide a 65°F leaving water temperature whenever weather conditions permit, floating up to

~~design leaving water temperatures at design conditions. Chilled water supply temperature shall be reset in accordance with Section 1432.2.2.~~

- 13. ~~Hot water system shall include a natural draft fossil fuel or electric boiler. The hot water pump shall be sized based on a 30°F temperature drop, from 180°F to 150°F, operating at a combined impeller and motor efficiency of 60%. Hot water supply temperature shall be reset in accordance with Section 1432.2.2.)~~

AMENDATORY SECTION (Amending WSR 01-03-010, filed 1/5/01, effective 7/1/01)

**WAC 51-11-99904 Section 4—Suggested software for systems analysis approach.**

| Program Name                       | Source  |
|------------------------------------|---|
| <del>((Blast 3.0 (Level 334)</del> | <del>Blast Support Office<br/>University of Illinois<br/>Dept. of Mechanical and Industrial Engineering<br/>1206 W. Green Street,<br/>Room 140, MEB<br/>Urbana, IL 61801<br/>(217) 244-8182))</del> |
| DOE 2.1E                           | Energy Science and Technology Software Center (ESTSC)<br>PO Box 1220<br>Oakridge, TN 37831-1020<br>423-576-2606   |
| DOE 2.1E or DOE 2.2                | James J. Hirsch & Associates<br>Building Performance Analysis Software & Consulting<br>12185 Presilla Road<br>Camarillo, CA 93012-9243<br>(805) 532-1045  |
| EnergyPlus                         | Kathy Ellington<br>Lawrence Berkeley National Laboratory (LBNL)<br>Building 90, Room 3147<br>Berkeley, CA 94720-0001<br>(510) 486-5711  |
| ESAS                               | Ross Meriweather<br>Consulting, Engineering<br>3315 Outrider<br>San Antonio, TX 78247-4405<br>210-490-7081  |
| ESP-II                             | Automated Procedures for Engineering Consultants, Inc.<br>40 W. 4th Centre, Suite 2100<br>Dayton, OH 45402<br>937-228-2602  |

| Program Name                         | Source  |
|--------------------------------------|---|
| HAP 3.24                             | Carrier Building Systems and Services<br>3215 South 116th St., Suite 133<br>Tukwila, WA 98168<br>(206)-439-0097 |
| Trace 600 Version 18.11 or Trace 700 | The Trane Co.<br>3600 Pammel Creek Rd.<br>Lacrosse, WI 54601<br>608-787-3926                                    |

**WSR 09-17-137**  
**PROPOSED RULES**  
**BUILDING CODE COUNCIL**  
[Filed August 19, 2009, 11:19 a.m.]

Original Notice.  
Preproposal statement of inquiry was filed as WSR 09-05-053.  
Title of Rule and Other Identifying Information: Amendment of chapter 51-13 WAC, Washington State Ventilation and Indoor Air Quality Code.  
Hearing Location(s): Holiday Inn Select Renton, One Grady Way South, Renton, WA, on September 29, 2009, at 10:00 a.m.; and at the Spokane City Council Chambers, West 808 Spokane Falls Boulevard, Spokane, WA, on October 5, 2009, at 9:00 a.m.  
Date of Intended Adoption: November 12, 2009.  
Submit Written Comments to: Peter DeVries, Council Chair, P.O. Box 42525, Olympia, WA 98504-2525, e-mail sbcc@commerce.wa.gov, fax (360) 586-9383, by October 5, 2009.  
Assistance for Persons with Disabilities: Contact Sue Mathers by September 15, 2009, TTY (360) 586-0772 or (360) 725-2966.  
Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposed rules amend the Washington State Ventilation and Indoor Air Quality Code.  
**Option 1:** Repeal the Ventilation and Indoor Air Quality (VIAQ) Code, chapter 51-13 WAC. The provisions currently in the VIAQ will be relocated to the International Residential Code (IRC) (whole-house and source ventilation requirements for single-family and townhouses), the International Mechanical Code (IMC) (for other residential and non-residential ventilation requirements), and the International Building Code (IBC) (for radon provisions for other than single-family and townhouses, and miscellaneous finishing requirements). See the CR-102 form change summaries for those codes for more information. This will help eliminate conflicts between codes and provide single-source reference material.  
**Option 2:** Retain the VIAQ Code with the following modifications. (These same modifications are shown in the relocated provisions noted above.)  
1. Section 301: The scoping of Chapter 3 is changed to apply to all residential construction. Ventilation for nonresi-

dential occupancies shall comply with the IMC or IBC, as applicable.

2. Section 302.1.1: Specifies that engineering calculations must be performed by a licensed engineer.

3. Section 302.1.3: Allows ASHRAE 62.2 to be used as an alternate with approval of the building official.

4. Section 302.3.1, Table 3-2, 302.3.1.1, 302.3.1.2 and Table 3-4: Values in Table 3-2 were updated to reflect a standard base case of continuous operation, consistent with ASHRAE 62.2. Maximum values are no longer found in the table. Table 3-4 and Section 302.3.1.2 provide data for calculating rates for ventilation systems operating intermittently.

5. Section 302.3.3: The sone rating for whole house fans is reduced to 1.0.

6. Section 303.4.1.5: The exception for outdoor air openings for exhaust only systems with forced air furnaces previous has been deleted.

7. Section 303.4.2.1: This section was amended to reflect the methodology for calculating intermittent ventilation rates. In addition, the options for a manual damper or an automatic flow regulating device have been eliminated. The system must use a motorized damper and the rate verified through testing.

8. Section 303.4.4.1: The requirements for heat recovery ventilation systems have been updated to reflect current practice.

9. Section 304: Ventilation requirements for other than residential are relocated to the IMC.

10. Section 501.1: Scoping for radon mitigation systems was clarified to explicitly refer IRC buildings to the IRC requirements for mitigation.

Reasons Supporting Proposal: RCW 19.27.190 and 19.27.020.

Statutory Authority for Adoption: RCW 19.27.190 and 19.27.020.

Statute Being Implemented: Chapters 19.27 and 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: The council is seeking comments on the issues proposed in the rules shown below.

Name of Proponent: Washington state building code council, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Krista Braaksma, P.O. Box 42525, Olympia, WA 98504-2525, (360) 725-2964; and Enforcement: Local jurisdictions.

No small business economic impact statement has been prepared under chapter 19.85 RCW. During review of the proposed changes, the technical advisory group and the economic and regulator assessment committee did not identify any items with potential disproportionate cost impact to small business.

A cost-benefit analysis is not required under RCW 34.05.328. The state building code council is not listed in this

section as one of the agencies required to comply with this statute.

August 1, 2009  
Peter D. DeVries  
Council Chair

**OPTION 1**

REPEALER

The following chapter of the Washington Administrative Code is repealed:

|               |  |
|---------------|--|
| WAC 51-13-100 | Chapter 1—Administration and enforcement.  |
| WAC 51-13-101 | Scope and general requirements.  |
| WAC 51-13-102 | Alternate systems and materials method of design, construction and installation.   |
| WAC 51-13-103 | Plans and specifications.  |
| WAC 51-13-104 | Enforcement and inspections.   |
| WAC 51-13-105 | Validity.  |
| WAC 51-13-106 | Conflicts with other codes.  |
| WAC 51-13-107 | Violations.  |
| WAC 51-13-108 | Liability.   |
| WAC 51-13-200 | Definitions.   |
| WAC 51-13-201 | General.   |
| WAC 51-13-202 | Definitions.   |
| WAC 51-13-300 | Chapter 3—Ventilation systems.   |
| WAC 51-13-301 | Compliance with this chapter.  |
| WAC 51-13-302 | Mechanical ventilation criteria using performance or design methods for Group R Occupancies four stories and less.                 |
| WAC 51-13-303 | Mechanical ventilation criteria using prescriptive methods for Group R Occupancies four stories and less.                          |
| WAC 51-13-304 | Mechanical ventilation criteria and minimum ventilation performance for all other occupancies not covered in sections 302 and 303. |
| WAC 51-13-400 | Chapter 4—Indoor air quality.  |
| WAC 51-13-401 | Pollutant source control.  |
| WAC 51-13-402 | Solid fuel burning appliances and fireplaces.  |
| WAC 51-13-500 | Chapter 5—Radon resistive construction standards.  |



|               |                                  |
|---------------|----------------------------------|
| WAC 51-13-501 | Scope.                           |
| WAC 51-13-502 | Statewide radon requirements.    |
| WAC 51-13-503 | Radon prescriptive requirements. |

**OPTION 2**

AMENDATORY SECTION (Amending WSR 01-02-099, filed 1/3/01, effective 7/1/01)

**WAC 51-13-301 Compliance with this chapter.**

301.1 General: The criteria of this chapter establish the minimum design conditions (~~(upon which the minimum)~~) for ventilation systems (~~(are to be based)~~) for ~~((all occupancies))~~ Group R Occupancies (~~(four (4) stories and less)~~) as defined by the Washington State Building Code. All other occupancies shall comply with ((either Section 302 or 303. Section 304 applies to all other occupancies)) the International Building Code and International Mechanical Code.

301.2 Compliance options: Group R Occupancies shall comply with either Section 302 or 303.

301.3 Testing: At the discretion of the building official, flow testing may be required to verify that the mechanical system(s) satisfies the requirements of this section. Flow testing may be performed using flow hoods measuring at the intake or exhaust points of the system, in-line pitot tube, or pitot-traverse type measurement systems in the duct, short term tracer gas measurements, or other means approved by the building official.

AMENDATORY SECTION (Amending WSR 04-07-192, filed 3/24/04, effective 7/1/04)

**WAC 51-13-302 Mechanical ventilation criteria using performance or design methods for Group R Occupancies (~~(four stories and less)~~).**

302.1 Applicability: Group R Occupancies (~~(four (4) stories and less)~~) as defined by the Washington State Building Code shall comply with either this section or Section 303.

302.1.1 Compliance by Calculations or Testing: Compliance with this section shall be demonstrated through engineering calculation by an engineer licensed to practice in the state of Washington or performance testing. Documentation of calculations or performance test results shall be submitted to the building official. Performance testing shall be conducted in accordance with recognized test methods.

302.1.2 Minimum Ventilation Performance: Each dwelling unit or guest room shall be equipped with source specific and whole house ventilation systems designed and installed to satisfy the ventilation requirements of this section.

All public corridors shall meet the ventilation requirements in section 1203 of the International Building Code.

302.1.3 Alternate Systems: When approved by the code official, systems designed and installed in accordance with ASHRAE Standard 62.2-2007 shall be permitted.

302.2 Source Specific Ventilation Requirements.

302.2.1 Source Specific Ventilation: Source specific exhaust ventilation is required in each kitchen, bathroom, water closet, laundry room, indoor swimming pool, spa, and other rooms where ~~((excess))~~ water vapor or cooking odor is produced.

The minimum source specific ventilation effective exhaust capacity shall be not less than levels specified in Table 3-1.

302.2.2 Source Specific Ventilation Controls: Source specific ventilation systems shall be controlled by manual switches, dehumidistats, timers, or other approved means. Source specific ventilation system controls shall be readily accessible.

302.2.3 Source Specific Ventilation Ducts: Source specific ventilation ducts shall terminate outside the building. Exhaust ducts in systems which are designed to operate intermittently shall be equipped with back-draft dampers. All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4. Terminal elements shall have at least the equivalent net free area of the duct work. Terminal elements for exhaust fan duct systems shall be screened or otherwise protected from entry by leaves or other material.

302.3 Requirements for Whole House Ventilation Systems.

302.3.1 Whole House Ventilation Systems: Each dwelling unit shall be equipped with a whole house ventilation system which shall be capable of providing the volume of outdoor air specified in Table 3-2 under normal operating conditions.

~~((EXCEPTION: Maximum flow rates listed in Table 3-2 do not apply to heat recovery ventilation systems.))~~

302.3.1.1 Continuously Operating Exhaust Ventilation Systems: Continuously operating exhaust ventilation systems shall provide the minimum flow rates specified in Table 3-2.

302.3.1.2 Intermittently Operating Ventilation Systems: The delivered ventilation rate for intermittently operating ventilation systems shall be the combination of its delivered capacity (Table 3-2), its ventilation effectiveness (Table 3-4), and its daily fractional operation time (Table 3-4).

$$Q_f = Q_r / (\epsilon f)$$

Where:

|            |   |  |
|------------|---|--|
| $Q_f$      | ≡ | fan flow rate                                |
| $Q_r$      | ≡ | ventilation air requirement (from Table 3-2) |
| $\epsilon$ | ≡ | ventilation effectiveness (from Table 3-4)   |
| $f$        | ≡ | fractional operation time                    |

302.3.2 Whole House Ventilation System Controls: All ventilation system controls shall be readily accessible. Controls for whole house ventilation systems shall be capable of

operating the ventilation system without energizing other energy-consuming appliances.

Intermittently operated whole house ventilation systems shall be constructed to have the capability for continuous operation, and shall have a manual control and an automatic control, such as a clock timer. At the time of final inspection, the automatic control timer shall be set to operate the whole house fan for at least eight hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

302.3.3 Fan Noise: Whole house fans located four feet or less from the interior grille shall have a sone rating of ~~((1-5))~~ 1.0 or less measured at 0.1 inches water gauge. Manufacturer's noise ratings shall be determined as per HVI 915 (October 1995). Remotely mounted fans shall be acoustically isolated from the structural elements of the building and from attached duct work using insulated flexible duct or other approved material.

EXCEPTION: Whole house ventilation systems which are integrated with forced-air heating systems or heat-recovery ventilation systems are exempt from the sone rating requirements of this section.

302.3.4 Whole House Ventilation Ducts: All ducts shall terminate outside the building. Exhaust ducts in systems which are designed to operate intermittently shall be equipped with back-draft dampers. All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4. All supply ducts in the conditioned space shall be insulated to a minimum of R-4.

#### 302.3.5 Outdoor Air.

302.3.5.1 Outdoor Air Supply: A mechanical system shall supply outdoor air as required in Section 302.3.1. The mechanical system may consist of exhaust fans, supply fans, or both.

302.3.5.2 Outdoor Air Inlets: Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

- a) Closer than ten feet from an appliance vent outlet, unless such vent outlet is three feet above the outdoor air inlet.
- b) Where it will pick up objectionable odors, fumes, or flammable vapors.
- c) A hazardous or unsanitary location.
- d) A room or space having any fuel-burning appliances therein.
- e) Closer than ten feet from a vent opening of a plumbing drainage system unless the vent opening is at least three feet above the air inlet.
- f) Attic, crawl spaces, garages.

302.3.5.3 Outdoor Air Distribution: Outdoor air shall be distributed to each habitable room by means such as individual inlets, separate duct systems, or a forced-air system. Where outdoor air supplies are separated from exhaust points

by doors, provisions shall be made to ensure air flow by installation of distribution ducts, undercutting doors, installation of grilles, transoms, or similar means where permitted by the International Building Code. Doors shall be undercut to a minimum of one-half inch above the surface of the finish floor covering.

302.3.5.4 Doors and operable lites in windows are deemed not to meet the outdoor air supply intake requirements.

302.3.5.5 Individual Room Outdoor Air Inlets: Where provided, individual room outdoor air inlets shall:

- a) Have controllable and secure openings;
- b) Be sleeved or otherwise designed so as not to compromise the thermal properties of the wall or window in which they are placed.

302.3.5.6 Ventilation Integrated with Forced-Air Systems: Where outdoor air is provided by a forced-air system, the outdoor air connection to the return air stream shall be located upstream of the forced-air system blower and shall not be connected directly into a furnace cabinet to prevent thermal shock to the heat exchanger.

AMENDATORY SECTION (Amending WSR 04-07-192, filed 3/24/04, effective 7/1/04)

#### **WAC 51-13-303 Mechanical ventilation criteria using prescriptive methods for Group R Occupancies (~~four stories and less~~).**

303.1 Applicability: Group R Occupancies 4 stories or less shall comply with this section or Section 302. This section establishes minimum prescriptive design requirements for intermittently operated systems. Continuously operated systems shall comply with Section 302. A system which meets the requirements of this section shall be deemed to satisfy the requirements of this chapter.

303.2 Minimum Ventilation Performance: Each dwelling unit or guest room shall be equipped with source specific and whole house ventilation systems designed and installed to satisfy the ventilation requirements of this section. All public corridors shall meet the ventilation requirements in Section 1203 of the International Building Code.

303.3 Source Specific Exhaust Ventilation Requirements.

303.3.1 Source Specific Ventilation: Source specific exhaust ventilation is required in each kitchen, bathroom, water closet, laundry room, indoor swimming pool, spa, and other rooms where excess water vapor or cooking odor is produced. The minimum source specific ventilation effective exhaust capacity shall be not less than levels specified in Table 3-1.

303.3.2 Source Specific Exhaust Fans: Exhaust fans providing source specific ventilation shall have a minimum fan flow rating not less than 50 cfm at 0.25 inches water gauge for bathrooms, laundries, or similar rooms and 100 cfm at 0.25 inches water gauge for kitchens. Manufacturers' fan flow ratings shall be determined as per HVI 916 (April 1995) or AMCA 210.

EXCEPTION: Where a range hood or down draft exhaust fan is used to satisfy the source specific ventilation requirements for kitchens, the range hood or down draft exhaust shall not be less than 100 cfm at 0.10 inches water gauge.

303.3.3 Source Specific Ventilation Controls: Source specific ventilation systems shall be controlled by manual switches, dehumidistats, timers, or other approved means. Source specific ventilation system controls shall be readily accessible.

303.3.4 Source Specific Ventilation Ducts: Source specific ventilation ducts shall terminate outside the building. Exhaust ducts shall be equipped with back-draft dampers. All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4. Terminal elements shall have at least the equivalent net free area of the duct work. Terminal elements for exhaust fan duct systems shall be screened or otherwise protected from entry by leaves or other material.

303.4 Prescriptive Whole House Ventilation Systems: Whole house ventilation shall be provided by a system that meets the requirements of either Section 303.3.1, 303.3.2, 303.3.3, or 303.3.4. A system which meets all of the requirements of one of these sections shall be deemed to satisfy the requirements for a whole house ventilation system.

303.4.1 Intermittent Whole House Ventilation Using Exhaust Fans: This section establishes minimum prescriptive requirements for intermittent whole house ventilation systems using exhaust fans. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole house ventilation system.

303.4.1.1 Whole House Ventilation Fans: Exhaust fans providing whole house ventilation shall have a flow rating at 0.25 inches water gauge as specified in Table 3-2. Manufacturers' fan flow ratings shall be determined according to HVI 916 (April 1995) or AMCA 210.

303.4.1.2 Fan Noise: Whole house fans located four feet or less from the interior grille shall have a sone rating of 1.5 or less measured at 0.1 inches water gauge. Manufacturer's noise ratings shall be determined as per HVI 915 (October 1995). Remotely mounted fans shall be acoustically isolated from the structural elements of the building and from attached duct work using insulated flexible duct or other approved material.

303.4.1.3 Fan Controls: The whole house ventilation fan shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. The 24-hour timer shall be readily accessible. The 24-hour timer shall be capable of operating the whole house ventilation fan without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house fan for at least eight hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

303.4.1.4 Exhaust Ducts: All exhaust ducts shall terminate outside the building. Exhaust ducts shall be equipped

with back-draft dampers. All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4.

303.4.1.5 Outdoor Air Inlets: Outdoor air shall be distributed to each habitable room by individual outdoor air inlets. Where outdoor air supplies are separated from exhaust points by doors, provisions shall be made to ensure air flow by installation of distribution ducts, undercutting doors, installation of grilles, transoms, or similar means where permitted by the International Building Code. Doors shall be undercut to a minimum of one-half inch above the surface of the finish floor covering.

Individual room outdoor air inlets shall:

- a. Have controllable and secure openings;
- b. Be sleeved or otherwise designed so as not to compromise the thermal properties of the wall or window in which they are placed;
- c. Provide not less than four square inches of net free area of opening for each habitable space. Any inlet or combination of inlets which provide 10 cfm at 10 Pascals as determined by the Home Ventilating Institute Air Flow Test Standard (HVI 901 (November 1996)) are deemed equivalent to four square inches net free area.

Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

- a. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
- b. Where it will pick up objectionable odors, fumes or flammable vapors.
- c. A hazardous or unsanitary location.
- d. A room or space having any fuel-burning appliances therein.
- e. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
- f. Attic, crawl spaces, or garages.

((EXCEPTION:

Exhaust only ventilation systems do not require outdoor air inlets if the home has a ducted forced air heating system that communicates with all habitable rooms and the interior doors are undercut to a minimum of one-half inch above the surface of the finish floor covering.))

303.4.2 Prescriptive Requirements for Intermittent Whole House Ventilation Integrated with a Forced-Air System: This section establishes minimum prescriptive requirements for intermittent whole house ventilation systems integrated with forced-air ventilation systems. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole house ventilation system.

303.4.2.1 Integrated Whole House Ventilation Systems: Integrated Whole House Ventilation Systems shall provide outdoor air at the rates ~~((specified in Table 3-2))~~ calculated using Section 302.3.1. Integrated Forced-Air Ventilation Systems shall distribute outdoor air to each habitable room through the forced-air system ducts. Integrated Forced-Air Ventilation Systems shall have an outdoor air inlet duct connecting a terminal element on the outside of the building to the return air plenum of the forced-air system, at a point

within four (4) feet upstream of the air handler. The outdoor air inlet duct connection to the return air stream shall be located upstream of the forced-air system blower and shall not be connected directly into a furnace cabinet to prevent thermal shock to the heat exchanger. ~~((The outdoor air inlet duct shall be prescriptively sized in accordance with Table 3-5.))~~ The system will be equipped with ~~((one of the following:~~

~~1.) a motorized damper connected to the automatic ventilation control as specified in Section 303.3.2.2(1); or~~

~~2. A damper installed and set to meet minimum flow rates as specified in Table 3-2, by either field testing or following manufacturer's installation instructions based on site conditions; or~~

~~3. An automatic flow regulated device with field measured or field calculated minimum negative pressure of 0.07 inches water gauge at the point where the outside air duct is connected to the return air plenum)). The required flow rate shall be verified by field testing with a flow hood or a flow measuring station.~~

303.4.2.2 Ventilation Controls: The whole house ventilation system shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. This control will control the forced air system blower and ~~((if applicable))~~ the automatic damper. The 24-hour timer shall be readily accessible. The 24-hour timer shall be capable of operating the whole house ventilation system without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house system for at least eight hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

303.4.2.3 Ventilation Duct Insulation: All supply ducts in the conditioned space shall be insulated to a minimum of R-4.

303.4.2.4 Outdoor Air Inlets: Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

- a. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
- b. Where it will pick up objectionable odors, fumes or flammable vapors.
- c. A hazardous or unsanitary location.
- d. A room or space having any fuel-burning appliances therein.
- e. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
- f. Attic, crawl spaces, or garages.

303.4.3 Prescriptive Requirements for Intermittent Whole House Ventilation Using a Supply Fan: This section establishes minimum prescriptive requirements for intermittent whole house ventilation systems using an inline supply fan. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole house ventilation system.

303.4.3.1 Outdoor Air: Supply Fan Ventilation Systems shall distribute outdoor air to each habitable room through the forced-air system ducts or through dedicated ducts to each habitable room. Supply fans shall have the capacity to provide the amount of outdoor air specified in Table 3-2 at 0.4 inches water gauge as per HVI 916 (April 1995). The outdoor air must be filtered before it is delivered to habitable rooms. The filter may be located at the intake device, inline with the fan, or, in the case of a connection to the return plenum of the airhandler, using the furnace filter. An outdoor air inlet shall be connected to either the supply or return air stream.

303.4.3.2 Ducts: An outdoor air inlet duct connection to the supply air stream shall be located downstream of the forced-air system blower. An outdoor air inlet duct connection to the return air stream shall be located at least four feet upstream of the forced-air system blower and its filter. Neither type of duct shall be connected directly into a furnace cabinet to prevent thermal shock to the heat exchanger. The outdoor air inlet duct shall be prescriptively sized in accordance with Table 3-6. The terminal element on the outside of the building shall be sized two inches in diameter larger than the outdoor air inlet duct.

303.4.3.3 Dampers: The system shall be equipped with a back-draft damper and one of the following:

1. A calibrated manual volume damper installed and set to meet the measured flow rates specified in Table 3-2 by field testing with a pressure gauge and/or following manufacturer's installation instructions, or

2. A manual volume damper installed and set to meet the measured flow rates specified in Table 3-2 by field testing with a flow hood or a flow measuring station; or

3. An automatic flow-regulating device sized to the specified flow rates in Table 3-2 which provides constant flow over a pressure range of 0.2 to 0.6 inches water gauge.

303.4.3.4 Ventilation Controls: The whole house ventilation system shall be controlled by a 24 hour clock timer with the capability of continuous operation, manual and automatic control. This control will control the inline supply fan. The 24-hour timer shall be readily accessible. The 24 hour timer shall be capable of operating the whole house ventilation system without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house system for at least eight hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

303.4.3.5 Ventilation Duct Insulation: All supply ducts in the conditioned space shall be insulated to a minimum of R-4.

303.4.3.6 Outdoor Air Inlets: Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

- a. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.

- b. Where it will pick up objectionable odors, fumes or flammable vapors.
- c. A hazardous or unsanitary location.
- d. A room or space having any fuel-burning appliances therein.
- e. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
- f. Attic, crawl spaces, or garages.

303.4.4 Prescriptive Requirements for Intermittent Whole House Ventilation Using a Heat Recovery Ventilation System: This section establishes minimum prescriptive requirements for intermittent whole house ventilation using a heat recovery ventilation system.

303.4.4.1 Heat Recovery Ventilation Systems: All duct work in heat recovery ventilation systems shall be ~~((not less than six inch diameter. Balancing dampers shall be installed on the inlet and exhaust side. Flow measurement grids shall be installed on the supply and return. System minimum flow rating shall be not less than that specified in Table 3-2. Maximum flow rates in Table 3-2 do not apply to heat recovery ventilation systems))~~ sized and installed per the manufacturer's instructions. System minimum flow rating shall be not less than that specified in Table 3-2. Heat recovery ventilation systems shall have a filter on the upstream side of the heat exchanger in both the intake and exhaust airstreams with a Minimum Efficiency Ratings Value (MERV) of 6.

303.4.4.2 Ventilation Controls: The whole house ventilation system shall be controlled by a 24 hour clock timer with the capability of continuous operation, manual and automatic control. This control will control the inline supply fan. The 24-hour timer shall be readily accessible. The 24-hour timer shall be capable of operating the whole house ventilation system without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house system for at least eight hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

303.4.4.3 Ventilation Duct Insulation: All supply ducts in the conditioned space installed upstream of the heat exchanger shall be insulated to a minimum of R-4.

303.4.4.4 Outdoor Air Inlets: Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

- a. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
- b. Where it will pick up objectionable odors, fumes or flammable vapors.
- c. A hazardous or unsanitary location.
- d. A room or space having any fuel-burning appliances therein.
- e. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
- f. Attic, crawl spaces, or garages.

AMENDATORY SECTION (Amending WSR 07-01-095, filed 12/19/06, effective 7/1/07)

**WAC 51-13-304 Mechanical ventilation criteria and minimum ventilation performance ~~((for all other occupancies not covered in sections 302 and 303)).~~**

~~((304.1 Ventilation: The minimum requirements for operable area to provide natural ventilation are specified in the International Building Code (IBC) as adopted by the state of Washington.~~

~~Where a mechanical ventilation system is installed, the mechanical ventilation system shall be capable of supplying ventilation air to each zone with the minimum outdoor air quantities specified in Table 3-4.~~

~~EXCEPTION: Where occupancy density is known and documented in the plans, the outside air rate may be based on the design occupant density. Under no circumstance shall the occupancies used result in outside air less than one-half that resulting from application of Table 3-4 estimated maximum occupancy values.~~

~~The outdoor air shall be ducted in a fully enclosed path directly to every air handling unit in each zone not provided with sufficient operable area for natural ventilation.~~

~~EXCEPTION: Ducts may terminate within 12 inches of the intake to an HVAC unit provided they are physically fastened so that the outside air duct is directed into the unit intake.~~

~~In all parking garages, other than open parking garages as defined in IBC 406.3, used for storing or handling of automobiles operating under their own power and on all loading platforms in bus terminals, ventilation shall be provided at 1.5 cfm per square foot of gross floor area. The building official may approve an alternate ventilation system designed to exhaust a minimum fourteen thousand cfm for each operating vehicle. Such system shall be based on the anticipated instantaneous movement rate of vehicles but not less than 2.5 percent (or one vehicle) of the garage capacity. Automatic carbon monoxide sensing systems may be submitted for approval.~~

~~In all buildings used for the repair of automobiles, each repair stall shall be equipped with an exhaust extension duct, extending to the outside of the building, which if over ten feet in length, shall mechanically exhaust three hundred cfm. Connecting offices and waiting rooms shall be supplied with conditioned air under positive pressure.~~

~~Combustion air requirements shall conform to the requirements of Chapter 7 of the International Mechanical Code (IMC).~~

~~Mechanical refrigerating equipment and rooms storing refrigerants shall conform to the requirements of Chapter 11 of the IMC.~~

~~304.2 Alternate Systems: Alternate systems designed in accordance with ASHRAE Standard 62.1-2004 shall be permitted.)~~

**TABLE 3-1  
Minimum Source Specific Ventilation Capacity Requirements**

|                          | Bathrooms | Kitchens |
|--------------------------|-----------|----------|
| Intermittently operating | 50 cfm    | 100 cfm  |
| Continuous operation     | 20 cfm    | 25 cfm   |

**TABLE 3-2  
Ventilation Rates For All Group R Occupancies ((~~four (4) stories and less~~)<sup>\*</sup>  
Minimum and Maximum Ventilation Rates: Cubic Feet Per Minute (CFM)) (Continuously operating systems)**

| ((Floor Area, ft <sup>2</sup> | Bedrooms  |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-------------------------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                               | 2 or less |      | 3    |      | 4    |      | 5    |      | 6    |      | 7    |      | 8    |      |
|                               | Min.      | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| <500                          | 50        | 75   | 65   | 98   | 80   | 120  | 95   | 143  | 110  | 165  | 125  | 188  | 140  | 210  |
| 501-1000                      | 55        | 83   | 70   | 105  | 85   | 128  | 100  | 150  | 115  | 173  | 130  | 195  | 145  | 218  |
| 1001-1500                     | 60        | 90   | 75   | 113  | 90   | 135  | 105  | 158  | 120  | 180  | 135  | 203  | 150  | 225  |
| 1501-2000                     | 65        | 98   | 80   | 120  | 95   | 143  | 110  | 165  | 125  | 188  | 140  | 210  | 155  | 233  |
| 2001-2500                     | 70        | 105  | 85   | 128  | 100  | 150  | 115  | 173  | 130  | 195  | 145  | 218  | 160  | 240  |
| 2501-3000                     | 75        | 113  | 90   | 135  | 105  | 158  | 120  | 180  | 135  | 203  | 150  | 225  | 165  | 248  |
| 3001-3500                     | 80        | 120  | 95   | 143  | 110  | 165  | 125  | 188  | 140  | 210  | 155  | 233  | 170  | 255  |
| 3501-4000                     | 85        | 128  | 100  | 150  | 115  | 173  | 130  | 195  | 145  | 218  | 160  | 240  | 175  | 263  |
| 4001-5000                     | 95        | 143  | 110  | 165  | 125  | 188  | 140  | 210  | 155  | 233  | 170  | 255  | 185  | 278  |
| 5001-6000                     | 105       | 158  | 120  | 180  | 135  | 203  | 150  | 225  | 165  | 248  | 180  | 270  | 195  | 293  |
| 6001-7000                     | 115       | 173  | 130  | 195  | 145  | 218  | 160  | 240  | 175  | 263  | 190  | 285  | 205  | 308  |
| 7001-8000                     | 125       | 188  | 140  | 210  | 155  | 233  | 170  | 255  | 185  | 278  | 200  | 300  | 215  | 323  |
| 8001-9000                     | 135       | 203  | 150  | 225  | 165  | 248  | 180  | 270  | 195  | 293  | 210  | 315  | 225  | 338  |
| >9000                         | 145       | 218  | 160  | 240  | 175  | 263  | 190  | 285  | 205  | 308  | 220  | 330  | 235  | 353  |

<sup>\*</sup>For residences that exceed 8 bedrooms, increase the minimum requirement listed for 8 bedrooms by an additional 15 CFM per bedroom. The maximum CFM is equal to 1.5 times the minimum.))

| Floor Area, ft <sup>2</sup> | Bedrooms |     |     |     |     |
|-----------------------------|----------|-----|-----|-----|-----|
|                             | 0-1      | 2-3 | 4-5 | 6-7 | ≥7  |
| <1500                       | 30       | 45  | 60  | 75  | 90  |
| 1501-3000                   | 45       | 60  | 75  | 90  | 105 |
| 3001-4500                   | 60       | 75  | 90  | 105 | 120 |
| 4501-6000                   | 75       | 90  | 105 | 120 | 135 |
| 6001-7500                   | 90       | 105 | 120 | 135 | 150 |
| ≥7500                       | 105      | 120 | 135 | 150 | 165 |

TABLE 3-3  
Prescriptive Exhaust Duct Sizing

| Fan Tested CFM @ 0.25 W.G. | Minimum Flex Diameter | Maximum Length Feet | Minimum Smooth Diameter | Maximum Length Feet | Maximum Elbows <sup>1</sup> |
|----------------------------|-----------------------|---------------------|-------------------------|---------------------|-----------------------------|
| 50                         | 4 inch                | 25                  | 4 inch                  | 70                  | 3                           |
| 50                         | 5 inch                | 90                  | 5 inch                  | 100                 | 3                           |
| 50                         | 6 inch                | No Limit            | 6 inch                  | No Limit            | 3                           |
| 80                         | 4 inch <sup>2</sup>   | NA                  | 4 inch                  | 20                  | 3                           |
| 80                         | 5 inch                | 15                  | 5 inch                  | 100                 | 3                           |
| 80                         | 6 inch                | 90                  | 6 inch                  | No Limit            | 3                           |
| 100                        | 5 inch <sup>2</sup>   | NA                  | 5 inch                  | 50                  | 3                           |
| 100                        | 6 inch                | 45                  | 6 inch                  | No Limit            | 3                           |
| 125                        | 6 inch                | 15                  | 6 inch                  | No Limit            | 3                           |
| 125                        | 7 inch                | 70                  | 7 inch                  | No Limit            | 3                           |

- For each additional elbow subtract 10 feet from length.
- Flex ducts of this diameter are not permitted with fans of this size.

TABLE 3-4  
((Outdoor air requirements for ventilation)<sup>+</sup>  
Occupancies not subject to sections 302 and 303

| Application  | Estimated Maximum <sup>2</sup> Occupancy P/1000 ft <sup>2</sup> or 100 m <sup>2</sup> | Outdoor Air Requirements cfm/person |
|--|---|-------------------------------------|
| <b>Dry Cleaners, Laundries<sup>3</sup></b>   |   |                                     |
| Commercial laundry   | 10  | 25                                  |
| Commercial dry cleaner   | 30  | 30                                  |
| Storage, pick up   | 30  | 35                                  |
| Coin-operated laundries  | 20  | 15                                  |
| Coin-operated dry cleaner  | 20  | 15                                  |
| <b>Dwelling Units In Buildings Greater Than Four Stories or Attached to I-Occupancy Facilities</b> |   |                                     |
| Bedroom & living area <sup>24</sup>  |   | 15                                  |
| <b>Food and Beverage Service</b>   |   |                                     |

| Application   | Estimated Maximum <sup>2</sup> Occupancy P/1000 ft <sup>2</sup> -or 100 m <sup>2</sup> | Outdoor Air Requirements cfm/person |
|---|--|-------------------------------------|
| Dining rooms  | 70   | 20                                  |
| Cafeteria, fast food  | 100  | 20                                  |
| Bars, cocktail lounges <sup>4</sup>   | 100  | 30                                  |
| Kitchens (cooking) <sup>2,3</sup>   | 20   | 15                                  |
| Garages, Repair, Service Stations   |  |                                     |
| Enclosed parking garage <sup>5</sup>  |  | 1.50 cfm/ft.sq.                     |
| Auto repair rooms   |  | 1.50 cfm/ft.sq.                     |
| Hotels, Motels, Resorts, Congregate Residences with More Than Four Stories <sup>6</sup> |  |                                     |
| Bedrooms  |  | 30 cfm/room                         |
| Living Rooms  |  | 30 cfm/room                         |
| Bath <sup>7</sup>   |  | 35 cfm/room                         |
| Lobbies   | 30   | 15                                  |
| Conference rooms  | 50   | 20                                  |
| Assembly rooms  | 120  | 15                                  |
| Gambling casinos <sup>4</sup>   | 120  | 30                                  |
| Offices   |  |                                     |
| Office space <sup>9</sup>   | 7  | 20                                  |
| Reception area  | 60   | 15                                  |
| Telecommunication centers and data entry areas  | 60   | 20                                  |
| Conference rooms  | 50   | 20                                  |
| Public Spaces   |  |                                     |
| Corridors and utilities   |  | 0.05 cfm/ft.sq.                     |
| Public restroom, cfm/we or urinal <sup>10</sup>   |  | 50                                  |
| Lockers and dressing rooms  |  | 0.50 cfm/ft.sq.                     |
| Smoking lounge <sup>11</sup>  | 70   | 60                                  |
| Elevators <sup>12</sup>   |  | 1.0 cfm/ft.sq.                      |
| Retail Stores, Sales Floors, and Show Room Floors                                       |  |                                     |
| Basement and street   | 30   | 0.30 cfm/ft.sq.                     |
| Upper floors  | 20   | 0.20 cfm/ft.sq.                     |
| Storage rooms   | 15   | 0.15 cfm/ft.sq.                     |
| Dressing rooms  |  | 0.20 cfm/ft.sq.                     |
| Malls and arcades   | 20   | 0.20 cfm/ft.sq.                     |
| Shipping and receiving  | 10   | 0.15 cfm/ft.sq.                     |
| Smoking lounge <sup>11</sup>  | 70   | 60                                  |
| Warehouses  | 5  | 0.05 cfm/ft.sq.                     |
| Specialty Shops   |  |                                     |
| Barber  | 25   | 15                                  |
| Beauty  | 25   | 25                                  |
| Reducing salons   | 20   | 15                                  |
| Florists <sup>13</sup>  | 8  | 15                                  |
| Clothiers, furniture  |  | 0.30 cfm/ft.sq.                     |
| Hardware, drugs, fabric   | 8  | 15                                  |
| Supermarkets  | 8  | 15                                  |
| Pet shops   |  | 1.00 cfm/ft.sq.                     |
| Sports and Amusement <sup>14</sup>  |  |                                     |
| Spectator areas   | 150  | 15                                  |
| Game rooms  | 70   | 25                                  |
| Ice arenas (playing areas)  |  | 0.50 cfm/ft.sq.                     |

| Application                                       | Estimated Maximum <sup>2</sup> Occupancy P/1000 ft <sup>2</sup> -or 100 m <sup>2</sup> | Outdoor Air Requirements cfm/person |
|---|--|-------------------------------------|
| Swimming Pools (pool and deck area) <sup>15</sup> |  | 0.50 cfm/ft.sq.                     |
| Playing floor (gymnasium)                         | 30   | 20                                  |
| Ballrooms and discos                              | 100  | 25                                  |
| Bowling alleys (seating areas)                    | 70   | 25                                  |
| Theaters <sup>16</sup>                            |  |                                     |
| Ticket booths                                     | 60   | 20                                  |
| Lobbies   | 150  | 20                                  |
| Auditorium  | 150  | 20                                  |
| Stages, studios                                   | 70   | 15                                  |
| Transportation <sup>17</sup>                      |  |                                     |
| Waiting rooms                                     | 100  | 15                                  |
| Platforms   | 100  | 15                                  |
| Vehicles  | 150  | 15                                  |
| Workrooms   |  |                                     |
| Meat processing <sup>18</sup>                     | 10   | 15                                  |
| Photo studios                                     | 10   | 15                                  |
| Darkrooms   | 10   | 0.50 cfm/ft.sq.                     |
| Pharmacy  | 20   | 15                                  |
| Bank vaults                                       | 5  | 15                                  |
| Duplicating, printing <sup>19</sup>               |  | 0.50 cfm/ft.sq.                     |
| INSTITUTIONAL FACILITIES                          |  |                                     |
| Education   |  |                                     |
| Classroom   | 50   | 15                                  |
| Laboratories <sup>20</sup>                        | 30   | 20                                  |
| Training shop                                     | 30   | 20                                  |
| Music rooms                                       | 50   | 15                                  |
| Libraries   | 20   | 15                                  |
| Locker rooms                                      |  | 0.50 cfm/ft.sq.                     |
| Corridors   |  | 0.10 cfm/ft.sq.                     |
| Auditoriums                                       | 150  | 15                                  |
| Smoking lounges <sup>11</sup>                     | 70   | 60                                  |
| Hospitals, Nursing and Convalescent Homes         |  |                                     |
| Patient rooms <sup>21</sup>                       | 10   | 25                                  |
| Medical procedure                                 | 20   | 15                                  |
| Operating rooms                                   | 20   | 30                                  |
| Recovery and ICU                                  | 20   | 15                                  |
| Autopsy rooms <sup>22</sup>                       |  | 0.50 cfm/ft.sq.                     |
| Physical Therapy                                  | 20   | 15                                  |
| Correctional Facilities                           |  |                                     |
| Cells   | 20   | 20                                  |
| Dining halls                                      | 100  | 15                                  |
| Guard station                                     | 40   | 15                                  |

- 1: Derived from ASHRAE Standard 62-1989.
- 2: Net occupiable space.
- 3: Dry-cleaning process may require more air.
- 4: Supplementary smoke-removal equipment may be required.
- 5: Distribution among people must consider worker location and concentration of running engine; stands where engines are run must incorporate systems for positive engine exhaust withdrawal. Contaminant sensors may be used to control ventilation.
- 6: Independent of room size.

- 7. Installed capacity for intermittent use.
- 8. See also food and beverage service, merchandising, barber and beauty shops, garages.
- 9. Some office equipment may require local exhaust.
- 10. Mechanical exhaust with no recirculation is recommended.
- 11. Normally supplied by transfer air, local mechanical exhaust; with no recirculation recommended.
- 12. Normally supplied by transfer air.
- 13. Ventilation to optimize plant growth may dictate requirements.
- 14. When internal combustion engines are operated for maintenance of playing surfaces, increased ventilation rates may be required.
- 15. Higher values may be required for humidity control.
- 16. Special ventilation will be needed to eliminate special stage effects.
- 17. Ventilation within vehicles may require special considerations.
- 18. Spaces maintained at low temperatures (-10°F. to +50°F.) are not covered by these requirements unless the occupancy is continuous. Ventilation from adjoining spaces is permissible. When the occupancy is intermittent, infiltration will normally exceed the ventilation requirements.
- 19. Installed equipment must incorporate positive exhaust and control of undesirable contaminants.
- 20. Special contamination control systems may be required for processes or functions including laboratory animal occupancy.
- 21. Special requirements or codes and pressure relationships may determine minimum ventilation rates and filter efficiency. Procedures generating contaminants may require higher rates.
- 22. Air shall not be recirculated into other spaces.
- 23. Makeup air for hood exhaust may require more ventilating air.
- 24. Occupant loading shall be based on the number of bedrooms as follows: first bedroom, two persons; each additional bedroom, one person. Where higher occupant loadings are known, they shall be used.))

Ventilation Effectiveness for Intermittent Fans

| Daily Fractional Operation Time, f | Ventilation Effectiveness, e |
|------------------------------------|------------------------------|
| $f \leq 35\%$                      | 0.33                         |
| $35\% < f < 60\%$                  | 0.50                         |
| $60\% \leq f < 80\%$               | 0.75                         |
| $80\% \leq f$                      | 1.0                          |

For systems designed to operate at least once every three hours, ventilation effectiveness can be 1.0.

TABLE 3-5  
Prescriptive Integrated Forced Air Supply Duct Sizing

| Required Flow (CFM) Per Table 3-2 | Minimum Smooth Duct Diameter | Minimum Flexible Duct Diameter | Maximum Length <sup>1</sup> | Maximum Number of Elbows <sup>2</sup> |
|-----------------------------------|------------------------------|--------------------------------|-----------------------------|---------------------------------------|
| 50-80                             | 6"                           | 7"                             | 20'                         | 3                                     |
| 80-125                            | 7"                           | 8"                             | 20'                         | 3                                     |
| 115-175                           | 8"                           | 10"                            | 20'                         | 3                                     |
| 170-240                           | 9"                           | 11"                            | 20'                         | 3                                     |

- 1. For lengths over 20 feet increase duct diameter 1 inch.
- 2. For elbows numbering more than 3 increase duct diameter 1 inch.

TABLE 3-6  
Prescriptive Supply Fan Duct Sizing

| Supply Fan Tested CFM At 0.4" WG |                              |                                |
|----------------------------------|------------------------------|--------------------------------|
| Specified volume from Table 3-2  | Minimum Smooth Duct Diameter | Minimum Flexible Duct Diameter |
| 50-90 CFM                        | 4 inch                       | 5 inch                         |
| 90-150 CFM                       | 5 inch                       | 6 inch                         |
| 150-250 CFM                      | 6 inch                       | 7 inch                         |
| 250-400 CFM                      | 7 inch                       | 8 inch                         |

AMENDATORY SECTION (Amending WSR 07-01-095, filed 12/19/06, effective 7/1/07)

**WAC 51-13-501 Scope.**

501.1 General: The criteria of this chapter establishes minimum radon resistive construction requirements for all Group R Occupancies except buildings complying with the International Residential Code. These requirements are adopted pursuant to the ventilation requirements of Section 7, of Chapter 2 of the Session Laws of 1990.

501.2 Application: The requirements of this chapter shall be adopted and enforced by all jurisdictions of the state according to the following subsections:

501.2.1: All jurisdictions of the state shall comply with section 502.

501.2.2: Clark, Ferry, Okanogan, Pend Oreille, Skamania, Spokane, and Stevens counties shall also comply with section 503.

**WSR 09-17-138  
PROPOSED RULES  
BUILDING CODE COUNCIL**

[Filed August 19, 2009, 11:21 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-05-047.

Title of Rule and Other Identifying Information: Repeal of chapter 51-19 WAC, the Historic Building Code.

Hearing Location(s): Holiday Inn Select Renton, One Grady Way South, Renton, WA, on September 29, 2009, at 10:00 a.m.; and at the Spokane City Council Chambers, West 808 Spokane Falls Boulevard, Spokane, WA, on October 5, 2009, at 9:00 a.m.

Date of Intended Adoption: November 12, 2009.

Submit Written Comments to: Peter DeVries, Council Chair, P.O. Box 42525, Olympia, WA 98504-2525, e-mail sbcc@commerce.wa.gov, fax (360) 586-9383, by October 5, 2009.

Assistance for Persons with Disabilities: Contact Sue Mathers by September 15, 2009, TTY (360) 586-0772 or (360) 725-2966.



Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Repeal chapter 51-19 WAC, the Historic Building Code. Provisions contained within chapter 51-19 WAC, which is outdated and out of step with current code requirements, will be addressed through the International Existing Building Code, adopted as a part of chapter 51-50 WAC.

Reasons Supporting Proposal: RCW 19.27.031 and 19.27.074.

Statutory Authority for Adoption: RCW 19.27.031 and 19.27.074.

Statute Being Implemented: Chapters 19.27 and 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: The council is seeking comments on the issues proposed in the rules shown below.

Name of Proponent: Washington state building code council, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Tim Nogler, P.O. Box 42525, Olympia, WA 98504-2525, (360) 725-2969; and Enforcement: Local jurisdictions.

No small business economic impact statement has been prepared under chapter 19.85 RCW. During review of the proposed change, no items with potential disproportionate cost impact to small business were identified by the technical advisory group or the council.

A cost-benefit analysis is not required under RCW 34.05.328. The state building code council is not listed in this section as one of the agencies required to comply with this statute.

August 1, 2009  
Peter D. DeVries  
Council Chair

**REPEALER**

The following chapter of the Washington Administrative Code is repealed:

|               |  |
|---------------|--|
| WAC 51-19-100 | Title.                                       |
| WAC 51-19-110 | Purpose.                                     |
| WAC 51-19-120 | Scope.                                       |
| WAC 51-19-130 | Existing uses.                               |
| WAC 51-19-140 | Additions, alterations, and repairs.         |
| WAC 51-19-150 | Change of occupancy.                         |
| WAC 51-19-160 | Maintenance.                                 |
| WAC 51-19-170 | Alternative materials, designs, and methods. |
| WAC 51-19-180 | Modifications.                               |
| WAC 51-19-190 | Tests.                                       |

|               |   |
|---------------|---|
| WAC 51-19-200 | Enforcement.  |
| WAC 51-19-210 | Permits.  |
| WAC 51-19-220 | Inspection.   |
| WAC 51-19-230 | Repairs.  |
| WAC 51-19-240 | Relocated buildings.  |
| WAC 51-19-250 | Right of entry.   |
| WAC 51-19-260 | Liability.  |
| WAC 51-19-270 | Unsafe buildings or structures.                               |
| WAC 51-19-280 | Appeals.  |
| WAC 51-19-300 | Definitions.  |
| WAC 51-19-400 | General.  |
| WAC 51-19-410 | Exit systems.   |
| WAC 51-19-420 | Structural safety.  |
| WAC 51-19-430 | Weather protection.   |
| WAC 51-19-440 | Other safety features.  |
| WAC 51-19-450 | Light, ventilation, sanitation, smoke detectors, and heating. |
| WAC 51-19-460 | Plumbing.   |
| WAC 51-19-500 | Survey or evaluation.   |
| WAC 51-19-510 | Alternatives.   |
| WAC 51-19-600 | General.  |
| WAC 51-19-610 | Heights and area.   |
| WAC 51-19-620 | Fire safety.  |
| WAC 51-19-630 | Property protection.  |
| WAC 51-19-640 | Structural safety.  |
| WAC 51-19-650 | Light and ventilation.  |
| WAC 51-19-660 | Flame spread reduction.                                       |
| WAC 51-19-670 | Roof coverings.   |
| WAC 51-19-700 | General.  |
| WAC 51-19-710 | Building access and use.                                      |
| WAC 51-19-800 | General.  |
| WAC 51-19-810 | Alternative energy conservation provisions.                   |
| WAC 51-19-900 | Appendix A.   |
| WAC 51-19-901 | Appendix B—Bibliography.                                      |

**WSR 09-17-139**  
**PROPOSED RULES**  
**BUILDING CODE COUNCIL**

[Filed August 19, 2009, 11:23 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-05-048.

Title of Rule and Other Identifying Information: Amendment of chapter 51-50 WAC, Adoption and amendment of the 2009 Edition of the International Building Code (IBC) and standards.

Hearing Location(s): Holiday Inn Select Renton, One Grady Way South, Renton, WA, on September 29, 2009, at 10:00 a.m.; and at the Spokane City Council Chambers, West 808 Spokane Falls Boulevard, Spokane, WA, on October 5, 2009, at 9:00 a.m.

Date of Intended Adoption: November 12, 2009.

Submit Written Comments to: Peter DeVries, Council Chair, P.O. Box 42525, Olympia, WA 98504-2525, e-mail sbcc@commerce.wa.gov, fax (360) 586-9383, by October 5, 2009.

Assistance for Persons with Disabilities: Contact Sue Mathers by September 15, 2009, TTY (360) 586-0772 or (360) 725-2966.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposed rules adopt the most recently published edition of the IBC and modify the state amendments to this code.

**1. WAC 51-50-003** International Building Code: Adopts 2009 edition, change from 2006 edition.

**2. WAC 51-50-004** Conflicts. Amends reference to chapter 51-13 WAC, proposed rule integrates state ventilation code into IBC Chapter.

**3. WAC 51-50-007** The 2009 International Existing Building Code is included in the adoption of this code by reference in chapter 34.

**4. WAC 51-50-008** Effective date. Sets new effective date, July 1, 2010.

**5.** Section 105.3.1 Application for permit. Requires authorization from the state for state licensed facilities prior to permit issuance.

**6.** Section 108.1 Temporary structures and uses. Modifies section number consistent with new code edition.

**7.** Section 202 Definitions. Current state amendments for definition of "story" and "story above grade plane" adopted in the 2009 model code. State amendments deleted as they are no longer necessary. Adds definition of "air impermeable insulation."

**8.** Section 305.2 Day care. Modifies current state amendment to be consistent in reference to "licensed by Washington state."

**9.** Section 308 Institutional Group I occupancies. Modifies the model code to reference facilities licensed by Washington state and adds "hospice care centers" to Group I-2 occupancy classification.

**10.** Section 310 Residential Group R occupancies. This section is modified for clarity and to be consistent with the model code.

**11.** Section 403.5.4 Smoke proof exit enclosures. The exception clarifies the code regarding which stairways in

high-rise development[s] are required to meet the smoke proof criteria.

**12.** Section 406.2.6 Motor vehicle related occupancies. Floor surfaces. Current state amendment adopted in the 2009 model code, allowing an exception to sloped floors in Group S-2 parking garages. State amendment deleted as it is no longer necessary.

**13.** Section 407.4.3 Horizontal assemblies. New section in the model code requires smoke barriers in Group I-2 occupancies. This section is not adopted.

**14.** Section 407.8 Locks and latches. State amendment allows locks without delayed egress in some licensed facilities. Section is moved to Chapter 10 section 1008.1.9.

**15.** Section 420.4. Subdivision of building spaces-smoke barriers. Requires smoke barriers in Group R-2 boarding homes licensed by Washington state. Relocates requirement from Chapter 10 section 1017.

**16.** Section 422 Ambulatory health care. Modifies the new section in the model code to clarify where smoke barriers and fire partitions are required.

**17.** Section 502.1 Definitions. State amended definitions of "basement" and "story" adopted in the 2009 model code. Deletes state amendments as they are no longer needed. (delete section, both definitions)

**18.** Section 506.1.1 Area modifications. Basements. Delete this section to be consistent with model code. (add to OTS document)

**19.** Section 509.2 and 509.3. Special provisions. Group S-2 enclosed parking garage. State amendments included in the 2009 model code revision of these sections. Delete state amendments to be consistent with the model code.

**20.** Section 708.14.1 Elevator lobbies. State amendments included in the 2009 revision of this section. Delete state amendments except for subsections on hoistway venting and machine rooms. Adds an exception for Group I-2 and Group R-2 occupancies.

**21.** Section 710.4 Smoke barriers. Continuity. Adds an exception for smoke barriers around an area of refuge.

**22.** Section 712.9 Horizontal assemblies. Smoke barriers. This section is not adopted.

**23.** Section 715.4.8. Fire door and shutter assemblies. Door closing. Adds a third exception for Group R-2 boarding homes.

**24.** Section 903 Automatic sprinkler systems. Section 903.2.1.6 Nightclubs, effective date for existing nightclubs adjusted to be concurrent with new code edition. Section 903.2.3. Group E, modified to be consistent with model code section number, method of calculating occupancy clarified. Section 903.2.8 Group R, modified to be consistent with model code section number.

**25.** Section 907.2.8 Group R-1 Carbon monoxide alarms. Requires carbon monoxide alarms in new and existing Group R-1 occupancies.

**26.** Section 907.2.9 Group R-2 Carbon Monoxide alarms. Requires carbon monoxide alarms in new and existing Group R-2 occupancies.

**27.** Section 907.2.10 Group R-3 Carbon monoxide alarms. Requires carbon monoxide alarms in new and existing Group R-3 occupancies.

**28.** Section 909.6.3. Elevator shaft pressurization. Modifies state amendment to make references consistent with the model code edition. Requires shaft pressurization be activated by the fire alarm, and requires two sources of power for the system.

**29.** Section 911.1.2. Fire command center. Separation. Requires a two-hour fire barrier protecting a fire command center.

**30.** Section 1007.1 Accessible means of egress required. Adds an exception for parking garages that do not contain accessible parking spaces.

**31.** Section 1007.8 Two-way communication. Modifies two-way communication system requirements to delete reference to the 911 option for dial-out. Adds a requirement for battery back-up.

**32.** Section 1008.1.2. Door swing. State amendment included in the 2009 model code revision. Delete state amendment to be consistent with the model code.

**33.** Section 1008.1.9.3 Locks and Latches. State amendment allows locks without delayed egress in some licensed facilities. Moved from 407.8.

**34.** Section 1008.1.9.6. Special locking arrangement in Group I-2. State amendment allows locks without delayed egress in some licensed facilities.

**35.** Section 1009.15 Stairways in individual units. State amendment provides an exception to stairways for small loft areas. Renumbered to be compatible with the model code.

**36.** Section 1010.1 Ramps. Adds an exception allowing a second accessible ramp in parking garages to be installed without handrails or landings.

**37.** Section 1014.2.2. Exit Access. Group I-2. Modifies current state amendment to be compatible with the model code and to clarify exit access provisions for suites in Group I-2.

**38.** Section 1015 State amendment included in the 2009 model code revision. Delete state amendment to be consistent with the model code.

**39.** Section 1018 Corridors. Sections deleted to be consistent with the model code numbering. State amendments modified to be consistent with model code numbering. Modifies "seating areas" in corridors for state licensed facilities.

**40.** Section 1019 State amendment included in the 2009 model code revision. Delete state amendment.

**41.** Section 1106 Parking and Passenger loading facilities. Modifies state amendment to reference Group I-2 outpatient facilities. Deletes state amendment on rehabilitation facilities; amendment is adopted in the model code.

**42.** Section 1203.2 Ventilation. Attic spaces. Modifies the model code to clarify where reduced structure ventilation is allowed.

**43.** Section 1203.4 Natural ventilation. Changes reference from the Washington state ventilation and indoor air quality code to the international mechanical code.

**44.** Section 1203.6 Radon resistive construction standards. Adds radon standards from the Washington state ventilation and indoor air quality code.

**45.** Section 1208.2 Minimum ceiling heights. Moves provision allowing a seven-foot ceiling to section 3404, existing construction.

**46.** Section 1208.3 Room area. Provides an exception for kitchens, providing no minimum room size, consistent with the residential code.

**47.** Section 1403.2 Weather protection. Modifies state amendment to clarify where an air space cavity behind siding is not required.

**48.** Section 1405.6.2. Seismic requirements. Anchored masonry veneer. Modifies state amendment to be consistent with new section in the model code. Provides an exception for "category III and IV" occupancies.

**49.** Section 1602 Definitions. State amendment related to "balcony" and "deck" included in the 2009 model code revision. Delete state amendment.

**50.** Section 1607 Live Loads. State amendment related to "balcony" and "deck" included in the 2009 model code revision. Delete state amendment to be consistent with the model code.

**51.** Section 1609.1.1 Determination of wind loads. State amendment corrects an error to the standard for determining topographic wind speed-up in antenna-supporting structural design.

**52.** Section 1613.7. Earthquake loads. Modification of ASCE 7. State amendment no longer necessary. Delete state amendment.

**53.** Section 1715.5 Preconstruction load tests. Exterior window and door assemblies. Modifies section number to be consistent with model code. Provides an exception for small businesses.

**54.** Section 2104.1 Masonry Construction. Modifies the standard for masonry construction.

**55.** Section 2106.1.1 Basic seismic-force-resisting system. State amendment no longer necessary. Delete state amendment.

**56.** Section 2107.1 Allowable stress design, masonry structures. General. Adds a reference to new section 2107.2, Load combinations. Allows stresses to be increased by one-third.

**57.** Section 2107.6 Adds a new section on anchor bolts.

**58.** Section 2108.4. Strength design of masonry. Adds a new section on anchor bolts.

**59.** Section 2111.7 Masonry fireplaces. Moves provisions from Washington state ventilation and indoor air quality code.

**60.** Section 2405.3 Sloped glazing and skylights. Screening. Expands exemption for screens over laminated glass.

**61.** Chapter 29 Minimum fixtures and sanitation facilities. Clarifies the use of the chapter and the use of occupant load factors establishing the minimum number of plumbing fixtures and sanitation facilities.

**62.** Section 3001. Elevators and conveying systems. General. State amendment deleted to be consistent with model code.

**63.** Section 3002.4. Elevator car to accommodate ambulance stretcher. Section is modified to include new model code language related to stretcher corner dimension.

**64.** Section 3108.1 Telecommunication and broadcast towers. Adds a provision requiring seismic design for towers.

**65.** Section 3401.5 Alternative compliance. Allows the use of the 2009 International Existing Building Code as amended by state adoption.

**66.** Section 3404.1 Alterations. Allows a seven foot ceiling in an existing residence.

**67.** Section 3410. Moved structures. State amendment moved to be consistent with new section in the model code. State amendment conforms to RCW 19.27.180.

**68.** Section 3411.7 Accessibility for existing buildings. Alterations affecting an area containing a primary function. State amendment requires a text telephone, renumbered to be consistent with the model code.

**69.** Section 3411.8.8 Type A dwelling or sleeping units. Modifies section to add reference to "altered" units.

**70.** Section 3411.8.11. Toilets. Renumbered to be consistent with the model code.

**71. WAC 51-50-480000.** 2009 International Existing Building Code. Adopts and amends the 2009 IEBC.

**72.** Section 480101. Applicability. Modifies section to specify use of this code is at the request of the permit applicant. Alternative is to meet the building code as applicable.

**73.** Section 480101.4.2 Buildings previously occupied. Clarifies "unsafe building." (change reference to codes to "state building code in Title 51 WAC" as in previous section.)

**74.** Section 480101.5 Compliance methods. This section is deleted as the model code has adopted the state amendment.

**75.** Section 480101.7 Appendices. State amendment adopts Appendix A Guidelines for the Seismic Retrofit of Existing Buildings.

**76.** Section 480102.4.1 Fire Prevention. Specifies the scope of the fire code.

**77.** Section 480302.1. Existing buildings or structures. State amendment is deleted to be consistent with the model code.

**78.** Section 480307.1 Change of Occupancy. Conformance. State amendment is renumbered to be consistent with the model code. References hazard tables of chapter 9.

**79.** Section 480506. Seismic Forces. State amendment is deleted to be consistent with model code.

**80.** Section 480607.1 Energy conservation. Cites the Washington State Energy Code chapter 51-11 WAC.

**81.** Section 480711 Energy conservation. Cites the Washington State Energy Code chapter 51-11 WAC.

**82.** Section 480807 Structural. Maintains current state amendments for evaluation and analysis, and substantial structural alteration.

**83.** Section 480808 Energy conservation. Cites the Washington State Energy Code chapter 51-11 WAC.

**84.** Section 4801101.1 Historic buildings. Maintains current state amendment stating the purpose of the chapter is to encourage cost-effective preservation of original or restored architectural elements.

**85.** Section 4801101.2 Report. State amendment is deleted to be consistent with model code.

**86.** Section 4801102 Repairs. Chapter 5 compliance; Replacement. State amendment is deleted to be consistent with model code.

**87.** Section 481104 Alterations. Model code references are updated.

**88.** Section 481106 Structural. State amendment is adopted in the model code. State amendment is deleted.

**89.** Section 481201 Moved buildings. Section conforms to state law and is moved to reflect new section in the model code.

**90.** Section 481301 Performance compliance. State amendment is deleted to be consistent with the model code.

**91.** Section 481500 Referenced standards. State amendment is deleted to be consistent with the model code.

Reasons Supporting Proposal: RCW 19.27.031 and 19.27.074.

Statutory Authority for Adoption: RCW 19.27.031 and 19.27.074.

Statute Being Implemented: Chapters 19.27 and 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: The council is seeking comments on the issues proposed in the rules shown below.

Name of Proponent: Washington state building code council, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Joanne McCaughan, P.O. Box 42525, Olympia, WA 98504-2525, (360) 725-2970; and Enforcement: Local jurisdictions.

A small business economic impact statement has been prepared under chapter 19.85 RCW.

#### Small Business Economic Impact Statement

**PURPOSE:** The purpose of this analysis is to comply with the requirements of chapter 19.85 RCW, Regulatory Fairness Act, to examine whether proposed rules will have a disproportionate impact on small businesses.

**INTRODUCTION:** The state building code council is proposing to adopt the 2009 version of the IBC. The following sections were identified by the council's economic and regulatory assessment committee (ERAC) as having a potential disproportionate cost impact to small business:

- Section 1714.5 Exterior Door and Window Assemblies

A small business is defined as any business that has fifty or fewer employees, RCW 19.85.020.

The IBC is published by the International Code Council.

The council appointed a technical advisory group (TAG) to do a comprehensive review and analysis of changes in the 2009 edition of the IBC. The TAG held meetings in the spring of 2009. All proposed state amendments were examined, and new provisions in the 2009 model code edition. The TAGs identified items with more than a minor first cost impact and referred these items to be reviewed by ERAC.

The council members and participants are representative sample of individuals involved in the building construction industry. The participants included: Architects, home builders, building officials, contractors, fire officials, manufacturers, engineers, plumbers, state and local officials, inspectors, industry associations and organizations, companies and busi-

ness, electricians, and the general public. See the directory of TAG and council members.

**BRIEF DESCRIPTION OF PROPOSED RULE AMENDMENTS:**

**Section 1715.5 Preconstruction Load Tests, Exterior window and door assemblies:** Requires exterior window and door assemblies to be tested and labeled according to a test standard for structural loading.

**Reporting and record-keeping requirements:** The proposed rule impacts the reporting and/or record keeping required to comply. Small business window and door manufacturers would be required to keep records of test results for all units.

**Associated costs:** Associated costs of equipment, supplies, labor, professional services and administrative costs are included in the cost of compliance.

The TAG identified a disproportionate impact on small business window and door manufacturers to test and label all units. The cost of testing sample units and labeling all units to meet the standards would be disproportionate due to the production process. A comparison per one hundred dollars of sales shows a disproportionate cost for small manufacturers to test and label product. Large window manufacturers, due to volume of production, have a cost per unit for testing and labeling disproportionately less compared to small business window manufacturers; the cost per testing and labeling custom window[s] due to limited production lines has an impact at least ten times greater than large manufacturers and in fact makes production cost prohibitive and compliance with the rule impractical.

**Lost sales or revenue:** The TAG identified a potential loss of sales and revenue for small business window manufacturers.

**Steps taken to reduce costs:** Through a formal and established method of negotiated rule making, the council and the affected industries have considered and mitigated costs associated with the proposed rules. The proposed rule modifies substantive regulatory requirements on small businesses. The proposed rule allows an alternate method of compliance to avoid cost and disproportionate economic impact associated with testing and labeling window and door products manufactured by small businesses in Washington state. The council solicited feedback from the industry to develop methods to mitigate the costs and provide a method to avoid additional costs of compliance.

**Involvement of small businesses:** The council has included small businesses in the development of the proposed rules.

- Small businesses were included in mailings and electronic notification.
- Small businesses were notified of meetings, agenda topics and proposals.
- Council members, technical group members and staff responded to inquiries from small businesses.
- The technical advisory group convened a special meeting to address small business concerns.

**List of industries required to comply:** A sample of the industries required to comply with the proposed rules are listed below:

| NAICS # | DESCRIPTION                         | NUMBER OF FIRMS |   |
|---------|-------------------------------------|-----------------|---|
|         |                                     |                 |   |
| 321911  | Wood window and door manufacturing  | 52              | 5 |
| 332321  | Metal window and door manufacturing | 14              | 3 |
| 327211  | Flat Glass Manufacturing            | 10              | 2 |
| 321918  | Other Millwork                      | 49              | 6 |

The North American Industry Classification System, data from 2007 (the most recent) were analyzed to determine the number of small and large businesses in Washington state, and the number of employees per business. Data from department of labor and industries report "Experience factor and firm size by NAICS."

**Job estimates:** No jobs created or lost as a result of compliance with the proposed rule, as the alternative method allows compliance, and has been in effect since 2007.

**CONCLUSION:** The council recognizes that the proposed rules may impose an economic impact on businesses in the building construction industry. However, the council also realizes its obligation to ensure the health, safety and welfare of the occupants or users of buildings and structures and the general public through the provisions of the building codes throughout the state, as stated in the council's legislative mandate.

The council has negotiated the proposed rules into their current form in an effort to achieve a minimum standard that meets the need of the building construction industry and the citizens of this state. The council appointed TAGs to do a comprehensive review and analysis of the proposed changes to the model code. All proposed state amendments submitted in 2009 were reviewed. The TAG findings were reviewed by ERAC to determine where the proposed rules would impact small businesses. To mitigate the impacts, the proposed rules were modified to eliminate disproportionate cost impact on the effected small businesses.

A copy of the statement may be obtained by contacting Tim Nogler, P.O. Box 42525, Olympia, WA 98504-2525, phone (360) 725-2969, fax (360) 586-9383, e-mail [nogler.tim@commerce.wa.gov](mailto:nogler.tim@commerce.wa.gov).

A cost-benefit analysis is not required under RCW 34.05.328. The state building code council is not listed in this section as one of the agencies required to comply with this statute.

August 1, 2009  
 Peter D. DeVries  
 Council Chair

**Chapter 51-50 WAC**

**STATE BUILDING CODE ADOPTION AND AMENDMENT OF THE ((2006)) 2009 EDITION OF THE INTERNATIONAL BUILDING CODE**

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-003 International Building Code.** The ((2006)) 2009 edition of the *International Building Code*, including Appendix E, published by the International Code Council is hereby adopted by reference with the exceptions noted in this chapter of the Washington Administrative Code.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-007 Exceptions.** The exceptions and amendments to the International Building Code contained in the provisions of chapter 19.27 RCW shall apply in case of conflict with any of the provisions of these rules.

The provisions of this code do not apply to temporary growing structures used solely for the commercial production of horticultural plants including ornamental plants, flowers, vegetables, and fruits. "Temporary growing structure" means a structure that has the sides and roof covered with polyethylene, polyvinyl, or similar flexible synthetic material and is used to provide plants with either frost protection or increased heat retention. A temporary growing structure is not considered a building for purposes of this code.

The provisions of this code do not apply to the construction, alteration, or repair of temporary worker housing except as provided by rule adopted under chapter 70.114A RCW or chapter 37, Laws of 1998 (SB 6168). "Temporary worker housing" means a place, area, or piece of land where sleeping places or housing sites are provided by an employer for his or her employees or by another person, including a temporary worker housing operator, who is providing such accommodations for employees, for temporary, seasonal occupancy, and includes "labor camps" under RCW 70.54.110.

Codes referenced which are not adopted through RCW 19.27.031 or chapter 19.27A RCW shall not apply unless specifically adopted by the authority having jurisdiction. The ((2006)) 2009 International Existing Building Code is ((referenced)) included in the adoption of this code ((as Appendix Chapter M and may be adopted by the authority having jurisdiction in accordance with Section 101.2.1)) in Section 3401.5 and amended in WAC 51-50-480000.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-008 Implementation.** The International Building Code adopted under chapter 51-50 WAC shall become effective in all counties and cities of this state on July 1, ((2007)) 2010.

#### NEW SECTION

##### **WAC 51-50-0105 Institutional Group 1.**

**105.3.1 Action on application.** The building official shall examine or cause to be examined applications for permits and amendments thereto within a reasonable time after filing. If the application or the construction documents do not conform to the requirements of pertinent laws, the building official shall reject such application in writing, stating the reasons

therefor. If the building official is satisfied that the proposed work conforms to the requirements of this code and laws and ordinances applicable thereto, the building official shall issue a permit therefor as soon as practicable.

**EXCEPTION:** Structures, or portions thereof, that are required to be licensed by the state of Washington as a hospital, hospice care center, boarding home, nursing home, residential treatment facility or ambulatory surgery center must receive authorization to begin construction from the Washington state department of health, construction review services prior to the issuance of a construction permit.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

##### **WAC 51-50-0107 Temporary structures and uses.**

~~((407.4))~~ **108.1 General.** The building official is authorized to issue a permit for temporary structures and temporary uses. Such permits shall be limited as to time of service, but shall not be permitted for more than 180 days. The building official is authorized to grant extensions for demonstrated cause.

**EXCEPTION:** The building official may authorize unheated tents and yurts under 500 square feet accommodating an R-1 Occupancy for recreational use as a temporary structure and allow them to be used indefinitely.

AMENDATORY SECTION (Amending WSR 08-01-110, filed 12/18/07, effective 4/1/08)

##### **WAC 51-50-0200 Chapter 2—Definitions.**

###### **SECTION 202—DEFINITIONS.**

**ADULT FAMILY HOME.** See Section 310.2.

**AIR-PERMEABLE INSULATION.** An insulation having an air permeance equal to or less than 0.02 L/s-m<sup>2</sup> at 75 Pa pressure differential tested in accordance with ASTM E2178 or ASTM E283.

**CHILD DAY CARE.** See Section 310.2.

**CHILD DAY CARE HOME, FAMILY.** See Section 310.2.

**NIGHTCLUB.** An A-2 Occupancy use under the 2006 International Building Code in which the aggregate area of concentrated use of unfixed chairs and standing space that is specifically designated and primarily used for dancing or viewing performers exceeds three hundred fifty square feet, excluding adjacent lobby areas. "Nightclub" does not include theaters with fixed seating, banquet halls, or lodge halls.

**PORTABLE SCHOOL CLASSROOM.** See Section 902.1.

**RESIDENTIAL CARE/ASSISTED LIVING FACILITIES.** See Section 310.2. This definition is not adopted.

~~((STORY. That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above, including basements (also see "Mezzanine" and Section 502.1). It is measured as the vertical distance from top to top of two successive tiers of beams or finished floor surfaces and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.~~

~~**STORY ABOVE GRADE PLANE.** Any story having its finished floor surface entirely above grade plane, except that a basement shall be considered as a story above grade plane where the finished surface of the floor or roof next above the basement is:~~

- ~~1. More than 6 feet (1829 mm) above grade plane; or~~
- ~~2. More than 12 feet (3658 mm) above the finished ground level at any point.)~~

AMENDATORY SECTION (Amending WSR 04-01-108, filed 12/17/03, effective 7/1/04)

**WAC 51-50-0305 Section 305—Educational Group E.**

**305.2 Day Care.** The use of a building or structure, or portion thereof, for educational, supervision or personal care services for more than five children older than 2 1/2 years of age, shall be classified as a Group E Occupancy.

EXCEPTION: Family child day care homes licensed by ((the)) Washington state ((department of social and health services)) for the care of twelve or fewer children shall be classified as Group R-3.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-0308 Section 308—Institutional Group I.**

**308.1 Institutional Group I.** Institutional Group I Occupancy includes, among others, the use of a building or structure, or a portion thereof, in which people are cared for or live in a supervised environment, having physical limitations because of health or age are harbored for medical treatment or other care or treatment, or in which people are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3 or I-4.

**308.2 Group I-1.** This occupancy shall include buildings, structures or parts thereof housing more than 16 persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment that provides personal care services. The occupants are capable of responding to an emergency situation without physical assistance from staff. This group shall include, but not be limited to, the following:

- Residential board and care facilities
- Assisted living facilities
- Halfway houses
- Group homes
- Congregate care facilities
- Social rehabilitation facilities
- Alcohol and drug centers
- Convalescent facilities

A facility such as the above with five or fewer persons and adult family homes licensed by ((the)) Washington state ((department of social and health services)) shall be classified as a Group R-3 or shall comply with the *International Residential Code* in accordance with Section 101.2.

A facility such as the above, providing licensed care to clients in one of the categories listed in Section 310.1 ((regulated)) licensed by ((either the)) Washington ((department of health or the department of social and health services)) state shall be classified as Group R-2.

**308.3 Group I-2.** This occupancy shall include buildings and structures used for medical, surgical, psychiatric, nursing or custodial care on a 24-hour basis of more than five persons who are not capable of self-preservation. This group shall include, but not be limited to, the following:

Hospitals

Nursing homes (both intermediate-care facilities and skilled nursing facilities)

Mental hospitals

Detoxification facilities

Hospice care centers

A facility such as the above providing licensed care to clients in one of the categories listed in Section 310.1 licensed by Washington state shall be classified as Group R-2.

A facility such as the above with five or fewer persons shall be classified as Group R-3 or shall comply with the *International Residential Code* in accordance with Section 101.2.

~~((A facility such as the above providing licensed care to clients in one of the categories listed in Section 310.1 regulated by either the Washington department of health or the department of social and health services shall be classified as Group R-2.))~~

**308.3.1 Definitions.** The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

**CHILD CARE FACILITIES.** Facilities that provide care on a 24-hour basis to more than five children, 2 1/2 years of age or less, shall be classified as Group I-2.

**DETOXIFICATION FACILITY.** Facilities that serve patients who are provided treatment for substance abuse on a 24-hour basis and who are incapable of self-preservation or who are harmful to themselves or others.

**HOSPITALS AND MENTAL HOSPITALS.** A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical or surgical treatment of inpatients who are incapable of self-preservation.

**NURSING HOMES.** Nursing homes are long-term care facilities on a 24-hour basis, including both intermediate care facilities and skilled nursing facilities, serving more than five persons and any of the persons are incapable of self-preservation.

**HOSPICE CARE CENTER.** A building or portion thereof used on a 24-hour basis for the provision of hospice services to terminally ill inpatients.

**308.5.2 Child care facility.** A facility that provides supervision and personal care on a less than 24-hour basis for more than five children 2 1/2 years of age or less shall be classified as Group I-4.

EXCEPTIONS:

1. A child day care facility that provides care for more than five but no more than 100 children 2 1/2 years or less of age, ~~((when))~~ where the rooms ~~((where such))~~ in which the children are cared for are located on ~~((the))~~ a level of exit discharge serving such rooms and each of these child care rooms has an exit door directly to the exterior, shall be classified as Group E.
2. Family child day care homes licensed by ~~((the))~~ Washington state ~~((department of social and health services))~~ for the care of twelve or fewer children shall be classified as Group R-3.

**AMENDATORY SECTION** (Amending WSR 08-01-110, filed 12/18/07, effective 4/1/08)

**WAC 51-50-0310 Section 310—Residential Group R.**

**310.1 Residential Group R.** Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the International Residential Code in accordance with Section 101.2. Residential occupancies shall include the following:

**R-1** Residential occupancies containing sleeping units where the occupants are primarily transient in nature, including:

- Boarding houses (transient)
- Hotels (transient)
- Motels (transient)

Congregate living facilities (transient) with 10 or fewer occupants are permitted to comply with the construction requirements for Group R-3.

**R-2** Residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:

- Apartment houses
- Boarding houses (not transient)
- Boarding homes as licensed by ~~((department of social and health services))~~ Washington state under chapter 388-78A WAC

- Convents
- Dormitories
- Fraternities and sororities
- Hotels (nontransient)
- Live/work units
- Monasteries
- Motels (nontransient)

Residential treatment facilities as licensed by ~~((department of health))~~ Washington state under chapter 246-337 WAC

- Vacation timeshare properties

Congregate living facilities with sixteen or fewer occupants are permitted to comply with the construction requirements for Group R-3.

**R-3** Residential occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I ~~((and where))~~, including: Buildings that do not contain more than two dwelling units ~~((as applicable in Section 101.2, including adult family homes and family child day care homes for the care of twelve or fewer children, licensed by the Washington state department of social and health services, or))~~. Adult ~~((and child))~~ care facilities that

provide accommodations for five or fewer persons of any age for less than 24 hours ~~((, or))~~. Child care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours. Congregate living facilities with sixteen or fewer persons. Adult ~~((family homes and family child day care homes, or adult and child care facilities that are))~~ care within a single-family home, adult family homes and family child day care homes are permitted to comply with the International Residential Code ~~((in accordance with Section 101.2)).~~

Foster family care homes licensed by ~~((the))~~ Washington state ~~((department of social and health services shall be))~~ are permitted to comply with the International Residential Code, as an accessory use to a dwelling, for six or fewer children including those of the resident family.

R-4 classification is not adopted. Any reference in this code to R-4 does not apply.

**310.2 Definitions.** The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

**ADULT FAMILY HOME** ~~((means))~~. A dwelling, licensed by Washington state, in which a person or persons provide personal care, special care, room and board to more than one but not more than six adults who are not related by blood or marriage to the person or persons providing the services.

**BOARDING HOUSE.** A building arranged or used for lodging for compensation, with or without meals, and not occupied as a single family unit.

**CHILD DAY CARE** ~~((, shall))~~. For the purposes of these regulations, ~~((mean))~~ is the care of children during any period of a 24-hour day.

**CHILD DAY CARE HOME, FAMILY** ~~((is))~~. A child day care facility, licensed by ~~((the))~~ Washington state, located in the dwelling of the person or persons under whose direct care and supervision the child is placed, for the care of twelve or fewer children, including children who reside at the home.

**CONGREGATE LIVING FACILITIES.** A building or part thereof that contains sleeping units where residents share bathroom and/or kitchen facilities.

**DORMITORY.** A space in a building where group sleeping accommodations are provided in one room, or in a series of closely associated rooms, for persons not members of the same family group, under joint occupancy and single management, as in college dormitories or fraternity houses.

**PERSONAL CARE SERVICE.** The care of residents who do not require chronic or convalescent medical or nursing care. Personal care involves responsibility for safety of the resident while inside the building.

**RESIDENTIAL CARE/ASSISTED LIVING FACILITIES.** This definition is not adopted.

**TRANSIENT.** Occupancy of a dwelling or sleeping unit for not more than 30 days.



NEW SECTION**WAC 51-50-0403 Section 403—High-rise buildings.**

**403.5.4 Smokeproof exit enclosures.** Every required level exit stairway serving floors more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access shall comply with Sections 909.20 and 1022.9.

**EXCEPTION:** Unless required by other sections of this code, portions of such stairways which extend to serve floors below the level of exit discharge need not comply with Sections 909.20 and 1022.9 provided the portion of the stairway below is separated from the level of exit discharge with a 1 hour fire barrier.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-0406 Section 406—Motor-vehicle-related occupancies.**

~~((406.2.6 Floor surface. Parking surfaces shall be of concrete or similar noncombustible and nonabsorbent materials.~~

~~EXCEPTION: Asphalt parking surfaces are permitted at ground level.))~~

Reserved.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-0407 Section 407—Group I-2.**

~~((407.8 Locks on exit doors. Approved, listed locks without delayed egress shall be permitted in nursing homes or portions of nursing homes, provided that:~~

~~1. The clinical needs of one or more patients require specialized security measures for their safety.~~

~~2. The doors unlock upon actuation of the automatic sprinkler system or automatic fire detection system.~~

~~3. The doors unlock upon loss of electrical power controlling the lock or lock mechanism.~~

~~4. The lock shall be capable of being deactivated by a signal from a switch located in an approved location.~~

~~5. There is a system, such as a keypad and code, in place that allows visitors, staff persons and appropriate residents to exit. Instructions for exiting shall be posted within six feet of the door.))~~

407.4.3 Horizontal assemblies. This section is not adopted.

NEW SECTION**WAC 51-50-0420 Section 420—Groups I-1, R-1, R-2, R-3.**

**420.4 Subdivision of building spaces—Smoke barriers.** Smoke barriers complying with Section 709 shall be installed on floors other than the level of exit discharge of a Group R-2 boarding home or residential treatment facility licensed by Washington state, where a fire-resistance rated corridor is required by Table 1017.1. The smoke barrier shall subdivide the floor into at least two compartments complying with Section 407.4.

NEW SECTION**WAC 51-50-0422 Section 422—Ambulatory health care.**

**422.1 General.** Occupancies classified as ambulatory health care facilities shall comply with the provisions of Sections 422.1 through 422.7 and other applicable provisions of this code by the services provided.

**422.2 Separation.** Ambulatory health care facilities where four or more care recipients are rendered incapable of self-preservation at any given time shall be separated from adjacent spaces, corridors or tenants with a fire partition installed in accordance with Section 709.

**422.3 Smoke compartments.** Where the aggregate area of one or more ambulatory health care facility exceeds 10,000 square feet on one story, the story shall be provided with a smoke barrier to subdivide the story into not less than two smoke compartments. Smoke barriers shall be installed in accordance with Section 710. The area of any one such smoke compartment shall not exceed 22,500 square feet (2092 m<sup>2</sup>). The travel distance from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60,960 mm).

**EXCEPTION:** Where the ambulatory health care facility is completely surrounded by the required smoke barrier, such smoke barriers shall not be required to be continuous from an outside wall to outside wall.

**422.4 Refuge area.** At least 15 net square feet (2.8 m<sup>2</sup>) per occupant shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas and other low-hazard areas on each side of each smoke barrier. Each ambulatory health care facility shall be provided with access to the required refuge areas without passing through or utilizing adjacent tenant spaces.

**422.5 Independent egress.** A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originated.

**422.6 Automatic sprinkler systems.** Automatic sprinkler systems shall be provided for ambulatory care facilities in accordance with Section 903.2.2.

**422.7 Fire alarm systems.** A fire alarm system shall be provided for ambulatory health care facilities in accordance with Section 907.2.2.1.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-0502 Section 502—Definitions.**

**502.1 Definitions.** ~~((The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.~~

~~**BASEMENT.** A story that is partly or completely below grade plane (see "Story above grade plane" in Section 202). A basement shall be considered as a story above grade plane~~

where the finished surface of the floor or roof next above the basement is:

1. More than 6 feet (1829 mm) above grade plane; or
2. More than 12 feet (3658 mm) above the finished ground level at any point.

**STORY.** That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above, including basements (also see "Basement" and "Mezzanine".) Reserved.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

#### WAC 51-50-0506 Area modifications.

~~((506.1.1 Basements. Basements below the first story above grade plane need not be included in the total allowable area provided each such basement does not exceed the area permitted for a building with no more than one story above grade plane.)) Reserved.~~

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

#### WAC 51-50-0509 Section 509—Special provisions.

~~((509.2 Group S-2 enclosed or open parking garage with Group A, B, M, R or S above. A building shall be considered as two separate and distinct buildings for the purpose of determining area limitations, continuity of fire walls, limitation of number of stories and type of construction, where all of the following conditions are met:~~

1. The buildings are separated with a horizontal assembly having a minimum 3-hour fire-resistance rating.
2. The building below the horizontal assembly is no more than one story above grade plane.
3. The building below the horizontal assembly is of Type IA construction.
4. Shaft, stairway, ramp and escalator enclosures through the horizontal assembly shall have not less than a 2-hour fire-resistance rating with opening protectives in accordance with Table 715.4.

**EXCEPTION:**

Where the enclosure walls below the horizontal assembly have not less than a 3-hour fire-resistance rating with opening protectives in accordance with Table 715.4, the enclosure walls extending above the horizontal assembly shall be permitted to have a 1-hour fire-resistance rating, provided:

1. The building above the horizontal assembly is not required to be of Type I construction;
2. The enclosure connects less than four stories; and
3. The enclosure opening protectives above the horizontal assembly have a minimum 1-hour fire-protection rating.

5. The building above the horizontal assembly shall be permitted to have multiple Group A uses each with an occupant load of less than 300, or Group B, M, R or S uses;

6. The building below the horizontal assembly is a Group S-2 enclosed or open parking garage, used for the parking and storage of private motor vehicles.

**EXCEPTIONS:**

1. Entry lobbies, mechanical rooms and similar uses incidental to the operation of the building shall be permitted;
2. Multiple Group A uses, each with an occupant load of less than 300, or Group B or M uses shall be permitted in addition to those uses incidental to the operation of the building (including storage areas), provided that the entire structure below the horizontal assembly is protected throughout by an approved automatic sprinkler system.

7. The maximum building height in feet shall not exceed the limits set forth in Section 503 for the building having the smaller allowable height as measured from grade plane.

~~**509.3 Group S-2 enclosed parking garage with Group S-2 open parking garage above.** A Group S-2 enclosed parking garage with no more than one story above grade plane and located below a Group S-2 open parking garage shall be classified as a separate and distinct building for the purpose of determining the type of construction where the following conditions are met:~~

1. The allowable area of the building shall be such that the sum of the ratios of the actual area divided by the allowable area for each separate occupancy shall not exceed 1.0.

2. The Group S-2 enclosed parking garage is of Type I or II construction and is at least equal to the fire-resistance requirements of the Group S-2 open parking garage.

3. The height and number of tiers of the Group S-2 open parking garage shall be limited as specified in Table 406.3.5.

4. The floor assembly separating the Group S-2 enclosed parking garage and Group S-2 open parking garage shall be protected as required for the floor assembly of the Group S-2 enclosed parking garage. Openings between the Group S-2 enclosed parking garage and Group S-2 open parking garage, except exit openings, shall not be required to be protected.

5. The Group S-2 enclosed parking garage is used exclusively for the parking or storage of private motor vehicles, but shall be permitted to contain an office, waiting room and toilet room having a total area of not more than 1,000 square feet (93 m<sup>2</sup>), and mechanical equipment rooms incidental to the operation of the building.)) Reserved.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

#### WAC 51-50-0707 Section ((707)) **708**—Shaft enclosures.

~~((707.14.2 Enclosed elevator lobby pressurization alternative. Where elevator hoistway pressurization is provided in lieu of required enclosed elevator lobbies, the pressurization system shall comply with this section.~~

~~**707.14.2.1 Pressurization requirements.** Elevator hoistways shall be pressurized to maintain a minimum positive pressure of 0.10 inches of water column with respect to adjacent occupied space on all floors and a maximum pressure so as to not prevent the automatic operation of the elevator doors, as well as accounting for the stack and wind effect expected on the mean low temperature January day. This pressure shall be measured at the midpoint of each hoistway door, with all hoistway doors open at the designated primary recall level and all other hoistway doors closed. The supply~~

air intake shall be from an outside, uncontaminated source located a minimum distance of 20 feet from any air exhaust system or outlet.

~~707.14.2.2 Ducts for system.~~ Any duct system that is part of the pressurization system shall be protected with the same fire-resistance rating as required for the elevator shaft enclosure.

~~707.14.2.3 Fan system.~~ The fan system provided for the pressurization system shall be as required by this section.

~~707.14.2.3.1 Fire-resistance.~~ When located within the building, the fan system that provides the pressurization shall be protected with the same fire-resistance rating required for the elevator shaft enclosure.

~~707.14.2.3.2 Smoke detection.~~ The fan system shall be equipped with a smoke detector that will automatically shut down the fan system when smoke is detected within the system.

~~707.14.2.3.3 Separate systems.~~ A separate fan system shall be used for each bank of elevators.

~~707.14.2.3.4 Fan capacity.~~ The supply fan shall either be adjustable with a capacity of at least 1000 cfm (.4719 m<sup>3</sup>/s) per door, or that specified by a registered design professional to meet the requirements of a designed pressurization system.

~~707.14.2.4 Standby power.~~ The pressurization system shall be provided with standby power from the same source as other required emergency systems for the building.

~~707.14.2.5 Activation of pressurization system.~~ The elevator pressurization system shall be activated upon activation of the building fire alarm system or upon activation of the elevator lobby smoke detectors.

~~707.14.2.6 Elevator doors.~~ Each elevator door shall operate properly when hoistway pressurization is in effect.

~~707.14.2.7)~~ **708.14.1 Elevator lobby.** An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby enclosure shall separate the elevator shaft enclosure doors from each floor by fire partitions. In addition to the requirements in Section 709 for fire partitions, doors protecting openings in the elevator lobby enclosure walls shall also comply with Section 715.4.3 as required for corridor walls and penetrations of the elevator lobby enclosure by ducts and air transfer openings shall be protected as required for corridors in accordance with Section 716.5.4.1. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

**EXCEPTIONS:**

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 708.2 are not required to have enclosed elevator lobbies.
3. Enclosed elevator lobbies are not required where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.

4. Enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. This exception shall not apply to the following:

4.1 Group I-2 occupancies;

4.2 Group I-3 occupancies;

4.3 High-rise buildings.

5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.1.1 or 903.3.1.2. In addition to the requirements in Sections 711.5.2, 711.5.3, and 715.4.8 and duct penetrations of the smoke partitions shall be protected as required for corridors in accordance with Section 716.5.4.1.

6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 708.14.2.

7. Enclosed elevator lobbies are not required where the elevator serves only open parking garages in accordance with Section 406.3.

8. Floors in I-2 and R-2 occupancies that are subdivided as required in Sections 407.4 and 1017.6.

**708.14.2.12 Hoistway venting.** Hoistway venting required by Section 3004 need not be provided for pressurized elevator shafts.

~~((707.14.2.8))~~ **708.14.2.13 Machine rooms.** Elevator machine rooms shall be pressurized in accordance with this section unless separated from the hoistway shaft by construction in accordance with Section 707.

~~((707.14.2.9 Special inspection.~~ Special inspection for performance shall be required in accordance with Section 909.18.8. System acceptance shall be in accordance with Section 909.19.))

**NEW SECTION**

**WAC 51-50-0710 Section 710—Smoke barriers.**

**710.4 Continuity.** Smoke barriers shall form an effective membrane continuous from outside wall to outside wall and from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces, such as those found above suspended ceiling, and interstitial structural and mechanical spaces. The supporting construction shall be protected to afford the required fire-resistance rating of the wall or floor supported in buildings of other than Type IIB, IIIB, or VB construction.

**EXCEPTIONS:**

1. Smoke-barrier walls are not required in interstitial spaces where such spaces are designed and constructed with ceilings that provide resistance to the passage of fire and smoke equivalent to that provided by the smoke-barrier walls.
2. Smoke barriers provided to enclose areas of refuge as required by Section 1007.6 are not required to extend from outside wall to outside wall.

**NEW SECTION**

**WAC 51-50-0712 Section 712—Horizontal assemblies.**

**712.9 Smoke barrier.** This section is not adopted.

NEW SECTION**WAC 51-50-0715 Section 715—Opening protectives.**

**715.4.8 Door closing.** Fire doors shall be self- or automatic-closing in accordance with this section.

- EXCEPTIONS:
1. Fire doors located in common walls separating sleeping units in Group R-1 shall be permitted without automatic- or self-closing devices.
  2. The elevator car doors and the associated hoistway enclosure doors at the floor level designated for recall in accordance with Section 3003.2 shall be permitted to remain open during Phase I emergency recall operation.
  3. Door closures shall not be required on any Group R-2 Occupancy licensed as a boarding home by Washington state that meets all of the IBC and IFC requirements for a Group I-2 Occupancy licensed as and meeting all of the staffing requirements of a skilled nursing facility.

AMENDATORY SECTION (Amending WSR 08-01-110, filed 12/18/07, effective 4/1/08)

**WAC 51-50-0903 Section 903—Automatic sprinkler systems.**

**903.2.1.6 Nightclub.** An automatic sprinkler system shall be provided throughout Group A-2 nightclubs as defined in this code. An existing nightclub constructed prior to July 1, 2006, shall be provided with automatic sprinklers not later than ~~((December 1, 2009))~~ July 1, 2010.

~~((903.2.2))~~ **903.2.3 Group E.** An automatic sprinkler system shall be provided for Group E Occupancies.

- EXCEPTIONS:
1. Portable school classrooms, provided aggregate area of any cluster or portion of a cluster of portable school classrooms does not exceed 5,000 square feet (1465 m<sup>2</sup>); and clusters of portable school classrooms shall be separated as required ~~((in chapter 5 of))~~ by the building code.
  2. Group E occupancies with an occupant load of 50 or less.

~~((903.2.7))~~ **903.2.8 Group R.** An automatic fire sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area.

- EXCEPTION:
- Group R-1 if all of the following conditions apply:
1. The Group R fire area is no more than 500 square feet and is used for recreational use only.
  2. The Group R fire area is only one story.
  3. The Group R fire area does not include a basement.
  4. The Group R fire area is no closer than 30 feet from another structure.
  5. Cooking is not allowed within the Group R fire area.
  6. The Group R fire area has an occupant load of no more than 8.
  7. A hand held (portable) fire extinguisher is in every Group R fire area.

NEW SECTION**WAC 51-50-0907 Section 907—Fire alarm and detection systems.**

**[F] 907.2.8 Group R-1.** Fire alarm systems, smoke alarms and carbon monoxide alarms shall be installed in Group R-1

occupancies as required in Sections 907.2.8.1 through 907.2.8.4.

**[F] 907.2.8.4. Carbon monoxide alarms.** For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedroom in sleeping units within which fuel-fired appliances are installed, and in sleeping units that have attached garages.

**[F] 907.2.8.4.1 Existing sleeping units.** Existing sleeping units within which fuel-fired appliances exist or that have attached garages shall be equipped with carbon monoxide alarms by January 1, 2013.

**[F] 907.2.8.4.2 Alarm requirements.** Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

**[F] 907.2.9 Group R-2.** Fire alarm systems, smoke alarms and carbon monoxide alarms shall be installed in Group R-2 occupancies as required in Sections 907.2.9.1 through 907.2.9.3.

**[F] 907.2.9.3. Carbon monoxide alarms.** For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedroom in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages.

**[F] 907.2.9.3.1 Existing dwelling units.** Existing dwelling units within which fuel-fired appliances exist or that have attached garages shall be equipped with carbon monoxide alarms by January 1, 2013.

**907.2.9.3.2 Alarm requirements.** Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

**[F]907.2.10 Group R-3.** Carbon monoxide alarms shall be installed in Group R-3 occupancies as required in Sections 907.2.10.1 through 907.2.10.3.

**[F]907.2.10.1 Carbon monoxide alarms.** For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedroom in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages.

**[F]907.2.10.2 Existing dwelling units.** Existing dwelling units within which fuel-fired appliances exist or that have attached garages shall be equipped with carbon monoxide alarms by January 1, 2013.

EXCEPTION: Owner-occupied Group R-3 residences legally occupied prior to July 1, 2010.

**[F]907.2.10.3 Alarm requirements.** Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency and appear in the Register pursuant to the requirements of RCW 34.08.040.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-0909 Section 909—Smoke control systems.**

**909.6.3 Elevator shaft pressurization.** Where elevator shaft pressurization is required to comply with Exception 6 of Section ((707.14.1)) 708.14.1, the pressurization system shall comply with and be maintained in accordance with ((707.14.2)) 708.14.2.

**909.6.3.1 Activation.** The elevator shaft pressurization system shall be activated by a fire alarm system which shall include smoke detectors or other approved detectors located near the elevator shaft on each floor as approved by the building official and fire code official. If the building has a fire alarm panel, detectors shall be connected to, with power supplied by, the fire alarm panel.

**909.6.3.2 Power system.** The power source for the fire alarm system and the elevator shaft pressurization system shall be in accordance with Section 909.11.

NEW SECTION

**WAC 51-50-0911 Section 911—Fire command center.**

**911.1.2 Separation.** The fire command center shall be separated from the remainder of the building by not less than a 2-hour fire barrier constructed in accordance with Section 707 or horizontal assembly constructed in accordance with Section 712, or both.

NEW SECTION

**WAC 51-50-1007 Section 1007—Accessible means of egress.**

**1007.1 Accessible means of egress required. Accessible means of egress shall comply with this section. Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress are required by Section 1015.1 or 1021.1 from any accessible space, each accessible portion of the space shall be served by not less than two accessible means of egress.**

EXCEPTIONS:

1. Accessible means of egress are not required in alterations to existing buildings.
2. One accessible means of egress is required from an accessible mezzanine level in accordance with Section 1007.3, 1007.4 or 1007.5.
3. In assembly areas with sloped or stepped aisles, one accessible means of egress is permitted where the common path of travel is accessible and meets the requirements in Section 1028.8.
4. In parking garages, accessible means of egress are not required to serve parking areas that do not contain accessible parking spaces.

**1007.8 Two-way communication.** A two-way communication system shall be provided at the elevator landing on each

accessible floor that is one or more stories above or below the story of exit discharge complying with Sections 1007.8.1 and 1007.8.2.

EXCEPTIONS:

1. Two-way communication systems are not required at the elevator landing where two-way communication is provided within the areas of refuge in accordance with section 1007.6.3.
2. Two-way communication systems are not required on floors provided with exit ramps conforming to provisions of section 1010.

**1007.8.1 System requirements.** Two-way communication systems shall provide communication between each required location and the fire command center or a central control point location approved by the fire department. Where the central control point is not constantly attended, a two-way communication system shall have a timed automatic telephone dial-out capability to a monitoring location. The two-way communication system shall include both audible and visible signals. The two-way communication system shall have a battery backup or an approved alternate source of power that is capable of 90 minutes use upon failure of the normal power source.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-1008 Section 1008—Doors, gates and turnstiles.**

~~((1008.1.2 Door swing. Egress doors shall be side-hinged swinging.~~

EXCEPTIONS:

1. Private garages, office areas, factory and storage areas with an occupant load of 10 or less.
2. Group I-3 Occupancies used as a place of detention.
3. Critical or intensive care patient rooms within suites of health care facilities.
4. Doors within or serving a single dwelling unit in Groups R-2 and R-3.
5. In other than Group H Occupancies, revolving doors complying with Section 1008.1.3.1.
6. In other than Group H Occupancies, horizontal sliding doors complying with Section 1008.1.3.3 are permitted as a means of egress.
7. Power-operated doors in accordance with Section 1008.1.3.2.
8. Doors serving a bathroom within an individual sleeping unit in Group R-1.
9. In other than Group H Occupancies, manually operated horizontal sliding doors are permitted in a means of egress from occupied spaces with an occupant load of 10 or less.

~~Doors shall swing in the direction of egress travel where serving an occupant load of 50 or more persons or a Group H Occupancy.~~

~~The opening force for interior side swinging doors without closers shall not exceed a 5 pound (22 N) force. For other side swinging, sliding, and folding doors, the door latch shall release when subjected to a 15 pound (67 N) force. The door shall be set in motion when subjected to a 30 pound (133 N) force. The door shall swing to a full open position when subjected to a 15 pound (67 N) force. Forces shall be applied to the latch side.)~~ **1008.1.9.3 Locks and latches.** Locks and

latches shall be permitted to prevent operation of doors where any of the following exists:

1. Places of detention or restraint.
2. In buildings in occupancy Group A having an occupant load of 300 or less, Groups B, F, M and S, and in places of religious worship, the main exterior door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:

2.1 The locking device is readily distinguishable as locked;

2.2 A readily visible sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background; and

2.3 The use of the key-operated locking device is revocable by the building official for due cause.

3. Where egress doors are used in pairs, approved automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts has no door-knob or surface-mounted hardware.

4. Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt, or security chain, provided such devices are openable from the inside without the use of a key or a tool.

5. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.

6. Approved, listed locks without delayed egress shall be permitted in Group R-2 boarding homes licensed by Washington state, provided that:

6.1. The clinical needs of one or more patients require specialized security measures for their safety.

6.2. The doors unlock upon actuation of the automatic sprinkler system or automatic fire detection system.

6.3. The doors unlock upon loss of electrical power controlling the lock or lock mechanism.

6.4. The lock shall be capable of being deactivated by a signal from a switch located in an approved location.

6.5. There is a system, such as a keypad and code, in place that allows visitors, staff persons and appropriate residents to exit. Instructions for exiting shall be posted within six feet of the door.

#### **1008.1.9.6 Special locking arrangements in Group I-2.**

Approved locks shall be permitted in a Group I-2 Occupancy where the clinical needs of persons receiving care require such locking. Locks shall be permitted in such occupancies where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907, provided that the doors unlock in accordance with Items 1 through 6 below.

1. The doors unlock upon actuation of the automatic sprinkler system or automatic fire detection system.

2. The doors unlock upon loss of power controlling the lock or lock mechanism.

3. The door locks shall have the capability of being unlocked by a signal from the fire command center, a nursing station or other approved location.

4. The procedures for the operation(s) of the unlocking system shall be described and approved as part of the emergency planning and preparedness required by Chapter 4 of the International Fire Code.

5. There is a system, such as a keypad and code, in place that allows visitors, staff persons and appropriate residents to exit. Instructions for exiting shall be posted within six feet of the door.

6. Emergency lighting shall be provided at the door.

#### EXCEPTION:

Items 1, 2, 3, and 5 shall not apply to doors to areas where persons which because of clinical needs require restraint or containment as part of the function of a Group I-2 mental hospital provided that all clinical staff shall have the keys, codes or other means necessary to operate the locking devices.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

#### **WAC 51-50-1009 Section 1009—Stairways and handrails.**

~~((1009.12))~~ **1009.15 Stairways in individual dwelling units.** Stairs or ladders within an individual dwelling unit used for access to areas of 200 square feet (18.6 m<sup>2</sup>) or less, and not containing the primary bathroom or kitchen, are exempt from the requirements of Section 1009.

#### NEW SECTION

#### **WAC 51-50-10100 Section 1010—Ramps.**

**1010.1 Scope.** The provisions of this section shall apply to ramps used as a component of a means of egress.

#### EXCEPTIONS:

1. Other than ramps that are part of the accessible routes providing access in accordance with Sections 1108.2 through 1108.2.4 and 1108.2.6, ramped aisles within assembly rooms or spaces shall conform with the provisions in Section 1028.11.
2. Curb ramps shall comply with ICC A117.1.
3. Vehicle ramps in parking garages for pedestrian exit access shall not be required to comply with Sections 1010.3 through 1010.9 when they are not an accessible route serving accessible parking spaces or other required accessible elements.
4. In a parking garage where one accessible means of egress serving accessible parking spaces or other accessible elements is provided, a second accessible means of egress serving that area may include a vehicle ramp that does not comply with Sections 1010.4 through 1010.8.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

#### **WAC 51-50-1014 Exit access.**

**1014.2.2 Group I-2.** ~~((Habitable rooms or suites in Group I-2 occupancies shall have an exit access door leading directly to a corridor.~~

#### EXCEPTION:

Rooms with exit doors opening directly to the outside at ground level.))

**General.** Habitable spaces and suites in Group I-2 occupancies are permitted to comply with this Section 1014.2.2.

**1014.2.2.1** ~~((Definition. For the purposes of this section, a suite is defined as a cluster of rooms or spaces sharing common circulation. Partitions within a suite are not required to have smoke or fire-resistance-rated construction unless required by another section of this Code.~~

**1014.2.3) Exit access doors.** Habitable spaces and suites in Group I-2 occupancies shall have an exit access door leading directly to a corridor.

**EXCEPTION:** Rooms with exit doors opening directly to the outside at ground level.

**1014.2.2.2 Exit access through suites.** Exit access from areas not classified as a Group I-2 Occupancy suite shall not pass through a suite. In a suite required to have more than one exit, one exit access may pass through an adjacent suite if all other requirements of Section 1014.2 are satisfied.

**1014.2.2.3 Separation.** Suites in Group I-2 Occupancies shall be separated from other portions of the building by a smoke partition complying with Section 711. Partitions within suites are not required to be smoke-resistant or fire-resistance-rated unless required by another section of this Code.

**1014.2.2.4 Suites ~~((in))~~ containing patient sleeping areas.** Patient sleeping areas in Group I-2 Occupancies shall be permitted to be divided into suites with one intervening room if one of the following conditions is met:

1. The intervening room within the suite is not used as an exit access for more than eight patient beds.
2. The arrangement of the suite allows for direct and constant visual supervision by nursing personnel.

~~((1014.2.3.1))~~ **1014.2.2.4.1 Area.** Suites of sleeping rooms shall not exceed 5,000 square feet (465 m<sup>2</sup>).

~~((1014.2.3.2))~~ **1014.2.2.4.2 Exit access.** Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1,000 square feet (93 m<sup>2</sup>) shall have at least two exit access doors ~~((remotely))~~ located ~~((from each other))~~ in accordance with Section 1015.2.

~~((1014.2.3.3))~~ **1014.2.2.4.3 Travel distance.** The travel distance between any point in a suite of sleeping rooms and an exit access door of that suite shall not exceed 100 feet (30,480 mm). The travel distance between any point in a Group I-2 Occupancy patient sleeping room and an exit access door in that room shall not exceed 50 feet (15,240 mm).

~~((1014.2.4))~~ **1014.2.2.5 Suites ~~((in areas other than))~~ not containing patient sleeping areas.** Areas other than patient sleeping areas in Group I-2 Occupancies shall be permitted to be divided into suites that comply with Sections 1014.2.2.5.1 through 1014.2.2.5.4.

~~((1014.2.4.1))~~ **1014.2.2.5.1 Area.** Suites of rooms, other than patient sleeping rooms, shall not exceed 10,000 square feet (929 m<sup>2</sup>).

~~((1014.2.4.2))~~ **1014.2.2.5.2 Exit access.** Any rooms or suite of rooms, other than patient sleeping rooms, of more than 2,500 square feet (232 m<sup>2</sup>) shall have at least two exit access

doors ~~((remotely))~~ located ~~((from each other))~~ in accordance with Section 1015.2.

~~((1014.2.4.3))~~ **1014.2.2.5.3 One intervening room.** For rooms other than patient sleeping rooms, suites of rooms are permitted to have one intervening room if the travel distance within the suite to the exit access door is not greater than 100 feet (30,480 mm).

~~((1014.2.4.4))~~ **1014.2.2.5.4 Two intervening rooms.** For rooms other than patient sleeping rooms located within a suite, exit access travel from within the suite shall be permitted through two intervening rooms where the travel distance to the exit access door is not greater than 50 feet (15,240 mm).

~~((1014.2.5 Travel distance.~~ The travel distance between any point in a Group I-2 Occupancy patient room and an exit access door in that room shall not exceed 50 feet (15,240 mm).)

~~1014.2.6 Separation.~~ Suites in Group I-2 Occupancies shall be separated from other portions of the building by a smoke partition complying with Section 710.))

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-1015 Exit and exit access doorways.**

~~((1015.1 (IFC 1015.1) Exits or exit access doorways from spaces.~~ Two exits or exit access doorways from any space shall be provided where one of the following conditions exists:

1. The occupant load of the space exceeds one of the values in Table 1015.1.

**EXCEPTION:** One means of egress is permitted within and from dwelling units with a maximum occupant load of 20 where the dwelling unit is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. The common path of egress travel exceeds one of the limitations of Section 1014.3.

3. Where required by Sections 1015.3, 1015.4, 1015.5, 1015.6 or 1015.6.1.

**EXCEPTION:** Group I-2 occupancies shall comply with Section 1014.2.2.

**TABLE 1015.1 (IFC 1015.1)  
SPACES WITH ONE MEANS OF EGRESS**

| OCCUPANCY                  | MAXIMUM OCCUPANT LOAD |
|----------------------------|-----------------------|
| A, B, E*, F, M, U          | 49                    |
| H 1, H 2, H 3              | 3                     |
| H 4, H 5, I 1, I 3, I 4, R | 10                    |
| S                          | 29                    |

a. Day care maximum occupant load is 10.

~~1015.1.1 (IFC 1015.1.1) Three or more exits or exit access doorways.~~ Three exits or exit access doorways shall be provided from any space with an occupant load of 501-1,000. Four exits or exit access doorways shall be provided from any space with an occupant load greater than 1,000.)) Reserved.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-1017 Section 1018—Corridors.**

~~((1017.1 Construction. Corridors shall be fire-resistance rated in accordance with Table 1017.1. The corridor walls required to be fire-resistance rated shall comply with Section 708 for fire partitions.~~

**EXCEPTIONS:**

1. A fire-resistance rating is not required for corridors in an occupancy in Group E where each room that is used for instruction has at least one door directly to the exterior and rooms for assembly purposes have at least one-half of the required means of egress doors opening directly to the exterior. Exterior doors specified in this exception are required to be at ground level.
2. A fire-resistance rating is not required for corridors contained within a dwelling or sleeping unit in an occupancy in Group R.
3. A fire-resistance rating is not required for corridors in open parking garages.
4. A fire-resistance rating is not required for corridors in an occupancy in Group B which is a space requiring only a single means of egress complying with Section 1015.1.
5. In Group R-2 boarding homes and residential treatment facilities licensed by Washington state, rest areas constructed as required for corridors shall be allowed to be open to the corridor provided:
  - 5.1 The area does not exceed 150 square feet, excluding the corridor width;
  - 5.2 The floor is separated into at least two compartments complying with Section 407.4;
  - 5.3 Combustible furnishings located within the rest area shall be in accordance with the International Fire Code section 805;
  - 5.4 Emergency means of egress lighting is provided as required by Section 1006 to illuminate the area.

~~**(1017.4) 1018.5 Air movement in corridors.** Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts.~~

**EXCEPTIONS:**

1. Use of a corridor as a source of makeup air for exhaust systems in rooms that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted provided that each such corridor is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor.
2. Where located within a dwelling unit, the use of corridors for conveying return air shall not be prohibited.
3. Where located within tenant spaces of one thousand square feet (93 m<sup>2</sup>) or less in area, utilization of corridors for conveying return air is permitted.
4. Incidental air movement from pressurized rooms within health care facilities, provided that a corridor is not the primary source of supply or return to the room.
5. Where such air is part of an engineered smoke control system.
 

~~((5. Make up or relief air in corridors of Group 1-2 Occupancies.))~~
6. Air supplied to corridors serving residential occupancies shall not be ((permitted to be supplied without specific mechanical exhaust)) considered as providing ventilation air to the dwelling units subject to the following:
  - 6.1 The ~~((supply))~~ air supplied to the corridor is one hundred percent outside air; and

6.2 The units served by the corridor have conforming ventilation air independent of the air supplied to the corridor; and

6.3 For other than high-rise buildings, the supply fan will automatically shut off upon activation of corridor smoke detectors which shall be spaced at no more than thirty feet (9,144 mm) on center along the corridor; or

6.4 For high-rise buildings, corridor smoke detector activation will close required smoke/fire dampers at the supply inlet to the corridor at the floor receiving the alarm.

~~((1017.6 Subdivision of building spaces—Smoke barriers. Smoke barriers complying with Section 709 shall be installed on floors other than the level of exit discharge of a Group R-2 boarding home or residential treatment facility licensed by Washington state, where a fire-resistance rated corridor is required by Table 1017.1. The smoke barrier shall subdivide the floor into at least two compartments complying with Section 407.4.))~~ **1018.6 Corridor continuity.** Fire-resistance-rated corridors shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms.

**EXCEPTIONS:**

1. Foyers, lobbies or reception rooms constructed as required for corridors shall not be construed as intervening rooms.
2. In Group R-2 boarding homes and residential treatment facilities licensed by Washington state, seating areas shall be allowed to be open to the corridor provided:
  - 2.1 The seating area is constructed as required for the corridor;
  - 2.2 The floor is separated into at least two compartments complying with Section 407.4;
  - 2.3 Each individual seating area does not exceed 150 square feet, excluding the corridor width;
  - 2.4 The combined total space of seating areas per compartment does not exceed 300 square feet, excluding the corridor width;
  - 2.5 Combustible furnishings located within the seating area shall be in accordance with the International Fire Code Section 805; and
  - 2.6 Emergency means of egress lighting is provided as required by Section 1006 to illuminate the area.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-1019 Number of exits and continuity.**

~~((1019.1 (IFC 1019.1) Exits from stories. All spaces within each story shall have access to the minimum number of exits as specified in Table 1019.1 based on the occupant load of the story, except as modified in Section 1019.2. For the purposes of this chapter, occupied roofs shall be provided with exits as required for stories. The required number of exits from any story, including basements, shall be maintained until arrival at grade or the public way.~~

**EXCEPTION:**

One means of egress is permitted within and from dwelling units with a maximum occupant load of 20 where the dwelling unit is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.



**TABLE 1019.1 (IFC 1019.1)  
MINIMUM NUMBER OF EXITS FOR OCCUPANT LOAD**

| OCCUPANT LOAD (persons per story) | MINIMUM NUMBER OF EXITS (per story) |
|-----------------------------------|-------------------------------------|
| 1-500                             | 2                                   |
| 501-1,000                         | 3                                   |
| More than 1,000                   | 4                                   |

**1019.2 (IFC 1019.2) Buildings with one exit.** Only one exit shall be required in buildings as specified below:

1. Buildings meeting the limitations of Table 1019.2, provided the building has not more than one level below the first story above grade plane.
2. Buildings of Group R-3 Occupancy.
3. Single level buildings with occupied spaces at the level of exit discharge provided each space complies with Section 1015.1 as a space with one exit or exit access doorway.

**TABLE 1019.2 (IFC 1019.2)  
BUILDINGS WITH ONE EXIT**

| OCCUPANCY                                    | MAXIMUM HEIGHT OF BUILDING ABOVE GRADE PLANE | MAXIMUM OCCUPANTS (OR DWELLING UNITS) PER FLOOR AND TRAVEL DISTANCE |
|--|--|---|
| A, B <sup>a</sup> , E <sup>c</sup> , F, M, U | 1 Story                                      | 49 occupants and 75 feet travel distance                            |
| H-2, H-3                                     | 1 Story                                      | 3 occupants and 25 feet travel distance                             |
| H-4, H-5, I, R                               | 1 Story                                      | 10 occupants and 75 feet travel distance                            |
| S <sup>a</sup>                               | 1 Story                                      | 29 occupants and 100 feet travel distance                           |
| B <sup>b</sup> , F, M, S <sup>a</sup>        | 2 Stories                                    | 30 occupants and 75 feet travel distance                            |
| R-2  | 2 Stories <sup>e</sup>                       | 4 dwelling units and 50 feet travel distance                        |

For IS: 1 foot = 304.8 mm.

- a. For the required number of exits for open parking structures, see Section 1019.1.1.
- b. For the required number of exits for air traffic control towers, see Section 412.1.
- c. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1026 shall have a maximum height of three stories above grade plane.
- d. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 with an occupancy in Group B shall have a maximum travel distance of 100 feet.
- e. Day care maximum occupant load is 10.)

Reserved.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-1106 Section 1106—Parking and passenger loading facilities.**

**1106.3 Group I-1 and I-2 outpatient facilities.** Ten percent, but not less than one, of patient and visitor parking spaces provided to serve Group ((I-1 and)) I-2 outpatient facilities shall be accessible.

~~((1106.4 Rehabilitation facilities and outpatient physical therapy facilities. Twenty percent, but not less than one, of the portion of patient and visitor parking spaces serving rehabilitation facilities specializing in treating conditions that affect mobility and outpatient physical therapy facilities shall be accessible.))~~

**1106.6 Location.** Accessible parking spaces shall be located on the shortest accessible route of travel from adjacent parking to an accessible building entrance. In parking facilities that do not serve a particular building, accessible parking spaces shall be located on the shortest route to an accessible pedestrian entrance to the parking facility. Where buildings have multiple accessible entrances with adjacent parking, accessible parking spaces shall be dispersed and located near the accessible entrances. Wherever practical, the accessible route shall not cross lanes of vehicular traffic. Where crossing traffic lanes is necessary, the route shall be designated and marked as a crosswalk.

EXCEPTION:

1. In multilevel parking structures, van accessible parking spaces are permitted on one level.
2. Accessible parking spaces shall be permitted to be located in different parking facilities if substantially equivalent or greater accessibility is provided in terms of distance from an accessible entrance or entrances, parking fee and user convenience.

AMENDATORY SECTION (Amending WSR 04-01-108, filed 12/17/03, effective 7/1/04)

**WAC 51-50-1203 Section 1203—Ventilation.**

**1203.1 General.** Buildings shall be provided with natural ventilation in accordance with Section 1203.4, or mechanical ventilation in accordance with the *International Mechanical Code* ((and the Washington State Ventilation and Indoor Air Quality Code)).

**1203.2 Attic spaces.** Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof framing members shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain and snow. Blocking and bridging shall be arranged so as not to interfere with the movement of air. A minimum of 1 inch (25 mm) of airspace shall be provided between the insulation and the roof sheathing. The net free ventilating area shall not be less than 1/150th of the area of the space ventilated, with 50 percent of the required ventilating area provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet (914 mm) above eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents.

**EXCEPTIONS:**

1. The minimum required net free ventilating shall be 1/300 of the area of the space ventilated, provided a vapor retarder having a transmission rate not exceeding one perm in accordance with ASTM E 96 is installed on the warm side of the attic insulation and provided 50 percent of the required ventilating area provided by ventilators located in the upper portion of the space to be ventilated is at least 3 feet (914 mm) above eave or cornice vents, with the balance of the required ventilation provided by eave or cornice vents.
2. Unvented attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) shall be permitted if all the following conditions are met:
- 2.1 The unvented attic space is completely contained within the building thermal envelope.
- 2.2 No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.
- 2.3 Where wood shingles or shakes are used, a minimum 1/4 inch (6 mm) vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.
- 2.4 Any air-impermeable insulation shall be a vapor retarder, or shall have a vapor retarder coating or covering in direct contact with the underside of the insulation.
- 2.5 Either items a, b, or c below shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.
- a. Air-impermeable insulation only. Insulation shall be applied in direct contact to the underside of the structural roof sheathing.
- b. Air-permeable insulation only. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing as specified per WA Climate Zone for condensation control.
- i. Climate Zone #1 - R-10 minimum rigid board or air-impermeable insulation R-value.
- ii. Climate Zone #2 - R-25 minimum rigid board or air-impermeable insulation R-value.
- c. Air-impermeable and air-permeable insulation. The air-impermeable insulation shall be applied in direct contact to the underside of the structural roof sheathing as specified per WA Climate Zone for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.
- i. Climate Zone #1 - R-10 minimum rigid board or air-impermeable insulation R-value.
- ii. Climate Zone #2 - R-25 minimum rigid board or air-impermeable insulation R-value.

**1203.4 Natural ventilation.** For other than Group R Occupancies in buildings four stories and less, natural ventilation of an occupied space shall be through windows, doors, louvers or other openings to the outdoors. The operating mechanism for such openings shall be provided with ready access so that the openings are readily controllable by the building occupants. Group R Occupancies in buildings four stories and less shall comply with the ((~~Washington State Ventilation and Indoor Air Quality Code~~)) *International Mechanical Code*.

**1203.6 Radon resistive construction standards.** The criteria of this section establishes minimum radon resistive construction requirements for Group R Occupancies.

**1203.6.1 Application.** The requirements of Section 1203.6 shall be adopted and enforced by all jurisdictions of the state according to the following subsections.

**1203.6.1.1** All jurisdictions of the state shall comply with Section 1203.6.2.

**1203.6.1.2** Clark, Ferry, Okanogan, Pend Oreille, Skamania, Spokane, and Stevens counties shall also comply with Section 1203.6.3.

**1203.6.2 State wide radon requirements.**

**1203.6.2.1 Crawlspace.** All crawlspaces shall comply with the requirements of this section.

**1203.6.2.2 Ventilation.** All crawlspaces shall be ventilated as specified in Section 1203.3.

If the installed ventilation in a crawlspace is less than one square foot for each 300 square feet of crawlspace area, or if the crawlspace vents are equipped with operable louvers, a radon vent shall be installed to originate from a point between the ground cover and soil. The radon vent shall be installed in accordance with Sections 1203.6.3.2.6 and 1203.6.3.2.7.

**1203.6.2.3 Crawlspace plenum systems.** In crawlspace plenum systems used for providing supply air for an HVAC system, aggregate, a permanently sealed soil gas retarder membrane and a radon vent pipe shall be installed in accordance with Section 1203.6.3.2. Crawlspace shall not be used for return air plenums.

In addition, an operable radon vent fan shall be installed and activated. The fan shall be located as specified in Section 1203.6.3.2.7. The fan shall be capable of providing at least 100 cfm at 1-inch water column static pressure. The fan shall be controlled by a readily accessible manual switch. The switch shall be labeled "RADON VENT FAN."

**1203.6.3 Radon prescriptive requirements.**

**1203.6.3.1 Scope.** This section applies to those counties specified in Section 1203.6.1.2. This section establishes prescriptive construction requirements for reducing the potential for radon entry into all Group R Occupancies, and for preparing the building for future mitigation if desired.

In all crawlspaces, except crawlspace plenums used for providing supply air for an HVAC system, a continuous air barrier shall be installed between the crawlspace area and the occupied area to limit air transport between the areas. If a wood sheet subfloor or other material is utilized as an air barrier, in addition to the requirements of Section 502.1.6.2 of the *Washington State Energy Code*, all joints between sheets shall be sealed.

**1203.6.3.2 Floors in contact with the earth.**

**1203.6.3.2.1 General.** Concrete slabs that are in direct contact with the building envelope shall comply with the requirements of this section.

EXCEPTION: Concrete slabs located under garages or other than Group R Occupancies need not comply with this chapter.

**1203.6.3.2.2 Aggregate.** A layer of aggregate of 4-inch minimum thickness shall be placed beneath concrete slabs. The aggregate shall be continuous to the extent practical.

**1203.6.3.2.3 Gradation.** Aggregate shall:

1. Comply with ASTM Standard C-33 Standard Specification for Concrete Aggregate and shall be size No. 8 or larger size aggregate as listed in Table 2, Grading Requirements for Course Aggregate; or

2. Meet the 1988 Washington State Department of Transportation Specification 9-03.1 (3) "Coarse Aggregate for Portland Cement Concrete," or any equivalent successor standards. Aggregate size shall be of Grade 8 or larger as listed in Section 9-03.1 (3) C, "Grading"; or

3. Be screened, washed pea gravel free of deleterious substances in a manner consistent with ASTM Standard C-33 with 100 percent passing a 1/2-inch sieve and less than 5 percent passing a No. 16 sieve. Sieve characteristics shall conform to those acceptable under ASTM Standard C-33.

EXCEPTION: Aggregate shall not be required if a substitute material or system, with sufficient load bearing characteristics, and having approved capability to provide equal or superior air flow, is installed.

**1203.6.3.2.4 Soil-gas retarder membrane.** A soil-gas retarder membrane, consisting of at least one layer of virgin polyethylene with a thickness of at least 6 mil, or equivalent flexible sheet material, shall be either placed directly under all concrete slabs so that the slab is in direct contact with the membrane, or on top of the aggregate with 2 inches minimum of fine sand or pea gravel installed between the concrete slab and membrane. The flexible sheet shall extend to the foundation wall or to the outside edge of the monolithic slab. Seams shall overlap at least 12 inches. The membrane shall also be fitted tightly to all pipes, wires, and other penetrations of the membrane and sealed with an approved sealant or tape. All punctures or tears shall be repaired with the same or approved material and similarly lapped and sealed.

**1203.6.3.2.5 Sealing of penetrations and joints.** All penetrations and joints in concrete slabs or other floor systems and walls below grade shall be sealed by an approved sealant to create an air barrier to limit the movement of soil-gas into the indoor air.

Sealants shall be approved by the manufacturer for the intended purpose. Sealant joints shall conform to manufacturer's specifications. The sealant shall be placed and tooled in accordance with manufacturer's specifications. There shall be no gaps or voids after the sealant has cured.

**1203.6.3.2.6 Radon vent.** One continuous sealed pipe shall run from a point within the aggregate under each concrete slab to a point outside the building. Joints and connections shall be permanently gas tight. The continuous sealed pipe shall interface with the aggregate in the following manner, or by other approved equal method. The pipe shall be permanently connected to a "T" within the aggregate area so that the two end openings of the "T" lie within the aggregate area. A minimum of 5 feet of perforated drain pipe of 3 inches minimum diameter shall join to and extend from the "T." The perforated pipe shall remain in the aggregate area and shall not be capped at the ends. The "T" and its perforated pipe extensions shall be located at least 5 feet horizontally from the exterior perimeter of the aggregate area.

The continuous sealed pipe shall terminate no less than 12 inches above the eave, and more than 10 horizontal feet from a woodstove or fireplace chimney, or operable window.

The continuous sealed pipe shall be labeled "radon vent." The label shall be placed so as to remain visible to an occupant.

The minimum pipe diameter shall be 3 inches unless otherwise approved. Acceptable sealed plastic pipe shall be smooth walled, and may include either PVC schedule 40 or ABS schedule of equivalent wall thickness.

The entire sealed pipe system shall be sloped to drain to the subslab aggregate.

The sealed pipe system may pass through an unconditioned attic before exiting the building; but to the extent practicable, the sealed pipe shall be located inside the thermal envelope of the building in order to enhance passive stack venting.

EXCEPTION: A fan for subslab depressurization system includes the following:

1. Soil-gas retarder membrane as specified in Section 1203.6.3.2.4;
2. Sealing of penetrations and joints as specified in Section 1203.6.3.2.5;
3. A 3-inch continuous sealed radon pipe shall run from a point within the aggregate under each concrete slab to a point outside the building;
4. Joints and connections shall be gas tight, and may be of either PVC schedule 40 or ABS schedule of equivalent in wall thickness;
5. A label of "radon vent" shall be placed on the pipe so as to remain visible to an occupant;
6. Fan circuit and wiring as specified in Section 1203.6.3.2.7 and a fan.

If the subslab depressurization system is exhausted through the concrete foundation wall or rim joist, the exhaust terminus shall be a minimum of 6 feet from operable windows or outdoor air intake vents and shall be directed away from operable windows and outdoor air intake vents to prevent radon reentrainment.

**1203.6.3.2.7 Fan circuit and wiring and location.** An area for location of an in-line fan shall be provided. The location shall be as close as practicable to the radon vent pipe's point of exit from the building, or shall be outside the building shell; and shall be located so that the fan and all downstream piping is isolated from the indoor air.

Provisions shall be made to allow future activation of an in-line fan on the radon vent pipe without the need to place new wiring. A 110 volt power supply shall be provided at a junction box near the fan location.

**1203.6.3.2.8 Separate aggregate areas.** If the 4-inch aggregate area underneath the concrete slab is not continuous, but is separated into distinct isolated aggregate areas by a footing or other barrier, a minimum of one radon vent pipe shall be installed into each separate aggregate area.

EXCEPTION: Separate aggregate areas may be considered a single area if a minimum 3-inch diameter connection joining the separate areas is provided for every 30 feet of barrier separating those areas.

**1203.6.3.2.9 Concrete block walls.** Concrete block walls connected to below grade areas shall be considered unsealed surfaces. All openings in concrete block walls that will not remain accessible upon completion of the building shall be sealed at both vertical and horizontal surfaces, in order to create a continuous air barrier to limit the transport of soil-gas into the indoor air.

AMENDATORY SECTION (Amending WSR 05-01-014, filed 12/2/04, effective 7/1/05)

**WAC 51-50-1208 Section 1208—Interior space dimensions.**

**1208.2 Minimum ceiling heights.** Occupiable spaces and habitable spaces shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). Bathrooms, toilet rooms, kitchen, storage rooms and laundry rooms shall be permitted to have a ceiling height of not less than 7 feet (2134 mm).

- EXCEPTIONS:
1. In one- and two-family dwellings, beams or girders spaced not less than 4 feet (1219 mm) on center and projecting not more than 6 inches (152 mm) below the required ceiling height.
  2. If any room in a building has a sloped ceiling, the prescribed ceiling height for the room is required in one-half the area thereof. Any portion of the room measuring less than 5 feet (1524 mm) from the finished floor to the ceiling shall not be included in any computation of the minimum area thereof.
  3. Mezzanines constructed in accordance with Section 505.1.
  4. Residential Group R Occupancies shall be permitted to have a ceiling height of not less than 7 feet (2134 mm).))

**1208.3 Room area.** Every dwelling unit shall have at least one room that shall have not less than 120 square feet (13.9 m<sup>2</sup>) of net floor area. Other habitable rooms shall have a net floor area of not less than 70 square feet (6.5 m<sup>2</sup>).

- EXCEPTION:
- ((Every)) Kitchens in ((a)) one- and two-family dwellings ((shall have not less than 50 square feet (4.64 m<sup>2</sup>) of gross floor area)).

Portions of a room with a sloped ceiling measuring less than 5 feet (1524 mm) or a flat ceiling measuring less than 7 feet (2134 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum habitable area for that room.

AMENDATORY SECTION (Amending WSR 08-01-110, filed 12/18/07, effective 4/1/08)

**WAC 51-50-1403 Section 1403—Performance requirements.**

**1403.2 Weather protection.** Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section 1405.3. The exterior wall envelope shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer, as described in Section 1404.2, and a means of draining water that enters the assembly to the exterior. An air space cavity is not required under the exterior cladding for an exterior wall clad with lapped or panel siding made of plywood, engineered wood, hardboard, or fiber cement.

- EXCEPTIONS:
1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapters 19 and 21, respectively.
  2. Compliance with the requirements for a means of drainage, and the requirements of Sections 1404.2 and 1405.3, shall not be required for an exterior wall envelope that has been demonstrated through testing

to resist wind-driven rain, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:

- 2.1 Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
- 2.2 Exterior wall envelope test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.
- 2.3 Exterior wall envelope assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (psf) (0.297 kN/m<sup>2</sup>).
- 2.4 Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours.

The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings or intersections of terminations with dissimilar materials.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-1405 Section 1405—Installation of wall coverings.**

~~((1405.5.2))~~ **1405.6.2 Seismic requirements.** Anchored masonry veneer located in Seismic Design Category C, D, E, or F shall conform to the requirements of Section 6.2.2.10((~~7 except~~)) of TMS 402/ACI 530/ASCE 5. Anchored masonry veneer located in Seismic Design Category D, for occupancy category III and IV, shall also conform to the requirements of Section ((6.2.2.10.3.2, of ACI 530/ASCE 5/)) 6.2.2.10.3.3 of TMS 402/ACI 530/ASCE 5.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-1602 Section 1602—Definitions and notations.**

- ~~((BALCONY, EXTERIOR. This definition is not adopted. DECK. This definition is not adopted.))~~ Reserved.

AMENDATORY SECTION (Amending WSR 08-01-110, filed 12/18/07, effective 4/1/08)

**WAC 51-50-1607 Section 1607—Live loads.**

~~((IBC Table 1607.1 MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS AND MINIMUM CONCENTRATED LIVE LOADS~~

| OCCUPANCY OR USE                            | UNIFORM (psf) | CONCENTRATED (psf) |
|---|---------------|--------------------|
| 4. Assembly areas and theaters              |               |                    |
| Fixed seats (fastened to floor)             | 60            |                    |
| Follow spot, projections, and control rooms | 50            |                    |
| Lobbies                                     | 100           | —————              |
| Movable seats                               | 100           |                    |
| Stages and platforms                        | 125           |                    |

~~(IBC Table 1607.1 MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS AND MINIMUM CONCENTRATED LIVE LOADS~~

| OCCUPANCY OR USE   | UNIFORM (psf)            | CONCENTRATED (psf) |
|--|--------------------------|--------------------|
| Other assembly areas                                     | 100                      |                    |
| 5. (Reserved)  |                          | _____              |
| 9. Decks <sup>h</sup> and Balconies                      | Same as occupancy served | _____              |
| 28. Residential  |                          |                    |
| One- and two-family dwellings                            |                          |                    |
| Uninhabitable attics without storage <sup>i</sup>        | 10                       |                    |
| Uninhabitable attics with limited storage <sup>i,j</sup> | 20                       |                    |
| Habitable attics and sleeping areas                      | 30                       | _____              |
| All other areas  | 40                       |                    |
| Hotels and multifamily dwellings                         |                          |                    |
| Private rooms and corridors serving them                 | 40                       |                    |
| Public rooms and corridors serving them                  | 100))                    |                    |

Reserved.

NEW SECTION

**WAC 51-50-1609 Section 1609—Wind loads.**

**1609.1.1 Determination of wind loads.** Wind loads on every building or structure shall be determined in accordance with Chapter 6 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. The type of opening protection required, the basic wind speed and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

- EXCEPTIONS:
1. Subject to the limitations of Section 1609.1.1.1, the provisions of ICC 600 shall be permitted for applicable Group R-2 and R-3 buildings.
  2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of the AF&PA WFCM.
  3. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AISI S230.
  4. Designs using NAAMM FP 1001.
  5. Designs using TIA-222 for antenna-supporting structures and antennas. In section 2.6.6.2, the extent of Topographic Category 2, escarpments, shall extend 16 times the height of the escarpment.
  6. Wind tunnel test in accordance with Section 6.6 of ASCE 7, subject to the limitations in Section 1609.1.1.2.

AMENDATORY SECTION (Amending WSR 08-01-110, filed 12/18/07, effective 4/1/08)

**WAC 51-50-1613 Section 1613—Earthquake loads.**

~~(1613.7 Modification of ASCE 7. ASCE 7-05 including Supplement #1 is modified according to this section.~~

~~1613.7.1 The following equations found in Section 12.8 and Section 15.4 expressing limitations for the seismic response coefficient  $C_s$  shall be defined as follows:~~

~~Equation 12.8-5  $C_s = 0.044S_{DS} I \geq 0.01$~~   
~~Equation 15.4-1  $C_s = 0.044S_{DS} I \geq 0.03$~~   
~~Equation 15.4-3  $C_s = 0.044S_{DS} I (\geq 0.01)$~~

Reserved.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-1714 Section ((1714)) 1715—Preconstruction load tests.**

~~((1714.5 Exterior window and door assemblies. The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1714.5.1 or 1714.5.2.~~

- EXCEPTION:
1. Structural wind load design pressures for window units smaller than the size tested in accordance with Section 1714.5.1 or 1714.5.2 shall be permitted to be higher than the design value of the tested unit provided such higher pressures are determined by accepted engineering analysis. All components of the small unit shall be the same as the tested unit. Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.
  2. Custom exterior windows and doors manufactured by a small business shall be exempt from all testing requirements in Section 1714 of the International Building Code provided they meet the applicable provisions of Chapter 24 of the International Building Code.)

1715.5 Exterior window and door assemblies. The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1715.5.1 or 1715.5.2.

- EXCEPTIONS:
1. Structural wind load design pressures for window units smaller than the size tested in accordance with Section 1715.5.1 or 1715.5.2 shall be permitted to be higher than the design value of the tested unit provided such higher pressures are determined by accepted engineering analysis. All components of the small unit shall be the same as the tested unit. Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.
  2. Custom exterior windows and doors manufactured by a small business shall be exempt from all testing requirements in Section 1715 of the International Building Code provided they meet the applicable provisions of Chapter 24 of the International Building Code.

NEW SECTION**WAC 51-50-2104 Section 2104—Construction.**

**2104.1 Masonry construction.** Masonry construction shall comply with the requirements of Sections 2104.1.1 through 2104.6 and with TMS 602/ACI 530.1/ASCE 6 except as modified by Sections 2104.5 and 2104.6.

**2104.5 TMS 602/ACI 530.1/ASCE 6, Article 3.5 D, grout lift heights.** Modify items 1.b, 1.c, and 2.b of Article 3.5 D as follows:

3.5 D.1.b When the conditions of Articles 3.5 D.1.a.i and 3.5 D.1.a.ii are met but there are intermediate bond beams within the grout pour, limit the grout lift height to the bottom of the lowest bond beam that is more than 5.33 ft. (1.63 m) above the bottom of the lift, but do not exceed a grout lift height of 12.67 ft. (3.86 m).

3.5 D.1.c When the conditions of Article 3.5 D.1.a.i or Article 3.5 D.1.a.ii are not met, place grout in lifts not exceeding 5.33 ft. (1.63 m).

3.5 D.2.b When placed in masonry that has not cured for at least 4 hours, place in lifts not exceeding 5.33 ft. (1.63 m).

**2104.6 TMS 602/ACI 530.1/ASCE 6, Article 3.2F, cleanouts.** Modify the first sentence of Article 3.2F as follows:

Provide cleanouts in the bottom course of masonry for each grout pour when the grout pour height exceeds 5.33 ft. (1.63 m).

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-2106 Section 2106—Seismic design.**

~~(2106.1.1 Basic seismic force resisting system. Buildings relying on masonry shear walls as part of the basic seismic force resisting system shall comply with Section 1.14.2.2 of ACI 530/ASCE 5/TMS 402 or with Section 2106.1.1.1, 2106.1.1.2, or 2106.1.1.3.~~

EXCEPTION: ~~Special reinforced masonry shear walls are not required to comply with Section 1.14.2.2.5(a) of ACI 530/ASCE 5/TMS 420 (MSJC-05), provided the masonry resists the calculated shear without shear reinforcement.)~~

Reserved.

NEW SECTION**WAC 51-50-21070 Section 2107—Allowable stress design.**

**2107.1 General.** The design of masonry structures using allowable stress design shall comply with Sections 2106, 2107.2 and the requirements of Chapters 1 and 2 of TMS 402/ACI 530/ASCE 5 except as modified by Sections 2107.3 through 2107.5.

**2107.2 Load combinations.** Structures and portions thereof shall be designed to resist the most critical effects resulting from the load combinations of Section 1605.3. When using the alternative load combinations of Section 1605.3.2 that

include wind or seismic loads, allowable stresses are permitted to be increased by one-third.

**2107.6 TMS 402/ACI 530/ASCE 5, Section 1.16.1 anchor bolts.** Modify the second paragraph of Section 1.16.1 as follows: Anchor bolts placed in the top of grouted cells and bond beams shall be positioned to maintain a minimum of 1/4 inch (6.4 mm) of fine grout between the bolts and the masonry unit or 1/2 inch (12.7 mm) of coarse grout between the bolts and the masonry unit. Anchor bolts placed in drilled holes in the face shells of hollow masonry units shall be permitted to contact the masonry unit where the bolt passes through the face shell, but the portion of the bolt that is within the grouted cell shall be positioned to maintain a minimum of 1/4 inch (6.4 mm) of fine grout between the head or bent leg of the bolt and the masonry unit or 1/2 inch (12.7 mm) of coarse grout between the head or bent leg of the bolt and the masonry unit.

AMENDATORY SECTION (Amending WSR 05-01-014, filed 12/2/04, effective 7/1/05)

**WAC 51-50-2108 Section 2108—Strength design of masonry.**

**2108.2 ACI 530/ASCE 5/TMS 402, Section 3.1.6.** Modify Section 3.1.6 as follows:

**3.1.6 Headed and bent-bar anchor bolts.** All embedded bolts shall be grouted in place, except that 1/4 inch (6.4 mm) diameter bolts are permitted to be placed in bed joints that are at least 1/2 inch (12.7 mm) in thickness.

**2108.4 TMS 402/ACI 530/ASCE 5, Section 1.16.1 anchor bolts.** Modify the second paragraph of Section 1.16.1 as follows: Anchor bolts placed in the top of grouted cells and bond beams shall be positioned to maintain a minimum of 1/4 inch (6.4 mm) of fine grout between the bolts and the masonry unit or 1/2 inch (12.7 mm) of coarse grout between the bolts and the masonry unit. Anchor bolts placed in drilled holes in the face shells of hollow masonry units shall be permitted to contact the masonry unit where the bolt passes through the face shell, but the portion of the bolt that is within the grouted cell shall be positioned to maintain a minimum of 1/4 inch (6.4 mm) of fine grout between the head or bent leg of the bolt and the masonry unit or 1/2 inch (12.7 mm) of coarse grout between the head or bent leg of the bolt and the masonry unit.

NEW SECTION**WAC 51-50-2111 Section 2111—Masonry fireplaces.**

**2111.7 Fireplaces.** Fireplaces shall be provided with each of the following:

1. Tightly fitting flue dampers, operated by a readily accessible manual or approved automatic control.

EXCEPTION: Fireplaces with gas logs shall be installed in accordance with the International Mechanical Code Section 901, except that the standards for liquefied petroleum gas installations shall be NFPA 58 (Liquefied Petroleum Gas Code) and NFPA 54 (National Fuel Gas Code).

2. An outside source for combustion air ducted into the firebox. The duct shall be at least 6 square inches, and shall be provided with an operable outside air duct damper.

**EXCEPTION:** Washington certified fireplaces shall be installed with the combustion air systems necessary for their safe and efficient combustion and specified by the manufacturer in accordance with the Washington State Building Standard 31-2 (WAC 51-50-31200) and IBC Section 2114 (WAC 51-50-2114).

3. Site built fireplaces shall have tight fitting glass or metal doors, or a flue draft induction fan or as approved for minimizing back-drafting. Factory built fireplaces shall use doors listed for the installed appliance.

**2111.7.1 Lintel and throat.** Masonry over a fireplace opening shall be supported by a lintel of noncombustible material. The minimum required bearing length on each end of the fireplace opening shall be 4 inches (102 mm). The fireplace throat or damper shall be located a minimum of 8 inches (203 mm) above the top of the fireplace opening.

#### NEW SECTION

#### **WAC 51-50-2400 Chapter 24—Glass and glazing.**

#### **Section 2405—Sloped glazing and skylights.**

**2405.3 Screening.** Where used in monolithic glazing systems, heat-strengthened glass and fully tempered glass shall have screens installed below the glazing material. The screens and their fastenings shall:

(1) Be capable of supporting twice the weight of the glazing;

(2) Be firmly and substantially fastened to the framing members; and

(3) Be installed within 4 inches (102 mm) of the glass. The screens shall be constructed of a noncombustible material not thinner than No. 12 B&S gage (0.0808 inch) with mesh not larger than 1 inch by 1 inch (25 mm by 25 mm). In a corrosive atmosphere, structurally equivalent noncorrosive screen materials shall be used. Heat strengthened glass, fully tempered glass and wired glass, when used in multiple-layer glazing systems as the bottom glass layer over the walking surface, shall be equipped with screening that conforms to the requirements for monolithic glazing systems.

**EXCEPTIONS:** In monolithic and multiple-layer sloped glazing systems, the following applies:

1. Fully tempered glass installed without protective screens where glazed between intervening floors at a slope of 30 degrees (0.52 rad) or less from the vertical plane shall have the highest point of the glass 10 feet (3048 mm) or less above the walking surface.

2. Screens are not required below any glazing material, including annealed glass, where the walking surface below the glazing material is permanently protected from the risk of falling glass or the area below the glazing material is not a walking surface.

3. Any glazing material, including annealed glass, is permitted to be installed without screens in the sloped glazing systems of commercial or detached noncombustible greenhouses used exclusively for growing plants and not open to the public, provided that the height of the greenhouse at the ridge does not exceed 30 feet (9144 mm) above grade.

4. Screens shall not be required within individual dwelling units in Groups R-2, R-3 and R-4 where

fully tempered glass is used as single glazing or as both panes in an insulating glass unit, and the following conditions are met:

4.1. Each pane of the glass is 16 square feet (1.5 m<sup>2</sup>) or less in area.

4.2. The highest point of the glass is 12 feet (3658 mm) or less above any walking surface or other accessible area.

4.3. The glass thickness is 3/16 inch (4.8 mm) or less.

5. Screens shall not be required for laminated glass with a 15 mil (0.38 mm) polyvinyl butyral (or equivalent) interlayer within the following limits:

5.1. Each pane of glass is 16 square feet (1.5 m<sup>2</sup>) or less in area.

5.2. The highest point of the glass is 12 feet (3658 mm) or less above a walking surface or other accessible area.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

#### **WAC 51-50-2900 Chapter 29—(~~Plumbing systems~~) Minimum plumbing fixtures and sanitation facilities.**

#### ~~SECTION 2901—(PLUMBING CODE) GENERAL.~~

~~(Plumbing systems shall comply with the Plumbing Code.)~~ **2901.1 Scope.** The provisions of this chapter shall apply to the number of plumbing fixtures and sanitation facilities to be provided in an occupancy regulated by this Code.

**2901.2 Minimum requirements.** Plumbing fixtures and sanitation facilities shall be provided in the minimum number shown in Table 2902.1 and in this chapter. Where the proposed occupancy is not listed in Table 2902.1, the building official shall determine the fixture and facility requirements based on the occupancy which most nearly resembles the proposed occupancy. The number of occupants used for determining minimum fixtures and facilities shall be computed at the rate of one occupant per unit of net floor area as prescribed in Table 2902.1.

Plumbing fixtures need not be provided for unoccupied buildings or facilities.

#### ~~SECTION 2902—(GENERAL) FIXTURES.~~

#### **2902.1 Number of fixtures.**

~~(2902.1.1 Requirements. Plumbing fixtures shall be provided in the minimum number shown in Table 2902.1 and in this chapter. Where the proposed occupancy is not listed in Table 2902.1, the building official shall determine fixture requirements based on the occupancy which most nearly resembles the intended occupancy.~~

~~Plumbing fixtures need not be provided for unoccupied buildings or facilities.~~

~~2902.1.2) 2902.1.1 Private offices.~~ Fixtures only accessible to private offices shall not be counted to determine compliance with this section.

~~(2902.1.3) 2902.1.2 Occupancy load distribution.~~ The occupant load shall be divided equally between the sexes, unless data approved by the building official indicates a different distribution of the sexes.

~~((2902.1.4))~~ **2902.1.3 Food preparation areas.** In food preparation, serving and related storage areas, additional fixture requirements may be dictated by health codes.

~~((2902.1.5))~~ **2902.1.4 Other requirements.** For other requirements for plumbing facilities, see Section 1210 and Chapter 11.

**2902.2 Access to fixtures.**

**2902.2.1 Location.** Plumbing fixtures shall be located in each building or conveniently in a building adjacent thereto on the same property.

**2902.2.1.1 Toilet rooms.** Toilet rooms shall not open directly into a room used for the preparation of food for service to the public or residents of Group R-2 boarding homes and residential treatment facilities licensed by Washington state.

**2902.2.2 Multiple tenants.** Access to toilets serving multiple tenants shall be through a common use area and not through an area controlled by a tenant.

**2902.2.3 Multistory buildings.** Required fixtures shall not be located more than one vertical story above or below the area served.

**SECTION 2903—FACILITIES.**

~~((2902.3 Separate))~~ **2903.3 Facilities.**

~~((2902.3.1))~~ **2903.3.1 Requirements.** Separate toilet facilities shall be provided for each sex.

EXCEPTION: In occupancies serving 15 or fewer persons, one toilet facility designed for use by no more than one person at a time shall be permitted for use by both sexes.

~~((2902.3.2))~~ **2903.3.2 Food service establishments.** When customers and employees share the same ~~((facilities))~~ toilet rooms, customer~~((s-accessing))~~ access to the ~~((facilities are excluded from))~~ to the toilet rooms shall not pass through food preparation and unpackaged food storage areas.

~~((2902.4))~~ **2903.4 Pay facilities.** Required facilities shall be free of charge. Where pay facilities are installed, they shall be in addition to the minimum required facilities.

~~((2902.5))~~ **2903.5** is not adopted.

~~((2902.6 is not adopted.))~~

**SECTION ~~((2903))~~ 2904—SPECIAL PROVISIONS.**

~~((2903.1))~~ **2904.1 Dwelling units.** Dwelling units shall be provided with a kitchen sink.

~~((2903.2))~~ **2904.2 Water closet space requirements.** The water closet stool in all occupancies shall be located in a clear space not less than 30 inches (762 mm) in width, with a clear space in front of the stool of not less than 24 inches (610 mm).

~~((2903.3))~~ **2904.3 Water.** Each required sink, lavatory, bathtub and shower stall shall be equipped with hot and cold running water necessary for its normal operation.

~~((2903.4))~~ **2904.4 Drinking fountains.**

~~((2903.4.1))~~ **2904.4.1 Number.** Occupant loads over 30 shall have one drinking fountain for the first 150 occupants, then one per each additional 500 occupants.

- EXCEPTIONS:
1. Sporting facilities with concessions serving drinks shall have one drinking fountain for each 1000 occupants.
  2. A drinking fountain need not be provided in a drinking or dining establishment.

~~((2903.4.2))~~ **2904.4.2 Multistory buildings.** Drinking fountains shall be provided on each floor having more than 30 occupants in schools, dormitories, auditoriums, theaters, offices and public buildings.

~~((2903.4.3))~~ **2904.4.3 Penal institutions.** Penal institutions shall have one drinking fountain on each cell block floor and one on each exercise floor.

~~((2903.4.4))~~ **2904.4.4 Location.** Drinking fountains shall not be located in toilet rooms.

**TABLE 2902.1—MINIMUM PLUMBING FIXTURES<sup>1,2,4,6</sup>**

| TYPE OF BUILDING OR OCCUPANCY <sup>8</sup>  | WATER CLOSETS<br>(fixtures per person)   |  | LAVATORIES <sup>5</sup><br>(fixtures per person) |        | BATHTUB OR SHOWER<br>(fixtures per person) |
|---|--|--|--|--------|--|
|   | MALE <sup>3</sup>  | FEMALE   | MALE   | FEMALE |  |
| For the occupancies listed below, use 30 square feet (2.79 m <sup>2</sup> ) per occupant for the minimum number of plumbing fixtures.   |  |  |  |        |  |
| <b>Group A<br/>Assembly places—</b><br>Conference rooms, dining rooms, drinking establishments, exhibit rooms, gymnasiums, lounges, stages and similar uses including restaurants classified as Group B Occupancies | 1:1-25<br>2:26-75<br>3:76-125<br>4:126-200<br>5:201-300<br>6:301-400<br>Over 400, add one fixture for each additional 200 males or 150 females | 1:1-25<br>2:26-75<br>3:76-125<br>4:126-200<br>5:201-300<br>6:301-400 | One per 2 water closets                          |        |  |



TABLE 2902.1—MINIMUM PLUMBING FIXTURES<sup>1,2,4,6</sup>

| TYPE OF BUILDING OR OCCUPANCY <sup>8</sup>   | WATER CLOSETS<br>(fixtures per person)  |                              | LAVATORIES <sup>5</sup><br>(fixtures per person)   |                                   | BATHTUB OR SHOWER<br>(fixtures per person) |
|--|---|------------------------------|--|-----------------------------------|--|
|  | MALE <sup>3</sup>   | FEMALE                       | MALE   | FEMALE                            |  |
| For the assembly occupancies listed below, use the number of fixed seating or, where no fixed seating is provided, use 15 square feet (1.39 m <sup>2</sup> ) per occupant for the minimum number of plumbing fixtures. |   |                              |  |                                   |  |
| Assembly places— <sup>9</sup><br>Theaters, auditoriums, convention halls, dance floors, lodge rooms, casinos, and such places which have limited time for fixture use (intermissions)                                  | 1:1-100<br>2:101-200<br>3:201-400<br>Over 400, add one fixture for each additional 250 males or 50 females  | One per 25<br>Up to 400      | 1:1-200<br>2:201-400<br>3:401-750<br>Over 750, add one fixture for each additional 500 persons | 1:1-200<br>2:201-400<br>3:401-750 |  |
| Assembly places—<br>Stadiums, arena and other sporting facilities where fixture use is not limited to intermissions  | 1:1-100<br>2:101-200<br>3:201-400<br>Over 400, add one fixture for each additional 300 males or 100 females | One per 50<br>Up to 400      | 1:1-200<br>2:201-400<br>3:401-750<br>Over 750, add one fixture for each additional 500 persons | 1:1-200<br>2:201-400<br>3:401-750 |  |
| For the assembly occupancies listed below, use the number of fixed seating or, where no fixed seating is provided, use 30 square feet (2.79 m <sup>2</sup> ) per occupant for the minimum number of plumbing fixtures. |   |                              |  |                                   |  |
| Worship places   |   |                              |  |                                   |  |
| Principal assembly area  | One per 150   | One per 75                   | One per 2 water closets  |                                   |  |
| Educational & activity unit  | One per 125   | One per 75                   | One per 2 water closets  |                                   |  |
| For the occupancies listed below, use 200 square feet (18.58 m <sup>2</sup> ) per occupant for the minimum number of plumbing fixtures.  |   |                              |  |                                   |  |
| <b>Group B</b><br>and other clerical or administrative employee accessory use  | 1:1-15<br>2:16-35<br>3:36-55<br>Over 55, add one for each additional 50 persons                             | 1:1-15<br>2:16-35<br>3:36-55 | One per 2 water closets  |                                   |  |
| For the occupancies listed below, use 100 square feet ( 9.3 m <sup>2</sup> ) per student for the minimum number of plumbing fixtures.  |   |                              |  |                                   |  |
| <b>Group E</b><br>Schools - for staff use<br>All schools<br>(One staff per 20 students)  | 1:1-15<br>2:16-35<br>3:36-55<br>Over 55, add one fixture for each additional 40 persons                     | 1:1-15<br>2:16-35<br>3:36-55 | One per 2 water closets  |                                   |  |
| Schools - for student use<br>Day care  | 1:1-20<br>2:21-50<br>Over 50, add one fixture for each additional 50 persons                                | 1:1-20<br>2:21-50            | 1:1-20<br>2:21-50  | 1:1-20<br>2:21-50                 |  |
| Elementary   | One per 30  | One per 25                   | One per 2 water closets  |                                   |  |
| Secondary  | One per 40  | One per 30                   | One per 2 water closets  |                                   |  |
| For the occupancies listed below, use 50 square feet (4.65 m <sup>2</sup> ) per occupant for the minimum number of plumbing fixtures.  |   |                              |  |                                   |  |
| <b>Education facilities other than Group E</b><br>Others (colleges, universities, adult centers, etc.)   | One per 40  | One per 25                   | One per 2 water closets  |                                   |  |
| For the occupancies listed below, use 2,000 square feet (185.8 m <sup>2</sup> ) per occupant for the minimum number of plumbing fixtures.  |   |                              |  |                                   |  |

TABLE 2902.1—MINIMUM PLUMBING FIXTURES<sup>1,2,4,6</sup>

| TYPE OF BUILDING OR OCCUPANCY <sup>8</sup>  | WATER CLOSETS<br>(fixtures per person)   |   | LAVATORIES <sup>5</sup><br>(fixtures per person)   |        | BATHTUB OR SHOWER<br>(fixtures per person)  |
|---|--|---|--|--------|---|
|   | MALE <sup>3</sup>  | FEMALE  | MALE   | FEMALE |   |
| <b>Group F and Group H</b><br>Workshop, foundries and similar establishments, and hazardous occupancies   | 1:1-10<br>2:11-25<br>3:26-50<br><br>4:51-75<br><br>5:76-100<br>Over 100, add one fixture for each additional 30 persons                          | 1:1-10<br>2:11-25<br>3:26-50<br><br>4:51-75<br><br>5:76-100   | One per 2 water closets  |        | One shower for each 15 persons exposed to excessive heat or to skin contamination with irritating materials |
| For the occupancies listed below, use the designated application and 200 square feet (18.58 m <sup>2</sup> ) per occupant of the general use area for the minimum number of plumbing fixtures.                |  |   |  |        |   |
| <b>Group I<sup>7</sup></b><br>Hospital waiting rooms<br><br>Hospital general use areas  | One per room (usable by either sex)<br><br>1:1-15<br>2:16-35<br>3:36-55<br>Over 55, add one fixture for each additional 40 persons               |   | One per room<br><br>One per 2 water closets  |        |   |
| Hospital patient rooms:<br>Single Bed<br><br>Isolation<br><br>Multibed<br>Long-term   | One adjacent to and directly accessible from<br><br>One adjacent to and directly accessible from<br><br>One per 4 patients<br>One per 4 patients |   | One per toilet room<br><br>One per toilet room<br><br>One per 4 patients<br>One per 4 patients |        | One per toilet room<br><br>One per toilet room<br><br>One per 8 patients<br>One per 15 patients             |
| Jails and reformatories<br>Cell<br>Exercise room  | One per cell<br>One per exercise room  |   | One per cell<br>One per exercise room  |        |   |
| Other institutions (on each occupied floor)   | One per 25   | One per 25  | One per 2 water closets  |        | One per 8   |
| For the occupancies listed below, use 200 square feet (18.58 m <sup>2</sup> ) per occupant for the minimum number of plumbing fixtures.   |  |   |  |        |   |
| <b>Group M</b><br>Retail or wholesale stores  | 1:1-50<br>2:51-100<br>3:101-400<br><br>4:201-300<br>5:301-400<br>Over 400, add one fixture for each additional 300 males or 150 females          | 1:1-50<br>2:51-100<br>3:101-200<br><br>4:201-300<br>5:301-400 | One per 2 water closets  |        |   |
| For Group R Occupancies containing dwelling units or guest rooms, use the table below. For dormitories, use 200 square feet (18.58 m <sup>2</sup> ) per occupant for the minimum number of plumbing fixtures. |  |   |  |        |   |
| <b>Group R</b><br>Dwelling units  | One per dwelling unit  |   | One per dwelling unit  |        | One per dwelling unit   |

TABLE 2902.1—MINIMUM PLUMBING FIXTURES<sup>1,2,4,6</sup>

| TYPE OF BUILDING OR OCCUPANCY <sup>8</sup>  | WATER CLOSETS<br>(fixtures per person)   |           | LAVATORIES <sup>5</sup><br>(fixtures per person)   |            | BATHTUB OR SHOWER<br>(fixtures per person)   |
|---|--|-----------|--|------------|--|
|   | MALE <sup>3</sup>  | FEMALE    | MALE   | FEMALE     |  |
| Hotel, motel, and boarding house guest rooms  | One per guest room   |           | One per guest room   |            | One per guest room   |
| Boarding homes licensed by the department of social and health services   | One per 8  | One per 8 | One per 8  | One per 8  | One per 12   |
| Dormitories   | One per 10<br>Over 10, add one fixture for each additional 25 males and over 8, add one for each additional 20 females | One per 8 | One per 12<br>Over 12, add one fixture for each additional 20 males and one for each additional 15 females | One per 12 | One per 8<br>For females, add one additional unit per each additional 30. Over 150 persons, add one additional unit per each additional 20 persons |
| For the occupancies listed below, use 5,000 square feet (464.5 m <sup>2</sup> ) per occupant for the minimum number of plumbing fixtures. |  |           |  |            |  |
| <b>Group S</b>  | 1:1-10   | 1:1-10    | One per 40 occupants of each sex   |            | One shower for each 15 persons exposed to excessive heat or to skin contamination with poisonous, infectious or irritating materials               |
| Warehouses  | 2:11-25  | 2:11-25   |  |            |  |
|   | 3:26-50  | 3:26-50   |  |            |  |
|   | 4:51-75  | 4:51-75   |  |            |  |
|   | 5:76-100<br>Over 100, add one for each 30 persons  | 5:76-100  |  |            |  |

<sup>1</sup>The figures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction thereof.

<sup>2</sup>For occupancies not shown, see Section 2902.1.1.

<sup>3</sup>Where urinals are provided, one water closet less than the number specified may be provided for each urinal installed, except the number of water closets in such cases shall not be reduced to less than one quarter (25%) of the minimum specified. For men's facilities serving 26 or more persons, not less than one urinal shall be provided.

<sup>4</sup>For drinking fountains, see Section 2903.4.

<sup>5</sup>Twenty-four inches (610 mm) of wash sink or 18 inches (457 mm) of a circular basin, when provided with water outlets for such space, shall be considered equivalent to one lavatory.

<sup>6</sup>For when a facility may be usable by either sex, see Section 2902.3.1.

<sup>7</sup>See WAC 246-320 for definitions, other fixtures and equipment for hospitals.

<sup>8</sup>When a space is accessory to or included as a part of a different occupancy group per Chapter 3, the area per occupant for the minimum plumbing fixture number is to be determined by its own specific use or purpose, not by that of the building's occupancy group.

<sup>9</sup>In multiplex movie theaters, where shows are scheduled at different times, the number of occupants for toilet fixture use may be based upon one-half (50%) of the total in all the auditoriums, but no less than the number in the largest auditorium.

**AMENDATORY SECTION** (Amending WSR 08-01-110, filed 12/18/07, effective 4/1/08)

**WAC 51-50-3001 Section 3001—General.**

~~((3001.1 Scope. This chapter governs the design, construction, installation, alteration and repair of elevators and conveying systems and their components.~~

~~**3001.2 Referenced standards.** Except as otherwise provided for in this code, the design, construction, installation, alteration, repair and maintenance of elevators and conveying systems and their components shall conform to ASME A17.1, ASME A90.1, ASME B20.1, ALI ALCTV, and ASCE 24 for construction in flood hazard areas established in Section 1612.3.~~

~~**3001.3 Accessibility.** Passenger elevators required to be accessible by Chapter 11 shall conform to ICC A17.1.~~

~~**3001.4 Change in use.** A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall comply with Part XII of ASME A17.1.)~~

**Section 3002—Hoistway enclosures.**

**3002.4 Elevator car to accommodate ambulance stretcher.** In buildings four stories in height or more, and in buildings which are required to have an elevator and contain Group R-1, R-2 or I Occupancies on a level other than the exit discharge level, at least one elevator shall be provided for fire department emergency access to all floors. Such elevator car shall be of such a size and arrangement to accommodate a 24-inch by 84-inch (610 mm by 2134 mm) ambulance stretcher with not less than 5-inch (127 mm) radius corners, in the horizontal, open position and shall be identified by the international symbol for emergency medical services (star of life). The symbol shall not be less than 3 inches (76 mm) high

and shall be placed inside on both sides of the hoistway door frame.

#### NEW SECTION

#### **WAC 51-50-3108 Section 3108—Telecommunications and broadcast towers.**

**3108.1 General.** Towers shall be designed and constructed in accordance with the provisions of TIA-222. In Section 2.6.6.2, the extent of Topographic Category 2, escarpments, shall extend 16 times the height of the escarpment. Towers shall be designed for seismic loads. The exceptions to the requirement of seismic design listed in Section 2.7.3 shall not apply. Class I structures per Table 2-1 of the standard may be exempted from seismic design, if approved by the building official.

EXCEPTION: Single free-standing poles used to support antennas not greater than 75 feet (22,860 mm), measured from the top of the pole to grade, shall not be required to be noncombustible.

#### NEW SECTION

#### **WAC 51-50-3401 Section 3401—General.**

**3401.5 Alternative compliance.** Work performed in accordance with the 2009 International Existing Building Code as amended in WAC 51-50-480000 shall be deemed to comply with the provisions of this chapter.

#### NEW SECTION

#### **WAC 51-50-3404 Section 3404—Alterations.**

**3404.1 General.** Except as provided by Section 3401.4 or this section, alterations to any building or structure shall comply with the requirements of the Code for new construction. Alterations shall be such that the existing building or structure is no less conforming with the provisions of this Code than the existing building or structure was prior to the alteration.

EXCEPTIONS:

1. An existing stairway shall not be required to comply with the requirements of Section 1009 where the existing space and construction does not allow a reduction in pitch or slope.
2. Handrails otherwise required to comply with Section 1009.10 shall not be required to comply with the requirements of Section 1012.5 regarding full extension of the handrails where such extensions would be hazardous due to plan configuration.
3. In buildings considered existing structures on July 1, 2010, dwelling units shall be permitted to have a ceiling height of not less than 7 feet (2134 mm).

AMENDATORY SECTION (Amending WSR 04-01-108, filed 12/17/03, effective 7/1/04)

#### **WAC 51-50-3408 Section 3408—Moved structures.**

**((3408.1)) 3410.1 Conformance.** Buildings or structures moved into or within the jurisdiction shall comply with the provisions of this code, the International Residential Code (chapter 51-51 WAC), the International Mechanical Code (chapter 51-52 WAC), the International Fire Code (chapter

51-54 WAC), the Uniform Plumbing Code and Standards (chapters 51-56 and 51-57 WAC), the Washington State Energy Code (chapter 51-11 WAC) and the Washington State Ventilation and Indoor Air Quality Code (chapter 51-13 WAC) for new buildings or structures.

EXCEPTION: Group R-3 buildings or structures are not required to comply if:

1. The original occupancy classification is not changed; and
2. The original building is not substantially remodeled or rehabilitated.

For the purposes of this section, a building shall be considered to be substantially remodeled when the costs of remodeling exceed 60 percent of the value of the building exclusive of the costs relating to preparation, construction, demolition or renovation of foundations.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

#### **WAC 51-50-3409 Section ((3409)) 3411—Accessibility for existing buildings.**

**((3409.7)) 3411.7 Alterations affecting an area containing a primary function.** Where an alteration affects the accessibility to, or contains an area of primary function, the route to the primary function area shall be accessible. The accessible route to the primary function area shall include toilet facilities, telephones or drinking fountains serving the area of primary function.

EXCEPTIONS:

1. The costs of providing the accessible route are not required to exceed 20 percent of the costs of the alteration affecting the area of primary function.
2. This provision does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to alterations limited solely to mechanical systems, electrical systems, installation or alteration of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to alterations undertaken for the primary purpose of increasing the accessibility of an existing building, facility or element.

**((3409.8.9)) 3411.8.8 Type A dwelling or sleeping units. Where more than 20 Group R-2 dwelling or sleeping units are being altered or added, the requirements for Section 1107 for Type A units apply only to the quantity of spaces being altered or added.**

**3411.8.11 Toilet rooms.** Where it is technically infeasible to alter existing toilet and bathing facilities to be accessible, an accessible unisex toilet or bathing facility is permitted. The unisex facility shall be located on the same floor and in the same area as the existing facility. The number of toilet facilities and water closets required by the State Building Code is permitted to be reduced by one, in order to provide accessible features.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-480000 ((Appendix Chapter M.)) 2009 International Existing Building Code.**

**INTERNATIONAL EXISTING BUILDING CODE  
(2006) 2009 EDITION**

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-480101 Section 101—General.**

**101.4 Applicability.** When requested by the permit applicant, this code shall apply to the repair, alteration, change of occupancy and relocation of buildings existing on the date of adoption of this code, regardless of occupancy, subject to the criteria of Sections 101.4.1 and 101.4.2. When compliance with this code has not been requested, compliance with the ((International)) State Building ((Fire and Mechanical Codes (as applicable))) Code as adopted in Title 51 WAC shall be demonstrated.

**101.4.1 Buildings not previously occupied.** A building or portion of a building that has not been previously occupied or used for its intended purpose in accordance with the laws in existence at the time of its completion shall comply with the provisions of the State Building Code adopted in Title 51 WAC, for new construction or with any current permit for such occupancy.

**101.4.2 Buildings previously occupied.** The legal occupancy of any building existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the International Fire Code, ((or the International Property Maintenance Code,)) or as deemed necessary by the code official to mitigate an unsafe building. For the purpose of this section, "unsafe building" is not to be construed as mere lack of compliance with the current code.

~~((101.5 Compliance methods. The repair, alteration, change of occupancy, addition or relocation of all existing buildings shall comply with one of the methods listed in Sections 101.5.1 through 101.5.3 as selected by the applicant. Application of a method shall be the sole basis for assessing the compliance of work performed under a single permit unless otherwise approved by the code official. Sections 101.5.1 through 101.5.3 shall not be applied in combination with each other.~~

**EXCEPTION:**

Subject to the approval of the code official, alterations complying with the laws in existence at the time the building or the affected portion of the building was built shall be considered in compliance with the provisions of this code unless the building is undergoing more than a limited structural alteration as defined in Section 807.5.3. New structural members added as part of the alteration shall comply with the International Building Code. Alterations of existing buildings in flood hazard areas shall comply with Section 601.3.)

**101.7 Appendices.** The code official is authorized to require rehabilitation and retrofit of buildings, structures, or individ-

ual structural members in accordance with the appendices of this code if such appendices have been individually adopted. ((Where)) Appendix A, Guidelines for the Seismic Retrofit of Existing Buildings, is ((specifically referenced in the text)) hereby adopted as part of this code ((, it becomes part of this code)) without any specific adoption by the local jurisdiction.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-480102 Section 102—Applicability.**

**102.4.1 Fire prevention.** The provisions of the International Fire Code shall apply to matters affecting or relating to structures, processes and premises ((from)) regarding: The hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices; ((from)) conditions hazardous to life, property or public welfare in the occupancy of structures or premises; and ((from)) the construction, extension, repair, alteration or removal of fire suppression and alarm systems or fire hazards in the structure or on the premises from occupancy or operation except as specifically provided for in this Code.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-480302 Section 302—Additions, alterations or repairs.**

~~((302.1 Existing buildings or structures. Additions or alterations to any building or structure shall comply with the requirements of the International Building Code for new construction except as specifically provided in this code. Additions or alterations shall not be made to an existing building or structure that will cause the existing building or structure to be in violation of any provisions of the International Building Code. An existing building plus additions shall comply with the height and area provisions of the International Building Code. Portions of the structure not altered and not affected by the alteration are not required to comply with the code requirements for a new structure.)) Reserved.~~

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-480305 Section 305((—Change of occupancy)).**

~~((B) 305.1 Conformance. No change shall be made in the use or occupancy of any building that would place the building in a different division of the same group of occupancy or in a different group of occupancies, unless such building is made to comply with the requirements of the International Building Code for such division or group of occupancy. Subject to the approval of the building official, the use or occupancy of existing buildings shall be permitted to be changed and the building is allowed to be occupied for purposes in other groups without conforming to all the requirements of the International Building Code for those groups, provided the new or proposed use is less hazardous, based on life and fire risk, than the existing use. The hazard tables of Chapter 9~~

may be used to demonstrate the relative fire and life risk of the existing and the new proposed uses.)) Reserved.

NEW SECTION

**WAC 51-50-480307 Section 307—Change of occupancy.**

**[B] 307.1 Conformance.** No change shall be made in the use or occupancy of any building that would place the building in a different division of the same group of occupancy or in a different group of occupancies, unless such building is made to comply with the requirements of the International Building Code for such division or group of occupancy. Subject to the approval of the building official, the use or occupancy of existing buildings shall be permitted to be changed and the building is allowed to be occupied for purposes in other groups without conforming to all the requirements of the International Building Code for those groups, provided the new or proposed use is less hazardous, based on life and fire risk, than the existing use. The hazard tables of Chapter 9 may be used to demonstrate the relative fire and life risk of the existing and the new proposed uses.

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency and appear in the Register pursuant to the requirements of RCW 34.08.040.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-480506 ((Section 506—Structural.)) Reserved.**

((~~506.1.1.2 IBC level seismic forces.~~ When seismic forces are required to meet the *International Building Code* level, they shall be one of the following:

1. One hundred percent of the values in the *International Building Code*. The *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor specified for structural systems classified as "ordinary" in accordance with Table 12.2-1 of ASCE 7, unless it can be demonstrated that the structural system satisfies the proportioning and detailing requirements for systems classified as "intermediate" or "special."

2. Those associated with the BSE-1 and BSE-2 Earthquake Hazard Levels defined in ASCE 41. Where ASCE 41 is used, the corresponding performance levels shall be those shown in Table 506.1.1.2.

**TABLE 506.1.1.2  
ASCE 41 AND ASCE 31 PERFORMANCE LEVELS**

| OCCUPANCY CATEGORY (BASED ON IBC TABLE 1604.5) | PERFORMANCE LEVEL FOR USE WITH ASCE 31 AND WITH ASCE 41 BSE-1 EARTHQUAKE HAZARD LEVEL | PERFORMANCE LEVEL FOR USE WITH ASCE 41 BSE-2 EARTHQUAKE HAZARD LEVEL |
|--|---|--|
| I  | Life Safety (LS)  | Collapse Prevention (CP)   |
| II   | Life Safety (LS)  | Collapse Prevention (CP)   |
| III  | Note a  | Note a   |
| IV   | Immediate Occupancy (IO)  | Life Safety (LS)   |

((a. Performance levels for Occupancy Category III shall be taken as halfway between the performance levels specified for Occupancy Category II and IV. Where seismic forces are permitted to meet reduced *International Building Code* levels, the performance level for Occupancy Category III shall be Life Safety (LS). Where seismic forces are required to meet the *International Building Code* levels, performance levels for Occupancy Category III shall be taken as follows: Acceptance criteria shall be taken as twenty-five percent more restrictive than the acceptance criteria specified for Occupancy Category II performance levels; but need not be more restrictive than the acceptance criteria specified for Occupancy Category IV performance levels.

~~506.1.1.3 Reduced IBC level seismic forces.~~ When seismic forces are permitted to meet reduced *International Building Code* levels, they shall be one of the following:

1. Seventy five percent of the forces prescribed in the *International Building Code*. The *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor as specified in Section 506.1.1.2 of this code.

2. In accordance with the applicable chapters in Appendix A of this code as specified in Items 2.1 through 2.5 below. Structures or portions of structures that comply with the requirements of the applicable chapter in Appendix A shall be deemed to comply with the requirements for reduced *International Building Code* force levels.

2.1. The seismic evaluation and design of unreinforced masonry bearing wall buildings in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A1.

2.2. Seismic evaluation and design of the wall anchorage system in reinforced concrete and reinforced masonry wall buildings with flexible diaphragms in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A2.

2.3. Seismic evaluation and design of cripple walls and sill plate anchorage in residential buildings of light frame wood construction in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A3.

2.4. Seismic evaluation and design of soft, weak or open front wall conditions in multiunit residential buildings of wood construction in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A4.

2.5. Seismic evaluation and design of concrete buildings and concrete with masonry infill buildings in all occupancy categories are permitted to be based on the procedures specified in Appendix Chapter A5.

3. In accordance with ASCE 31 based on the applicable performance level as shown in Table 506.1.1.2.

4. Those associated with the BSE-1 Earthquake Hazard Level defined in ASCE 41 and the performance level as shown in Table 506.1.1.2. Where ASCE 41 is used, the design spectral response acceleration parameters  $S_{x1}$  and  $S_{x2}$  shall not be taken less than seventy five percent of the respective design spectral response acceleration parameters  $S_{D1}$  and  $S_{D2}$  defined by the *International Building Code* and its reference standards.))

NEW SECTION**WAC 51-50-480607 Section 607—Energy conservation.**

**607.1 Minimum requirements.** Level 1 alterations to existing buildings or structures shall comply with the Washington State Energy Code (chapter 51-11 WAC).

NEW SECTION**WAC 51-50-480711 Section 711—Energy conservation.**

**711.1 Minimum requirements.** Level 2 alterations to existing buildings or structures shall comply with the Washington State Energy Code (chapter 51-11 WAC).

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-480807 Section 807—Structural.**

~~((807.5.1))~~ **807.4.1 Evaluation and analysis.** An engineering evaluation and analysis that establishes the structural adequacy of the altered structure shall be prepared by a registered design professional and submitted to the code official. For structures assigned to Seismic Design Category D, the registered design professional shall submit to the code official a seismic evaluation report of the existing building based on one of the procedures specified in Section ~~((506.1.1.3))~~ 101.5.4.2. This seismic evaluation report shall not be required for buildings in compliance with the benchmark building provisions of ASCE 31, Section 3.2.

~~((807.5.2))~~ **807.4.2 Substantial structural alteration.** Any building or structure undergoing substantial improvement shall have an evaluation and analysis to demonstrate that the altered building or structure complies with the *International Building Code* for wind loading and with reduced *International Building Code* level seismic forces as specified in Section ~~((507.1.1.3))~~ 101.5.4.2 for seismic loading. For seismic considerations, the analysis shall be based on one of the procedures specified in Section ~~((507.1.1.1))~~ 101.5.4.

~~((807.5.3))~~ **807.4.3 Limited structural alteration.** Where any building or structure undergoes less than substantial improvement, the evaluation and analysis shall demonstrate that the altered building or structure complies with the loads applicable at the time the building was constructed.

NEW SECTION**WAC 51-50-480808 Section 808—Energy conservation.**

**808.1 Minimum requirements.** Level 3 alterations to existing buildings or structures shall comply with the Washington State Energy Code (chapter 51-11 WAC).

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-481101 Chapter 11—Historic buildings—Section 1101—General.**

**1101.1 Scope.** It is the intent of this chapter to provide means for the preservation of historic buildings as defined in Chapter 2. It is the purpose of this chapter to encourage cost-effective preservation of original or restored architectural elements and features and to provide a historic building that will result in a reasonable degree of safety, based on accepted life and fire safety practices, compared to the existing building. Historical buildings shall comply with the provisions of this chapter relating to their repair, alteration, relocation and change of occupancy.

~~((1101.2 Report. A historic building undergoing repair, alteration, or change of occupancy shall be investigated and evaluated. If it is intended that the building meet the requirements of this chapter, a written report shall be prepared and filed with the code official by a registered design professional when such a report is necessary in the opinion of the code official. Such report shall be in accordance with Chapter 1 and shall identify each required safety feature that is in compliance with this chapter and where compliance with other chapters of these provisions would be damaging to the contributing historic features. In Seismic Design Category D or higher, a structural evaluation describing, at minimum, a complete load path and other earthquake-resistant features shall be prepared. In addition, the report shall describe each feature that is not in compliance with these provisions and shall demonstrate how the intent of these provisions is complied with in providing an equivalent level of safety.))~~

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-481102 ((Section 1102—Repairs.)) Reserved.**

~~((1102.4 Chapter 5 compliance. Historic buildings undergoing repairs shall comply with all of the applicable requirements of Chapter 5, except as specifically permitted in this chapter.))~~

~~**1102.5 Replacement.** Replacement of existing or missing features using original materials shall be permitted. Partial replacement for repairs that match the original in configuration, height, and size shall be permitted. Such replacements shall not be required to meet the materials and methods requirements of Section 501.2.~~

EXCEPTION: Replacement glazing in hazardous locations shall comply with the safety glazing requirements of Chapter 24 of the *International Building Code*.)

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-481104 Alterations.**

**1104.1 Accessibility requirements.** The provisions of Sections 605 and 706 shall apply to buildings and facilities designated as historic structures that undergo alterations, unless

technically infeasible. Where compliance with the requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historic significance of the building or facility, as determined by the professional responsible for the historical documentation of the project, the alternative requirements of Sections 1104.1.1 through 1104.1.4 for that element shall be permitted.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-481106 Section 1106—Structural.**

~~((**1106.1 General.** Historic buildings shall comply with the applicable structural provisions for the work as classified in Chapter 5.~~

EXCEPTION: The code official shall be authorized to accept existing floors and approve operational controls that limit the live load on any such floor.))

Reserved.

NEW SECTION

**WAC 51-50-481201 Section 1201—General.**

**1201.1 Conformance.** Buildings or structures moved into or within the jurisdiction shall comply with the provisions of this code, the International Residential Code (chapter 51-51 WAC), the International Mechanical Code (chapter 51-52 WAC), the International Fire Code (chapter 51-54 WAC), the Uniform Plumbing Code and Standards (chapters 51-56 and 51-57 WAC), the Washington State Energy Code (chapter 51-11 WAC) and the Washington State Ventilation and

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-481500 Chapter 15—Referenced standards.**

~~((**ASCE**           **American Society of Civil Engineers**  
Standard  
Reference  
Number        Title  
**41-06**        **Seismic Rehabilitation of Existing Buildings**~~

~~**NFPA**           **National Fire Protection Association**  
Standard  
Reference  
Number        Title  
**13-02**        **Installation of Sprinkler Systems**~~

Reserved.

NEW SECTION

The following sections of the Washington Administrative Code are decodified as follows:

Indoor Air Quality Code (chapter 51-13 WAC) for new buildings or structures.

EXCEPTION: Group R-3 buildings or structures are not required to comply if:  
1. The original occupancy classification is not changed; and  
2. The original building is not substantially remodeled or rehabilitated.

For the purposes of this section, a building shall be considered to be substantially remodeled when the costs of remodeling exceed 60 percent of the value of the building exclusive of the costs relating to preparation, construction, demolition or renovation of foundations.

**SECTION 1202—REQUIREMENTS.** This section not adopted.

AMENDATORY SECTION (Amending WSR 07-01-091, filed 12/19/06, effective 7/1/07)

**WAC 51-50-481301 Chapter 13—Performance compliance methods.**

~~((**Section 1301 General.**~~

~~**1301.4.1 Structural analysis.** The owner shall have a structural analysis of the existing building made to determine adequacy of structural systems for the proposed alteration, addition, or change of occupancy. The analysis shall demonstrate that the altered building or structure complies with the requirements of Chapter 16 of the *International Building Code*.~~

EXCEPTION: The reduced *International Building Code* level seismic forces as specified in Section 506.1.1.3 shall be permitted to be used for this analysis.))

Reserved.

| Old WAC Number | New WAC Number |
|----------------|----------------|
| 51-50-0707     | 51-50-0708     |
| 51-50-1017     | 51-50-1018     |
| 51-50-1714     | 51-50-1715     |



REPEALER

The following section of the Washington Administrative Code is repealed:

|               |  |
|---------------|--|
| WAC 51-50-004 | Conflicts with Washington State Ventilation and Indoor Air Quality Code. |
|---------------|--|

**WSR 09-17-140**  
**PROPOSED RULES**  
**BUILDING CODE COUNCIL**

[Filed August 19, 2009, 11:25 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-05-051.

Title of Rule and Other Identifying Information: Amendment of chapter 51-51 WAC, Adoption and amendment of the 2009 Edition of the International Residential Code (IRC) and standards.

Hearing Location(s): Holiday Inn Select Renton, One Grady Way South, Renton, WA, on September 29, 2009, at 10:00 a.m.; and at the Spokane City Council Chambers, West 808 Spokane Falls Boulevard, Spokane, WA, on October 5, 2009, at 9:00 a.m.

Date of Intended Adoption: November 12, 2009.

Submit Written Comments to: Peter DeVries, Council Chair, P.O. Box 42525, Olympia, WA 98504-2525, e-mail sbcc@commerce.wa.gov, fax (360) 586-9383, by October 5, 2009.

Assistance for Persons with Disabilities: Contact Sue Mathers by September 15, 2009, TTY (360) 586-0772 or (360) 725-2966.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposed rules adopt the most recently published edition of the IRC and make changes to the state amendments to this code.

**1. WAC 51-51-003 International Residential Code.** Adopts 2009 edition, change from 2006 edition. Maintains amendment to not adopt chapters 11 and 25 through 42, regulating energy efficiency, plumbing and electrical; maintains amendment to adopt Appendix G, Swimming Pools, Spas and Hot Tubs.

**2. WAC 51-51-008 Implementation.** Sets effective date of July 1, 2010, for 2009 IRC.

**3. Section R102 Applicability.** Section 102.5 Appendices. References new Appendix S, Fire Sprinklers, and preapproves Appendix S for local adoption upon notification of the council. Section 102.7.1 Additions, alterations or repairs. Provides an exception for ventilation and radon protection.

**4. Section R202 Definitions.** Adds, deletes and amends definitions, including air-impermeable insulation; attic, habitable; dwelling unit; source specific ventilation; whole house ventilation.

**5. Section R301 Design criteria.** Delete Table 301.5, Minimum distributed live loads. State amendments adopted in the 2009 model code. Revert to 2009 IRC without state amendments.

**6. Section R302 Fire-resistant Construction.** Adopts and amends provisions in 2009 model code for fire-resistant construction to replace existing state amendments for location on lot and townhouse separation, and for structural independence of townhouses.

**7. Section R303 Light, ventilation and heating.** Section R303.1 Natural light. Section R303.2 Minimum ventilation performance. Integrates Washington state ventilation requirements. (reference should be M1507)

**8. Section R303.6 Stairway Illumination.** Adds a requirement for illumination to receive primary power from the building wiring.

**9. Section R311 Means of egress.** R311.4 Vertical egress. Provides an exception to stairs for small loft areas.

**10. Section R313 Automatic Fire Sprinkler Systems.** New section 313; this section is modified to move the sprinkler requirement to Appendix S; allows the use of prescriptive design in Appendix R for voluntarily installed fire sprinklers.

**11. Section R314 Smoke alarms.** Smoke alarms requirements moved from section 313 to section 314.

**12. Section R315.1 Carbon monoxide alarms.** New language developed to comply with SSB 5561. This section provides standards for new residential construction.

**13. Section R315.2 Carbon monoxide alarms.** New language developed to comply with SSB 5561. This section provides standards for existing dwellings.

**14. Section R315.3 Carbon monoxide alarms.** New language describes alarm requirements.

**15. Section R317 Dwelling unit separation.** This section is moved to R302. State amendment deleted.

**16. Section R322 Flood resistant construction.** Allows a greater building elevation requirement where designated by local ordinance.

**17. Section R403 Footings.** State amendment is modified to address continuous footings and braced wall footings, the remaining state amendments are deleted to be consistent with the model code.

**18. Section R404 Foundation and retaining walls.** State amendments are deleted to be consistent with the model code.

**19. Section R408 Under-floor space.** State amendment clarifies conditions for vented and unvented under floor spaces.

**20. Section R502.2.2.2 Alternate Deck Ledger Connections.** State amendment allows an approved fastener.

**21. Section R502.2.2.3 Deck Lateral Load Connections.** Adds an exception for decks under thirty inches from grade.

**22. Section R602 Wood Wall Framing.** Amends provisions related to braced wall panels and cripple wall footings and bracing. (602.10.1.5 exception applies to "one area")

**23. Section R613 Exterior windows and glass doors.** State amendment provides an exception from the testing and labeling requirement for small business.

**24. Section 702 [R702] Interior covering.** State amendment requires an exposure rating on plywood panels. Moved from state ventilation and indoor air quality code.

**25. Section R703 Exterior covering.** State amendment clarifies that an air space is not required behind certain lapped or panel siding.

**26.** Section R806 Roof ventilation. State amendment allows an unvented attic under certain conditions.

**27.** Section R903 Weather protection. Overflow drains and scuppers. State amendment clarifies where overflow drain connects.

**28.** Section R1001 Masonry fireplaces. State amendment specifies combustion air requirements for fireplaces. Moved from state ventilation and indoor air quality code.

**29.** Section R1006 Exterior air supply. State amendment specifies combustion air requirements for solid fuel burning devices. Moved from state ventilation and indoor air quality code.

**30.** Section M1302 General Mechanical System Requirements. State amendment adds requirements for construction documents and testing at the discretion of the building official, to be consistent with the state mechanical code.

**31.** Section M1415 Masonry heaters. State amendment requires tight fitting doors. Moved from the state ventilation and indoor air quality code.

**32.** Section M1501 General. Outdoor discharge. State amendment is deleted to be consistent with the model code.

**33.** Section M1507 Source Specific Ventilation. State amendment meets ventilation requirements of the state ventilation and indoor air quality code.

**34.** Section M1508 Whole House Ventilation. State amendment meets ventilation requirements of the state ventilation and indoor air quality code.

**35.** Section M1601.1.1 Above ground duct systems. State amendment clarifies use of stud wall cavities for ducts.

**36.** Section M1701 Combustion Air. Reference to fireplace is added for consistency.

**37.** Section G2439 Clothes dryer exhaust. State amendment is deleted to be consistent with the model code.

**38.** Chapter 44 Reference Standards. State amendment adopts a test method for emissions from fireplaces.

**39.** WAC 51-51-60105 Appendix R. Dwelling unit fire sprinkler systems. Adopts a prescriptive method to install multipurpose fire sprinkler systems.

**40.** WAC 51-51-60107 Appendix S. Where adopted locally, requires fire sprinklers in one and two family dwellings and townhouses.

Reasons Supporting Proposal: RCW 19.27.031 and 19.27.074.

Statutory Authority for Adoption: RCW 19.27.031 and 19.27.074.

Statute Being Implemented: Chapters 19.27 and 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: The council is seeking comments on the issues proposed in the rules shown below.

Name of Proponent: Washington state building code council, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Joanne McCaughan, P.O. Box 42525, Olympia, WA 98504-2525, (360) 725-2970; and Enforcement: Local jurisdictions.

A small business economic impact statement has been prepared under chapter 19.85 RCW.

#### Small Business Economic Impact Statement

**PURPOSE:** The purpose of this analysis is to comply with the requirements of chapter 19.85 RCW, Regulatory Fairness Act, to examine whether proposed rules will have a disproportionate impact on small businesses.

**INTRODUCTION:** The state building code council is proposing to adopt the 2009 version of the IRC. The following sections were identified by the council's economic and regulatory assessment committee (ERAC) as having a potential disproportionate cost impact to small business:

- Section R612 Exterior Door and Window Assemblies

A small business is defined as any business that has fifty or fewer employees, RCW 19.85.020.

The IRC is published by the International Code Council.

The council appointed a technical advisory group (TAG) to do a comprehensive review and analysis of changes in the 2009 edition of the IRC. The TAG held meetings in the spring of 2009. All proposed state amendments were examined, and new provisions in the 2009 model code edition. The TAGs identified items with more than a minor first cost impact and referred these items to be reviewed by ERAC.

The council members and participants are representative sample of individuals involved in the building construction industry. The participants included: Architects, home builders, building officials, contractors, fire officials, energy professionals, manufacturers, engineers, plumbers, state and local officials, inspectors, industry associations and organizations, companies and business, electricians, and the general public.

#### BRIEF DESCRIPTION OF PROPOSED RULE AMENDMENTS:

**Section 612.6 [R612.6] Exterior windows and glass doors, Testing and labeling:** Requires exterior windows and glass doors to be tested and labeled according to a test standard for structural loading.

**Reporting and record-keeping requirements:** The proposed rule impacts the reporting and/or record keeping required to comply. Small business window and door manufacturers would be required to keep records of test results for all units.

**Associated costs:** Associated costs of equipment, supplies, labor, professional services and administrative costs are included in the cost of compliance.

The TAG identified a disproportionate impact on small business window and door manufacturers to test and label all units. The cost of testing sample units and labeling all units to meet the standards would be disproportionate due to the production process. A comparison per one hundred dollars of sales shows a disproportionate cost for small manufacturers to test and label product. Large window manufacturers, due to volume of production, have a cost per unit for testing and labeling disproportionately less compared to small business window manufacturers; the cost per testing and labeling custom window[s] due to limited production lines has an impact at least ten times greater than large manufacturers and in fact

makes production cost prohibitive and compliance with the rule impractical.

**Lost sales or revenue:** The TAG identified a potential loss of sales and revenue for small business window manufacturers.

**Steps taken to reduce costs:** Through a formal and established method of negotiated rule making, the council and the affected industries have considered and mitigated costs associated with the proposed rules. The proposed rule modifies substantive regulatory requirements on small businesses. The proposed rule allows an alternate method of compliance to avoid cost and disproportionate economic impact associated with testing and labeling window and door products manufactured by small businesses in Washington state. The council solicited feedback from the industry to develop methods to mitigate the costs and provide a method to avoid additional costs of compliance.

**Involvement of small businesses:** The council has included small businesses in the development of the proposed rules.

- Small businesses were included in mailings and electronic notification.
- Small businesses were notified of meetings, agenda topics and proposals.
- Council members, technical group members and staff responded to inquiries from small businesses.
- The technical advisory group convened a special meeting to address small business concerns.

**List of industries required to comply:** A sample of the industries required to comply with the proposed rules are listed below:

| NAICS # | DESCRIPTION                         | NUMBER OF FIRMS |   |
|---------|-------------------------------------|-----------------|---|
| 321911  | Wood window and door manufacturing  | 52              | 5 |
| 332321  | Metal window and door manufacturing | 14              | 3 |
| 327211  | Flat Glass Manufacturing            | 10              | 2 |
| 321918  | Other Millwork                      | 49              | 6 |

The North American Industry Classification System, data from 2007 (the most recent) were analyzed to determine the number of small and large businesses in Washington state, and the number of employees per business. Data from department of labor and industries report "Experience factor and firm size by NAICS."

**Job estimates:** No jobs created or lost as a result of compliance with the proposed rule, as the alternative method allows compliance, and has been in effect since 2007.

**CONCLUSION:** The council recognizes that the proposed rules may impose an economic impact on businesses in the building construction industry. However, the council also realizes its obligation to ensure the health, safety and welfare of the occupants or users of buildings and structures and the general public through the provisions of the building codes

throughout the state, as stated in the council's legislative mandate.

The council has negotiated the proposed rules into their current form in an effort to achieve a minimum standard that meets the need of the building construction industry and the citizens of this state. The council appointed TAGs to do a comprehensive review and analysis of the proposed changes to the model code. All proposed state amendments submitted in 2009 were reviewed. The TAG findings were reviewed by ERAC to determine where the proposed rules would impact small businesses. To mitigate the impacts, the proposed rules were modified to eliminate disproportionate cost impact on the effected small businesses.

A copy of the statement may be obtained by contacting Tim Nogler, P.O. Box 42525, Olympia, WA 98504-2525, phone (360) 725-2969, fax (360) 586-9383, e-mail [nogler.tim@commerce.wa.gov](mailto:nogler.tim@commerce.wa.gov). During review of the proposed changes, the TAG did not identify any items with potential disproportionate cost impact to small business.

A cost-benefit analysis is not required under RCW 34.05.328. The state building code council is not listed in this section as one of the agencies required to comply with this statute.

August 1, 2009  
 Peter D. DeVries  
 Council Chair

**Chapter 51-51 WAC**

**STATE BUILDING CODE ADOPTION AND AMENDMENT OF THE ((2006)) 2009 EDITION OF THE INTERNATIONAL RESIDENTIAL CODE**

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

**WAC 51-51-003 International Residential Code.** The ((2006)) 2009 edition of the *International Residential Code* as published by the International Code Council is hereby adopted by reference with the following additions, deletions, and exceptions: Provided that chapters 11 and 25 through 42 of this code are not adopted. Energy Code is regulated by chapter 51-11 WAC; Plumbing Code is regulated by chapter 51-56 WAC; Electrical Code is regulated by chapter 296-46B WAC or Electrical Code as adopted by the local jurisdiction. Appendix G<sub>2</sub> Swimming Pools, Spas and Hot Tubs<sub>2</sub> is included in adoption of the International Residential Code.

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

**WAC 51-51-008 Implementation.** The International Residential Code adopted by chapter 51-51 Washington Administrative Code (WAC) shall become effective in all counties and cities of this state on July 1, ((2007)) 2010.

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

**WAC 51-51-0102 Section R102—Applicability.**

**R102.5 Appendices.** Provisions in the appendices shall not apply unless specifically referenced in the adopting ordinance. Except for Appendix S, Fire Sprinklers, an appendix adopted by a local jurisdiction shall not be effective unless approved by the state building code council pursuant to RCW 19.27.060 (1)(a). The state building code council has determined that a local ordinance requiring fire sprinklers in accordance with Appendix S of this chapter may be adopted by any local government upon notification of the council.

Appendix G, Swimming Pools, Spas and Hot Tubs, and Appendix R, Dwelling Unit Fire Sprinkler Systems, are included in adoption of the International Residential Code.

**R102.7.1 Additions, alterations or repairs.** Additions, alterations or repairs to any structure shall conform to the requirements for a new structure without requiring the existing structure to comply with all of the requirements of this code, unless otherwise stated. Additions, alterations or repairs shall not cause an existing structure to become unsafe or adversely affect the performance of the building.

**EXCEPTIONS:**

1. Additions with less than 500 square feet of conditioned floor area are exempt from the requirements for Whole House Ventilation Systems. Section M1508.
2. Additions or alterations to existing buildings which do not require the construction of foundations, crawl-spaces, slabs or basements shall not be required to meet the requirements for radon protection in Section R327.1 and Appendix F.

**R102.7.2 Moved buildings.** Buildings or structures moved into or within a jurisdiction shall comply with the provisions of this code, the International Building Code (chapter 51-50 WAC), the International Mechanical Code (chapter 51-52 WAC), the International Fire Code (chapter 51-54 WAC), the Uniform Plumbing Code and Standards (chapters 51-56 and 51-57 WAC), the Washington State Energy Code (chapter 51-11 WAC) and the Washington State Ventilation and Indoor Air Quality Code (chapter 51-13 WAC) for new buildings or structures.

**EXCEPTION:** Group R-3 buildings or structures are not required to comply if:

1. The original occupancy classification is not changed; and
2. The original building is not substantially remodeled or rehabilitated.

For the purposes of this section a building shall be considered to be substantially remodeled when the costs of remodeling exceed 60 percent of the value of the building exclusive of the costs relating to preparation, construction, demolition or renovation of foundations.

AMENDATORY SECTION (Amending WSR 09-04-023, filed 1/27/09, effective 7/1/09)

**WAC 51-51-0202 Section R202—Definitions.**

**ADULT FAMILY HOME** means a dwelling in which a person or persons provide personal care, special care, room and board to more than one but not more than six adults who are not

related by blood or marriage to the person or persons providing the services.

~~((BALCONY, EXTERIOR. Definition is not adopted.))~~

**AIR-IMPERMEABLE INSULATION.** An insulation having an air permeance equal to or less than 0.02 L/s-m<sup>2</sup> at 75 Pa pressure differential tested in accordance with ASTM E2178 or ASTM E283.

**ATTIC, HABITABLE.** A conditioned area, not considered a story, complying with all of the following requirements:

1. The occupiable floor area is at least 70 square feet (6.5 m<sup>2</sup>), in accordance with Section R304.

2. The occupiable floor area has a ceiling height in accordance with Section R305.

3. The occupiable space is enclosed by the roof assembly above, knee walls (if applicable) on the sides, and the floor-ceiling assembly below.

**CHILD DAY CARE,** shall, for the purposes of these regulations, mean the care of children during any period of a 24 hour day.

**CHILD DAY CARE HOME, FAMILY** is a child day care facility, licensed by the state, located in the dwelling of the person or persons under whose direct care and supervision the child is placed, for the care of twelve or fewer children, including children who reside at the home.

~~((DECK. Definition is not adopted.))~~

**DWELLING UNIT.** A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation. Dwelling units may also include the following uses:

1. Adult family homes, foster family care homes and family day care homes licensed by the Washington state department of social and health services.

2. Offices, mercantile, food preparation for off-site consumption, personal care salons or similar uses which are conducted primarily by the occupants of the dwelling unit and are secondary to the use of the unit for dwelling purposes, and which do not exceed 500 square feet (46.4 m<sup>2</sup>).

3. Owner-occupied dwellings with 5 or fewer guest rooms.

**FIRE SEPARATION DISTANCE.** The distance measured from the foundation wall or face of the wall framing, whichever is closer, to one of the following:

1. To the closest interior lot line; or
2. To the centerline of a street, an alley or public way; or
3. To an imaginary line between two buildings on the lot.

The distance shall be measured at a right angle from the wall.

**SMALL BUSINESS.** Any business entity (including a sole proprietorship, corporation, partnership or other legal entity) which is owned and operated independently from all other businesses, which has the purpose of making a profit, and which has fifty or fewer employees, or which has a million dollars or less per year in gross sales, of window products.

**SOURCE SPECIFIC VENTILATION SYSTEM.** A mechanical ventilation system including all fans, controls, and ducting.

which is dedicated to exhausting contaminant-laden air to the exterior of the building from the room or space in which the contaminant is generated.

**UNUSUALLY TIGHT CONSTRUCTION.** Construction meeting the following requirements:

1. Walls exposed to the outside atmosphere having a continuous water vapor retarder with a rating of 1 perm (57 ng/s·m<sup>2</sup>·Pa) or less with openings gasketed or sealed;
2. Openable windows and doors meeting the air leakage requirements of the *International Energy Conservation Code*, Section 502.1.4; and
3. Caulking or sealants are applied to areas such as joints around window and door frames, between sole plates and floors, between wall-ceiling joints, between wall panels, at penetrations for plumbing, electrical and gas lines, and at other openings; or
4. Buildings built in compliance with the 1986 or later editions of the Washington State Energy Code chapter 51-11 WAC, Northwest Energy Code, or Super Good Cents weath-erization standards or equivalent.

**WHOLE HOUSE VENTILATION SYSTEM.** A mechanical venti-lation system, including fans, controls, and ducts, which replaces, by direct or indirect means, air from the habitable rooms with outdoor air.

**AMENDATORY SECTION** (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

**WAC 51-51-0301 Section R301—Design criteria.**

**((TABLE R301.5  
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS  
(in pounds per square foot))**

| USE  | LIVE LOAD        |
|--|------------------|
| Attics with limited storage <sup>b, g, h</sup> | 20               |
| Attics without storage <sup>b</sup>            | 10               |
| Decks <sup>a</sup> and exterior balconies      | 40               |
| Fire escapes                                   | 40               |
| Guardrails and handrails <sup>d</sup>          | 200 <sup>i</sup> |
| Guardrails in-fill components <sup>f</sup>     | 50 <sup>i</sup>  |
| Passenger vehicle garages <sup>a</sup>         | 50 <sup>a</sup>  |
| Rooms other than sleeping rooms                | 40               |
| Sleeping rooms                                 | 30               |
| Stairs   | 40 <sup>e</sup>  |

<sup>a</sup>Elevated garage floors shall be capable of supporting a 2,000-pound load applied over a 20-square-inch area.

<sup>b</sup>Attics without storage are those where the maximum clear height between joist and rafter is less than 42 inches, or where there are not two or more adjacent trusses with the same web configuration capable of containing a rectangle 42 inches high by 2 feet wide, or greater, located within the plane of the truss. For attics without storage, this live load need not be assumed to act concurrently with any other live load requirements.

<sup>c</sup>Individual stair treads shall be designed for the uniformly distrib-uted live load or a 300-pound concentrated load acting over an area of 4 square inches, whichever produces the greater stresses.

<sup>d</sup>A single concentrated load applied in any direction at any point along the top.

<sup>e</sup>See Section R502.2.1 for decks attached to exterior walls.

<sup>f</sup>Guard in-fill components (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.

<sup>g</sup>For attics with limited storage and constructed with trusses, this live load needs to be applied only to those portions of the bottom chord where there are two or more adjacent trusses with the same web con-figuration capable of containing a rectangle 42 inches high or greater by 2 feet wide or greater, located within the plane of the truss. The rectangle shall fit between the top of the bottom chord and the bottom of any other truss member, provided that each of the following crite-ria is met:

<sup>1</sup>The attic area is accessible by a pull-down stairway or framed open-ing in accordance with Section R807.1; and

<sup>2</sup>The truss has a bottom chord pitch less than 2:12.

<sup>h</sup>Attic spaces served by a fixed stair shall be designed to support the minimum live load specified for sleeping rooms.

<sup>i</sup>Glazing used in handrail assemblies and guards shall be designed with a safety factor of 4. The safety factor shall be applied to each of the concentrated loads applied to the top of the rail, and to the load on the in-fill components. These loads shall be determined independent of one another, and loads are assumed not to occur with any other live load.))

Reserved.

**AMENDATORY SECTION** (Amending WSR 09-04-023, filed 1/27/09, effective 7/1/09)

**WAC 51-51-0302 Section R302—(~~Location on lot~~)  
Fire-resistant construction.**

**R302.1 Exterior walls.** ((Exterior walls with a fire separa-tion distance of 3 feet (914 mm) or less shall have not less than a one-hour fire-resistive rating with exposure from both sides. Projections shall not extend to a point closer than 2 feet (610 mm) from the line used to determine the fire separation distance.

**EXCEPTION:** Detached garages accessory to a dwelling located within 2 feet of a lot line may have roof eave projec-tions not exceeding 4 inches.

Projections extending into the fire separation distance shall have not less than one-hour fire-resistive construction on the underside. The above provisions shall not apply to walls which are perpendicular to the line used to determine the fire separation distance.

**EXCEPTIONS:**

1. Tool and storage sheds, playhouses and similar structures exempted from permits by Section R105.2 are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
2. Eave projections into the fire separation distance do not require one-hour fire-resistive construction where no openings are provided in the eaves, including openings for ventilation.))

**Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1.**

**EXCEPTIONS:**

1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance.

- 2. Walls of dwellings and accessory structures located on the same lot.
- 3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.

- 4. Detached garages accessory to a dwelling located within 2 feet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm).
- 5. Foundation vents installed in compliance with this code are permitted.

**Table R302.1**  
**Exterior Walls**

| <b>Exterior Wall Element</b> |                                    | <b>Minimum Fire-Resistance Rating</b>  | <b>Minimum Fire Separation Distance</b> |
|------------------------------|------------------------------------|--|---|
| <u>Walls</u>                 | <u>(Fire-resistance rated)</u>     | <u>1-hour tested in accordance with ASTM E 119 or UL 263 with exposure from both sides</u> | <u>&lt; 5 feet</u>                      |
|                              | <u>(Not fire-resistance rated)</u> | <u>0 hours</u>   | <u>≥ 5 feet</u>                         |
| <u>Projections</u>           | <u>(Fire-resistance rated)</u>     | <u>1 hour on the underside<sup>ab</sup></u>  | <u>≥ 2 feet to 5 feet</u>               |
|                              | <u>(Not fire-resistance rated)</u> | <u>0 hours</u>   | <u>5 feet</u>                           |
| <u>Openings in Walls</u>     | <u>Not allowed</u>                 | <u>N/A</u>   | <u>&lt; 3 feet</u>                      |
|                              | <u>25% maximum of wall area</u>    | <u>0 hours</u>   | <u>3 feet</u>                           |
|                              | <u>Unlimited</u>                   | <u>0 hours</u>   | <u>5 feet</u>                           |
| <u>Penetrations</u>          | <u>All</u>                         | <u>Comply with Section R302.4</u>  | <u>&lt; 5 feet</u>                      |
|                              |                                    | <u>None required</u>   | <u>5 feet</u>                           |

For IS: 1 foot = 304.8 mm. N/A = Not Applicable

- a. Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fire blocking is provided from the wall top plate to the underside of the roof sheathing.
- b. Roof eave overhangs shall be permitted to be reduced to 0 hours where no gable vent opening is allowed.

**R302.2 ((Openings.** Openings shall not be permitted in the exterior wall of a dwelling or accessory building with a fire separation distance of 3 feet (914 mm) or less. Openings, including openings for ventilation, shall be limited to 25% of the exterior wall area with a fire separation distance between 3 feet (914 mm) to less than 5 feet (1524 mm). This distance shall be measured perpendicular to the line used to determine the fire separation distance.

- EXCEPTIONS:
- 1. Openings shall be permitted in walls that are perpendicular to the line used to determine the fire separation distance.
  - 2. Foundation vents installed in compliance with this code are permitted.))

**Townhouses.** Each townhouse shall be considered a separate building and shall be separated by fire-resistance-rated wall assemblies meeting the requirements of Section R302.1 for exterior walls.

- EXCEPTION:
- (1) A common 1-hour fire-resistance rated wall assembly tested in accordance with ASTM E 119 or UL 263 is permitted for townhouses where an automatic sprinkler system is installed in accordance with NFPA 13 D, if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be installed in accordance with chapter 296-46B WAC or electrical code as adopted by the local jurisdiction. Penetrations of electrical outlet boxes shall be in accordance with Section R302.4.

- (2) A common 2-hour fire-resistance-rated wall assembly tested in accordance with ASTM E 119 or UL 263 is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be installed in accordance with chapter 296-46B WAC or electrical code as adopted by the local jurisdiction. Penetrations of electrical outlet boxes shall be in accordance with Section R302.4.

**R302.2.1 Continuity.** The fire-resistance-rated wall or assembly separating townhouses shall be continuous from the foundation to the underside of the roof sheathing, deck or slab. The fire-resistance rating shall extend the full length of the wall or assembly, including wall extensions through and separating attached enclosed accessory structures.

Where a story extends beyond the exterior wall of a story below:

- 1. The fire-resistance-rated wall or assembly shall extend to the outside edge of the upper story; or
- 2. The underside of the exposed floor-ceiling assembly shall be protected as required for projections in Section R302.

**R302.2.4 Structural independence.** Each individual townhouse shall be structurally independent.

- EXCEPTIONS:
- 1. Foundation supporting exterior walls or common walls.
  - 2. Structural roof and wall sheathing from each unit may be fastened to the common wall framing.
  - 3. Nonstructural wall coverings.

4. Flashing at termination of roof covering over common wall.
5. Townhouses separated by a common 2-hour fire-resistance-rated wall as provided in Section R302.2.
6. Floor sheathing may fasten to the floor framing of both units.

**R302.3 Penetrations.** Penetrations located in the exterior wall of a dwelling with a fire separation distance of 3 feet (914 mm) or less shall be protected in accordance with Section R317.3.

**EXCEPTION:** Penetrations shall be permitted in walls that are perpendicular to the line used to determine the fire separation distance.

**AMENDATORY SECTION** (Amending WSR 04-01-109, filed 12/17/03, effective 7/1/04)

**WAC 51-51-0303 Section R303—Light, ventilation and heating.**

**R303.1 Natural Light.** All habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms.

**EXCEPTION:** The glazed areas need not be installed in rooms where artificial light is provided capable of producing an average illumination of 6 footcandles (65 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level.

**R303.1.1 Adjoining Rooms.** For the purposes of determining light requirements, any room shall be considered as a portion of an adjoining room when at least one-half of the area of the common wall is open and unobstructed and provides an opening of not less than one-tenth of the floor area of the interior room but not less than 25 square feet (2.3 m<sup>2</sup>).

**EXCEPTION:** Openings required for light shall be permitted to open into a thermally isolated sunroom addition or patio cover, provided that there is an openable area between the adjoining room and the sunroom addition or patio cover of not less than one-tenth of the floor area of the interior room but not less than 20 square feet (2 m<sup>2</sup>).

**R303.2 Minimum Ventilation Performance.** Every space intended for human occupancy shall be equipped with source specific and whole house ventilation systems designed and installed as specified in Sections R1507 and R1508.

**R303.3 Bathrooms.** This section is not adopted.

**R303.4.1 Intake Openings.** Mechanical and gravity outdoor air intake openings shall be located a minimum of 10 feet (3048 mm) from any hazardous or noxious contaminant, such as vents, chimneys, plumbing vents, streets, alleys, parking lots and loading docks, except as otherwise specified in this code. Where a source of contaminant is located within 10 feet (3048 mm) of an intake opening, such opening shall be located a minimum of 3 feet (914 mm) below the contaminant source.

For the purposes of this section, the exhaust from dwelling unit toilet rooms, bathrooms and kitchens shall not be considered as hazardous or noxious.

**R303.6 Stairway Illumination.** All interior and exterior stairways shall be provided with a means to illuminate the

stairs, including the landings and treads. Stairway illumination shall receive primary power from the building wiring. Interior stairways shall be provided with an artificial light source located in the immediate vicinity of each landing of the stairway. For interior stairs the artificial light sources shall be capable of illuminating treads and landings to levels not less than 1 foot-candle (11 lux) measured at the center of treads and landings. Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the stairway. Exterior stairways providing access to a basement from the outside grade level shall be provided with an artificial light source located in the immediate vicinity of the bottom landing of the stairway.

**EXCEPTION:** An artificial light source is not required at the top and bottom landing, provided an artificial light source is located directly over each stairway section.

**R303.6.1 Light Activation.** Where lighting outlets are installed in interior stairways, there shall be a wall switch at each floor level to control the lighting outlet where the stairway has six or more risers. The illumination of exterior stairways shall be controlled from inside the dwelling unit.

**EXCEPTION:** Lights that are continuously illuminated or automatically controlled.

**R303.8.1 Definitions.** For the purposes of this section only, the following definitions apply.

**DESIGNATED AREAS** are those areas designated by a county to be an urban growth area in chapter 36.70A RCW and those areas designated by the U.S. Environmental Protection Agency as being in nonattainment for particulate matter.

**SUBSTANTIALLY REMODELED** means any alteration or restoration of a building exceeding 60 percent of the appraised value of such building within a 12 month period. For the purpose of this section, the appraised value is the estimated cost to replace the building and structure in kind, based on current replacement costs.

**R303.8.2 Primary Heating Source.** Primary heating sources in all new and substantially remodeled buildings in designated areas shall not be dependent upon wood stoves.

**R303.8.3 Solid Fuel Burning Devices.** No used solid fuel burning device shall be installed in new or existing buildings unless such device is United States Environmental Protection Agency certified or a pellet stove either certified or exempt from certification by the United States Environmental Protection Agency.

**EXCEPTION:** Antique wood cook stoves and heaters manufactured prior to 1940.

**AMENDATORY SECTION** (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

**WAC 51-51-0311 Section R311—Means of egress.**

**((R311.1 General.)) R311.4 Vertical egress.** Stairways, ramps, exterior exit balconies, hallways and doors shall comply with this section.

**EXCEPTION:** Stairs or ladders within an individual dwelling unit used for access to areas of 200 square feet (18.6 m<sup>2</sup>)

or less, and not containing the primary bathroom or kitchen.

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

**WAC 51-51-0313 Section R313—(~~Smoke alarms~~)  
Automatic fire sprinkler systems.**

~~((R313.2 Location. Smoke alarms shall be installed in the following locations:~~

- ~~1. In each sleeping room.~~
- ~~2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.~~
- ~~3. On each additional story of the dwelling, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.~~
- ~~4. In napping areas in family child day care homes.~~

~~When more than one smoke alarm is required to be installed within an individual dwelling unit, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit.)~~ **R313.1. Automatic Fire Sprinkler Systems.** A voluntarily installed automatic fire sprinkler system in townhouses or one and two family dwellings shall be installed in accordance with Appendix R, Dwelling Unit Fire Sprinkler Systems.

NEW SECTION

**WAC 51-51-0314 Section R314—Smoke alarms.**

**R314.2 Location.** Smoke alarms shall be installed in the following locations:

1. In each sleeping room.
2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
4. In napping areas in family child day care homes.

When more than one smoke alarm is required to be installed within an individual dwelling unit, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit.

**R314.3.1 Alterations, Repairs and Additions.** When alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms as required for new dwellings.

EXCEPTIONS: 1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the

addition of a porch or deck are exempt from the requirements of this section.

2. Installation, alteration or repairs of plumbing, electrical or mechanical systems are exempt from the requirements of this section.

NEW SECTION

**WAC 51-51-0315 Section R315—Carbon monoxide alarms.**

**R315.1 Carbon Monoxide Alarms.** For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedroom in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages.

**R315.2 Existing Dwellings.** Existing dwellings within which fuel-fired appliances exist or that have attached garages shall be equipped with carbon monoxide alarms by January 1, 2013.

EXCEPTION: Owner-occupied detached one-family dwellings legally occupied prior to July 1, 2010.

**R315.3 Alarm Requirements.** Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

**WAC 51-51-0317 (~~Section R317—Dwelling unit separation~~) Reserved.**

~~((R317.2 Townhouses. Each townhouse shall be considered a separate building and shall be separated by fire resistance-rated wall assemblies meeting the requirements of Section R302 for exterior walls.~~

EXCEPTION: A common 2-hour fire resistance-rated wall is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. Penetrations of electrical outlet boxes shall be in accordance with Section R317.3.

~~**R317.2.1 Continuity.** The fire resistance rated wall or assembly separating townhouses shall be continuous from the foundation to the underside of the roof sheathing, deck or slab. The fire resistance rating shall extend the full length of the wall or assembly, including wall extensions through and separating attached enclosed accessory structures.~~

~~Where a story extends beyond the exterior wall of a story below:~~

- ~~1. The fire resistance rated wall or assembly shall extend to the outside edge of the upper story; or~~
- ~~2. The underside of the exposed floor ceiling assembly shall be protected as required for projections in Section R302.~~

~~**R317.2.4 Structural independence.** Each individual townhouse shall be structurally independent.~~

EXCEPTIONS: 1. Foundation supporting exterior walls or common walls.



2. Structural roof and wall sheathing from each unit may be fastened to the common wall framing.
3. Nonstructural wall coverings.
4. Flashing at termination of roof covering over common wall.
5. Townhouses separated by a common 2-hour fire-resistive rated wall as provided in Section R317.2.
6. Floor sheathing may fasten to the floor framing of both units.))

## NEW SECTION

### **WAC 51-51-0322 Section R322—Flood resistant construction.**

#### **R322.2.1 Elevation Requirements.**

1. Buildings and structures in flood hazard areas not designated as Coastal A Zones, shall have the lowest floor elevated to or above the design flood elevation, or a greater elevation as designated by local ordinance.

2. Buildings and structures in flood hazard areas designated as Coastal A Zones shall have the lowest floors elevated to or above the base flood elevation plus 1 foot (305 mm), or to the design load elevation, whichever is higher.

3. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated at least as high above the highest adjacent grade as the depth number specified in feet on the FIRM, or at least 2 feet (610 mm) if a depth number is not specified.

4. Basement floors that are below grade on all sides shall be elevated to or above the design flood elevation.

EXCEPTION: Enclosed areas below the design flood elevation, including basements whose floors are not below grade on all sides, shall meet the requirements of Section R322.2.2.

AMENDATORY SECTION (Amending WSR 08-01-103, filed 12/18/07, effective 4/1/08)

### **WAC 51-51-0403 Section R403—Footings.**

**R403.1 General.** All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings, wood foundations, or other approved structural systems which shall be of sufficient design to accommodate all loads specified in Section R301 and to transmit the resulting loads to the supporting soil within the limitations determined from the characteristics of the soil. Footings shall be supported on undisturbed natural soil or engineered fill. Foundation walls complying with Section R404 or stem walls complying with Section R403.1.3 shall be permitted to support exterior walls, exterior braced wall lines and exterior braced wall panels provided they are supported by continuous footings.

**R403.1.2 ((Braced Wall Panels)) Continuous Footing in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub>.** The braced wall panels at exterior ((and interior)) walls of buildings located in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub> shall be supported by ((foundations)) continuous footings. All required interior braced wall panels shall be supported on footings at intervals not exceeding 50 feet (15,240 mm).

((EXCEPTIONS: 1. In buildings in Seismic Design Categories D<sub>0</sub> and D<sub>1</sub>, and in one-story buildings in Seismic Design Category D<sub>2</sub>, interior braced wall panels are not required

to be supported by foundations, provided no building plan dimension perpendicular to the interior braced wall lines is greater than 50 feet.

2. In two-story buildings in Seismic Design Category D<sub>2</sub>, interior braced wall panels are not required to be supported by foundations, provided all of the following conditions are met:

- 2.1. No building plan dimension perpendicular to the interior braced wall lines exceeds 50 feet;
- 2.2. The distances between braced wall lines do not exceed twice the building width measured parallel to the braced wall lines;
- 2.3. The braced wall panels at the first story are continuously supported by floor joists, blocking or floor beams; and
- 2.4. The heights of braced wall panels in under-floor spaces do not exceed 48 inches (1219 mm).

**~~R403.1.2.1 Foundations.~~** Foundations at braced wall panels shall be constructed of masonry or concrete foundation walls in accordance with Sections R402 and R404, and masonry or concrete footings in accordance with Sections R402 and R403.

#### **EXCEPTIONS:**

1. In under-floor spaces, cripple walls shall be permitted to substitute for masonry or concrete foundation walls provided they comply with the following:
  - a. They are located directly below the interior braced wall panels above;
  - b. They are braced in accordance with Sections R602.10.2 and R602.10.11.4 for cripple wall bracing; and
  - e. They are supported by footings complying with Sections R402 and R403, except that the footing of a foundation supporting an interior braced wall panel is not required to be continuous.
2. Footings of foundations supporting interior braced wall panels are not required to be continuous but shall be constructed beyond the ends of foundation walls, stem walls and cripple walls supporting braced wall panels for a minimum distance of 4 inches and a maximum distance of the footing thickness. The footing extension is not required at intersections with other footings.

**~~R403.1.3 Seismic reinforcing in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub>.~~** Concrete footings of buildings assigned to Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub> shall comply with this section and have minimum reinforcement as specified by Section R403.1.3.1 or R403.1.3.2. Bottom reinforcement shall be located a minimum of 3 inches (76 mm) from the bottom of the footing.

Where a construction joint is created between a concrete footing and a concrete stem wall, minimum vertical reinforcement of one No. 4 bar shall be provided at not more than 4 feet (1219 mm) on center. The bars shall extend to 3 inches (76 mm) clear of the bottom of the footing, have a standard hook, and extend into the stem wall the lesser of 2 inches (49 mm) clear of the top of the wall and 14 inches (357 mm).

Where a solidly grouted masonry stem wall is supported on a concrete footing, minimum vertical reinforcement of one No. 4 bar shall be provided at not more than 4 feet (1219 mm) on center. The bars shall extend to 3 inches (76 mm) clear of the bottom of the footing, have a standard hook, and extend into the stem wall to 2 inches (49 mm) clear of the top of the wall.

Masonry stem walls without solid grout and vertical reinforcing are not permitted.

Concrete and masonry stem walls shall comply with the requirements of Section R404 for foundation walls.

**EXCEPTION:** In detached one- and two-family dwellings of light-framed construction and three stories or less above grade, plain concrete footings supporting walls, columns or pedestals are permitted.

**R403.1.3.1 Foundation stem walls.** Foundation stem walls shall have installed a minimum of one No. 4 bar within 12 inches (305 mm) of the top of the stem wall and one No. 4 bar located 3 inches (76 mm) to 4 inches (102 mm) from the bottom of the footing.

**R403.1.4 Minimum depth.** All exterior footings shall be placed at least 12 inches (305 mm) below the undisturbed ground surface. Where applicable, the depth of footings shall also comply with Sections R403.1.4.1 through R403.1.4.2.

**R403.1.4.1 Frost protection.** Except where otherwise protected from frost, foundation walls, piers and other permanent supports of buildings and structures shall be protected from frost by one or more of the following methods:

1. Extend below the frost line specified in Table R301.2(1);
2. Construct in accordance with Section R403.3;
3. Construct in accordance with ASCE 32; or
4. Erect on solid rock.

**EXCEPTIONS:**

1. Protection of freestanding accessory structures with an area of 600 square feet (56 m<sup>2</sup>) or less and an eave height of 10 feet (3048 mm) or less shall not be required.
2. Protection of freestanding accessory structures with an area of 400 square feet (37 m<sup>2</sup>) or less, of other than light-framed construction, with an eave height of 10 feet (3048 mm) or less shall not be required.
3. Decks not supported by a dwelling need not be provided with footings that extend below the frost line.

Footings shall not bear on frozen soil unless such frozen condition is of a permanent character.

**R403.1.6 Anchorage at braced wall panels.** Where braced wall panels are supported by monolithic slabs, footings or foundations, the wood sole plates, wood sill plates or cold-formed steel bottom tracks shall be anchored to the slab cast monolithically with a footing, footing or foundation in accordance with Section R403.1.6.

The wood sole or sill plate shall be anchored to the monolithic slab, footing or foundation with anchor bolts spaced a maximum of 6 feet (1829 mm) on center. There shall be a minimum of two bolts per plate section with one bolt located not more than 12 inches (305 mm) and not less than seven bolt diameters from each end of the plate section. Bolts shall be at least 1/2 inch (13 mm) in diameter and shall extend a minimum of 7 inches (178 mm) into masonry or concrete. A nut and washer shall be tightened to a snug-tight condition on each bolt to the plate.

Cold formed steel framing systems shall be fastened to wood sill plates or anchored directly to the foundation in accordance with Section R505.3.1 or R603.3.1.

**EXCEPTIONS:**

1. Foundation anchorage, spaced as required to provide equivalent anchorage to 1/2-inch diameter (13 mm) anchor bolts.
2. Walls 24 inches (610 mm) in total length or shorter connecting offset braced wall panels shall be

anchored to the footing or foundation with a minimum of one anchor bolt located in the center third of the plate section and shall be attached to adjacent braced wall panels as specified in Figure R602.10.5 at the corners.

3. Walls 12 inches (305 mm) in total length or shorter connecting offset braced wall panels shall be permitted to be connected to the footing or foundation without anchor bolts. The wall shall be attached to adjacent braced wall panels as specified in Figure R602.10.5 at the corners.

**R403.1.6.1 Foundation anchorage in Seismic Design Categories C, D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub>.** In addition to the requirements of Section R403.1.6, the following requirements shall apply to wood light frame structures in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub> and wood light frame townhouses in Seismic Design Category C.

1. Bearing walls and interior braced wall sill plates shall be anchored to footings or foundations with anchor bolts spaced at not more than 6 feet (1829 mm) on center and located within 12 inches (305 mm) from the ends of each plate section when supported on a continuous foundation.

2. The maximum anchor bolt spacing shall be 4 feet (1219 mm) for buildings over two stories in height.

3. Plate washers complying with Section R602.11.1 shall be provided for all anchor bolts over the full length of required braced wall lines. Properly sized cut washers shall be permitted for anchor bolts in wall lines not containing braced wall panels or in braced wall lines.

4. Stepped cripple walls shall conform to Section R602.11.3.

5. Where wood foundations in accordance with Sections R402.1 and R404.2 are used, the force transfer shall have a capacity equal to or greater than the connections required by Section R602.11.1 or the braced wall panel shall be connected to the wood foundations in accordance with the braced wall panel to floor fastening requirements of Table 602.3(1).)

**AMENDATORY SECTION** (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

**WAC 51-51-0404 Section R404—Foundation and retaining walls.**

~~((R404.1 Concrete and masonry foundation walls. Concrete and masonry foundation walls shall be selected and constructed in accordance with the provisions of Section R404 or in accordance with ACI 318, ACI 332, NCMA TR68-A or ACI 530/ASCE 5/TMS 402 or other approved structural standards. When ACI 318, ACI 332 or ACI 530/ASCE 5/TMS 402 or the provisions of Section R404 are used to design concrete or masonry foundation walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for the design, unless otherwise required by the state law of the jurisdiction having authority.~~

Tables R404.1(1), R404.1(2), and R404.1(3) are not adopted.

**TABLE R404.1.1(3)**  
**10-INCH MASONRY FOUNDATION WALLS WITH**  
**REINFORCING**  
**WHERE  $d > 6.75$  INCHES\***

(no changes to Table R404.1.1(3) or footnotes)

**R404.3 Wood sill plates.** Wood sill plates shall be a minimum of 2 inch by 4 inch nominal lumber. Sill plate anchorage shall be in accordance with Sections R403.1.6 and R602.11.)

Reserved.

**AMENDATORY SECTION** (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

**WAC 51-51-0408 Section R408—Under-floor space.**

**R408.1 Ventilation.** The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a basement) shall have ventilation openings through foundation walls or exterior walls.

**R408.2 Openings for under-floor ventilation.** The minimum net area of ventilation openings shall not be less than 1 square foot (0.0929 m<sup>2</sup>) for each 300 square feet (28 m<sup>2</sup>) of under-floor area. ~~((In addition, a ground cover that meets the requirements of Section 502.1.6.7 of the Washington State Energy Code (chapter 51-11 WAC) shall be installed.))~~ One ventilating opening shall be within 3 feet (914 mm) of each corner of the building, except one side of the building shall be permitted to have no ventilation openings. Ventilation openings shall be covered for their height and width with any of the following materials provided that the least dimension of the covering shall not exceed 1/4 inch (6.4 mm):

1. Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick.
2. Expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick.
3. Cast-iron grill or grating.
4. Extruded load-bearing brick vents.
5. Hardware cloth of 0.035 inch (0.89 mm) wire or heavier.
6. Corrosion-resistant wire mesh, with the least dimension being 1/8 inch (3.2 mm).

**EXCEPTION:** The total area of ventilation openings shall be permitted to be reduced to 1/1,500 of the under-floor area where the ground surface is covered with an approved Class I vapor retarder material and the required openings are placed to provide cross ventilation of the space. The installation of operable louvers shall not be prohibited. If the installed ventilation is less than 1/300, or if operable louvers are installed, a radon vent shall be installed to originate from a point between the ground cover and soil. The radon vent shall be installed in accordance with the requirements of Appendix F (Radon) of this code.

**R408.3 Unvented crawl space.** Ventilation openings in under-floor spaces specified in Sections R408.1 and R408.2 shall not be required where:

1. Exposed earth is covered with a continuous Class I vapor retarder. Joints of the vapor retarder shall overlap by 6 inches (152 mm) and shall be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches (152 mm) up

the stem wall and shall be attached and sealed to the stem wall; and a radon system shall be installed that meets the requirements of Appendix F (Radon) of this code.

**2. Continuously operated mechanical exhaust ventilation** is provided at a rate equal to 1 cubic foot per minute (0.47 L/s) for each 50 square feet (4.7 m<sup>2</sup>) of crawlspace floor area. Exhaust ventilation shall terminate to the exterior.

**EXCEPTION:** Plenum in existing structures complying with Section M1601.4, if under-floor space is used as a plenum.

**NEW SECTION**

**WAC 51-51-0502 Section R502—Wood floor framing.**

**R502.2.2.2 Alternate Deck Ledger Connections.** Deck ledger connections not conforming to Table R502.2.2.1 shall be attached with approved fasteners having equivalent withdrawal capacity or be designed in accordance with accepted engineering practice. Girders supporting deck joists shall not be supported on deck ledgers or band joists. Deck ledgers shall not be supported on stone or masonry veneer.

**R502.2.2.3 Deck Lateral Load Connections.** The lateral load connection required by Section R502.2.2 shall be permitted to be in accordance with Figure R502.2.2.3. Hold-down tension devices shall be installed in not less than two locations per deck, and each device shall have an allowable stress design capacity of not less than 1500 pounds (6672 N).

**EXCEPTION:** Decks not more than 30 inches above grade at any point may be unattached.

**AMENDATORY SECTION** (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

**WAC 51-51-0602 Section R602—Wood wall framing.**

~~((**R602.3 Design and construction.** Exterior walls of wood light framed construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's NDS. Components of exterior walls shall be fastened in accordance with Table R602.3(1) through R602.3(4). Exterior walls covered with foam plastic sheathing shall be braced in accordance with Section R602.10. Structural sheathing shall be fastened directly to structural framing members.~~

**R602.3.4 Bottom (sole) plate.** Studs shall have full bearing on a 2-inch nominal (38 mm) or larger plate or sill having a width at least equal to the width of the studs.)

**R602.9 Foundation cripple walls.** Foundation cripple walls shall be framed of studs not smaller than the studding above. When exceeding 4 feet (1219 mm) in height, such walls shall be framed of studs having the size required for an additional story.

Cripple walls supporting bearing walls or exterior walls or interior braced wall panels as required in Sections R403.1.2 and ~~((R403.1.2.1))~~ R602.10.7.1 with a stud height less than 14 inches (356 mm) shall be sheathed on at least one side with a wood structural panel that is fastened to both the top and bottom plates in accordance with Table R602.3(1), or

the cripple walls shall be constructed of solid blocking. Cripple walls ((supporting exterior walls or interior braced wall panels as required in Section R403.1.2 and R403.1.2.1)) shall be supported on continuous footings or foundations.

~~((R602.10 Wall bracing. All exterior walls shall be braced in accordance with this section. In addition, interior braced wall lines shall be provided in accordance with Section 602.10.1.1. For buildings in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub>, walls shall be constructed in accordance with the additional requirements of Sections R602.10.11 through R602.11.3.))~~

EXCEPTION: Footings supporting cripple walls used to support interior braced wall panels as required in Sections R403.1.2 and R602.10.7.1 shall be continuous for the required length of the cripple wall and constructed beyond the cripple wall for a minimum distance of 4 inches and a maximum distance of the footing thickness. The footings extension is not required at intersections with other footings.

**R602.10.1.2 Length of bracing.** The length of bracing along each braced wall line shall be the greater of that required by the design wind speed and braced wall line spacing in accordance with Table R602.10.1.2(1) as adjusted by the factors in the footnotes or the Seismic Design Category and braced wall line length in accordance with Table R602.10.1.2(2) as adjusted by the factors in Table R602.10.1.2(3). Braced wall panel locations shall comply with the requirements of Section R602.10.1.4. Only walls that are parallel to the braced wall line shall be counted toward the bracing requirement of that line, except angled walls shall be counted in accordance with Section R602.10.1.3. In no case shall the minimum total length of bracing in a braced wall line, after all adjustments have been taken, be less than 48 inches (1219 mm) total.

**R602.10.1.5 Braced wall line spacing for Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub>.** Spacing between braced wall lines in each story shall not exceed 25 feet (7620 mm) on center in both the longitudinal and transverse directions.

EXCEPTION: In one-story and two-story buildings, spacing between two adjacent braced wall lines shall not exceed 35 feet (10,668 mm) on center in order to accommodate one single room not exceeding 900 square feet (84 m<sup>2</sup>) in each dwelling unit or accessory structure. Spacing between all other braced wall lines shall not exceed 25 feet (7 620 mm). A spacing of 35 feet (10,668 mm) or less shall be permitted between braced wall lines where the length of wall bracing required by Table R602.10.1.2(2) is multiplied by the appropriate adjustment factor from Table R602.10.1.5, the length-to-width ratio for the floor/roof diaphragm does not exceed 3:1, and the top plate lap splice face nailing is twelve 16d nails on each side of the splice.

## R602.10.2 Cripple wall bracing.

~~((R602.10.2.1 Seismic Design Categories Other than D<sub>3</sub>. In Seismic Design Categories other than D<sub>3</sub>, cripple walls supporting exterior walls or interior braced wall panels as required in Section R403.1.2 and R403.1.2.1 shall be braced with an amount and type of bracing as required for the wall above in accordance with Table R602.10.1 with the following modifications for cripple wall bracing:~~

1. The percent bracing amount as determined from Table R602.10.1 shall be increased by 15 percent; and

2. The wall panel spacing shall be decreased to 18 feet (5486 mm) instead of 25 feet (7620 mm).

~~**R602.10.2.2 Seismic Design Category D<sub>3</sub>.** In Seismic Design Category D<sub>3</sub>, cripple walls supporting exterior walls or interior braced wall panels as required in Section R403.1.2 and R403.1.2.1 shall be braced in accordance with Table R602.10.1.))~~

**R602.10.2.3 Redesignation of cripple walls.** In any Seismic Design Category, cripple walls are permitted to be redesignated as the first story walls for purposes of determining wall bracing requirements. If the cripple walls are redesignated, the stories above the redesignated story shall be counted as the second and third stories, respectively.

~~((R602.10.5 Continuous wood structural panel sheathing. When continuous wood structural panel sheathing is provided in accordance with Method 3 of Section R602.10.3 on all sheathable areas of all exterior walls including areas above and below openings, braced wall panel lengths are not required to be in accordance with Section R602.10.4 provided they are in accordance with Table R602.10.5. Wood structural panel sheathing shall be installed at corners in accordance with Figure R602.10.5. The bracing percentages in Table R602.10.1 for Method 3 shall be permitted to be multiplied by a factor of 0.9 for exterior walls with a maximum opening height that does not exceed 85 percent of the wall height or a factor of 0.8 for exterior walls with a maximum opening height that does not exceed 67 percent of the wall height.~~

**TABLE R602.10.5**  
**LENGTH REQUIREMENTS FOR BRACED WALL PANELS IN A CONTINUOUSLY SHEATHED WALL<sup>a,b,c</sup>**

(no proposed changes to contents of Table R602.10.5)

For IS: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 pound per square foot = 0.0479 kN/m<sup>2</sup>.

a. Linear interpolation shall be permitted.

b. Full height sheathed wall segments on either side of garage openings that support roofs of light framed construction only, with roof covering dead loads of 3 psf or less shall be permitted to have a 4:1 height to width ratio.

c. Walls on either or both sides of openings in garages attached to fully sheathed dwellings shall be permitted to be built in accordance with Section R602.10.6.2 and Figure R602.10.6.2 except that a single sill plate shall be permitted and two anchor bolts shall be placed at 1/3 points. In addition, tie-down devices shall not be required and the vertical wall segment shall have a maximum 6:1 height to width ratio (with height being measured from top of header to the bottom of the sill plate). This option shall be permitted for the first story of two-story applications in Seismic Design Categories A through C.

~~**R602.10.6 Alternate braced wall panel construction methods.** Alternate braced wall panels shall be constructed in accordance with Sections R602.10.6.1 and R602.10.6.2.~~

**R602.10.6.1 Alternate braced wall panels.** Alternate braced wall panels constructed in accordance with one of the following provisions shall be permitted to replace each 4 feet (1219 mm) of braced wall panel as required by Section R602.10.4. The maximum height and minimum width of each panel shall be in accordance with Table R602.10.6.

1. In one-story buildings, each panel shall be sheathed on one face with 3/8-inch minimum thickness (9.5 mm) wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Table R602.3(1) and blocked at all wood structural panel sheathing edges. Two anchor bolts installed in accordance with Figure R403.1(1) shall be provided in each panel. Anchor bolts shall be placed in from each end of the panel a horizontal distance of one-fourth the panel width. Each panel end stud shall have a tie-down device fastened to the foundation, capable of providing an uplift capacity in accordance with Table R602.10.6. The tie-down device shall be installed in accordance with the manufacturer's recommendations. The panels shall be supported directly on a foundation or on floor framing supported directly on a foundation which is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom. When the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing or turned down slab edge is permitted at door openings in the braced wall line. This continuous footing or turned down slab edge shall be reinforced with not less than one No. 4 bar top and bottom. This reinforcement shall be lapped 15 inches (381 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.

2. In the first story of two-story buildings, each braced wall panel shall be in accordance with Item 1 above, except that the following:

2.1 The wood structural panel sheathing shall be provided on both faces;

2.2 Sheathing edge nailing spacing shall not exceed 4 inches on center; and

2.3 Anchor bolts shall be placed at the center of the panel width and in from each end of the panel a horizontal distance of one-fifth the panel width (three total).

**R602.10.7 Panel joints.** All vertical joints of panel sheathing shall occur over, and be fastened to, common studs. Horizontal joints in braced wall panels shall occur over, and be fastened to, common blocking of a minimum 2 inches in nominal thickness.

((EXCEPTION: Blocking is not required behind horizontal joints in Seismic Design Categories A and B and detached dwellings in Seismic Design Category C when constructed in accordance with Section R602.10.3, braced wall panel construction Method 3 and Table R602.10.1, Method 3, or where permitted by the manufacturer's installation requirements for the specific sheathing material.

**R602.10.8 Connections.** Braced wall panel bottom (sole) plates shall be fastened to the floor framing and top plates shall be connected to the framing above in accordance with Table R602.3(1). Sill plates shall be fastened to the footing, foundation or slab in accordance with Sections R403.1.6 and

R602.11. Where joists are perpendicular to the braced wall lines above, blocking shall be provided under and in line with the braced wall panels. Where joists are perpendicular to braced wall lines below, blocking shall be provided over and in line with the braced wall panels. Where joists are parallel to braced wall lines above or below, a rim joist or other parallel framing member shall be provided at the wall to permit fastening per Table R602.3(1). For buildings in Seismic Design Categories  $D_0$ ,  $D_1$ , and  $D_2$ , braced wall panels shall also be fastened in accordance with Section R602.11.2.))

**R602.10.7.1 Braced wall panel support for Seismic Design Category  $D_2$ .** In one-story buildings located in Seismic Design Category  $D_2$ , braced wall panels shall be supported on continuous foundations at intervals not exceeding 50 feet (15,240 mm). In two-story buildings located in Seismic Design Category  $D_2$ , all braced wall panels shall be supported on continuous foundations.

**R602.10.9 ((Interior braced wall support.** This section is not adopted. See Section R403.1.2.

**R602.10.10 Design of structural elements.** Where a building, or portion thereof, does not comply with one or more of the bracing requirements in Sections R602.10 through R602.10.9, those portions shall be designed and constructed in accordance with accepted engineering practice.

**R602.10.11 Bracing in Seismic Design Categories  $D_0$ ,  $D_1$ , and  $D_2$ .** Structures located in Seismic Design Categories  $D_0$ ,  $D_1$ , and  $D_2$  shall have exterior and interior braced wall lines.

**R602.10.11.1 Braced wall line spacing.** Spacing between braced wall lines in each story shall not exceed 25 feet (7620 mm) on center in both the longitudinal and transverse directions.

EXCEPTION: In one- and two-story buildings two adjacent braced wall lines shall not exceed 35 feet (10,668 mm) on center in order to accommodate an area not exceeding 900 square feet (84 m<sup>2</sup>) in each dwelling unit. Spacing between all other braced wall lines shall not exceed 25 feet (7620 mm).

**R602.10.11.2 Braced wall panel location.** Exterior braced wall lines shall be provided with a braced wall panel located at each end of the braced wall line.

EXCEPTION: For braced wall panel construction Method 3 of Section R602.10.3, the braced wall panel shall be permitted to begin no more than 8 feet (2438 mm) from each end of the braced wall line provided one of the following is satisfied:

1. A minimum 24-inch wide (610 mm) panel is applied to each side of the building corner and the two 24-inch wide (610 mm) panels at the corner shall be attached to framing in accordance with Figure R602.10.5; or

2. The end of each braced wall panel closest to the corner shall have a tie-down device fastened to the stud at the edge of the braced wall panel closest to the corner and to the foundation or framing below. The tie-down device shall be capable of providing an uplift allowable design value of at least 1,800 pounds (8 kN). The tie-down device shall be installed in accordance with the manufacturer's recommendations.

**R602.10.11.3 Collectors.** A designed collector shall be provided if a braced wall panel is not located at each end of a braced wall line as indicated in Section R602.10.11.2 or, when using the Section R602.10.11.2 Exception, if a braced wall panel is more than 8 feet (2438 mm) from each end of a braced wall line.

**R602.10.11.4 Cripple wall bracing.** In addition to the requirements of Section R602.10.2, where interior braced wall panels occur without a foundation below, the length of parallel exterior cripple wall bracing shall be one and one-half times the length required by Table R602.10.1. Where cripple walls braced using Method 3 of Section R602.10.3 cannot provide this additional length, the capacity of the sheathing shall be increased by reducing the spacing of fasteners along the perimeter of each piece of sheathing to 4 inches (102 mm) on center.

**R602.10.11.5 Sheathing attachment.** Adhesive attachment of wall sheathing shall not be permitted in Seismic Design Categories C, D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub>.

**R602.11 Framing and connections for Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub>.** The framing and connection details of buildings located in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub> shall be in accordance with Sections R602.11.1 through R602.11.3.

**R602.11.1 Wall anchorage.** Braced wall line sill plates shall be anchored to concrete or masonry foundations in accordance with Sections R403.1.6 and R602.11. For all buildings in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub> and townhouses in Seismic Design Category C, plate washers, a minimum of 0.229 inch by 3 inches by 3 inches (5.8 mm by 76 mm by 76 mm) in size, shall be installed between the foundation sill plate and the nut. The hole in the plate washer is permitted to be diagonally slotted with a width of up to 3/16 inch (5 mm) larger than the bolt diameter and a slot length not to exceed 1-3/4 inches (44 mm), provided a standard cut washer is placed between the plate washer and the nut.

**R602.11.2 Interior braced wall panel connections.** Interior braced wall panels shall be fastened to floor and roof framing in accordance with Table R602.3(1), to required foundations in accordance with Section R602.11.1, and in accordance with the following requirements:

1. Floor joists parallel to the top plate shall be toe-nailed to the top plate with at least 8d nails spaced a maximum of 6 inches (152 mm) on center.
2. Top plate laps shall be face-nailed with at least eight 16d nails on each side of the splice.

**R602.11.3 Stepped foundations.** Where stepped foundations occur, the following requirements apply:

1. Where the height of a required braced wall panel that extends from foundation to floor above varies more than 4 feet (1220 mm), the braced wall panel shall be constructed in accordance with Figure R602.11.3.
2. Where the lowest floor framing rests directly on a sill bolted to a foundation not less than 8 feet (2440 mm) in length along a line of bracing, the line shall be considered as braced. The double plate of the cripple stud wall beyond the segment of footing that extends to the lowest framed floor

shall be spliced by extending the upper top plate a minimum of 4 feet (1219 mm) along the foundation. Anchor bolts shall be located a maximum of 1 foot and 3 feet (305 and 914 mm) from each end of the plate section at the step in the foundation.

3. Where cripple walls occur between the top of the foundation and the lowest floor framing, the bracing requirements for a story shall apply.

4. Where only the bottom of the foundation is stepped and the lowest floor framing rests directly on a sill bolted to the foundations, the requirements of Section R602.11.1 shall apply.) **Cripple wall bracing.** In Seismic Design Categories other than D<sub>2</sub>, cripple walls supporting bearing walls or exterior walls or interior braced wall panels as required in R403.1.2 and R602.10.7.1 shall be braced with a length and type of bracing as required for the wall above in accordance with Tables R602.10.1.2(1) and R602.10.1.2(2) with the following modifications for cripple wall bracing:

1. The length of bracing as determined from Tables R602.10.1.2(1) and R602.10.1.2(2) shall be multiplied by a factor of 1.15, and

2. The wall panel spacing shall be decreased to 18 feet (5486 mm) instead of 25 feet (7620 mm).

**R602.10.9.1 Cripple wall bracing in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub>.** In addition to the requirements of Section R602.10.9, where braced wall lines at interior walls occur without a continuous foundation below, the length of parallel exterior cripple wall bracing shall be 1 1/2 times the length required by Tables R602.10.1.2(1) and R602.10.1.2(2). Where cripple walls braced using Method WSP of Section R602.10.2 cannot provide this additional length, the capacity of the sheathing shall be increased by reducing the spacing of fasteners along the perimeter of each piece of sheathing to 4 inches (102 mm) on center.

In Seismic Design Category D<sub>2</sub>, cripple walls supporting bearing walls or exterior walls or interior braced wall panels as required in Sections R403.1.2 and R602.10.7.1 shall be braced in accordance with Tables R602.10.1.2(1) and R602.10.1.2(2).

**AMENDATORY SECTION** (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

**WAC 51-51-0613 Section ((R613)) R612—Exterior windows and glass doors.**

**((R613.4)) R612.6 Testing and labeling.** Exterior windows and sliding doors shall be tested by an approved independent laboratory, and bear a label identifying manufacturer, performance characteristics and approved inspection agency to indicated compliance with AAMA/WDMA/CSA 101/I.S.2/A440. Exterior side-hinged doors shall be tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 or comply with Section R613.6.

EXCEPTION:

1. Decorative glazed openings.
2. Custom exterior windows and doors manufactured by a small business shall be exempt from all testing requirements in Section R-613 of the International Residential Code provided they meet the applicable provisions of Chapter 24 of the International Building Code.

NEW SECTION**WAC 51-51-0702 Section R702—Interior Covering.**

**R702.5 Other finishes.** Wood veneer paneling and hardboard paneling shall be placed on wood or cold-formed steel framing spaced not more than 16 inches (406 mm) on center. Wood veneer and hardboard paneling less than 1/4-inch (6 mm) nominal thickness shall not have less than a 3/8-inch (10 mm) gypsum board packer. Wood veneer paneling not less than 1/4-inch (6 mm) nominal thickness shall conform to ANSI/HPVA HP-1. Hardboard paneling shall conform to ANSI/AHA A135.5. All structural panel components within the conditioned space such as plywood, particle board, wafer board and oriented strand board shall be identified as "EXPOSURE 1," "EXTERIOR" or "HUD-APPROVED."

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

**WAC 51-51-0703 Section R703—Exterior covering.**

**R703.1 General.** Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.8. The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining water that enters the assembly to the exterior.

## EXCEPTIONS:

1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed according to Section R703.7 or R703.8.
2. Compliance with the requirements for a means of drainage, and the requirements of Section R703.2 and R703.8, shall not be required for an exterior wall envelope that has been demonstrated to resist wind-driven rain through testing of the exterior wall envelope, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
  - 2.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
  - 2.2. Exterior wall envelope test assemblies shall be at least 4 feet (1219 mm) by 8 feet (2438 mm) in size.
  - 2.3. Exterior wall assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (299Pa).
  - 2.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours. The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate: Control joints in the exterior wall envelope; joints at the perimeter of opening penetration; or intersections of terminations with dissimilar materials.
3. The requirement for a means of drainage shall not be construed to mean an air space cavity under the exterior cladding for an exterior wall clad with panel or lapped siding made of plywood, engineered wood, hardboard, or fiber cement. A water-resistive barrier as required by Section R703.2 and Table R703.4 will be required on exterior walls.

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

**WAC 51-51-0806 Section R806—Roof ventilation.**

**R806.4 ((Conditioned)) Unvented attic assemblies.** ~~((This section is not adopted.))~~ Unvented attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) shall be permitted if all of the following conditions are met:

1. The unvented attic space is completely contained within the building thermal envelope.

2. No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.

3. Where wood shingles or shakes are used, a minimum 1/4-inch (6 mm) vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.

4. Any air-impermeable insulation shall be a vapor retarder, or shall have a vapor retarder coating or covering in direct contact with the underside of the insulation.

5. Either items a, b or c below shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.

a. Air-impermeable insulation only. Insulation shall be applied in direct contact to the underside of the structural roof sheathing.

b. Air-permeable insulation only. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing as specified per Washington climate zone for condensation control.

i. Climate Zone #1 - R-10 minimum rigid board or air-impermeable insulation R-value.

ii. Climate Zone #2 - R-25 minimum rigid board or air-impermeable insulation R-value.

c. Air-impermeable and air-permeable insulation. The air-impermeable insulation shall be applied in direct contact to the underside of the structural roof sheathing as specified per Washington climate zone for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.

i. Climate Zone #1 - R-10 minimum rigid board or air-impermeable insulation R-value.

ii. Climate Zone #2 - R-25 minimum rigid board or air-impermeable insulation R-value.

NEW SECTION**WAC 51-51-0903 Section R903—Weather protection.**

**R903.4.1 Overflow drains and scuppers.** Where roof drains are required, overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2 inches (51 mm) above the low point of the roof, or overflow scuppers having three times the size of the roof drains and having a minimum opening height of 4 inches (102 mm) shall be installed in the adjacent parapet walls with the inlet flow located 2 inches (51 mm) above the low point of the roof served. The installation and sizing of overflow drains, leaders and conductors shall comply with the plumb-

ing code. Overflow drains shall discharge to an approved location.

#### NEW SECTION

#### **WAC 51-51-1001 Section R1001—Masonry fireplaces.**

**R1001.7.1 Damper.** Masonry fireplaces shall be equipped with a ferrous metal damper located at least 8 inches (203 mm) above the top of the fireplace opening. Dampers shall be installed in the fireplace or the chimney venting the fireplace, and shall be operable from the room containing the fireplace.

Fireplaces shall be provided with each of the following:

1. Tightly fitting flue dampers, operated by a readily accessible manual or approved automatic control.

EXCEPTION: Fireplaces with gas logs shall be installed in accordance with the International Mechanical Code Section 901, except that the standards for liquefied petroleum gas installations shall be NFPA 58 (Liquefied Petroleum Gas Code) and NFPA 54 (National Fuel Gas Code).

2. An outside source for combustion air ducted into the firebox. The duct shall be at least 6 square inches, and shall be provided with an operable outside air duct damper.

EXCEPTION: Washington certified fireplaces shall be installed with the combustion air systems necessary for their safe and efficient combustion and specified by the manufacturer in accordance with the Washington State Building Standard 31-2 (WAC 51-50-31200) and IBC Section 2114 (WAC 51-50-2114).

3. Site built fireplaces shall have tight fitting glass or metal doors, or a flue draft induction fan or as approved for minimizing back-drafting. Factory built fireplaces shall use doors listed for the installed appliance.

#### NEW SECTION

#### **WAC 51-51-1006 Section R1006—Exterior air supply.**

**R1006.2 Solid fuel burning appliances and fireplaces.** Solid fuel burning appliances and fireplaces shall be provided with tight fitting metal or ceramic glass doors, and:

1. A source from outside the structure of primary combustion air, connected to the appliance as per manufacturer's specification. The air inlet shall originate at a point below the fire box. The duct shall be 4 inches or greater in diameter, not exceed 20 feet in length, and be installed as per manufacturer's instructions; or

2. The appliance and manufacturer's recommended combustion air supply, as an installed unit, shall be certified by an independent testing laboratory to have passed Test No. 11-Negative Pressure Test, Section 12.3, of ULC S627-M1984 "Space Heaters for Use with Solid Fuels," modified as follows:

Negative pressure of 8 Pascal shall be initially established with the chamber sealed and the air supply, if not directly connected to the appliance, closed off.

The air supply if not directly connected to the appliance, shall then be opened.

The maximum allowable air exchange rate from chamber leakage and intentional air supply for the unit (appliance with combustion air supply) in the test chamber is 3.5 air changes per hour, or 28 cfm (cubic feet of air per minute), whichever is less.

EXCEPTION: Combustion air may be supplied to the room in which the solid fuel burning appliance is located in lieu of direct ducting, provided that one of the following conditions is met:

1. The solid fuel burning appliance is part of a central heating plant and installed in an unconditioned space in conformance with the International Mechanical Code; or

2. The solid fuel burning appliance is installed in existing construction directly on a concrete floor or surrounded by masonry materials as in a fireplace.

The combustion air terminus shall be located as close to the solid fuel burning appliance as possible and shall be provided with a barometric damper or equivalent. The combustion air source shall be specified by the manufacturer or no less than 4 inches in diameter or the equivalent in area or as approved.

**R1006.1.1 Factory built fireplaces.** Do not adopt this section.

**R1006.1.2 Masonry fireplaces.** Do not adopt this section.

**R1006.2 Exterior air intake.** Do not adopt this section.

#### NEW SECTION

#### **WAC 51-51-1302 Section M1302—General mechanical system requirements.**

**M1302.2 Construction Documents.** The plans and specifications shall show in sufficient detail pertinent data and features of the materials, equipment and systems as herein governed, including, but not limited to: Design criteria, structural panel materials, size and type of apparatus and equipment, systems and equipment controls, provisions for combustion air to fuel burning appliances, and other pertinent data to indicate conformance with the requirements of this code.

**M1302.3 Testing.** At the discretion of the building official, flow testing may be required to verify that the mechanical system(s) satisfies the requirements of this code. Flow testing may be performed using flow hoods measuring at the intake or exhaust points of the system, in-line pitot tube, or pitot-traverse type measurement systems in the duct, short term tracer gas measurements, or other means approved by the building official.

#### NEW SECTION

#### **WAC 51-51-1415 Section M1415—Masonry heaters.**

**M1415.1 General.** Masonry heaters shall be approved by the department of ecology and shall contain both of the following:

1. Primary combustion air ducted from the outside of the structure to the appliance.



2. Tight fitting ceramic glass or metal doors. Flue damper, when provided, shall have an external control and when in the closed position shall have a net free area of not less than 5% of the flue cross sectional area.

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

**WAC 51-51-1501 Section M1501—General.**

~~((M1501 Outdoor discharge. The air removed by every mechanical exhaust system shall be discharged to the outdoors. Air shall not be exhausted into an attic, soffit, ridge vent or crawl space.~~

EXCEPTION: Whole-house cooling attic fans that discharge into the attic space of dwelling units having private attics shall be permitted.)

Reserved.

NEW SECTION

**WAC 51-51-1507 Section M1507—Mechanical ventilation.**

**M1507.1 General.** Source specific exhaust ventilation is required in each kitchen, bathroom, water closet, laundry room, indoor swimming pool, spa, and other rooms where water vapor or cooking odor is produced. The minimum source specific ventilation effective exhaust capacity shall not be less than levels specified in Table M1507.3.

**M1507.3.1 Source Specific Exhaust Fans.** Exhaust fans providing source specific ventilation shall have a minimum fan flow rating not less than 50 cfm at 0.25 inches water gauge for bathrooms, laundries, or similar rooms and 100 cfm at 0.25 inches water gauge for kitchens. Manufacturers' fan flow ratings shall be determined as per HVI 916 (April 1995) or AMCA 210.

EXCEPTION: Where a range hood or down draft exhaust fan is used to satisfy the source specific ventilation requirements for kitchens, the range hood or down draft exhaust shall not be less than 100 cfm at 0.10 inches water gauge.

**M1507.3.2 Source Specific Ventilation Controls.** Source specific ventilation systems shall be controlled by manual switches, dehumidistats, timers, or other approved means. Source specific ventilation system controls shall be readily accessible.

**M1507.3.3 Source Specific Ventilation Ducts.** Source specific ventilation ducts shall terminate outside the building. Exhaust ducts shall be equipped with back-draft dampers. All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4. Terminal elements shall have at least the equivalent net free area of the duct work. Terminal elements for exhaust fan duct systems shall be screened or otherwise protected from entry by leaves or other material. Minimum 50% net free area shall meet the requirements of R303.5.

NEW SECTION

**WAC 51-51-1508 Section M1508—Whole house ventilation.**

**M1508.1 General.** This section establishes minimum prescriptive design requirements for whole house ventilation systems. Each dwelling unit or guest room shall be equipped with a ventilation system complying with Section M1508.4, M1508.5, M1508.6 or M1508.7. Compliance is also permitted to be demonstrated through compliance with the International Mechanical Code.

**M1508.1.1 Operating Instructions.** Installers shall provide the manufacturer's installation, operating instructions, and a whole house ventilation system operation description.

**M1508.2 Continuously Operating Exhaust Ventilation Systems.** Continuously operating exhaust ventilation systems shall provide the minimum flow rates specified in Table M1508.2.

**TABLE M1508.2  
MINIMUM VENTILATION RATES  
(Continuously operating systems)**

|           | Bedrooms |     |     |     |     |
|-----------|----------|-----|-----|-----|-----|
|           | 0-1      | 2-3 | 4-5 | 6-7 | >7  |
| <1500     | 30       | 45  | 60  | 75  | 90  |
| 1501-3000 | 45       | 60  | 75  | 90  | 105 |
| 3001-4500 | 60       | 75  | 90  | 105 | 120 |
| 4501-6000 | 75       | 90  | 105 | 120 | 135 |
| 6001-7500 | 90       | 105 | 120 | 135 | 150 |
| >7500     | 105      | 120 | 135 | 150 | 165 |

**M1508.3 Intermittently Operating Ventilation Systems.** The delivered ventilation rate for intermittently operating ventilation systems shall be the combination of its delivered capacity from Table M1508.2, and its ventilation effectiveness and daily fractional operation time from Table M1508.3.

$$Q_f = Q_r / (\epsilon f)$$

Where:

- Q<sub>f</sub> = Fan flow rate
- Q<sub>r</sub> = Ventilation air requirement (from Table 3-2)
- ε = Ventilation effectiveness (from Table 3-4)
- f = Fractional operation time

**TABLE M1508.3  
VENTILATION EFFECTIVENESS FOR INTERMITTENT FANS**

| Daily Fractional Operation Time, f | Ventilation Effectiveness, ε |
|------------------------------------|------------------------------|
| f ≤ 35%                            | 0.33                         |
| 35% ≤ f < 60%                      | 0.50                         |
| 60% ≤ f < 80%                      | 0.75                         |
| 80% ≤ f                            | 1.0                          |

For systems designed to operate at least once every three hours, ventilation effectiveness can be 1.0.

**M1508.4 Intermittent Whole House Ventilation Using Exhaust Fans.** This section establishes minimum prescriptive requirements for intermittent whole house ventilation systems using exhaust fans. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole house ventilation system.

**M1508.4.1 Whole House Ventilation Fans.** Exhaust fans providing whole house ventilation shall have a flow rating at 0.25 inches water gauge as specified in Table M1503.2. Manufacturers' fan flow ratings shall be determined according to HVI 916 (April 1995) or AMCA 210.

**M1508.4.2 Fan Noise.** Whole house fans located 4 feet or less from the interior grille shall have a sone rating of 1.0 or less measured at 0.1 inches water gauge. Manufacturer's noise ratings shall be determined as per HVI 915 (October 1995). Remotely mounted fans shall be acoustically isolated from the structural elements of the building and from attached duct work using insulated flexible duct or other approved material.

**M1508.4.3 Fan Controls.** The whole house ventilation fan shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. The 24-hour timer shall be readily accessible. The 24-hour timer shall be capable of operating the whole house ventilation fan without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house fan for at least 8 hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

**M1508.4.4 Exhaust Ducts.** All exhaust ducts shall terminate outside the building. Exhaust ducts shall be equipped with back-draft dampers. All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4.

**M1508.4.5 Outdoor Air Inlets.** Outdoor air shall be distributed to each habitable room by individual outdoor air inlets. Where outdoor air supplies are separated from exhaust points by doors, provisions shall be made to ensure air flow by installation of distribution ducts, undercutting doors, installation of grilles, transoms, or similar means where permitted by the International Building Code. Doors shall be undercut to a minimum of 1/2 inch above the surface of the finish floor covering.

Individual room outdoor air inlets shall:

1. Have controllable and secure openings;
2. Be sleeved or otherwise designed so as not to compromise the thermal properties of the wall or window in which they are placed;
3. Provide not less than 4 square inches of net free area of opening for each habitable space. Any inlet or combination of inlets which provide 10 cfm at 10 Pascals as determined by the Home Ventilating Institute Air Flow Test Standard (HVI 901 November 1996) are deemed equivalent to 4 square inches net free area.

Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.
4. A room or space having any fuel-burning appliances therein.
5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
6. Attic, crawl spaces, or garages.

**M1508.5 Intermittent Whole House Ventilation Integrated With a Forced-Air System.** This section establishes minimum prescriptive requirements for intermittent whole house ventilation systems integrated with forced-air ventilation systems. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole house ventilation system.

**M1508.5.1 Integrated Whole House Ventilation Systems.** Integrated whole house ventilation systems shall provide outdoor air at the rate calculated using Section M1508.3. Integrated forced-air ventilation systems shall distribute outdoor air to each habitable room through the forced-air system ducts. Integrated forced-air ventilation systems shall have an outdoor air inlet duct connecting a terminal element on the outside of the building to the return air plenum of the forced-air system, at a point within 4 feet upstream of the air handler. The outdoor air inlet duct connection to the return air stream shall be located upstream of the forced-air system blower and shall not be connected directly into a furnace cabinet to prevent thermal shock to the heat exchanger. The system will be equipped with a motorized damper connected to the automatic ventilation control as specified in Section M1508.5.2. The required flow rate shall be verified by field testing with a flow hood or a flow measuring station.

**M1508.5.2 Ventilation Controls.** The whole house ventilation system shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. This control will control the forced air system blower and the automatic damper. The 24-hour timer shall be readily accessible. The 24-hour timer shall be capable of operating the whole house ventilation system without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house system for at least 8 hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

**M1508.5.3 Ventilation Duct Insulation.** All supply ducts in the conditioned space shall be insulated to a minimum of R-4.

**M1508.5.4 Outdoor Air Inlets.** Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.
4. A room or space having any fuel-burning appliances therein.
5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
6. Attic, crawl spaces, or garages.

**M1508.6. Intermittent Whole House Ventilation Using a Supply Fan.** This section establishes minimum prescriptive requirements for intermittent whole house ventilation systems using an inline supply fan. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole house ventilation system.

**M1508.6.1 Outdoor Air.** Supply fan ventilation systems shall distribute outdoor air to each habitable room through the forced-air system ducts or through dedicated ducts to each habitable room. Supply fans shall have the capacity to provide the amount of outdoor air specified in Table M1508.2 at 0.40 inches water gauge as per HVI 916 (April 1995). The outdoor air must be filtered before it is delivered to habitable rooms. The filter may be located at the intake device, in line with the fan, or, in the case of a connection to the return plenum of the air handler, using the furnace filter. An outdoor air inlet shall be connected to either the supply or return air stream.

**M1508.6.2 Ducts.** An outdoor air inlet duct connection to the supply air stream shall be located downstream of the forced-air system blower. An outdoor air inlet duct connection to the return air stream shall be located at least 4 feet upstream of the forced-air system blower and its filter. Neither type of duct shall be connected directly into a furnace cabinet to prevent thermal shock to the heat exchanger. The outdoor air inlet duct shall be prescriptively sized in accordance with Table M1508.6.2. The terminal element on the outside of the building shall be sized 2 inches in diameter larger than the outdoor air inlet duct.

TABLE M1508.6.2  
PRESCRIPTIVE SUPPLY FAN DUCT SIZING

| Supply Fan Tested cfm at 0.40" wg  |                              |                                |
|------------------------------------|------------------------------|--------------------------------|
| Specified Volume from Table 1508.2 | Minimum Smooth Duct Diameter | Minimum Flexible Duct Diameter |
| 50 - 90 cfm                        | 4 inch                       | 5 inch                         |
| 90 - 150 cfm                       | 5 inch                       | 6 inch                         |
| 150 - 250 cfm                      | 6 inch                       | 7 inch                         |
| 250 - 400 cfm                      | 7 inch                       | 8 inch                         |

**M1508.6.3 Dampers.** The system shall be equipped with a back-draft damper and one of the following:

1. A calibrated manual volume damper installed and set to meet the measured flow rates specified in Table M1508.2

by field testing with a pressure gauge and/or following manufacturer's installation instructions; or

2. A manual volume damper installed and set to meet the measured flow rates specified in Table M1508.2 by field testing with a flow hood or a flow measuring station; or

3. An automatic flow-regulating device sized to the specified flow rates in Table M1508.2 which provides constant flow over a pressure range of 0.20 to 0.60 inches water gauge.

**M1508.6.4 Ventilation Controls.** The whole house ventilation system shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. This will control the inline supply fan. The 24-hour timer shall be readily accessible. The 24 hour timer shall be capable of operating the whole house ventilation system without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer shall be set to operate the whole house system for at least 8 hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

**M1508.6.5 Ventilation Duct Insulation.** All supply ducts in the conditioned space shall be insulated to a minimum of R-4.

**M1508.6.6 Outdoor Air Inlets.** Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.
4. A room or space having any fuel-burning appliances therein.
5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
6. Attic, crawl spaces, or garages.

**M1508.7 Intermittent Whole House Ventilation Using a Heat Recovery Ventilation System.** This section establishes minimum prescriptive requirements for intermittent whole house ventilation using a heat recovery ventilation system.

**M1508.7.1 Heat Recovery Ventilation Systems.** All duct work in heat recovery systems shall be sized and installed per the manufacturer's instructions. System minimum flow rating shall be not less than that specified in Table M1508.2. Heat recovery ventilation systems shall have a filter on the upstream side of the heat exchanger in both the intake and exhaust airstreams with a minimum efficiency ratings value (MERV) of 6.

**M1508.7.2 Ventilation Controls.** The whole house ventilation system shall be controlled by a 24-hour clock timer with the capability of continuous operation, manual and automatic control. This control will control the inline supply fan. The 24-hour timer shall be readily accessible. The 24-hour timer shall be capable of operating the whole house ventilation system without energizing other energy-consuming appliances. At the time of final inspection, the automatic control timer

shall be set to operate the whole house system for at least 8 hours a day. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

**M1508.7.3 Ventilation Duct Insulation.** All supply ducts in the conditioned space installed upstream of the heat exchanger shall be insulated to a minimum of R-4.

**M1508.7.4 Outdoor Air Inlets.** Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.
4. A room or space having any fuel-burning appliances therein.
5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
6. Attic, crawl spaces, or garages.

#### NEW SECTION

##### **WAC 51-51-1600 Chapter 16—Duct systems.**

**M1601.1.1 Above-ground duct systems.** Above-ground duct systems shall conform to the following:

1. Equipment connected to duct systems shall be designed to limit discharge air temperature to a maximum of 250°F (121°C).
2. Factory-made air ducts shall be constructed of Class 0 or Class 1 materials as designated in Table M1601.1.1(1).
3. Fibrous duct construction shall conform to the SMACNA Fibrous Glass Duct Construction Standards or NAIMA Fibrous Glass Duct Construction Standards.
4. Minimum thickness of metal duct material shall be as listed in Table M1601.1.1(2). Galvanized steel shall conform to ASTM A 653.
5. Use of gypsum products to construct return air ducts or plenums is permitted, provided that the air temperature does not exceed 125°F (52°C) and exposed surfaces are not subject to condensation.
6. Duct systems shall be constructed of materials having a flame spread index not greater than 200.
7. Stud wall cavities and the spaces between solid floor joists shall not be used as a duct or an air plenum in new construction. For existing systems, stud wall cavities and the spaces between solid floor joists to be used as air plenums shall comply with the following:
  - 7.1. These cavities or spaces shall not be used as a plenum for supply air.
  - 7.2. These cavities or spaces shall not be part of a required fire-resistance-rated assembly.
  - 7.3. Stud wall cavities shall not convey air from more than one floor level.
  - 7.4. Stud wall cavities and joist-space plenums shall be isolated from adjacent concealed spaces by tight-fitting fire blocking in accordance with Section R602.8.

#### NEW SECTION

##### **WAC 51-51-1700 Chapter 17—Combustion air.**

**M1701.1 Scope.** Solid-fuel-burning appliances shall be provided with combustion air in accordance with the appliance manufacturer's installation instructions. Oil-fired appliances shall be provided with combustion air in accordance with NFPA 31. The methods of providing combustion air in this chapter do not apply to fireplaces, fireplace stoves and direct-vent appliances. The requirements for combustion and dilution air for gas-fired appliances shall be in accordance with Chapter 24.

Fireplaces shall comply with Section 1001.

AMENDATORY SECTION (Amending WSR 08-01-102, filed 12/18/07, effective 4/1/08)

##### **WAC 51-51-2439 Section G2439—Clothes dryer exhaust.**

~~((G2439.5.3 Protection required. Plates or clips shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer exhaust duct. Plates or clips shall be placed on the finished face of all framing members where there is less than 1-1/4 inches (32 mm) between the duct and the finished face of the framing material. The plate or clip shall be steel not less than 1/16 inch (1.59 mm) in thickness and of sufficient width to protect the duct.))~~  
Reserved.

AMENDATORY SECTION (Amending WSR 07-01-090, filed 12/19/06, effective 7/1/07)

##### **WAC 51-51-4300 Chapter ((43)) 44—Referenced standards.**

##### **Washington State Building Code Standard 31-2 STANDARD TEST METHOD FOR PARTICULATE EMISSIONS FROM FIREPLACES**

**See Section R1004.1, *International Residential Code Standard* is located in *International Building Code*, Chapter 35**

#### NEW SECTION

##### **WAC 51-51-60105 Appendix R—Dwelling unit fire sprinkler systems.**

**AR105.1 General.** Where installed, residential fire sprinkler systems, or portions thereof, shall be in accordance with NFPA 13D or Appendix R, which shall be considered equivalent to NFPA 13D. Appendix R shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose fire sprinkler system shall supply domestic water to both fire sprinklers and plumbing fixtures. A stand-alone sprinkler system shall be separate and independent from the water distribution system.

**AR105.1.1 Required sprinkler locations.** Sprinklers shall be installed to protect all areas of a dwelling unit.

EXCEPTIONS:

1. Attics, crawl spaces and normally unoccupied concealed spaces that do not contain fuel-fired appliances do not require sprinklers. In attics, crawl spaces and normally unoccupied concealed spaces that contain fuel-fired equipment, a sprinkler shall be installed above the equipment; however, sprinklers shall not be required in the remainder of the space.
2. Clothes closets, linen closets and pantries not exceeding 24 square feet (2.2 m<sup>2</sup>) in area, with the smallest dimension not greater than 3 feet (915 mm) and having wall and ceiling surfaces of gypsum board.
3. Bathrooms not more than 55 square feet (5.1 m<sup>2</sup>) in area.
4. Garages; carports; exterior porches; unheated entry areas, such as mud rooms, that are adjacent to an exterior door; and similar areas.

**AR105.2 Sprinklers.** Sprinklers shall be new listed residential sprinklers and shall be installed in accordance with the sprinkler manufacturer's installation instructions.

**AR105.2.1 Temperature rating and separation from heat sources.** Except as provided for in Section AR105.2.2, sprinklers shall have a temperature rating of not less than 135°F (57°C) and not more than 170°F (77°C). Sprinklers shall be separated from heat sources as required by the sprinkler manufacturer's installation instructions.

**AR105.2.2 Intermediate temperature sprinklers.** Sprinklers shall have an intermediate temperature rating not less than 175°F (79°C) and not more than 225°F (107°C) where installed in the following locations:

1. Directly under skylights, where the sprinkler is exposed to direct sunlight.
2. In attics.
3. In concealed spaces located directly beneath a roof.
4. Within the distance to a heat source as specified in Table AR105.2.2.

**AR105.2.3 Freezing areas.** Piping shall be protected from freezing. Where sprinklers are required in areas that are subject to freezing, dry-side-wall or dry-pendent sprinklers extending from a nonfreezing area into a freezing area shall be installed.

**TABLE AR105.2.2  
LOCATIONS WHERE INTERMEDIATE TEMPERATURE  
SPRINKLERS ARE REQUIRED**

| HEAT SOURCE                                   | RANGE OF DISTANCE FROM HEAT SOURCE WITHIN WHICH INTERMEDIATE TEMPERATURE SPRINKLERS ARE REQUIRED <sup>a,b</sup> (inches) |
|---|--|
| Fireplace, side of open or recessed fireplace | 12 to 36   |
| Fireplace, front of recessed fireplace        | 36 to 60   |
| Coal and wood burning stove                   | 12 to 42   |
| Kitchen range top                             | 9 to 18  |
| Oven  | 9 to 18  |

**TABLE AR105.2.2  
LOCATIONS WHERE INTERMEDIATE TEMPERATURE  
SPRINKLERS ARE REQUIRED**

| HEAT SOURCE                               | RANGE OF DISTANCE FROM HEAT SOURCE WITHIN WHICH INTERMEDIATE TEMPERATURE SPRINKLERS ARE REQUIRED <sup>a,b</sup> (inches) |
|---|--|
| Vent connector or chimney connector       | 9 to 18  |
| Heating duct, not insulated               | 9 to 18  |
| Hot water pipe, not insulated             | 6 to 12  |
| Side of ceiling or wall warm air register | 12 to 24   |
| Front of wall mounted warm air register   | 18 to 36   |
| Water heater, furnace or boiler           | 3 to 6   |
| Luminaire up to 250 watts                 | 3 to 6   |
| Luminaire 250 watts up to 499 watts       | 6 to 12  |

For IS: 1 inch = 25.4 mm.

- a. Sprinklers shall not be located at distances less than the minimum table distance unless the sprinkler listing allows a lesser distance.
- b. Distances shall be measured in a straight line from the nearest edge of the heat source to the nearest edge of the sprinkler.

**AR105.2.4 Sprinkler coverage.** Sprinkler coverage requirements and sprinkler obstruction requirements shall be in accordance with Sections AR105.2.4.1 and AR105.2.4.2.

**AR105.2.4.1 Coverage area limit.** The area of coverage of a single sprinkler shall not exceed 400 square feet (37 m<sup>2</sup>) and shall be based on the sprinkler listing and the sprinkler manufacturer's installation instructions.

**AR105.2.4.2 Obstructions to coverage.** Sprinkler discharge shall not be blocked by obstructions unless additional sprinklers are installed to protect the obstructed area. Sprinkler separation from obstructions shall comply with the minimum distances specified in the sprinkler manufacturer's instructions.

**AR105.2.4.2.1 Additional requirements for pendent sprinklers.** Pendent sprinklers within 3 feet (915 mm) of the center of a ceiling fan, surface-mounted ceiling luminaire or similar object shall be considered to be obstructed, and additional sprinklers shall be installed.

**AR105.2.4.2.2 Additional requirements for sidewall sprinklers.** Sidewall sprinklers within 5 feet (1524 mm) of the center of a ceiling fan, surface-mounted ceiling luminaire or similar object shall be considered to be obstructed, and additional sprinklers shall be installed.

**AR105.2.5 Sprinkler installation on systems assembled with solvent cement.** The solvent cementing of threaded

adapter fittings shall be completed and threaded adapters for sprinklers shall be verified as being clear of excess cement prior to the installation of sprinklers on systems assembled with solvent cement.

**AR105.2.6 Sprinkler modifications prohibited.** Painting, caulking or modifying of sprinklers shall be prohibited. Sprinklers that have been painted, caulked, modified or damaged shall be replaced with new sprinklers.

**AR105.3 Sprinkler piping system.** Sprinkler piping shall be supported in accordance with the requirements for cold water distribution piping. Sprinkler piping shall comply with all requirements for cold water distribution piping. For multipurpose piping systems, the sprinkler piping shall connect to and be a part of the cold water distribution piping system.

**AR105.3.1 Nonmetallic pipe and tubing.** Nonmetallic pipe and tubing, such as CPVC and PEX, shall be listed for use in residential fire sprinkler systems.

**AR105.3.1.1 Nonmetallic pipe protection.** Nonmetallic pipe and tubing systems shall be protected from exposure to the living space by a layer of not less than 3/8-inch (9.5 mm) thick gypsum wallboard, 1/2-inch thick plywood (13 mm), or other material having a 15-minute fire rating.

EXCEPTIONS:

1. Pipe protection shall not be required in areas that do not require protection with sprinklers as specified in Section AR105.1.1.
2. Pipe protection shall not be required where exposed piping is permitted by the pipe listing.

**AR105.3.2 Shutoff valves prohibited.** With the exception of shutoff valves for the entire water distribution system, valves shall not be installed in any location where the valve would isolate piping serving one or more sprinklers.

**AR105.3.3 Single dwelling limit.** Piping beyond the service valve located at the beginning of the water distribution system shall not serve more than one dwelling.

**AR105.3.4 Drain.** A means to drain the sprinkler system shall be provided on the system side of the water distribution shutoff valve.

**AR105.4 Determining system design flow.** The flow for sizing the sprinkler piping system shall be based on the flow rating of each sprinkler in accordance with Section AR105.4.1 and the calculation in accordance with Section AR105.4.2.

**AR105.4.1 Determining required flow rate for each sprinkler.** The minimum required flow for each sprinkler shall be determined using the sprinkler manufacturer's published data for the specific sprinkler model based on all of the following:

1. The area of coverage.
2. The ceiling configuration.
3. The temperature rating.
4. Any additional conditions specified by the sprinkler manufacturer.

**AR105.4.2 System design flow rate.** The design flow rate for the system shall be based on the following:

1. The design flow rate for a room having only one sprinkler shall be the flow rate required for that sprinkler, as determined by Section AR105.4.1.

2. The design flow rate for a room having two or more sprinklers shall be determined by identifying the sprinkler in that room with the highest required flow rate, based on Section AR105.4.1, and multiplying that flow rate by 2.

3. Where the sprinkler manufacturer specifies different criteria for ceiling configurations that are not smooth, flat and horizontal, the required flow rate for that room shall comply with the sprinkler manufacturer's instructions.

4. The design flow rate for the sprinkler system shall be the flow required by the room with the largest flow rate, based on Items 1, 2 and 3.

5. For the purpose of this section, it shall be permissible to reduce the design flow rate for a room by subdividing the space into two or more rooms, where each room is evaluated separately with respect to the required design flow rate. Each room shall be bounded by walls and a ceiling. Openings in walls shall have a lintel not less than 8 inches (203 mm) in depth and each lintel shall form a solid barrier between the ceiling and the top of the opening.

**AR105.5 Water supply.** The water supply shall provide not less than the required design flow rate for sprinklers in accordance with Section AR105.4.2 at a pressure not less than that used to comply with Section AR105.6.

**AR105.5.1 Water supply from individual sources.** Where a dwelling unit water supply is from a tank system, a private well system or a combination of these, the available water supply shall be based on the minimum pressure control setting for the pump.

**AR105.5.2 Required capacity.** The water supply shall have the capacity to provide the required design flow rate for sprinklers for a period of time as follows:

1. 7 minutes for dwelling units one story in height and less than 2,000 square feet (186 m<sup>2</sup>) in area.
2. 10 minutes for dwelling units two or more stories in height or equal to or greater than 2,000 square feet (186 m<sup>2</sup>) in area.

Where a well system, a water supply tank system or a combination thereof is used, any combination of well capacity and tank storage shall be permitted to meet the capacity requirement.

**AR105.6 Pipe sizing.** The piping to sprinklers shall be sized for the flow required by Section AR105.4.2. The flow required to supply the plumbing fixtures shall not be required to be added to the sprinkler design flow.

**AR105.6.1 Method of sizing pipe.** Piping supplying sprinklers shall be sized using the prescriptive method in Section AR105.6.2 or by hydraulic calculation in accordance with NFPA 13D. The minimum pipe size from the water supply source to any sprinkler shall be 3/4 inch (19 mm) nominal. Threaded adapter fittings at the point where sprinklers are attached to the piping shall be a minimum of 1/2 inch (13 mm) nominal.

**AR105.6.2 Prescriptive pipe sizing method.** Pipe shall be sized by determining the available pressure to offset friction

loss in piping and identifying a piping material, diameter and length using the equation in Section AR105.6.2.1 and the procedure in Section AR105.6.2.2.

**AR105.6.2.1 Available pressure equation.** The pressure available to offset friction loss in the interior piping system ( $P_t$ ) shall be determined in accordance with Equation AR-1.

$$P_t = P_{sup} - PL_{svc} - PL_m - PL_d - PL_e - P_{sp}$$

(Equation AR-1)

Where:

|            |   |   |
|------------|---|---|
| $P_t$      | = | Pressure used in applying Tables AR105.6.2(4) through AR105.6.2(9). |
| $P_{sup}$  | = | Pressure available from the water supply source.                    |
| $PL_{svc}$ | = | Pressure loss in the water-service pipe.                            |
| $PL_m$     | = | Pressure loss in the water meter.                                   |
| $PL_d$     | = | Pressure loss from devices other than the water meter.              |
| $PL_e$     | = | Pressure loss associated with changes in elevation.                 |
| $P_{sp}$   | = | Maximum pressure required by a sprinkler.                           |

**AR105.6.2.2 Calculation procedure.** Determination of the required size for water distribution piping shall be in accordance with the following procedure:

**Step 1 - Determine  $P_{sup}$**

Obtain the static supply pressure that will be available from the water main from the water purveyor, or for an individual source, the available supply pressure shall be in accordance with Section AR105.5.1.

**Step 2 - Determine  $PL_{svc}$**

Use Table 2904.6.2(1) to determine the pressure loss in the water service pipe based on the selected size of the water service.

**Step 3 - Determine  $PL_m$**

Use Table 2904.6.2(2) to determine the pressure loss from the water meter, based on the selected water meter size.

**Step 4 - Determine  $PL_d$**

Determine the pressure loss from devices other than the water meter installed in the piping system supplying sprinklers, such as pressure-reducing valves, backflow preventers, water softeners or water filters. Device pressure losses shall be based on the device manufacturer's specifications. The flow rate used to determine pressure loss shall be the rate from Section AR105.4.2, except that 5 gpm (0.3 L/S) shall be added where the device is installed in a water-service pipe that supplies more than one dwelling. As alternative to deducting pressure loss for a device, an automatic bypass valve shall be installed to divert flow around the device when a sprinkler activates.

**Step 5 - Determine  $PL_e$**

Use Table 2904.6.2(3) to determine the pressure loss associated with changes in elevation. The elevation used in applying the table shall be the difference between the elevation where the water source pressure was measured and the elevation of the highest sprinkler.

**Step 6 - Determine  $P_{sp}$**

Determine the maximum pressure required by any individual sprinkler based on the flow rate from Section AR105.4.1. The required pressure is provided in the sprinkler manufacturer's published data for the specific sprinkler model based on the selected flow rate.

**Step 7 - Calculate  $P_t$**

Using Equation AR-1, calculate the pressure available to offset friction loss in water-distribution piping between the service valve and the sprinklers.

**Step 8 - Determine the maximum allowable pipe length**

Use Tables P2904.6.2(4) through P2904.6.2(9) to select a material and size for water distribution piping. The piping material and size shall be acceptable if the developed length of pipe between the service valve and the most remote sprinkler does not exceed the maximum allowable length specified by the applicable table. Interpolation of  $P_t$  between the tabular values shall be permitted.

The maximum allowable length of piping in Tables P2904.6.2(4) through P2904.6.2(9) incorporates an adjustment for pipe fittings, and no additional consideration of friction losses associated with pipe fittings shall be required.

**AR105.7 Instructions and signs.** An owner's manual for the fire sprinkler system shall be provided to the owner. A sign or valve tag shall be installed at the main shutoff valve to the water distribution system stating the following: "Warning, the water system for this home supplies fire sprinklers that require certain flows and pressures to fight a fire. Devices that restrict the flow or decrease the pressure or automatically shutoff the water to the fire sprinkler system, such as water softeners, filtration systems and automatic shutoff valves, shall not be added to this system without a review of the fire sprinkler system by a fire protection specialist. Do not remove this sign."

**AR105.8 Inspections.** The water distribution system shall be inspected in accordance with Sections AR105.8.1 and AR105.8.2.

**AR105.8.1 Preconcealment Inspection.** The following items shall be verified prior to the concealment of any sprinkler system piping:

1. Sprinklers are installed in all areas as required by Section AR105.1.1.
2. Where sprinkler water spray patterns are obstructed by construction features, luminaires or ceiling fans, additional sprinklers are installed as required by Section AR105.2.4.2.
3. Sprinklers are the correct temperature rating and are installed at or beyond the required separation distances from heat sources as required by Sections AR105.2.1 and AR105.2.2.
4. The pipe size equals or exceeds the size used in applying Tables P2904.6.2(4) through P2904.6.2(9) or, if the piping system was hydraulically calculated in accordance with Section AR105.6.1, the size used in the hydraulic calculation.
5. The pipe length does not exceed the length permitted by Tables AR105.6.2(4) through AR105.6.2(9) or, if the piping system was hydraulically calculated in accordance with

Section AR105.6.1, pipe lengths and fittings do not exceed those used in the hydraulic calculation.

6. Nonmetallic piping that conveys water to sprinklers is listed for use with fire sprinklers.

7. Piping is supported in accordance with the pipe manufacturer's and sprinkler manufacturer's installation instructions.

8. The piping system is tested in accordance with the plumbing code.

**AR105.8.2 Final inspection.** The following items shall be verified upon completion of the system:

1. Sprinklers are not painted, damaged or otherwise hindered from operation.

2. Where a pump is required to provide water to the system, the pump starts automatically upon system water demand.

3. Pressure-reducing valves, water softeners, water filters or other impairments to water flow that were not part of the original design have not been installed.

4. The sign or valve tag required by Section AR105.7 is installed and the owner's manual for the system is present.

#### NEW SECTION

**WAC 51-51-60107 Appendix S—Fire sprinklers.** The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

**AS107.1 Fire sprinklers.** An approved automatic fire sprinkler system shall be installed in new one-family and two-family dwellings and townhouses in accordance with Section 903.3.1 of the 2009 International Building Code.

#### NEW SECTION

The following sections of the Washington Administrative Code are decodified as follows:

| Old WAC Number | New WAC Number |
|----------------|----------------|
| 51-51-0613     | 51-51-0612     |
| 51-51-4300     | 51-51-4400     |

**WSR 09-17-141  
PROPOSED RULES  
BUILDING CODE COUNCIL**

[Filed August 19, 2009, 11:28 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-05-050.

Title of Rule and Other Identifying Information: Amendment of chapter 51-52 WAC, Adoption and amendment of the 2009 Edition of the International Mechanical Code (IMC) and International Fuel Gas Code (IFGC); 2009 Edition of the National Fuel Gas Code (NFPA 54); and the 2008 Edition of the Liquefied Petroleum Gas Code (NFPA 58).

Hearing Location(s): Holiday Inn Select Renton, One Grady Way South, Renton, WA, on September 29, 2009, at 10:00 a.m.; and at the Spokane City Council Chambers, West 808 Spokane Falls Boulevard, Spokane, WA, on October 5, 2009, at 9:00 a.m.

Date of Intended Adoption: November 12, 2009.

Submit Written Comments to: Peter DeVries, Council Chair, P.O. Box 42525, Olympia, WA 98504-2525, e-mail sbcc@commerce.wa.gov, fax (360) 586-9383, by October 5, 2009.

Assistance for Persons with Disabilities: Contact Sue Mathers by September 15, 2009, TTY (360) 586-0772 or (360) 725-2966.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposed rules adopt the most recently published editions of the IMC, IFGC, NFPA 54 and NFPA 58 and make changes to the state amendments to those codes.

1. Section 008: Coordinating change with Option 1 of the Ventilation and Indoor Air Quality (VIAQ) Code. The provisions of the VIAQ Code are relocated to the IMC, IRC and IBC and the VIAQ is repealed.

2. Section 101.2: The referenced editions of the NFPA codes are updated to the most recent version.

3. Section 202: The definitions of "source specific ventilation" and "whole house ventilation system" are added to coordinate with the integration of these requirements into the IMC. The definition of "environmental air" is amended to include parking garage exhaust.

4. Section 306: The design criteria for access ladders are amended for consistency with other state and federal laws.

5. Section 401.2: This amendment incorporates language previously found in the VIAQ.

6. Sections 401.2.1, 401.2.2 and 401.7: These amendments incorporate requirements previous [previously] found in the VIAQ.

7. Section 403.3 and Table 403.3: This modification of the state amendment incorporates changes made to the model code and updates the table for better consistency with ASHRAE 62.1. In addition, residential provisions of the table are updated to be consistent with requirements from the VIAQ.

8. Section 403.8: This section contains the requirements for whole house and source specific ventilation relocated from the VIAQ. The scope of the requirements has been expanded to include all residential occupancies.

Other changes from the existing VIAQ are as follows:

**Table 403.8.1** contains the information previously found [in] VIAQ Table 3-2 but has been modified to reflect values for continuously operating systems rather than intermittent.

**Section 403.8.5.1** contains the formula and table to convert to intermittent ventilation.

**Section 403.8.5.2** requires a motorized damper on outdoor air ducts integrated with dedicated or central systems rather than the manual damper or automated flow regulating device allowed under the VIAQ.

The exception for outdoor air openings for exhaust only systems with forced air furnaces previous [previously] found in VIAQ Section 303.4.1.5 has been deleted from **Section**



**403.8.6.1.** This section does now include items 2 and 3 specific to high rise buildings.

The sone rating for fans, found in Section **403.8.6.5**, has been reduced from 1.5 to 1.0.

The requirements for heat and energy recovery ventilation systems, found in **Section 403.8.9**, have been updated.

**Section 403.8.1** allows for the use of AHSRAE [ASHRAE] 62.2-2007 when approved by the building official.

9. Section 404: This amendment incorporate[s] requirements previous [previously] found in the VIAQ.

10. Section 501.2.1: This amendment was modified to provide specific guidance for parking garage and transformer vault exhaust outlet locations. It also incorporates changes made to the base model code.

11. Section 504.6.3: This amendment is repealed; the language is now found in the base model code and the amendment is no longer necessary.

12. Section 504.6.4.1: This amendment allows for the use of listed and labeled booster fans on dryer exhaust.

13. Section 505.1: This amendment allows for the use of listed and labeled booster fans on domestic range exhaust.

14. Section 506.3.3.1: This amendment is repealed; the same provision is now found in the base model code and the amendment is no longer necessary.

15. Section 506.3.9: This section provides provisions for access panels on grease ducts for cleanout purposes.

16. Section 507: This amendment provides an exception to allow R-2 boarding homes to provide Type II hoods rather than Type I.

17. Section 601.2: Exception 4 was added to the base model code, thereby eliminating the need for exception 5 added by state amendment. Exception 6 was modified to provide clarification on intent.

18. Section 603.5.1: This amendment adds an exception to allow the use of gypsum boards to form air shafts in stairwell and elevator pressurization systems.

19. Section 606.2.2: This amendment clarifies the requirements for the control system used to shut down fan-powered terminal units.

20. Chapter 10: The language sending users to L&I for boilers and pressure vessels is revised.

21. Chapter 15: ASHRAE 62.2-2007 was added to the list of referenced standards as a companion change to Section 403.8.11.

22. IFGC Section 101: The scoping section was amended to reference the updated editions of the NFPA codes for LP gas installations.

Reasons Supporting Proposal: RCW 19.27.031 and 19.27.074.

Statutory Authority for Adoption: RCW 19.27.031 and 19.27.074.

Statute Being Implemented: Chapters 19.27 and 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: The council is seeking comments on the issues proposed in the rules shown below.

Name of Proponent: Washington state building code council, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Krista Braaksma, P.O. Box 42525, Olympia, WA 98504-2525, (360) 725-2964; and Enforcement: Local jurisdictions.

No small business economic impact statement has been prepared under chapter 19.85 RCW. During review of the proposed changes, the technical advisory group and the economic and regulator assessment committee did not identify any items with potential disproportionate cost impact to small business.

A cost-benefit analysis is not required under RCW 34.05.328. The state building code council is not listed in this section as one of the agencies required to comply with this statute.

August 1, 2009  
Peter D. DeVries  
Council Chair

### Chapter 51-52 WAC

#### STATE BUILDING CODE ADOPTION AND AMENDMENT OF THE ~~((2006))~~ 2009 EDITION OF THE INTERNATIONAL MECHANICAL CODE

AMENDATORY SECTION (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

**WAC 51-52-003 International Mechanical Code.** The ~~((2006))~~ 2009 edition of the *International Mechanical Code* published by the International Code Conference is hereby adopted by reference with the exceptions noted in this chapter of the Washington Administrative Code (WAC).

AMENDATORY SECTION (Amending WSR 04-01-104, filed 12/17/03, effective 7/1/04)

**WAC 51-52-005 (~~Conflict between International Mechanical Code and State Ventilation and Indoor Air Quality Code chapter 51-13 WAC.~~) Reserved.** ((In the case of conflict between the Group R ventilation requirements of this code and the Group R ventilation requirements of chapter 51-13 WAC, the Washington State Ventilation and Indoor Air Quality Code, the provisions of the Ventilation and Indoor Air Quality Code shall govern.))

AMENDATORY SECTION (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

**WAC 51-52-008 Implementation.** The International Mechanical Code adopted by chapter 51-52 WAC shall become effective in all counties and cities of this state on July 1, ~~((2007))~~ 2010.

AMENDATORY SECTION (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

#### **WAC 51-52-0101 Section 101—General.**

**101.2 Scope.** This code shall regulate the design, installation, maintenance, alteration and inspection of mechanical

systems that are permanently installed and utilized to provide control of environmental conditions and related processes within buildings. This code shall also regulate those mechanical systems, system components, equipment and appliances specifically addressed herein. The installation of fuel gas distribution piping and equipment, fuel gas-fired appliances and fuel gas-fired appliance venting systems shall be regulated by the *International Fuel Gas Code*.

EXCEPTIONS:

1. Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures shall comply with the *International Residential Code*.
2. The standards for liquefied petroleum gas installations shall be the ((2004)) 2008 Edition of NFPA 58 (Liquefied Petroleum Gas Code) and the ((2006)) 2009 Edition of ANSI Z223.1/NFPA 54 (National Fuel Gas Code).

**AMENDATORY SECTION** (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

**WAC 51-52-0202 Section 202—General definitions.**

**ENVIRONMENTAL AIR.** Air that is conveyed to or from occupied areas through ducts which are not part of the heating or air-conditioning system, such as ventilation for human usage, domestic kitchen range exhaust, domestic clothes dryer exhaust and parking garage exhaust.

**SOURCE SPECIFIC VENTILATION.** A mechanical ventilation system including all fans, controls, and ducting, which is dedicated to exhausting contaminant-laden air to the exterior of the building from the room or space in which the contaminant is generated.

**UNUSUALLY TIGHT CONSTRUCTION.** Construction meeting the following requirements:

1. Walls exposed to the outdoor atmosphere having a continuous water vapor retarder with a rating of 1 perm (57 ng/s·m<sup>2</sup>·Pa) or less with openings gasketed or sealed; and
2. Operable windows and doors meeting the air leakage requirements of the *International Energy Conservation Code*, Section 502.1.4; and
3. Caulking or sealants are applied to areas such as joints around window and door frames, between sole plates and floors, between wall-ceiling joints, between wall panels, at penetrations for plumbing, electrical and gas lines, and at other openings; or
4. Buildings built in compliance with the 1986 or later editions of the Washington State Energy Code, chapter 51-11 WAC, Northwest Energy Code, or Super Good Cents weatherization standards or equivalent.

**WHOLE HOUSE VENTILATION SYSTEM.** A mechanical ventilation system, including fans, controls, and ducts, which replaces, by direct or indirect means, air from the habitable rooms with outdoor air.

**NEW SECTION**

**WAC 51-52-0306 Section 306—Access and service space.**

**306.5 Equipment and appliances on roofs or elevated structures.** Where equipment and appliances requiring access are installed on roofs or elevated structures at a height exceeding 16 feet (4877 mm), such access shall be provided by a permanent approved means of access, the extent of which shall be from grade or floor level to the equipment and appliances' level service space. Such access shall not require climbing over obstructions greater than 30 inches (762 mm) high or walking on roofs having a slope greater than 4 units vertical in 12 units horizontal (33 percent slope).

Permanent ladders installed to provide the required access shall comply with the following minimum design criteria:

1. The side railing shall extend above the parapet or roof edge not less than 42 inches (1067 mm).
2. Ladders shall have rung spacing not to exceed 12 inches (305 mm) on center.
3. Ladders shall have a toe spacing not less than 7 inches (178 mm) deep.
4. There shall be a minimum of 18 inches (457 mm) between rails.
5. Rungs shall have a minimum 0.75-inch (19 mm) diameter and be capable of withstanding a 300-pound (136.1 kg) load.
6. Ladders over 30 feet (9144 mm) in height shall be provided with offset sections and landings capable of withstanding 100 pounds (488.2 kg/m<sup>2</sup>) per square foot.
7. Ladders shall be protected against corrosion by approved means.

Catwalks installed to provide the required access shall be not less than 24 inches (610 mm) wide and shall have railings as required for service platforms.

EXCEPTION: This section shall not apply to Group R-3 occupancies.

**AMENDATORY SECTION** (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

**WAC 51-52-0401 Section 401—General.**

~~((401.4.2 Exhaust openings. Outdoor exhaust openings shall be located in accordance with Chapter 5. Exhaust air shall not be directed onto walkways.))~~ **401.2 Ventilation required.** Every occupied space other than enclosed parking garages and buildings used for repair of automobiles shall be ventilated in accordance with Section 402.2.1 or 401.2.2. Enclosed parking garages and buildings used for repair of automobiles shall be ventilated by mechanical means in accordance with Sections 403 and 404.

**401.2.1 Group R occupancies.** Ventilation in Group R occupancies shall be provided in accordance with Section 403.8.

**401.2.2 All other occupancies.** Ventilation in all other occupancies shall be provided by natural means in accordance with Section 402 or by mechanical means in accordance with Sections 403.1 to 403.7.

**401.7 Testing and balancing.** At the discretion of the building official, flow testing may be required to verify that the

mechanical system(s) satisfies the requirements of this chapter. Flow testing may be performed using flow hood measuring at the intake or exhaust points of the system, in-line pitot tube, or pitot-traverse type measurement systems in the duct, short term tracer gas measurements, or other means approved by the building official.

**AMENDATORY SECTION** (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

**WAC 51-52-0403 Section 403—Mechanical ventilation.**

**403.2 Outdoor air required.** The minimum ventilation rate of outdoor air shall be determined in accordance with Section 403.3.

**EXCEPTIONS:**

1. Where the registered design professional demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor air ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be reduced in accordance with such engineered system design.
2. Alternate systems designed in accordance with ASHRAE Standard ((62.1-2004)) 62.1 Section 6.2, Ventilation Rate Procedure, shall be permitted.

**403.2.1 Recirculation of air.** The air required by Section 403.3 shall not be recirculated. Air in excess of that required by Section 403.3 shall not be prohibited from being recirculated as a component of supply air to building spaces, except that:

1. Ventilation air shall not be recirculated from one dwelling to another or to dissimilar occupancies.
2. Supply air to a swimming pool and associated deck areas shall not be recirculated unless such air is dehumidified to maintain the relative humidity of the area at 60 percent or less. Air from this area shall not be recirculated to other

spaces where 10 percent or more of the resulting supply air-stream consists of air recirculated from these spaces.

3. Where mechanical exhaust is required by Note b in Table 403.3, recirculation of air from such spaces shall be prohibited. All air supplied to such spaces shall be exhausted, including any air in excess of that required by Table 403.3. (Item 4 is not adopted.)

**403.3 ((Ventilation)) Outdoor airflow rate.** Ventilation systems shall be designed to have the capacity to supply the minimum outdoor airflow rate determined in accordance with ((Table 403.3 based on the occupancy of the space and the occupant load or other parameter as stated therein)) this section. The occupant load utilized for design of the ventilation system shall not be less than the number determined from the estimated maximum occupant load rate indicated in Table 403.3. Ventilation rates for occupancies not represented in Table 403.3 shall be those for a listed occupancy classification that is most similar in terms of occupant density, activities and building construction; or shall be determined by an approved engineering analysis. The ventilation system shall be designed to supply the required rate of ventilation air continuously during the period the building is occupied, except as otherwise stated in other provisions of the code.

With the exception of smoking lounges, the ventilation rates in Table 403.3 are based on the absence of smoking in occupiable spaces. Where smoking is anticipated in a space other than a smoking lounge, the ventilation system serving the space shall be designed to provide ventilation over and above that required by Table 403.3 in accordance with accepted engineering practice.

**EXCEPTION:**

Where occupancy density is known and documented in the plans, the outside air rate may be based on the design occupant density. Under no circumstance shall the occupancies used result in outside air less than one-half that resulting from application of Table 403.3 estimated maximum occupancy rates.

**Table 403.3  
Required Outdoor Ventilation Air**

| <b>Occupancy Classification</b>              | <b>((Estimated Maximum Occupant Load, Persons per 1,000 Square Feet*)) People Outdoor Airflow Rate in Breathing Zone<br/>Zone<br/>cfm/Person</b> | <b>((Outdoor Air (Cubic feet per minute (cfm) per person) Unless Noted*)) Area Outdoor Airflow Rate in Breathing Zone R<sub>a</sub><br/>cfm/ft<sup>2a</sup></b> | <b>Default Occupant Density #/1000 ft<sup>2a</sup></b> | <b>Exhaust Airflow Rate cfm/ft<sup>2</sup></b> |
|--|--|---|--|--|
| <b>Correctional facilities</b>               |  |   |  |  |
| Cells  |  |   |  |  |
| without plumbing fixtures                    | ((20)) 5   | ((20)) 0.12   | 25   | —  |
| with plumbing fixtures <sup>g</sup>          | ((20)) 5   | ((20)) 0.12   | 25   | 1.0  |
| Dining halls (see food and beverage service) | ((100)) —  | ((15)) —  | —  | —  |
| Guard stations                               | ((40)) 5   | ((15)) 0.06   | 15   | —  |
| Day room                                     | 5  | 0.06  | 30   | —  |
| Booking/waiting                              | 7.5  | 0.06  | 50   | —  |
| <b>Dry cleaners, laundries</b>               |  |   |  |  |
| Coin-operated dry cleaner                    | ((20)) 15  | ((15)) —  | 20   | —  |
| Coin-operated laundries                      | ((20)) 7.5   | ((15)) 0.06   | 20   | —  |
| Commercial dry cleaner                       | 30   | ((30)) —  | 30   | —  |
| Commercial laundry                           | ((10)) 25  | ((25)) —  | 10   | —  |

**Table 403.3  
Required Outdoor Ventilation Air**

| <b>Occupancy Classification</b>                  | <b><del>((Estimated Maximum Occupant Load, Persons per 1,000 Square Feet*)) People Outdoor Airflow Rate in Breathing Zone</del><br/>cfm/Person</b> | <b><del>((Outdoor Air (Cubic feet per minute (cfm) per person) Unless Noted*)) Area Outdoor Airflow Rate in Breathing Zone R<sub>a</sub></del><br/>cfm/ft<sup>2a</sup></b> | <b>Default Occupant Density #/1000 ft<sup>2a</sup></b> | <b>Exhaust Airflow Rate cfm/ft<sup>2</sup></b> |
|--|--|--|--|--|
| Storage, pick up                                 | <del>((30))</del> 7.5  | <del>((35))</del> 0.12   | 30   | =  |
| <b>Education</b>                                 |  |  |  |  |
| (A) Auditoriums                                  | 150  | 15   |  |  |
| Classrooms                                       | 50   | 15   |  |  |
| Corridors  | —  | 0.10 cfm/ft <sup>2</sup>   |  |  |
| Laboratories                                     | 30   | 20   |  |  |
| Libraries  | 20   | 15   |  |  |
| Locker rooms                                     | —  | 0.50 cfm/ft <sup>2</sup>   |  |  |
| Music rooms                                      | 50   | 15   |  |  |
| Smoking lounges <sup>b,e</sup>                   | 70   | 60   |  |  |
| Training shops                                   | 30   | 20   |  |  |
| Art classroom                                    | 10   | 0.18   | 20   | 0.7  |
| Auditoriums                                      | 5  | 0.06   | 150  | =  |
| Classrooms (ages 5-8)                            | 10   | 0.12   | 25   | =  |
| Classrooms (ages 9 plus)                         | 10   | 0.12   | 35   | =  |
| Computer lab                                     | 10   | 0.12   | 25   | =  |
| Corridors (see public spaces)                    | =  | =  | =  | =  |
| Day care (through age 4)                         | 10   | 0.18   | 25   | =  |
| Lecture classroom                                | 7.5  | 0.06   | 65   | =  |
| Lecture hall (fixed seats)                       | 7.5  | 0.06   | 150  | =  |
| Locker/dressing room                             | =  | =  | =  | 0.25   |
| Media center                                     | 10   | 0.12   | 25   | =  |
| Multiuse assembly                                | 7.5  | 0.06   | 100  | =  |
| Music/theater/dance                              | 10   | 0.06   | 35   | =  |
| Science laboratories <sup>g</sup>                | 10   | 0.18   | 25   | 1.0  |
| Smoking lounges <sup>b,e</sup>                   | 60   | =  | 70   | =  |
| Sports locker rooms <sup>g</sup>                 | =  | =  | =  | 0.5  |
| Wood/metal shops <sup>g</sup>                    | 10   | 0.18   | 20   | 0.5  |
| <b>Food and beverage service</b>                 |  |  |  |  |
| Bars, cocktail lounges                           | <del>((400))</del> 7.5   | <del>((30))</del> 0.18   | 100  | =  |
| Cafeteria, fast food                             | <del>((400))</del> 7.5   | <del>((20))</del> 0.18   | 100  | =  |
| Dining rooms                                     | <del>((70))</del> 7.5  | <del>((20))</del> 0.18   | 70   | =  |
| Kitchens (cooking) <sup>(f,e)</sup> <sup>b</sup> | <del>((20))</del> =  | <del>((15))</del> =  | =  | 0.7  |
| <b>Hospitals, nursing and convalescent homes</b> |  |  |  |  |
| Autopsy rooms <sup>b</sup>                       | —  | <del>((0.50 cfm/ft<sup>2</sup>))</del> =   | =  | 0.5  |
| Medical procedure rooms                          | <del>((20))</del> 15   | <del>((15))</del> =  | 20   |  |
| Operating rooms                                  | <del>((20))</del> 30   | <del>((30))</del> =  | 20   |  |
| Patient rooms                                    | <del>((10))</del> 25   | <del>((25))</del> =  | 10   |  |
| Physical therapy                                 | <del>((20))</del> 15   | <del>((15))</del> =  | 20   |  |
| Recovery and ICU                                 | <del>((20))</del> 15   | <del>((15))</del> =  | 20   |  |
| <b>Hotels, motels, resorts and dormitories</b>   |  |  |  |  |
| Multipurpose assembly <del>((rooms))</del>       | <del>((120))</del> 5   | <del>((15))</del> 0.06   | 120  | =  |
| Bathrooms/toilet—private <sup>g</sup>            | —  | <del>((35))</del> =  | =  | 25/50 <sup>f</sup>                             |
| Bedroom <del>((s))</del> /living room            | <del>((—))</del> 5   | <del>((30 cfm per room))</del> 0.06  | 10   | =  |
| Conference <del>((rooms))</del> /meeting         | <del>((50))</del> 5  | <del>((20))</del> 0.06   | 50   | =  |
| Dormitory sleeping areas                         | <del>((20))</del> 5  | <del>((15))</del> 0.06   | 20   | =  |
| Gambling casinos                                 | <del>((120))</del> 7.5   | <del>((30))</del> 0.18   | 120  | =  |

**Table 403.3  
Required Outdoor Ventilation Air**

| <b>Occupancy Classification</b>  | <b><del>((Estimated Maximum Occupant Load, Persons per 1,000 Square Feet*))</del> People Outdoor Airflow Rate in Breathing Zone<br/>cfm/Person</b> | <b><del>((Outdoor Air (Cubic feet per minute (cfm) per person) Unless Noted*))</del> Area Outdoor Airflow Rate in Breathing Zone <math>R_a</math><br/>cfm/ft<sup>2a</sup></b> | <b>Default Occupant Density #/1000 ft<sup>2a</sup></b>                                   | <b>Exhaust Airflow Rate cfm/ft<sup>2</sup></b> |
|--|--|---|--|--|
| <del>((Living rooms<br/>Kitchens<br/>Lobbies/prefunction</del>           | <del>—<br/>=<br/>(30) 7.5</del>  | <del>30 cfm per room)<br/>=<br/>(15) 0.06</del>   | <del>=<br/>30</del>  | <del>25/100<sup>f</sup><br/>=</del>            |
| <b>Offices</b>   |  |   |  |  |
| Conference rooms   | (50) 5   | (20) 0.06   | 50   | =  |
| Office spaces  | (7) 5  | (20) 0.06   | 5  | =  |
| Reception areas  | 60   | (15) 0.06   | 30   | =  |
| <del>((Telecommunication centers and)) Telephone/data entry</del>        | <del>(60) 5</del>  | <del>(20) 0.06</del>  | <del>60</del>  | <del>=</del>                                   |
| Main entry lobbies   | 5  | 0.06  | 10   | =  |
| <b>Private dwellings, single and multiple</b>                            |  |   |  |  |
| Garages, common for multiple units <sup>b</sup>                          | —  | ((1.5 cfm/ft <sup>2</sup> )) =  | =  | 0.75   |
| Garages, separate for each dwelling                                      | —  | ((100 cfm per car)) =   | =  | 100 cfm per car                                |
| Kitchens <sup>g</sup>  | —  | ((100 cfm intermittent or 25 cfm continuous))   |  | 25/100 <sup>f</sup>                            |
| Living areas <sup>c</sup>  | <del>((Based upon number of bedrooms. First bedroom: 2; each additional: 1)) See Tables 403.8.5.1 and 403.8.5.2</del>                              | <del>((0.35 air changes per hour* or 15 cfm per person, whichever is greater)) =</del>  | <del>Based on the number of bedrooms. First bedroom: 2; each additional bedroom, 1</del> | =  |
| Toilet rooms <del>((and))</del> bathrooms and laundry areas <sup>g</sup> | —  | <del>((Mechanical exhaust capacity of 50 cfm intermittent or 20 cfm continuous))</del>  |  | 20/50 <sup>f</sup>                             |
| <b>Public spaces</b>   |  |   |  |  |
| Corridors <del>((and utilities))</del>                                   | —  | <del>((0.05 cfm/ft<sup>2</sup>)) 0.06</del>   | =  | =  |
| Elevator car( <sup>g</sup> )   | —  | <del>((1.00 cfm/ft<sup>2</sup>))</del>  | =  | 1.0  |
| <del>((Locker rooms</del>  |  | <del>0.5 cfm/ft<sup>2</sup>)</del>  |  |  |
| Shower room(s) (per shower head) <sup>g</sup>                            |  | <del>((50 cfm intermittent or 20 cfm continuous))</del>   | =  | 50/20 <sup>f</sup>                             |
| Smoking lounges <sup>b</sup>   | (70) 60  | (60) =  | 70   | =  |
| Toilet rooms - public <sup>g</sup>                                       | =  | <del>((75 cfm per water closet or urinal))</del>  | =  | 50/70 <sup>e</sup>                             |
| Places of religious worship  | 5  |   | 120  | =  |
| Courtrooms   | 5  |   | 70   | =  |
| Legislative chambers   | 5  |   | 50   | =  |
| Libraries  | 5  |   | 10   | =  |
| Museums (children's)   | 7.5  |   | 40   | =  |
| Museums/galleries  | 7.5  |   | 40   | =  |
| <b>Retail stores, sales floors and showroom floors</b>                   |  |   |  |  |
| <del>((Basement and street)) Sales (except as below)</del>               | <del>((—)) 7.5</del>   | <del>((0.30 cfm/ft<sup>2</sup>)) 0.12</del>   | <del>15</del>  | =  |
| Dressing rooms   | —  | <del>((0.20 cfm/ft<sup>2</sup>)) =</del>  | =  | 0.25   |
| Mall(s and arcades) common areas   | (—) 7.5  | <del>((0.20 cfm/ft<sup>2</sup>)) 0.06</del>   | 40   | =  |
| Shipping and receiving   | —  | <del>((0.15 cfm/ft<sup>2</sup>)) 0.12</del>   | =  | =  |
| Smoking lounges <sup>b</sup>   | (70) 60  | (60) =  | 70   | =  |
| Storage rooms  | —  | <del>((0.15 cfm/ft<sup>2</sup>)) 0.12</del>   | =  | =  |
| <del>((Upper floors))</del>  | <del>((—))</del>   | <del>((0.20 cfm/ft<sup>2</sup>))</del>  |  |  |

**Table 403.3  
Required Outdoor Ventilation Air**

| <b>Occupancy Classification</b>                                 | <b><del>((Estimated Maximum Occupant Load, Persons per 1,000 Square Feet*))</del> <u>People Outdoor Airflow Rate in Breathing Zone</u><br/><u>cfm/Person</u></b> | <b><del>((Outdoor Air Cubic feet per minute (cfm) per person) Unless Noted*))</del> <u>Area Outdoor Airflow Rate in Breathing Zone R<sub>a</sub></u><br/><u>cfm/ft<sup>2a</sup></u></b> | <b><u>Default Occupant Density #/1000 ft<sup>2a</sup></u></b> | <b><u>Exhaust Airflow Rate cfm/ft<sup>2</sup></u></b> |
|---|--|---|---|---|
| Warehouses (see storage)  | —  | ((0.05 cfm/ft <sup>2</sup> )) =   | =   | =   |
| <b>Specialty shops</b>  |  |   |   |   |
| Automotive motor-fuel-dispensing stations <sup>b</sup>          | —  | ((1.5 cfm/ft <sup>2</sup> )) =  | =   | 1.5   |
| Barber  | ((25)) 20  | ((15)) 0.06   | 25  | 0.5   |
| Beauty and nail salons <sup>b,h</sup>                           | ((25)) 20  | ((25)) 0.12   | 25  | 0.6   |
| ((Clothiers, furniture  | —  | 0.30 cfm/ft <sup>2</sup> )  |   |   |
| Embalming room <sup>b</sup>                                     | =  | ((2.0 cfm/ft <sup>2</sup> )) =  | =   | 2.0   |
| ((Florist   | 8  | 15  |   |   |
| Hardware, drug, fabrics   | 8  | 15  |   |   |
| Nail salon <sup>b,i</sup>                                       | —  | 50 cfm intermittent or 20 cfm-continuous per station))  |   |   |
| Pet shops   | ((—)) 7.5  | ((1.00 cfm/ft <sup>2</sup> )) 0.18  | 10  | 0.9   |
| ((Reducing salons   | 20   | 15))  |   |   |
| Supermarkets  | ((8)) 7.5  | ((15)) 0.06   | 8   | =   |
| <b>Sports and amusement</b>                                     |  |   |   |   |
| ((Ballrooms and) Disco((s))/dance floors                        | ((100)) 20   | ((25)) 0.06   | 100   | =   |
| Bowling alleys (seating areas)                                  | ((70)) 10  | ((25)) 0.12   | 40  | =   |
| Game ((rooms)) arcades  | ((70)) 7.5   | ((25)) 0.18   | 20  | =   |
| Ice arenas, without combustion engines                          | —  | ((0.50 cfm/ft <sup>2</sup> )) 0.30  | =   | 0.5   |
| ((Playing floors (gymsnasiums))) Gym, stadium arena (play area) | ((30)) =   | ((20)) 0.30   | =   | =   |
| Spectator areas   | ((150)) 7.5  | ((15)) 0.06   | 150   | =   |
| Swimming pools (pool and deck area)                             | —  | ((0.50 cfm/ft <sup>2</sup> )) 0.48  | =   | =   |
| Health club/aerobics room                                       | 20   | 0.06  | 40  | =   |
| Health club/weight room   | 20   | 0.06  | 10  | =   |
| <b>Storage</b>  |  |   |   |   |
| Repair garages, enclosed parking garage <sup>b,d</sup>          | —  | ((1.5 cfm/ft <sup>2</sup> )) =  | =   | 0.75  |
| Warehouses  | —  | ((0.05 cfm/ft <sup>2</sup> )) 0.06  | =   | =   |
| <b>Theaters</b>   |  |   |   |   |
| Auditoriums (see education)                                     | ((150))  | ((15))  | =   | =   |
| Lobbies   | ((150)) 5  | ((20)) 0.06   | 150   | =   |
| Stages, studios   | ((70)) 10  | ((15)) 0.06   | 70  | =   |
| Ticket booths   | ((60)) 5   | ((20)) 0.06   | 60  | =   |
| <b>Transportation</b>   |  |   |   |   |
| Platforms   | ((100)) 7.5  | ((15)) 0.06   | 100   | =   |
| ((Vehieles  | 150  | 15))  |   |   |
| Transportation waiting ((rooms))                                | ((100)) 7.5  | ((15)) 0.06   | 100   | =   |
| <b>Workrooms</b>  |  |   |   |   |
| Bank vaults/safe deposit  | 5  | ((15)) 0.06   | 5   | =   |
| Darkrooms   | —  | ((0.50 cfm/ft <sup>2</sup> )) =   | =   | 1.0   |
| ((Dupliating)) Copy, printing rooms                             | ((—)) 5  | ((0.50 cfm/ft <sup>2</sup> )) 0.06  | 45  | 0.5   |
| Meat processing <sup>c</sup>                                    | ((10)) 15  | ((15)) =  | 10  | =   |
| Pharmacy (prep area)  | ((20)) 5   | ((15)) 0.18   | 10  | =   |

**Table 403.3  
Required Outdoor Ventilation Air**

| <b>Occupancy Classification</b> | <b>((Estimated Maximum Occupant Load, Persons per 1,000 Square Feet*)) People Outdoor Airflow Rate in Breathing Zone<br/>cfm/Person</b> | <b>((Outdoor Air (Cubic feet per minute (cfm) per person) Unless Noted*)) Area Outdoor Airflow Rate in Breathing Zone R<sub>a</sub><br/>cfm/ft<sup>2a</sup></b> | <b>Default Occupant Density #/1000 ft<sup>2a</sup></b> | <b>Exhaust Airflow Rate cfm/ft<sup>2</sup></b> |
|---------------------------------|---|---|--|--|
| Photo studios                   | ((40)) 5  | ((15)) 0.12   | 10   | =  |
| Computer (without printing)     | 5   | 0.06  | 4  | =  |

For SI: 1 cubic foot per minute = 0.0004719 m<sup>3</sup>/s, 1 ton = 908 kg, 1 cubic foot per minutes per square foot = 0.00508 m<sup>3</sup>/(s•m<sup>2</sup>), °C = [(°F) -32]/1.8, 1 square foot = 0.0929 m<sup>2</sup>.

- Based upon net occupiable floor area.
- Mechanical exhaust required and the recirculation of air from such spaces ((as permitted by Section 403.2.1)) is prohibited (see Section 403.2.1, Item((s- and)) 3).
- Spaces unheated or maintained below 50°F are not covered by these requirements unless the occupancy is continuous.
- Ventilation systems in enclosed parking garages shall comply with Section 404.
- ((Where the ventilation rate is expressed in cfm/ft<sup>2</sup>, such rate is based upon cubic feet per minute per square foot of the floor area being ventilated.)) Rates are per water closet or urinal. The higher rate shall be provided where periods of heavy use are expected to occur, such as toilets in theaters, schools and sports facilities. The lower rate shall be permitted where periods of heavy use are not expected.
- ((The sum of the outdoor and transfer air from adjacent spaces shall be sufficient to provide an exhaust rate of not less than 1.5 cfm/ft<sup>2</sup>.) Rates are per room unless otherwise indicated. The higher rate shall be provided where the exhaust system is designed to operate intermittently. The lower rate shall be permitted where the exhaust system is designed to operate continuously during normal hours of use.
- ((Transfer air permitted in accordance with Section 403.2.2.)) Reserved.
- ((Reserved.)) For nail salons, the required exhaust shall include ventilation tables or other systems that capture the contaminants and odors at their source and are capable of exhausting a minimum of 50 cfm per station.
- ((The required exhaust system shall capture the contaminants and odors at their source.)) A laundry area within a kitchen or bathroom is not required to have source specific exhaust. Where there are doors that separate the laundry area from the kitchen or bathroom the door shall be louvered.

**403.8 Ventilation systems for Group R occupancies.** Each dwelling unit or guest room shall be equipped with source specific and whole house ventilation systems and shall comply with Sections 403.8.1 through 403.8.11. All public corridors and other than Group R occupied spaces that support the

Group R occupancy shall meet the ventilation requirements of Section 402 or Sections 403.1 to 403.7.

**403.8.1 Minimum ventilation performance.** Ventilation systems shall be designed and installed to satisfy the ventilation requirements of Table 403.3 or Table 403.8.1.

**Table 403.8.1  
Ventilation Rates for All Group R Private Dwellings, Single and Multiple  
(Continuously Operating Systems)**

| <b>Floor Area<br/>(ft<sup>2</sup>)</b> | <b>Bedrooms<sup>1</sup></b> |            |            |            |           |
|--|-----------------------------|------------|------------|------------|-----------|
|  | <b>0-1</b>                  | <b>2-3</b> | <b>4-5</b> | <b>6-7</b> | <b>≥7</b> |
| <1500                                  | 30                          | 45         | 60         | 75         | 90        |
| 1501 - 3000                            | 45                          | 60         | 75         | 90         | 105       |
| 3001 - 4500                            | 60                          | 75         | 90         | 105        | 120       |
| 4501 - 6000                            | 75                          | 90         | 105        | 120        | 135       |
| 6001 - 7500                            | 90                          | 105        | 120        | 135        | 150       |
| >7500                                  | 105                         | 120        | 135        | 150        | 165       |

<sup>1</sup> Ventilation rates in table are minimum outdoor airflow rates measured in cfm.

**403.8.2 Control and operation.**

1. **Location of controls.** Controls for all ventilation systems shall be readily accessible by the occupant.

2. **Instructions.** Operating instructions for whole house ventilation systems shall be provided to the occupant by the installer of the system.

3. **Source specific ventilation systems.** Source specific ventilation systems shall be controlled by manual switches, dehumidistats, timers, or other approved means.

4. **Continuous whole house ventilation systems.** Continuous whole house ventilation systems shall operate continuously. Exhaust fans, forced-air system fans, or supply fans

shall be equipped with "fan on" as override controls. Controls shall be capable of operating the ventilation system without energizing other energy-consuming appliances. A label shall be affixed to the controls that reads "Whole House Ventilation (see operating instructions)."

5. **Intermittent whole house ventilation systems.** Intermittent whole house ventilation systems shall comply with the following:

5.1 They shall be capable of operating intermittently and continuously.

5.2 They shall have controls capable of operating the exhaust fans, forced-air system fans, or supply fans without energizing other energy-consuming appliances.

5.3 The ventilation rate shall be adjusted according to the exception in Section 403.8.5.1.

5.4 The system shall be designed so that it can operate automatically based on the type of control timer installed.

5.5 The intermittent mechanical ventilation system shall operate at least one hour out of every twelve.

5.6 The system shall have a manual control and automatic control, such as a 24-hour clock timer.

5.7 At the time of final inspection, the automatic control shall be set to operate the whole house fan according to the schedule used to calculate the whole house fan sizing.

5.8 A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

**403.8.3 Outdoor air intake locations.** Outdoor air intakes shall be classified as either operable openings or mechanical air intakes and shall be located per the following criteria. The intake locations for operable openings and mechanical air intakes shall comply with the following:

1. Openings for mechanical air intakes shall comply with Section 401.4. Operable openings shall comply with Section 401.4 items 2 and 4 only.

2. Intake openings shall not be located closer than 10 feet from an appliance vent outlet unless such vent outlet is 3 feet above the outdoor air inlet. The vent shall be permitted to be closer if specifically allowed by Chapter 8 or by the International Fuel Gas Code.

3. Intake openings shall be located where they will not pick up objectionable odors, fumes, or flammable vapors.

4. Intake openings shall be located where they will not take air from a hazardous or unsanitary location.

5. Intake openings shall be located where they will not take air from a room or space having a fuel-burning appliances.

6. Intake openings shall not be located closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.

7. Intake openings shall not be located where they will take air from an attic, crawl space, or garage.

**403.8.4 Source specific ventilation requirements.** Source specific exhaust ventilation systems shall exhaust at least the volume of air required for exhaust in Table 403.3. Exhaust shall be provided in each kitchen, bathroom, water closet, laundry area, indoor swimming pool, spa, and other room where water vapor or cooking odor is produced.

**403.8.4.1 Source specific exhaust systems.** Exhaust systems shall be designed and installed to meet all of the criteria below:

1. Source specific exhaust shall be discharged outdoors.

2. Exhaust outlets shall comply with Section 501.2.

3. Pressure equalization shall comply with Section 501.3.

4. Exhaust ducts in systems which are designed to operate intermittently shall be equipped with back-draft dampers.

5. All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4.

6. Terminal outlet elements shall have at least the equivalent net free area of the ductwork.

7. Terminal outlet elements shall be screened or otherwise protected as required by Section 501.2.2.

8. Exhaust fans in separate dwelling units or guest rooms shall not share common exhaust ducts unless the system is engineered for this operation.

9. Where permitted by Chapter 5, multiple source specific exhaust ducts may be combined. If more than one of the exhaust fans in a dwelling unit or guest room shares a common exhaust duct then each exhaust fan shall be equipped with a back-draft damper to prevent the recirculation of exhaust air from one room to another room via the exhaust ducting system.

**403.8.4.2 Source specific exhaust fans.** Exhaust fan construction and sizing shall meet the following criteria.

1. Exhaust fans shall be tested and rated in accordance with the airflow and sound rating procedures of the Home Ventilating Institute (HVI 915, HVI Loudness Testing and Rating Procedure, HVI 916, HVI Airflow Test Procedure, and HVI 920, HVI Product Performance Certification Procedure).

EXCEPTION: Where a range hood or down draft exhaust fan is used for source specific exhaust for a kitchen, the device is not required to be rated per these standards.

2. Installation of the system or equipment shall be carried out in accordance with manufacturers' installation instructions.

3. Fan airflow rating and duct system shall be designed and installed to deliver at least the exhaust airflow required by Table 403.3. The airflows required refer to the delivered airflow of the system as installed and tested using a flow hood, flow grid, or other airflow measurement device.

EXCEPTIONS:

1. An exhaust airflow rating at a pressure of 0.25 in. w.g. may be used, provided the duct sizing meets the prescriptive requirements of Table 403.8.4.2.
2. Where a range hood or down draft exhaust fan is used to satisfy the source specific ventilation requirements for kitchens, the range hood or down draft exhaust shall not be less than 100 cfm at 0.10 in. w.g.

**Table 403.8.4.2  
Prescriptive Exhaust Duct Sizing**

| <b>Fan Tested cfm at 0.25 inches w.g.</b> | <b>Minimum Flex Diameter</b> | <b>Maximum Length in Feet</b> | <b>Minimum Smooth Diameter</b> | <b>Maximum Length in Feet</b> | <b>Maximum Elbows<sup>1</sup></b> |
|---|------------------------------|-------------------------------|--------------------------------|-------------------------------|-----------------------------------|
| 50  | 4 inches                     | 25                            | 4 inches                       | 70                            | 3                                 |
| 50  | 5 inches                     | 90                            | 5 inches                       | 100                           | 3                                 |
| 50  | 6 inches                     | No Limit                      | 6 inches                       | No Limit                      | 3                                 |



**Table 403.8.4.2  
Prescriptive Exhaust Duct Sizing**

| Fan Tested cfm at 0.25 inches w.g. | Minimum Flex Diameter | Maximum Length in Feet | Minimum Smooth Diameter | Maximum Length in Feet | Maximum Elbows <sup>1</sup> |
|------------------------------------|-----------------------|------------------------|-------------------------|------------------------|-----------------------------|
| 80                                 | 4 inches <sup>2</sup> | NA                     | 4 inches                | 20                     | 3                           |
| 80                                 | 5 inches              | 15                     | 5 inches                | 100                    | 3                           |
| 80                                 | 6 inches              | 90                     | 6 inches                | No Limit               | 3                           |
| 100                                | 5 inches <sup>2</sup> | NA                     | 5 inches                | 50                     | 3                           |
| 100                                | 6 inches              | 45                     | 6 inches                | No Limit               | 3                           |
| 125                                | 6 inches              | 15                     | 6 inches                | No Limit               | 3                           |
| 125                                | 7 inches              | 70                     | 7 inches                | No Limit               | 3                           |

1. For each additional elbow, subtract 10 feet from length.
2. Flex ducts of this diameter are not permitted with fans of this size.

**403.8.5 Whole house ventilation requirements.** Each dwelling unit or guest room shall be equipped with one of the following four types of mechanical whole house ventilation systems: A system using exhaust fans (see Section 403.8.6); a system integrated with forced-air systems (see Section 403.8.7); a system using supply fans (see Section 403.8.8); or a heat or energy recovery ventilation system (see Section 403.8.9).

**403.8.5.1 Outdoor air.** Outdoor air shall be distributed to each habitable space.

Where outdoor air supply intakes are separated from exhaust vents by doors, means shall be provided to ensure airflow to all separated habitable spaces by installing distribution ducts, installed grilles, transoms, doors undercut to a minimum of 1/2-inch above the surface of the finish floor covering, or other similar means where permitted by the International Building Code.

The mechanical system shall operate continuously to supply at least the volume of outdoor air required in Table 403.3 or Table 403.8.1.

**EXCEPTION:** Intermittently operating ventilation systems: The mechanical system shall have controls for intermittent operation per Section 403.8.2 and shall supply at least the volume of outdoor air required for intermittent operation based on the combination of its delivered capacity (from Table 403.3 or Table 403.8.1), its ventilation effectiveness (from Table 403.8.5.1) and its daily fractional operation time (from Table 403.8.5.1) using the formula:

$$Q_f = Q_r / (\epsilon f)$$

Where:

- $Q_f$  ≡ outdoor air flow rate
- $Q_r$  ≡ ventilation air requirement (from Table 403.3 or 403.8.1)
- $\epsilon$  ≡ ventilation effectiveness (from Table 403.8.5.1)
- $f$  ≡ fractional operation time (from Table 403.8.5.1)

**Table 403.8.5.1  
Ventilation Effectiveness for Intermittent Fans**

| Daily Fractional Operation Time, f | Ventilation Effectiveness, ε |
|------------------------------------|------------------------------|
| $f \leq 35\%$                      | 0.33                         |

**Table 403.8.5.1  
Ventilation Effectiveness for Intermittent Fans**

| Daily Fractional Operation Time, f | Ventilation Effectiveness, ε |
|------------------------------------|------------------------------|
| $35\% \leq f < 60\%$               | 0.50                         |
| $60\% \leq f < 80\%$               | 0.75                         |
| $80\% \leq f$                      | 1.0                          |

**403.8.5.2 Whole house supply system general requirements.** Whole house ventilation systems integrated with a forced-air system, systems using supply fans and systems using a heat or energy recovery ventilation system shall comply with the following.

1. Outdoor air louvers shall be adequately sized for the required airflow and shall comply with Section 401.5. Outdoor air intake locations shall comply with mechanical air intakes requirements of Section 403.8.3.

2. Outdoor air ducts for dedicated or central supply systems and exhaust ducts for heat or energy recovery systems shall be provided with a means for balancing the system to the required airflow via balance dampers or other devices.

3. Outdoor air ducts, for dedicated or central systems shall be provided with motorized dampers.

**EXCEPTION:** Outdoor air ducts at heat or energy ventilation systems are not required to have motorized dampers.

4. Ducts in the conditioned space shall be insulated to a minimum of R-4. In heat or energy recovery ventilation systems, ducts upstream of the heat exchanger shall also be insulated to at least R-4.

5. All outdoor air ducts shall be designed and installed to deliver at least the outdoor airflow required by Section 403.8.5.1. The airflows required refer to the delivered airflow of the system as installed and tested using a flow hood, flow grid, or other airflow measurement device.

**EXCEPTION:** The outdoor air duct for supply fan systems and heat or energy recovery systems may be prescriptively sized per Table 403.8.5.2 for dedicated outdoor air ducts upstream of the supply fan. Supply fans shall have the capacity to provide the amount of outdoor air required by Section 403.8.5.1 at 0.40 in. w.g. as per HVI 916 (April 1995). When prescriptively sized the system shall be tested and balanced using a flow hood, flow-grid, or other airflow measurement device.

6. Whole house ventilation controls for continuous and intermittent operation shall be provided at both the forced-air fan and the motorized damper.

**Table 403.8.5.2  
Prescriptive Supply Fan Duct Sizing**

| Supply Fan Tested cfm at 0.40" w.g. |                              |                                |
|-------------------------------------|------------------------------|--------------------------------|
| Specified Volume from Table 408.1   | Minimum Smooth Duct Diameter | Minimum Flexible Duct Diameter |
| 50 - 90 cfm                         | 4 inch                       | 5 inch                         |
| 90 - 150 cfm                        | 5 inch                       | 6 inch                         |
| 150 - 250 cfm                       | 6 inch                       | 7 inch                         |
| 250 - 400 cfm                       | 7 inch                       | 8 inch                         |

**403.8.6 Whole house ventilation with exhaust fan systems.** This section establishes minimum requirements for mechanical whole house ventilation systems using exhaust fans.

**403.8.6.1 Outdoor air.** Exhaust fan only ventilation systems shall provide outdoor air through one of the following methods:

1. Outdoor air may be drawn through air inlets installed in exterior walls or windows. For interior spaces without openings to the outdoor, air inlets cannot be used unless a transfer fan is provided in compliance with Section 403.8.6.1 Item 3. The air inlets shall comply with all of the following:
  - a. Inlets shall have controllable, secure openings and shall be designed to not compromise the thermal properties of the building envelope.
  - b. Inlets shall be accessible to occupants.
  - c. Inlets shall be screened or otherwise protected from entry by insects, leaves, or other material.
  - d. Inlets shall provide not less than 4 square inches of net free area of opening for each 10 cfm of outdoor air required in Table 403.3 or Table 403.8.1.
  - e. Any inlet or combination of inlets which provide 10 cfm at 10 Pascals as determined by the Home Ventilation Institute Air Flow Test Standard (HVI 901 (November 1996)) are deemed equivalent to 4 square inches of net free area.
  - f. Each occupiable space shall have a minimum of one air inlet that has a minimum of 4 square inches of net free area.

2. In high-rise buildings, outdoor air may be drawn in through operable windows, doors, louvers or other operable openings to the outdoors. Exterior spaces shall have a minimum openable area of 4 percent of the total floor area being ventilated. Doors exiting to a corridor, court or public way shall not be used to provide outdoor air. For interior spaces without openings to the outdoors, the opening to the adjoining room shall be unobstructed and shall have an area of not less than 8 percent of the floor area of the interior room or space, but not less than 25 square feet. The operable openings shall comply with the following:

- a. Openings shall be controllable, securable, and shall be designed to not compromise the thermal properties of the building envelope.
  - b. Openings shall be accessible to occupants.
3. For interior spaces, in buildings with air inlets in accordance with Section 403.8.6.1 Item 1 or in high-rise building without operable openings in accordance with Sec-

tion 403.8.6.1 Item 2 shall have a whole house transfer fan sized to provide a minimum of the ventilation rate required per Section 403.8.5.1. The transfer fan shall circulate air between the interior room or space and the adjacent habitable space. The transfer fan may operate continuously or intermittently using controls per Section 403.8.2.

**403.8.6.2 Outside air intake locations.** All outside air intake opening types described in Section 403.8.6.1 shall be classified operable openings and shall not be classified as mechanical air intakes. The intake locations shall comply with Section 403.8.3.

**403.8.6.3 Whole house exhaust system.** Whole house exhaust system shall be designed and installed to meet all of the applicable criteria below:

1. Whole house ventilation exhaust shall be discharged outdoors.
2. Exhaust outlets shall comply with Section 501.2.
3. Exhaust ducts in systems which are designed to operate intermittently shall be equipped with back-draft dampers.
4. All exhaust ducts in unconditioned spaces shall be insulated to a minimum of R-4.5. Terminal outlet elements shall have at least the equivalent net free area of the ductwork.
5. Terminal outlet elements shall be screened or otherwise protected as required by Section 501.2.2.
6. One of the required source specific exhaust fans for the laundry room or bathroom may be designated as the whole house exhaust fan.
7. Exhaust fans in separate dwelling units or guest rooms shall not share common exhaust ducts unless the system is engineered for this operation.
8. Where permitted by Chapter 5 whole house exhaust ducts may be combined with other source specific exhaust ducts. If more than one of the exhaust fans in a dwelling unit or guest room shares a common exhaust duct then each exhaust fan shall be equipped with a back-draft damper to prevent the recirculation of exhaust air from one room to another room via the exhaust ducting system.

**403.8.6.4 Whole house exhaust and transfer fans.** Exhaust fan construction and sizing shall meet the following criteria.

1. Exhaust and transfer fans shall be tested and rated in accordance with the airflow and sound rating procedures of the Home Ventilating Institute (HVI 915, HVI Loudness Testing and Rating Procedure, HVI 916, HVI Airflow Test Procedure, and HVI 920, HVI Product Performance Certification Procedure).
2. Installation of system or equipment shall be carried out in accordance with manufacturers' design requirements and installation instructions.

3. Fan airflow rating and duct system shall be designed and installed to deliver at least the outdoor airflow required by Table 403.3 or Table 403.8.1. The airflows required refer to the delivered airflow of the system as installed and tested using a flow hood, flow grid, or other airflow measurement device.

**EXCEPTION:** An airflow rating at a pressure of 0.25 in. w.g. may be used, provided the duct sizing meets the prescriptive requirements of Table 403.8.5.2.

**403.8.6.5 Fan noise.** Whole house exhaust and transfer fans located 4 feet or less from the interior grille shall have a sound rating of 1.0 or less measured at 0.10 inches water gauge. Manufacturer's noise ratings shall be determined as per HVI 915. Remotely mounted fans shall be acoustically isolated from the structural elements of the building and from attached ductwork using insulated flexible duct or other approved material.

**403.8.7 Whole house ventilation integrated with forced-air systems.** This section establishes minimum requirements for mechanical whole house ventilation systems using forced-air system fans.

**403.8.7.1 Outdoor air.** Forced-air system fan ventilation systems shall provide outdoor air through one of the following methods:

1. A dedicated outdoor air louver and outdoor air duct for each dwelling unit or guest room shall supply outdoor air to the return side of the forced-air system fan; or

2. A central outdoor air delivery system that supplies multiple dwelling units or guest rooms shall supply outdoor air to the return side of the forced air system fan.

**403.8.7.2 Whole house forced-air system.** Where outdoor air is provided to each habitable dwelling unit or guest room by a forced-air system, the outdoor air duct shall be connected to the return air stream at a point within 4 feet upstream of the forced-air unit. It shall not be connected directly to the forced-air unit cabinet in order to prevent thermal shock to the heat exchanger. At a minimum, filtration of the outdoor air shall be provided at the forced-air unit. The filter shall be accessible for regular maintenance and replacement. The filter shall have a Minimum Efficiency Rating Value (MERV) of at least 6.

**403.8.8 Whole house ventilation with supply fan systems.** This section establishes minimum requirements for mechanical whole house ventilation systems using supply fan systems.

**403.8.8.1 Outdoor air.** Supply fan ventilation systems shall provide outdoor air through one of the following methods:

1. A dedicated outdoor air louver and outdoor air duct for each dwelling unit or guest room shall supply outdoor air to a supply fan; or

2. A central outdoor air supply fan system shall distribute unconditioned or conditioned air to multiple dwelling units or guest rooms.

**403.8.8.2 Whole house supply system.** Where outdoor air is provided to each habitable dwelling unit or guest room by supply fan systems the outdoor air shall be filtered.

The system filter may be located at the intake device or inline with the fan. The filter shall be accessible for regular maintenance and replacement. The filter shall have a Minimum Efficiency Rating Value (MERV) of at least 6.

**403.8.9 Whole house ventilation with heat recovery or energy recovery ventilation systems.** This section establishes minimum requirements for mechanical whole house ventilation systems using heat recovery or energy recovery ventilation systems.

**403.8.9.1 Outdoor air.** Heat recovery or energy recovery ventilation systems shall provide outdoor air through one of the following methods:

1. A dedicated outdoor air louver and outdoor air duct for each dwelling unit or guest room shall supply outdoor air to the heat recovery or energy recovery ventilator; or

2. A central outdoor air heat recovery or energy recovery unit shall distribute conditioned air to multiple dwelling units or guest rooms.

**403.8.9.2 Whole house heat recovery ventilator system.** Where outdoor air is provided to each habitable dwelling unit or guest room by heat recovery or energy recovery ventilator the outdoor air shall be filtered. The filter shall be located on the upstream side of the heat exchanger in both the intake and exhaust airstreams with a Minimum Efficiency Rating Value (MERV) of at least 6. The system filter may be located at the intake device or inline with the fan. The filter shall be accessible for regular maintenance and replacement.

**403.8.10 Source specific exhaust ventilation and whole house ventilation alternate performance or design requirements.** In lieu of complying with Sections 403.8.4 or 403.8.5 compliance with the section shall be demonstrated through engineering calculations by an engineer licensed to practice in the state of Washington or by performance testing. Documentation of calculations or performance test results shall be submitted to and approved by the building official. Performance testing shall be conducted in accordance with approved test methods.

**403.8.11 Alternate systems.** When approved by the code official, systems designed in accordance with ASHRAE Standard 62.2-2007 shall be permitted.

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency and appear in the Register pursuant to the requirements of RCW 34.08.040.

#### NEW SECTION

**WAC 51-52-0404 Section 404—Enclosed parking garages and automobile repair facilities.**

**404.5 Automobile repair facilities.** In buildings used for the repair of automobiles, each repair stall shall be equipped with an exhaust extension duct, extending to the outside of the building. Exhaust extension duct over 10 feet in length shall mechanically exhaust at least 300 cfm. Connecting offices and waiting rooms shall be supplied with conditioned air under positive pressure.

AMENDATORY SECTION (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

**WAC 51-52-0501 Section 501—General.**

**501.2 Exhaust discharge.** The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a nuisance and not less than the distances specified in Section 501.2.1. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic or crawlspace.

- EXCEPTIONS:
1. Whole-house cooling attic fans shall be permitted to discharge into the attic space of dwelling units having private attics.
  2. Commercial cooking recirculating systems.

**501.2.1 Location of exhaust outlets.** The termination point of exhaust outlets and ducts discharging to the outdoors shall be located with the following minimum distances:

1. **For ducts conveying explosive or flammable vapors, fumes or dusts:** 30 feet (9144 mm) from the property line; 10 feet (3048 mm) from operable openings into the building; 6 feet (1829 mm) from exterior walls and roofs; 30 feet (9144 mm) from combustible walls and operable openings into the building which are in the direction of the exhaust discharge; 10 feet (3048 mm) above adjoining grade.

2. **For other product-conveying outlets:** 10 feet (3048 mm) from property lines; 3 feet (914 mm) from exterior walls and roofs; 10 feet (3048 mm) from operable openings into the building; 10 feet (3048 mm) above adjoining grade.

3. **For environmental air (~~duct~~) exhaust other than enclosed parking garage and transformer vault exhaust:** 3 feet (914 mm) from property lines, 3 feet (914 mm) from operable openings into (~~the~~) buildings for all occupancies other than Group U, and 10 feet (3048 mm) from (~~a~~) mechanical air intakes. Such exhaust shall not be considered hazardous or noxious.

- EXCEPTIONS:
1. The separation between an air intake and exhaust outlet on a single listed package HVAC unit.
  2. Exhaust from environmental air systems other than garages may be discharged into an open parking garage.
  3. Except for Group I occupancies, where ventilation system design circumstances require building HVAC air to be relieved, such as during economizer operation, such air may be relieved into an open or enclosed parking garage within the same building.

4. (~~For specific systems: For clothes dryer exhaust, see Section 504.4; for kitchen hoods, see Section 506.3; and for subslab soil exhaust systems, see Section 512.4.~~) Exhaust outlets serving structures in flood hazard areas shall be installed at or above the design flood level.

5. For enclosed parking garage exhaust system outlets and transformer vault exhaust system outlets: 10 feet (3048 mm) from property lines which separate one lot from another; 10 feet (3048 mm) from operable openings into buildings; 10 feet (3048 mm) above adjoining grade.

6. For elevator machinery rooms in enclosed or open parking garages: Exhaust outlets may discharge air directly into the parking garage.

7. For specific systems see the following sections:

7.1 Clothes dryer exhaust, Section 504.4.

7.2 Kitchen hoods and other kitchen exhaust equipment, Sections 506.3, 506.4 and 506.5.

7.3 Dust stock and refuse conveying systems, Section 511.

7.4 Subslab soil exhaust systems, Section 512.4.

7.5 Smoke control systems, Section 513.10.3.

7.6 Refrigerant discharge, Section 1105.7.

7.7 Machinery room discharge, Section 1105.6.1.

AMENDATORY SECTION (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

**WAC 51-52-0504 Section 504—Clothes dryer exhaust.**

~~((504.6.3 Protection required. Plates or clips shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer exhaust duct. Plates or clips shall be placed on the finished face of all framing members where there is less than 1-1/4 inches (32 mm) between the duct and the finished face of the framing material. The plate or clip shall be steel not less than 1/16 inch (1.59 mm) in thickness and of sufficient width to protect the duct.))~~

**504.6.4.1 Specified length.** The maximum length of the exhaust duct shall be 35 feet (10668 mm) from the connection to the transition duct from the dryer to the outlet terminal. Where fittings are used, the maximum length of the exhaust duct shall be reduced in accordance with Table 504.6.4.1.

The maximum length of the duct may be increased in an engineered exhaust system when a listed and labeled exhaust booster fan is installed in accordance with the manufacturer's installation instructions.

NEW SECTION

**WAC 51-52-0505 Section 505—Domestic kitchen exhaust equipment.**

**505.1 Domestic systems.** Where domestic range hoods and domestic appliances equipped with downdraft exhaust are located within dwelling units, such hoods and appliances shall discharge to the outdoors through sheet metal ducts constructed of galvanized steel, stainless steel, aluminum or copper. Such ducts shall have smooth inner walls and shall be air tight and equipped with a backdraft damper. Domestic range hood duct systems shall not be combined with other environmental air exhaust systems.

Listed and labeled exhaust booster fans shall be permitted when installed in accordance with the manufacturer's installation instructions.

- EXCEPTIONS:
1. Where installed in accordance with the manufacturer's installation instructions and where mechanical or natural ventilation is otherwise provided in accordance with Chapter 4, listed and labeled ductless range hoods shall not be required to discharge to the outdoors.
  2. Ducts for domestic kitchen cooking appliances equipped with downdraft exhaust systems shall be permitted to be constructed of Schedule 40 PVC pipe and fittings provided that the installation complies with all of the following:
    - 2.1. The duct shall be installed under a concrete slab poured on grade.
    - 2.2. The underfloor trench in which the duct is installed shall be completely backfilled with sand or gravel.
    - 2.3. The PVC duct shall extend not more than 1 inch (25 mm) above the indoor concrete floor surface.
    - 2.4. The PVC duct shall extend not more than 1 inch (25 mm) above grade outside of the building.
    - 2.5. The PVC ducts shall be solvent cemented.

AMENDATORY SECTION (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

**WAC 51-52-0506 Section 506—Commercial kitchen hood ventilation system ducts and exhaust equipment.**

~~((506.3.3.1)) 506.3.9 Grease duct cleanout location, spacing and installation. 506.3.9.1 Grease duct ((test)) horizontal cleanout.~~ ((Prior to the use or concealment of any portion of a grease duct system, a leakage test shall be performed. Ducts shall be considered to be concealed where installed in shafts or covered by coatings or wraps that prevent the duct work from being visually inspected on all sides. The permit holder shall be responsible to provide the necessary equipment and perform the grease duct leakage test. A light test or an approved equivalent test method shall be performed to determine that all welded and brazed joints are liquid tight. A light test shall be performed by passing a lamp having a power rating of not less than 100 watts through the entire section of duct work to be tested. The lamp shall be open so as to emit light equally in all directions perpendicular to the duct walls.

~~A test shall be performed for the entire duct system, including the hood to duct connection. The duct work shall be permitted to be tested in sections, provided that every joint is tested.))~~ Cleanouts located on horizontal sections of ducts shall be spaced not more than 20 feet (6096 mm) apart. The cleanouts shall be located on the side of the duct with the opening not less than 1 1/2 inches (38 mm) above the bottom of the duct, and not less than 1 inch (25 mm) below the top of the duct. The opening minimum dimensions shall be 12 inches (305 mm) on each side. Where the dimensions of the side of the duct prohibit the cleanout installation prescribed herein, the openings shall be on the top of the duct or the bottom of the duct. Where located on the top of the duct, the opening edges shall be a minimum of 1 inch (25 mm) from the edges of the duct. Where located in the bottom of the duct, cleanout openings shall be designed to provide internal damming around the opening, shall be provided with gasketing to preclude grease leakage, shall provide for drainage of grease down the duct around the dam and shall be approved for the application. Where the dimensions of the sides, top or bottom of the duct preclude the installation of the prescribed minimum-size cleanout opening, the cleanout shall be located on the duct face that affords the largest opening dimension and shall be installed with the opening edges at the prescribed distances from the duct edges as previously set forth in this section.

506.3.9.2 Grease duct vertical cleanouts. Where ducts pass vertically through floors, cleanouts shall be provided. A minimum of one cleanout shall be provided on each floor. Cleanout openings shall be not less than 1 1/2 inches (38 mm) from all outside edges of the duct or welded seams.

NEW SECTION

**WAC 51-52-0507 Section 507—Commercial Kitchen Hoods.**

**507.2.1 Type I hoods.** Type I hoods shall be installed where cooking appliances produce grease or smoke. Type I hoods

shall be installed over medium-duty, heavy-duty and extra-heavy-duty cooking appliances. Type I hoods shall be installed over light-duty cooking appliances that produce grease or smoke.

EXCEPTION: A Type I hood shall not be required in an R-2 type occupancy with not more than 16 residents.

AMENDATORY SECTION (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

**WAC 51-52-0601 Section 601—General.**

**601.2 Air movement in egress elements.** Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts.

- EXCEPTIONS:
1. Use of a corridor as a source of makeup air for exhaust systems in rooms that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted provided that each such corridor is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor.
  2. Where located within a dwelling unit, the use of corridors for conveying return air shall not be prohibited.
  3. Where located within tenant spaces of one thousand square feet (93 m<sup>2</sup>) or less in area, utilization of corridors for conveying return air is permitted.
  4. Incidental air movement from pressurized rooms within health care facilities, provided that the corridor is not the primary source of supply or return to the room.
  5. Where such air is part of an engineered smoke control system.
- ~~((5. Make up or relief air in corridors of Group I-2 occupancies.))~~
6. Air supplied to corridors serving residential occupancies shall not be ((permitted to be supplied without specific mechanical exhaust)) considered as providing ventilation air to the dwelling units subject to the following:
    - 6.1 The ((supply)) air supplied to the corridor is one hundred percent outside air; and
    - 6.2 The units served by the corridor have conforming ventilation air independent of the air supplied to the corridor; and
    - 6.3 For other than high-rise buildings, the supply fan will automatically shut off upon activation of corridor smoke detectors which shall be spaced at no more than thirty feet (9,144 mm) on center along the corridor; or
    - 6.4 For high-rise buildings, corridor smoke detector activation will close required smoke/fire dampers at the supply inlet to the corridor at the floor receiving the alarm.

NEW SECTION

**WAC 51-52-0603 Section 603—Duct construction and installation.**

**603.5.1 Gypsum ducts.** The use of gypsum boards to form air shafts (ducts) shall be limited to return air systems where the air temperatures do not exceed 125°F (52°C) and the gypsum board surface temperature is maintained above the air-stream dew-point temperature. Air ducts formed by gypsum boards shall not be incorporated in air-handling systems utilizing evaporative coolers.

EXCEPTION: In other than Group I-2 occupancies, gypsum boards may be used for ducts that are only used for stairwell or elevator pressurization supply air. The gypsum duct shall not attach directly to the equipment.

#### NEW SECTION

#### **WAC 51-52-0606 Section 606—Smoke detection systems control.**

**606.2.2 Common supply and return air systems.** Where multiple air-handling systems share common supply or return air ducts or plenums with a combined design capacity greater than 2,000 cfm (0.9 m<sup>3</sup>/s), the return air system shall be provided with smoke detectors in accordance with Section 606.2.1.

EXCEPTION: Individual smoke detectors shall not be required for each fan-powered terminal unit, provided that such units do not have an individual design capacity greater than 2,000 cfm (0.9 m<sup>3</sup>/s) and will be shut down by activation of one of the following:

1. Smoke detectors required by Sections 606.2.1 and 606.2.3.
2. An approved area smoke detector system located in the return air plenum serving such units.
3. An area smoke detector system as prescribed in the exception to Section 606.2.1.

In all cases, the smoke detectors shall comply with Sections 606.4 and 606.4.1.

The shut down of fan-powered terminal units may be performed by a building automation system upon activation of smoke detection as described in Section 606.2.2, Exception Items 1, 2, or 3. The building automation system is not required to be listed as a smoke control system and is not required to comply with UL Standard 864: Standard for Control Units and Accessories for Fire Alarm Systems.

AMENDATORY SECTION (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

#### **WAC 51-52-1000 Chapter 10—Boilers, water heaters and pressure vessels.**

SECTIONS 1003 THROUGH 1011, are not adopted.

Boilers and Unfired Pressure Vessels are regulated by chapter 70.79 RCW ((and chapter 296-104 WAC, and may be further regulated by the local jurisdiction)).

#### NEW SECTION

**WAC 51-52-1500 Chapter 15—Referenced standards.** The following referenced standards are added to Chapter 15.

ASHRAE  
62.2-2007 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings

AMENDATORY SECTION (Amending WSR 07-01-092, filed 12/19/06, effective 7/1/07)

#### **WAC 51-52-21101 Section 101—General.**

**101.2 Scope.** This code shall apply to the installation of fuel gas piping systems, fuel gas utilization equipment, gaseous

hydrogen systems and regulated accessories in accordance with Section 101.2.1 through 101.2.5.

- EXCEPTIONS:
1. Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures shall comply with the *International Residential Code*.
  2. The standards for liquefied petroleum gas installations shall be the ((2004)) 2008 Edition of NFPA 58 (Liquefied Petroleum Gas Code) and the ((2006)) 2009 Edition of ANSI Z223.1/NFPA 54 (National Fuel Gas Code).

#### **WSR 09-17-142**

#### **PROPOSED RULES**

#### **BUILDING CODE COUNCIL**

[Filed August 19, 2009, 11:30 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-05-049.

Title of Rule and Other Identifying Information: Amendment of chapter 51-54 WAC, Adoption and amendment of the 2009 Edition of the International Fire Code (IFC) and standards.

Hearing Location(s): Holiday Inn Select Renton, One Grady Way South, Renton, WA, on September 29, 2009, at 10:00 a.m.; and at the Spokane City Council Chambers, West 808 Spokane Falls Boulevard, Spokane, WA, on October 5, 2009, at 9:00 a.m.

Date of Intended Adoption: November 12, 2009.

Submit Written Comments to: Peter DeVries, Council Chair, P.O. Box 42525, Olympia, WA 98504-2525, e-mail sbcc@commerce.wa.gov, fax (360) 586-9383, by October 5, 2009.

Assistance for Persons with Disabilities: Contact Sue Mathers by September 15, 2009, TTY (360) 586-0772 or (360) 725-2966.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposed rules adopt the most recently published edition of the IFC and make changes to the state amendments to this code.

**1. WAC 51-54-003** International Fire Code: Adopts 2009 edition, change from 2006 edition.

**2. WAC 51-54-007** Exceptions. New appendix references and modifies the 2009 International Wildland Urban Interface Code.

**3. WAC 51-54-008** Effective date. Sets new effective date, July 1, 2010.

**4.** Section 105.6.17 Flammable or combustible liquids. State amendment included in the 2009 model code revision. Delete state amendment to be consistent with the model code.

**5.** Section 105.1.1 Permits Required. Identifies fire code official as the permit provider.

**6.** Section 202 Definitions. Adds new definitions to reference lockdown and shelter in place procedures, and marina requirements.

**7.** Section 308.1.4 Open Flame Cooking Devices. Modifies section number consistent with new code edition. Section not adopted.

**8.** Section 308.1.7 Religious ceremonies. Hand held candles not precluded by state law. Modifies current amendment.

**9.** Section 308.1.9 Aisles and exits. Modifies new code edition to maintain consistency and deletes current state amendments.

**10.** Chapter 4 Emergency Planning and Preparedness. Completely replaces the existing Chapter 4 and modifies state amendments for lockdown and shelter in place procedures to be consistent with new code edition.

**11.** Section 507.3 Fire Flow. Modifies section number consistent with new code edition.

**12.** Section 609.3 Commercial Kitchen Hoods. Modifies section to be consistent with state rules.

**13.** Section 801.1 Scope. Interior finish, decorative materials, and furnishings. Deletes state amendment to be consistent with new code edition.

**14.** Section 806.1.1 Natural cut trees. Restricted occupancies. Modifies section for clarity.

**15.** Section 806.1.3 Natural cut trees. Dryness. State amendment is deleted as unnecessary.

**16.** Chapter 9 Fire protection systems. Section 902.1 Definitions. Adds definitions consistent with alert systems required in chapter 4.

**17.** Section 903.2.3 Group E. Modifies section for clarity and to be consistent with new code edition.

**18.** Section 903.2.8 Group R. Section modified to be consistent with new model code edition.

**19.** Section 903.6.2 Nightclubs. Sprinkler requirement moved to section 4603.4.3. to be consistent with new code edition.

**20.** Section 906.1 Portable Fire extinguishers. Where required. Modifies model code to delete the exception.

**21.** Section 907.2.8 Group R-1 fire extinguisher, smoke alarm, and carbon monoxide requirements.

**22.** Section 907.2.8.4 Carbon monoxide alarm requirements and sleeping areas in new construction.

**23.** Section 907.2.8.4.1 Requirements for existing sleeping units and compliance deadline established.

**24.** Section 907.2.8.4.2 Compliance with manufacturers installation instructions.

**25.** Section 907.2.9 Installation in R-2 in accordance with code references.

**26.** Section 907.2.9.1 Group R-2 boarding homes. Requires manual alarms in state licensed facilities.

**27.** Section 907.2.9.3 Requirements for new construction.

**28.** Section 907.2.9.3.1 Requirements for existing dwelling units.

**29.** Section 909.6.3 Elevator shaft pressurization. Modifies section to correct reference numbers consistent with new code edition.

**30.** Section 915 Alerting systems. Adds provisions for alerting systems consistent with chapter 4 state amendments for lockdown and shelter in place procedures.

**31.** Section 1007.1 Accessible means of egress required. Adds an exception for parking garages that do not contain accessible parking spaces.

**32.** Section 1007.8 Two-way communication. Modifies two way communication system requirements to delete refer-

ence to the 911 option for dial-out. Adds a requirement for battery back-up.

**33.** Section 1008.1.2. Door swing. State amendment included in the 2009 model code revision. Delete state amendment to be consistent with the model code.

**34.** Section 1008.1.9.3 Locks and Latches. State amendment allows locks without delayed egress in some licensed facilities.

**35.** Section 1008.1.9.6. Special locking arrangement in Group I-2. State amendment allows locks without delayed egress in some licensed facilities.

**36.** Section 1009.15 Stairways in individual units. State amendment provides an exception to stairways for small loft areas. Renumbered to be compatible with the model code.

**37.** Section 1010.1 Ramps. Adds an exception allowing a second accessible ramp in parking garages to be installed without handrails or landings.

**38.** Section 1014.2.2. Exit Access. Group I-2. Modifies current state amendment to be compatible with the model code and to clarify exit access provisions for suites in Group I-2.

**39.** Section 1015 State amendment included in the 2009 model code revision. Delete state amendment to be consistent with the model code.

**40.** Section 1017 Corridors. Sections deleted to be consistent with the model code numbering.

**41.** Section 1018 Corridors. State amendments modified to be consistent with model code numbering. Modifies "seating areas" in corridors for state licensed facilities.

**42.** Section 1019 State amendment included in the 2009 model code revision. Delete state amendment to be consistent with the model code.

**43.** Section 1106.5.1 Positioning of aircraft fuel-servicing vehicles. Deletes state amendment to be consistent with new code edition.

**44.** Chapter 22 Motor fuel dispensing facilities and repair garages. Section 2202.1 Definitions. Adds a definition of "motor vehicle."

**45.** Chapter 33 Explosives and Fireworks. Section 3301.1 Scope. Corrects references to state administrative code.

**46.** Chapter 34 Flammable and combustible liquids. Moved definition of Motor Vehicle to Chapter 22; delete sections on leaking tank, tank lining.

**47.** Section 3404.2.8.7 Arrangement. Section related to above ground tanks deleted to be consistent with new code edition.

**48.** Section 3406.5.4 Dispensing from tank cars and Section 3406.5.4.1 Marine craft and special equipment; and section 3406.5.4.5 commercial, industrial, governmental or manufacturing. Sections deleted to be consistent with new code edition.

**49.** Chapter 38 Liquefied petroleum gases. Section 3808.1 scope. New section.

**50.** Chapter 45 Marinas. Changes Chapter number from 46 to 45. Modifies state amendments for marinas to be consistent with new code edition.

**51.** Chapter 46 Existing buildings. New chapter addresses existing buildings.

**52.** Chapter 47 Reference standards. Adds reference to standard for commercial cooking equipment.

**53.** Appendix K adopts and amends the International Wildland Urban Interface Code, preapproved for local adoption.

Reasons Supporting Proposal: RCW 19.27.031 and 19.27.074.

Statutory Authority for Adoption: RCW 19.27.031 and 19.27.074.

Statute Being Implemented: Chapters 19.27 and 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: The council is seeking comments on the issues proposed in the rules shown below.

Name of Proponent: Washington state building code council, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Joanne McCaughan, P.O. Box 42525, Olympia, WA 98504-2525, (360) 725-2970; and Enforcement: Local jurisdictions.

No small business economic impact statement has been prepared under chapter 19.85 RCW. During review of the proposed changes, the technical advisory group did not identify any items with potential disproportionate cost impact to small business.

A cost-benefit analysis is not required under RCW 34.05.328. The state building code council is not listed in this section as one of the agencies required to comply with this statute.

August 1, 2009

Peter D. DeVries

Council Chair

AMENDATORY SECTION (Amending WSR 07-01-093, filed 12/19/06, effective 7/1/07)

**WAC 51-54-003 International Fire Code.** The ((2006)) 2009 edition of the International Fire Code, published by the International Code Council is hereby adopted by reference with the following additions, deletions, and exceptions.

AMENDATORY SECTION (Amending WSR 04-01-105, filed 12/17/03, effective 7/1/04)

**WAC 51-54-007 Exceptions.** The exceptions and amendments to the International Fire Code contained in the provisions of chapter 19.27 RCW shall apply in case of conflict with any of the provisions of these rules.

Codes referenced which are not adopted through RCW 19.27.031 or chapter 19.27A RCW shall not apply unless specifically adopted by the authority having jurisdiction. The 2009 International Wildland Urban Interface Code is included in this Code as Section 4800 with amendments found in Appendix Chapter K.

The provisions of this code do not apply to temporary growing structures used solely for the commercial production

of horticultural plants including ornamental plants, flowers, vegetables, and fruits. "Temporary growing structure" means a structure that has the sides and roof covered with polyethylene, polyvinyl, or similar flexible synthetic material and is used to provide plants with either frost protection or increased heat retention. A temporary growing structure is not considered a building for purposes of this code.

The provisions of this code do not apply to the construction, alteration, or repair of temporary worker housing except as provided by rule adopted under chapter 70.114A RCW or chapter 37, Laws of 1998 (2SSB 6168). "Temporary worker housing" means a place, area, or piece of land where sleeping places or housing sites are provided by an employer for his or her employees or by another person, including a temporary worker housing operator, who is providing such accommodations for employees, for temporary, seasonal occupancy, and includes "labor camps" under RCW 70.54.110.

The manufacture, storage, handling, sale and use of fireworks shall be governed by chapter 70.77 RCW and by chapter 212-17 WAC and local ordinances consistent with chapter 212-17 WAC.

AMENDATORY SECTION (Amending WSR 07-01-093, filed 12/19/06, effective 7/1/07)

**WAC 51-54-008 Implementation.** The International Fire Code adopted by chapter 51-54 WAC shall become effective in all counties and cities of this state on July 1, ((2007)) 2010.

AMENDATORY SECTION (Amending WSR 04-01-105, filed 12/17/03, effective 7/1/04)

**WAC 51-54-0100 Chapter 1—Administration.**

~~((105.6.17 Flammable or combustible liquids. An operational permit is required:~~

~~1. To use or operate a pipeline for the transportation within facilities of flammable or combustible liquids. This requirement shall not apply to the offsite transportation in pipelines regulated by the department of transportation (DOT) nor does it apply to piping systems.~~

~~2. To store, handle or use Class I liquids in excess of 5 gallons (19 L) in a building or in excess of 10 gallons (37.9 L) outside of a building, except that a permit is not required for the following:~~

~~2.1 The storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant or mobile heating plant, unless such storage, in the opinion of the code official, would cause an unsafe condition.~~

~~2.2 The storage or use of paints, oils, varnishes or similar flammable mixtures when such liquids are stored for maintenance, painting or similar purposes for a period of not more than 30 days.~~

~~3. To store, handle or use Class II or Class III-A liquids in excess of 25 gallons (95 L) in a building or in excess of 60 gallons (227 L) outside a building, except for fuel oil used in connection with oil-burning equipment.~~

~~4. To remove Class I or Class II liquids from an underground storage tank used for fueling motor vehicles by any~~



means other than the approved, stationary on-site pumps normally used for dispensing purposes.

5. To operate tank vehicles, equipment, tanks, plants, terminals, wells, fuel dispensing stations, refineries, distilleries and similar facilities where flammable and combustible liquids are produced, processed, transported, stored, dispensed or used.

6. To place temporarily out of service (for more than 90 days) an underground, protected above-ground or above-ground flammable or combustible liquid tank.

7. To change the type of contents stored in a flammable or combustible liquid tank to a material which poses a greater hazard than that for which the tank was designed and constructed.

8. To manufacture, process, blend or refine flammable or combustible liquids.

9. To engage in the dispensing of liquid fuels into the fuel tanks of motor vehicles at commercial, industrial, governmental or manufacturing establishments.

10. To utilize a site for the dispensing of liquid fuels from tank vehicles into the fuel tanks of motor vehicles at commercial, industrial, governmental or manufacturing establishments.

11. To utilize a site for the dispensing of liquid fuels from tank vehicles into the fuel tanks of marine craft and special equipment at commercial, industrial, governmental or manufacturing establishments.)) **101.2.1 Appendices.** Provisions in the appendices shall not apply unless specifically adopted. The State Building Code Council has determined that a local ordinance adopting Appendix K Wildland Urban Interface Code may be adopted by any local government upon notification of the Council.

**105.1.1 Permits required.** Any property owner or authorized agent who intends to conduct an operation or business, or install or modify systems and equipment, which is regulated by this code, or to cause any such work to be done shall first make application to the fire code official and obtain the required permit.

**AMENDATORY SECTION** (Amending WSR 08-01-101, filed 12/18/07, effective 4/1/08)

**WAC 51-54-0200 Chapter 2—Definitions.**

**SECTION 202 GENERAL DEFINITIONS.**

**ADULT FAMILY HOME** means a dwelling in which a person or persons provide personal care, special care, room and board to more than one but not more than six adults who are not related by blood or marriage to the person or persons providing the services.

**ALERT SIGNAL.** See Section 402.1

**ALERT SYSTEM.** See Section 402.1

**CHILD DAY CARE**, shall, for the purposes of these regulations, mean the care of children during any period of a 24-hour day.

**COVERED BOAT MOORAGE.** See Section 4502.1

**ELECTRICAL CODE** is the National Electrical Code, promulgated by the National Fire Protection Association, as adopted

by rule or local ordinance under the authority of chapter 19.28 RCW.

**FAMILY CHILD DAY CARE HOME** is a child day care facility, licensed by the state, located in the dwelling of the person or persons under whose direct care and supervision the child is placed, for the care of twelve or fewer children, including children who reside at the home.

**FULL LOCKDOWN.** See Section 402.1

**GRAVITY - OPERATED DROP OUT VENTS.** See Section 4502.1

**MODIFIED LOCKDOWN.** See Section 402.1

**NIGHTCLUB.** An A-2 Occupancy use under the 2006 International Building Code in which the aggregate area of concentrated use of unfixed chairs and standing space that is specifically designated and primarily used for dancing or viewing performers exceeds three hundred fifty square feet, excluding adjacent lobby areas. "Nightclub" does not include theaters with fixed seating, banquet halls, or lodge halls.

**EDUCATIONAL GROUP E.** Educational Group E Occupancy includes, among others, the use of a building or structure, or a portion thereof, by six or more persons at any one time for educational purposes through the 12th grade. Religious educational rooms and religious auditoriums, which are accessory to churches in accordance with Section 302.2 of the IBC and have occupant loads of less than 100, shall be classified as Group A-3 Occupancies.

**Day Care.** The use of a building or structure, or portion thereof, for educational, supervision or personal care services for more than five children older than 2 1/2 years of age, shall be classified as a Group E Occupancy.

**EXCEPTION:** Family child day care homes licensed by the Washington state department of social and health services for the care of twelve or fewer children shall be classified as Group R3.

**INSTITUTIONAL GROUP I.** Institutional Group I Occupancy includes, among others, the use of a building or structure, or a portion thereof, in which people, cared for or living in a supervised environment and having physical limitations because of health or age, are harbored for medical treatment or other care or treatment, or in which people are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3 or I-4.

**Group I-1.** This occupancy shall include buildings, structures or parts thereof housing more than 16 persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment that provides personal care services. The occupants are capable of responding to an emergency situation without physical assistance from staff. This group shall include, but not be limited to, the following:

- Residential board and care facilities
- Assisted living facilities
- Halfway houses
- Group homes
- Congregate care facilities
- Social rehabilitation facilities

Alcohol and drug centers  
Convalescent facilities

A facility such as the above with five or fewer persons and adult family homes licensed by the Washington state department of social and health services shall be classified as a Group R-3 or shall comply with the *International Residential Code* in accordance with Section 101.2.

A facility such as the above providing licensed care to clients in one of the categories listed in IBC Section 310.1 regulated by either the Washington department of health or the department of social and health services shall be classified as Group R-2.

**Group I-2.** This occupancy shall include buildings and structures used for medical, surgical, psychiatric, nursing or custodial care on a 24-hour basis of more than five persons who are not capable of self-preservation. This group shall include, but not be limited to, the following:

Hospitals

Nursing homes (both intermediate-care facilities and skilled nursing facilities)

Mental hospitals

Detoxification facilities

A facility such as the above with five or fewer persons shall be classified as Group R-3 or shall comply with the *International Residential Code* in accordance with Section 101.2.

A facility such as the above providing licensed care to clients in one of the categories listed in IBC Section 310.1 regulated by either the Washington department of health or the department of social and health services shall be classified as Group R-2.

**Group I-3.** (Remains as printed in the IFC.)

**Group I-4. Day care facilities.** This group shall include buildings and structures occupied by persons of any age who receive custodial care for less than 24 hours by individuals other than parents or guardians, relatives by blood marriage, or adoption, and in a place other than the home of the person cared for. A facility such as the above with five or fewer persons shall be classified as Group R-3 or shall comply with the *International Residential Code*. Places of worship during religious functions are not included.

**Adult care facility.** A facility that provides accommodations for less than 24 hours for more than five unrelated adults and provides supervision and personal care services shall be classified as Group I-4.

EXCEPTION: Where the occupants are capable of responding to an emergency situation without physical assistance from the staff, the facility shall be classified as Group A-3.

**Child care facility.** A facility that provides supervision and personal care on a less than 24-hour basis for more than five children 2 1/2 years of age or less shall be classified as Group I-4.

EXCEPTIONS: 1. A child day care facility that provides care for more than five but no more than 100 children 2 1/2 years or less of age, when the rooms where such children are cared for are located on the level of exit discharge and each of these child care rooms has an exit door directly to the exterior, shall be classified as Group E.

2. Family child day care homes licensed by the Washington state department of social and health services for the care of 12 or fewer children shall be classified as Group R3.

**RESIDENTIAL GROUP R.** Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or Licensed Care Group LC. Residential occupancies shall include the following:

**R-1** Residential occupancies where the occupants are primarily transient in nature, including:

Boarding houses (transient)

Hotels (transient)

Motels (transient)

**R-2** Residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:

Apartment houses

Boarding houses (not transient)

Boarding homes as licensed by the department of social and health services under chapter 388-78A WAC

Convents

Dormitories

Fraternities and sororities

Hotels (nontransient)

Motels (nontransient)

Monasteries

Residential treatment facilities as licensed by the department of health under chapter 246-337 WAC

Vacation timeshare properties

Congregate living facilities with sixteen or fewer occupants are permitted to comply with the construction requirements for Group R-3.

**R-3** Residential occupancies where the occupants are primarily permanent in nature and not classified as R-1, R-2, R-4 or I and where buildings do not contain more than two dwelling units as applicable in Section 101.2, including adult family homes and family child day care homes for the care of 12 or fewer children, licensed by the Washington state department of social and health services, or adult and child care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours, or congregate living facilities with sixteen or fewer persons. Adult family homes and family child day care homes, or adult and child care facilities that are within a single-family home are permitted to comply with the *International Residential Code* in accordance with Section 101.2.

Foster family care homes licensed by the Washington state department of social and health services shall be permitted, as an accessory use to a dwelling, for six or fewer children including those of the resident family.

R-4 classification is not adopted. Any reference in this code to R-4 does not apply.

**RECALL SIGNAL.** See Section 402.1

**SHELTER-IN-PLACE.** See Section 402.1

AMENDATORY SECTION (Amending WSR 07-01-093, filed 12/19/06, effective 7/1/07)

**WAC 51-54-0300 Chapter 3—General precautions against fire.**

**307.2.1 Authorization.** Where required by state or local law or regulations, open burning shall only be permitted with prior approval from the state or local air and water quality management authority, provided that all conditions specified in the authorization are followed. See also chapter 173-425 WAC.

**307.4.2 Recreational fires.** Recreational fires shall not be conducted within 25 feet of a structure or combustible material. Conditions which could cause a fire to spread within 25 feet of a structure shall be eliminated prior to ignition. See also chapter 173-425 WAC.

~~((308.3.1 Open flame cooking devices. This section is not adopted.))~~ **308.1.4 Open flame cooking devices.** This section is not adopted.

**308.1.7 Religious ceremonies.** Participants in religious ceremonies shall not be precluded from carrying hand-held candles. See RCW 19.27.031(3).

**308.1.9 Aisles and exits.** Candles shall be prohibited in areas where occupants stand, or in an aisle or exit.

EXCEPTION: Candles used in religious ceremonies.

**308.3.1.1 Liquefied-petroleum-gas-fueled cooking devices.** This section is not adopted.

~~((308.3.4 Aisles and exits. Candles shall be prohibited in areas where occupants stand, or in an aisle or exit.~~

(EXCEPTION: Candles used in religious ceremonies. See RCW 19.27.031(3).

~~308.3.5 Religious ceremonies. Participants in religious ceremonies shall not be precluded from carrying hand-held candles.))~~

AMENDATORY SECTION (Amending WSR 09-04-027, filed 1/28/09, effective 7/1/09)

**WAC 51-54-0400 Chapter 4—Emergency planning and preparedness.**

~~((401.2 Approval. Where required by the fire code official, fire safety plans, emergency procedures, and employee training programs shall be approved.~~

**SECTION 402 DEFINITIONS**

**EMERGENCY DRILL.** An exercise performed to train staff and occupants and to evaluate their efficiency and effectiveness in carrying out emergency procedures.

**LOCKDOWN.** An action used to position occupants behind secured openings and isolated from threats.

**Full lockdown.** Occupants remain out of sight and as quiet as possible, with only limited authorized entry, exit, or movement within the building. Occupants in corridors, common areas, or unsecured areas move quickly to the nearest secured area.

**Modified lockdown.** Occupants of a facility are isolated from potential outside threats by remaining within a building with exterior doors and other exits secured, and that entry and exit from the building is limited to that which is authorized. During a modified lockdown, interior movement and other activities within the building may be allowed or restricted in accordance to the lockdown plan.

**SHELTER IN PLACE.** An emergency response used to minimize exposure of facility occupants to chemical or environmental hazards by taking refuge in predetermined interior rooms or areas where actions are taken to isolate the interior environment from the exterior hazard.

**SECTION 404 EMERGENCY PLANS**

**404.1 General.** Fire safety, evacuation, shelter in place, and lockdown plans shall comply with the requirements of this section.

~~404.2 Fire safety and evacuation plans. Fire safety and evacuation plans shall comply with the requirements of Sections 404.2.1 through 404.2.4.~~

~~404.2.1 Where required. A fire safety and evacuation plan shall be prepared and maintained in accordance with this chapter for the following occupancies and buildings when required by the fire code official:~~

- ~~1. Group A having an occupant load of 100 or more.~~
- ~~2. Group B buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.~~
- ~~3. Group E.~~
- ~~4. Group H.~~
- ~~5. Group I.~~
- ~~6. Group R-1.~~
- ~~7. Group R-2 college and university buildings, boarding homes, group homes, and residential treatment facilities licensed by the state of Washington.~~
- ~~8. High-rise buildings.~~
- ~~9. Group M buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.~~
- ~~10. Covered malls exceeding 50,000 sf in aggregate floor area.~~
- ~~11. Underground buildings.~~
- ~~12. Buildings with an atrium and having an occupancy in Group A, E, or M.~~

~~404.2.2 Contents. Fire safety and evacuation plan contents shall be in accordance with Sections 404.2.2.1 and 404.2.2.2.~~

~~404.2.2.1 Fire evacuation plans. Fire evacuation plans shall include the following:~~

- ~~1. Emergency egress or escape routes and whether evacuation of the building is to be complete or, where approved, by selected floors or areas only.~~
- ~~2. Procedures for employees who must remain to operate critical equipment before evacuating.~~
- ~~3. Procedures for accounting for employees and occupants after evacuation has been completed.~~
- ~~4. Identification and assignment of personnel responsible for rescue or emergency medical aid.~~

5. The preferred and any alternative means of notifying occupants of a fire or emergency.

6. The preferred and any alternative means of reporting fires and other emergencies to the fire department or designated emergency response organization.

7. Identification and assignment of personnel who can be contacted for further information or explanation of duties under the plan.

8. A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages, where provided.

**404.2.2.2 Fire safety plans.** Fire safety plans shall include the following:

1. The procedure for reporting a fire or other emergency.

2. The life safety strategy and procedures for notifying, relocating, or evacuating occupants.

3. Site plans indicating the following:

3.1 The occupancy assembly point.

3.2 The locations of fire hydrants.

3.3 The normal routes of fire department vehicle access.

4. Floor plans identifying the locations of the following:

4.1 Exits.

4.2 Primary evacuation routes.

4.3 Secondary evacuation routes.

4.4 Accessible egress routes.

4.5 Areas of refuge.

4.6 Manual fire alarm boxes.

4.7 Portable fire extinguishers.

4.8 Occupant use hose stations.

4.9 Fire alarm annunciators and controls.

5. A list of major fire hazards associated with the normal use and occupancy of the premises, including maintenance and housekeeping procedures.

6. Identification and assignment of personnel responsible for maintenance of systems and equipment installed to prevent or control fires.

7. Identification and assignment of personnel responsible for maintenance, housekeeping and controlling fuel hazard sources.

**404.2.3 Maintenance.** Fire safety and evacuation plans shall be reviewed by the owner or occupant annually or more often, as necessitated by changes in staff assignments, occupancy, or the physical arrangement of the building.

**404.2.4 Availability.** Fire safety and evacuation plans shall be available in the workplace for reference and review by employees, and copies shall be furnished to the fire code official for review upon request.

**404.3 Shelter in place and lockdown plans.** Shelter in place and lockdown plans shall comply with the requirements of Sections 404.3.1 through 404.3.4.

**404.3.1 Where required.** A shelter in place and lockdown plan shall be prepared and maintained for all Group E occupancies.

EXCEPTION: Day-cares not collocated on a Group E campus.

**404.3.2 Contents.** Shelter in place and lockdown plan contents shall be in accordance with Sections 404.3.2.1 and 404.3.2.2.

**404.3.2.1 Shelter in place plans.** Shelter in place plans shall include the following:

1. Identification of the procedures of initiating the shelter in place plan throughout the facility or campus.

2. Identification of prearranged alert and recall signals to notify all occupants.

3. Identification of procedures for reporting the facility is sheltering in place to the local emergency dispatch center.

4. A means of two-way communication between a central location and each secure area.

5. Identification of protective security measures.

6. Location of emergency supplies.

7. Accountability procedures for staff to report the presence or absence of occupants.

8. Identification of crisis response team members in accordance with the National Incident Management System.

9. Actions to be taken in the event of a fire or medical emergency while sheltering in place.

**404.3.2.2 Lockdown plans.** Lockdown plans shall include the following:

1. Identification of the procedures of initiating the lockdown plan throughout the facility or campus.

2. Identification of prearranged alert and recall signals to notify all occupants.

3. Identification of procedure for access to facility for emergency responders.

4. Identification of procedures for reporting the facility is in lockdown to the local emergency dispatch center.

5. A means of two-way communication between a central location and each secure area.

6. Identification of protective security measures.

7. Location of emergency supplies.

8. Accountability procedures for staff to report the presence or absence of occupants.

9. Identification of crisis response team members in accordance with the National Incident Management System.

10. Actions to be taken in the event of a fire or medical emergency while in lockdown.

**404.3.3 Maintenance.** Shelter in place and lockdown plans shall be reviewed by the owner or occupant annually or more often, as necessitated by changes in staff assignments, occupancy, or the physical arrangement of the building.

**404.3.4 Availability.** Shelter in place and lockdown plans shall be available in the workplace for reference and review by employees, and copies shall be furnished to the fire code official for review upon request.

**Sections 404.4 and 404.5 are not adopted.**

#### SECTION 405 EMERGENCY DRILLS

**405.1 General.** Emergency drills shall comply with the requirements of this section.

**405.2 Emergency evacuation drills.** Emergency evacuation drills complying with the provisions of this section shall be conducted at least annually in the occupancies listed in Section 404.2.1 or when required by the fire code official. Drills shall be designed in cooperation with the local authorities.

**405.2.1 Frequency.** Required emergency evacuation drills shall be held at the intervals specified in Table 405.2.1 or more frequently where necessary to familiarize all occupants with the drill procedure.

**TABLE 405.2.1  
FIRE AND EVACUATION DRILL  
FREQUENCY AND PARTICIPATION**

| <b>GROUP OR OCCUPANCY</b> | <b>FREQUENCY</b>        | <b>PARTICIPATION</b>   |
|---------------------------|-------------------------|------------------------|
| Group A                   | Quarterly               | Employees              |
| Group B <sup>e</sup>      | Annually                | Employees              |
| Group E                   | Monthly <sup>a,c</sup>  | All occupants          |
| Group I                   | Quarterly on each shift | Employees <sup>b</sup> |
| Group R-1                 | Quarterly on each shift | Employees              |
| Group R-2 <sup>f</sup>    | Quarterly on each shift | Employees              |
| Group R-2 <sup>d</sup>    | Four annually           | All occupants          |
| High-rise buildings       | Annually                | Employees              |

- a. The frequency shall be allowed to be modified in accordance with Section 408.3.2.
- b. Fire and evacuation drills in residential care assisted living facilities shall include complete evacuation of the premises in accordance with Section 408.10.5. Where occupants receive habilitation or rehabilitation training, fire prevention and fire safety practices shall be included as part of the training program.
- c. Group B buildings having an occupant load of five hundred or more persons or more than one hundred persons above or below the lowest level of exit discharge.
- d. Applicable to Group R-2 college and university buildings in accordance with Section 408.3.
- e. Group E and day cares collocated on a Group E campus shall jointly perform at least six fire and evacuation drills per school year.
- f. Applicable to boarding homes, group homes, and residential treatment facilities licensed by the state of Washington.

**405.2.2 Leadership.** Responsibility for the planning and conduct of drills shall be assigned to competent persons designated to exercise leadership.

**405.2.3 Time.** Drills shall be held at unexpected times and under varying conditions to simulate the unusual conditions that occur in case of fire.

**405.2.4 Recordkeeping.** Records shall be maintained of required emergency evacuation drills and include the following information:

1. Identity of the person conducting the drill.
2. Date and time of the drill.
3. Notification method used.
4. Staff members on duty and participating.
5. Number of occupants evacuated.
6. Special conditions simulated.
7. Problems encountered and corrective action taken.
8. Weather conditions when occupants were evacuated.
9. Time required to accomplish complete evacuation.

**405.2.5 Notification.** Where required by the fire code official, prior notification of emergency evacuation drills shall be given to the fire code official.

**405.2.6 Initiation.** Where a fire alarm system is provided, emergency evacuation drills shall be initiated by activating the fire alarm system. The fire alarm monitoring company shall be notified prior to the activation of the fire alarm system for drill purposes and again at the conclusion of the transmission and restoration of the fire alarm system to normal mode.

**EXCEPTION:** Drills conducted between the hours of 9:00 p.m. and 6:00 a.m., in Group R-2 boarding homes, group homes and residential treatment facilities licensed by the state of Washington, are allowed to utilize a coded announcement.

**405.2.7 Accountability.** As building occupants arrive at the assembly point, efforts shall be made to determine if all occupants have been successfully evacuated or have been accounted for.

**405.2.8 Recall and reentry.** An electrically or mechanically operated signal used to recall occupants after an evacuation shall be separate and distinct from the signal used to initiate the evacuation. The recall signal initiation means shall be manually operated and under the control of the person in charge of the premises or the official in charge of the incident. No one shall reenter the premises until authorized to do so by the official in charge.

**405.3 Shelter in place and lockdown drills.** Shelter in place and lockdown drills complying with the provisions of this section shall be conducted in the occupancies listed in Section 404.3.1 or when required by the fire code official. Drills shall be designed in cooperation with local authorities.

**405.3.1 Frequency.** Shelter in place and lockdown drills required by this section shall each be held at least annually to familiarize all occupants with the emergency procedures. Group E and collocated day cares shall drill jointly.

**405.3.2 Leadership.** Responsibility for the planning and conduct of drills shall be assigned to competent persons designated to exercise leadership.

**405.3.3 Time.** Drills shall be held at unexpected times and under varying conditions to simulate the unusual conditions that occur in case of an emergency.

**405.3.4 Recordkeeping.** Records shall be maintained of required shelter in place and lockdown drills and include the following information:

1. Identity of the person conducting the drill.
2. Date and time of the drill.
3. Notification method used.
4. Staff members on duty and participating.
5. Number of occupants sheltered and unaccounted for.
6. Special conditions simulated.
7. Problems encountered and corrective actions taken.
8. Time required to accomplish complete sheltering.

**405.3.5 Notification.** Where required by the fire code official, prior notification of shelter in place and lockdown drills shall be given to appropriate emergency response agencies.

**405.3.6 Signals.** Alerting signals shall be separate and distinct from the fire alarm and other signals.

**405.3.7 Accountability.** Efforts shall be made to determine if all occupants have been successfully sheltered and accounted for.

**SECTION 406 EMPLOYEE TRAINING AND RESPONSE PROCEDURES**

**406.1 General.** Employees in the occupancies listed in Sections 404.2.1 and 404.3.1 shall be trained in the procedures described in their emergency plans. Training shall be based on these plans and as described in Sections 404.2.2 and 404.3.2.

**406.3 Employee training program.** Employees shall be trained in fire prevention, evacuation, fire safety, shelter in place, and lockdown in accordance with Sections 406.3.1 through 406.3.4.

**406.3.4 Shelter in place and lockdown training.** Employees shall be familiarized with the alert and recall signals, their assigned duties in the event of an alarm or emergency, communication system, location of emergency supplies, and the use of the incident notification and alert system.

**SECTION 408 USE AND OCCUPANCY-RELATED REQUIREMENTS**

**408.2.1 Seating plan.** The fire safety and evacuation plans for assembly occupancies shall include the information required by Section 404.2.2 and a detailed seating plan, occupant load, and occupant load limit. Deviations from the approved plans shall be allowed provided the occupant load limit for the occupancy is not exceeded and the aisles and exit accessways remain unobstructed.

**408.3.2 Emergency evacuation drill deferral.** In severe climates, the fire code official shall have the authority to modify the emergency evacuation drill frequency specified in Section 405.2.1.

**408.5.4 Drill frequency.** Emergency evacuation drills shall be conducted at least six times per year, two times per year on each shift. Twelve drills shall be conducted in the first year of operation. Drills are not required to comply with the time requirements of Section 405.2.3.

**408.6 Group I-2 occupancies.** Group I-2 occupancies shall comply with the requirements of Sections 408.6.1 and 408.6.2 and Sections 401 through 406. Drills are not required to comply with the time requirements of Section 405.2.3.

**Section 408.10 is not adopted.**

**408.11.1 Lease plan.** A lease plan shall be prepared for each covered mall building. The plan shall include the following information in addition to that required by Section 404.2.2.2:

1. Each occupancy, including identification of tenant.
2. Exits from each tenant space.
3. Fire protection features, including the following:
  - 3.1 Fire department connections.
  - 3.2 Fire command center.
  - 3.3 Smoke management system controls.
  - 3.4 Elevators and elevator controls.
  - 3.5 Hose valves outlets.
  - 3.6 Sprinkler and standpipe control valves.
  - 3.7 Automatic fire extinguishing system areas.

3.8 Automatic fire detector zones.

3.9 Fire barriers.

**408.11.1.1 Submittal.** The lease plan shall be submitted to the fire code official, and shall be maintained on site for immediate reference by responding fire service personnel.

**408.11.1.2 Revisions.** The lease plan shall be reviewed and revised annually or as often as necessary to keep them current. Modifications or changes in occupancies shall not be made without prior approval of the fire code official and building official.)) **SECTION 401 GENERAL**

**401.1 Scope.** Reporting of emergencies, coordination with emergency response forces, emergency plans and procedures for managing or responding to emergencies shall comply with the provisions of this section.

**EXCEPTION:** Firms that have approved on-premises firefighting organizations and that are in compliance with approved procedures for fire reporting.

**401.2 Approval.** Where required by the fire code official, fire safety plans, emergency procedures and employee training programs shall be approved.

**401.3 Emergency responder notification.** Notification of emergency responders shall be in accordance with Sections 401.3.1 through 401.3.3.

**401.3.1 Fire events.** In the event an unwanted fire occurs on a property, the owner or occupant shall immediately report such condition to the fire department.

**401.3.2 Alarm activations.** Upon activation of a fire alarm signal, employees or staff shall immediately notify the fire department.

**401.3.3 Delayed notification.** A person shall not, by verbal or written directive, require any delay in the reporting of a fire to the fire department.

**401.4 Required plan implementation.** In the event an unwanted fire is detected in a building or a fire alarm activates, the emergency plan shall be implemented.

**401.5 Making false report.** A person shall not give, signal or transmit a false alarm.

**401.6 Emergency evacuation drills.** The sounding of a fire alarm signal and the carrying out of an emergency evacuation drill in accordance with the provisions of Section 405 shall be allowed.

**401.7 Unplanned evacuation.** Evacuations made necessary by the unplanned activation of a fire alarm system or by any other emergency shall not be substituted for a required evacuation drill.

**401.8 Interference with fire department operations.** It shall be unlawful to interfere with, attempt to interfere with, conspire to interfere with, obstruct or restrict the mobility of or block the path of travel of a fire department emergency vehicle in any way, or to interfere with, attempt to interfere with, conspire to interfere with, obstruct or hamper any fire department operation.

**SECTION 402 DEFINITIONS**

**402.1 Definition.** The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

**ALARM SIGNAL.** See Section 902.1.

**ALERT SIGNAL.** A distinctive signal indicating the need for trained personnel and occupants to initiate a specific action, such as lockdown or shelter-in-place.

**ALERT SYSTEM.** Approved devices, equipment and systems or combinations of systems used to transmit or broadcast an alert signal.

**EMERGENCY DRILL.** An exercise performed to train staff and occupants and to evaluate their efficiency and effectiveness in carrying out emergency procedures.

**LOCKDOWN.** An emergency situation, in other than a Group I-3 occupancy, requiring that the occupants be sheltered and secured in place within a building when normal evacuation would put occupants at risk.

**FULL LOCKDOWN.** Occupants remain out of sight and as quiet as possible, with only limited authorized entry, exit, or movement within the building. Occupants in corridors, common areas, or unsecured areas move quickly to the nearest secured area.

**MODIFIED LOCKDOWN.** Occupants of a facility are isolated from potential outside threats by remaining within a building with exterior doors and other exits secured, and that entry and exit from the building is limited to that which is authorized. During a modified lockdown, interior movement and other activities within the building may be allowed or restricted in accordance to the lockdown plan.

**SHELTER-IN-PLACE.** An emergency response used to minimize exposure of facility occupants to chemical or environmental hazards by taking refuge in predetermined interior rooms or areas where actions are taken to isolate the interior environment from the exterior hazard.

**RECALL SIGNAL.** An electrically or mechanically operated signal used to recall occupants after an emergency drill or to terminate a lockdown or shelter-in-place event that shall be distinct from any alarm or alert signal used to initiate an emergency plan, or other signals.

**SECTION 403 PUBLIC ASSEMBLAGES AND EVENTS**

**403.1 Fire watch personnel.** When, in the opinion of the fire code official, it is essential for public safety in a place of assembly or any other place where people congregate, because of the number of persons, or the nature of the performance, exhibition, display, contest or activity, the owner, agent or lessee shall provide one or more fire watch personnel, as required and approved, to remain on duty during the times such places are open to the public, or when such activity is being conducted.

**403.1.1 Duties.** Fire watch personnel shall keep diligent watch for fires, obstructions to means of egress and other hazards during the time such place is open to the public or such activity is being conducted and take prompt measures

for remediation of hazards, extinguishment of fires that occur and assist in the evacuation of the public from the structures.

**403.2 Public safety plan.** In other than Group A or E occupancies, where the fire code official determines that an indoor or outdoor gathering of persons has an adverse impact on public safety through diminished access to buildings, structures, fire hydrants and fire apparatus access roads or where such gatherings adversely affect public safety services of any kind, the fire code official shall have the authority to order the development of, or prescribe a plan for, the provision of an approved level of public safety.

**403.2.1 Contents.** The public safety plan, where required by Section 403.2, shall address such items as emergency vehicle ingress and egress, fire protection, emergency medical services, public assembly areas and the directing of both attendees and vehicles (including the parking of vehicles), vendor and food concession distribution, and the need for the presence of law enforcement, and fire and emergency medical services personnel at the event.

**403.3 Crowd managers.** Trained crowd managers shall be provided for facilities or events where more than 1,000 persons congregate. The minimum number of crowd managers shall be established at a ratio of one crowd manager to every 250 persons. Where approved by the fire code official, the ratio of crowd managers shall be permitted to be reduced where the facility is equipped throughout with an approved automatic sprinkler system or based upon the nature of the event.

**SECTION 404 FIRE SAFETY AND EMERGENCY PLANS**

**404.1 General.** Fire safety, evacuation, shelter-in-place and lockdown plans and associated drills shall comply with the requirements of Sections 404.2 through 404.5.1.

**404.2 Fire safety and evacuation plans.** Fire safety and evacuation plans shall comply with the requirements of Sections 404.2.1 through 404.2.2.2.

**404.2.1 Where required.** An approved fire safety and evacuation plan shall be prepared and maintained for the following occupancies and buildings.

1. Group A having an occupant load of 100 or more.
2. Group B buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.
3. Group E.
4. Group F buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.
5. Group H.
6. Group I.
7. Group R-1.
8. Group R-2 college and university buildings, boarding homes, group homes, and residential treatment facilities licensed by the state of Washington.
9. High-rise buildings.
10. Group M buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.

11. Covered malls exceeding 50,000 square feet (4645 m<sup>2</sup>) in aggregate floor area.

12. Underground buildings.

13. Buildings with an atrium and having an occupancy in Group A, E or M.

**404.2.2 Contents.** Fire evacuation and safety plan contents shall be in accordance with Sections 404.2.2.1 and 404.2.2.2.

**404.2.2.1 Fire evacuation plans.** Fire evacuation plans shall include the following:

1. Emergency egress or escape routes and whether evacuation of the building is to be complete or, where approved, by selected floors or areas only.

2. Procedures for employees who must remain to operate critical equipment before evacuating.

3. Procedures for assisted rescue for persons unable to use the general means of egress unassisted.

4. Procedures for accounting for employees and occupants after evacuation has been completed.

5. Identification and assignment of personnel responsible for rescue or emergency medical aid.

6. The preferred and any alternative means of notifying occupants of a fire.

7. The preferred and any alternative means of reporting fires and other emergencies to the fire department or designated emergency response organization.

8. Identification and assignment of personnel who can be contacted for further information or explanation of duties under the plan.

9. A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages, where provided.

**404.2.2.2 Fire safety plans.** Fire safety plans shall include the following:

1. The procedure for reporting a fire or other emergency.

2. The life safety strategy and procedures for notifying, relocating or evacuating occupants, including occupants who need assistance.

3. Site plans indicating the following:

3.1. The occupancy assembly point.

3.2. The locations of fire hydrants.

3.3. The normal routes of fire department vehicle access.

4. Floor plans identifying the locations of the following:

4.1. Exits.

4.2. Primary evacuation routes.

4.3. Secondary evacuation routes.

4.4. Accessible egress routes.

4.5. Areas of refuge.

4.6. Exterior areas for assisted rescue.

4.7. Manual fire alarm boxes.

4.8. Portable fire extinguishers.

4.9. Occupant-use hose stations.

4.10. Fire alarm annunciators and controls.

5. A list of major fire hazards associated with the normal use and occupancy of the premises, including maintenance and housekeeping procedures.

6. Identification and assignment of personnel responsible for maintenance of systems and equipment installed to prevent or control fires.

7. Identification and assignment of personnel responsible for maintenance, housekeeping and controlling fuel hazard sources.

**404.3 Shelter-in-place and lockdown plans.** Shelter-in-place and lockdown plans shall comply with the requirements of Sections 404.3.1 through 404.3.3.

**404.3.1 Where required.** A shelter-in-place and lockdown plan shall be prepared and maintained for all Group E occupancies.

EXCEPTION: Day cares not collocated on a Group E campus.

**404.3.2 Shelter-in-place plan contents.** Shelter-in-place plans shall include the following:

1. Identification of the procedures of initiating the shelter-in-place plan throughout the facility or campus.

2. Identification of prearranged alert and recall signals to notify all occupants.

3. Identification of procedures for reporting the facility is sheltering-in-place to the local emergency dispatch center.

4. A means of two-way communication between a central location and each secure area, and consideration for maintaining means of communication in absence of primary power.

5. Identification of protective security measures.

6. Location of emergency supplies.

7. Accountability procedures for staff to report the presence or absence of occupants.

8. Identification of crisis response team members in accordance with the National Incident Management System.

9. Actions to be taken in the event of a fire or medical emergency while sheltering-in-place.

**404.3.3 Lockdown plan contents.** Lockdown plans shall include the following:

1. Identification of the procedures of initiating the lockdown plan throughout the facility or campus.

2. Identification of prearranged alert and recall signals to notify all occupants.

3. Identification of procedures for access to the facility for emergency responders.

4. Identification of procedures for reporting the facility is in lockdown to the local emergency dispatch center.

5. A means of two-way communication between a central location and each secure area, and consideration for maintaining means of communication in absence of primary power.

6. Identification of protective security measures.

7. Location of emergency supplies.

8. Accountability procedures for staff to report the presence or absence of occupants.

9. Identification of crisis response team members in accordance with the National Incident Management System emergency while in lockdown.

10. Actions to be taken in the event of a fire or medical emergency while in lockdown.

**404.4 Maintenance.** Emergency plans shall be reviewed or updated annually or as necessitated by changes in staff assignments, occupancy or the physical arrangement of the building.



**404.5 Availability.** Emergency plans shall be available in the workplace for reference and review by employees, and copies shall be furnished to the fire code official for review upon request.

**404.5.1 Distribution.** The fire safety and evacuation plans shall be distributed to the tenants and building service employees by the owner or owner's agent. Tenants shall distribute to their employees applicable parts of the fire safety plan affecting the employees' actions in the event of a fire or other emergency.

**SECTION 405 EMERGENCY DRILLS**

**405.1 General.** Emergency drills complying with the provisions of this section shall be conducted at least annually in the occupancies listed in Section 404.2.1 or when required by the fire code official. Drills shall be designed in cooperation with the local authorities.

**405.2 Frequency.** Required emergency drills shall be held at the intervals specified in Table 405.2 or more frequently where necessary to familiarize all occupants with the drill procedure.

**405.2.1 Group E occupancies.** The occupancy shall conduct at a minimum the following drills during the year.

1. One drill using the school mapping information system.

EXCEPTION: Day cares not collocated on a school campus.

2. Six fire evacuation drills.
3. One shelter-in-place drill.
4. One lockdown drill.

**TABLE 405.2  
EMERGENCY DRILL FREQUENCY AND PARTICIPATION**

| <u>GROUP OR OCCUPANCY</u> | <u>FREQUENCY</u>        | <u>PARTICIPATION</u>   |
|---------------------------|-------------------------|------------------------|
| Group A                   | Quarterly               | Employees              |
| Group B <sup>c</sup>      | Annually                | Employees              |
| Group E                   | Monthly <sup>a,c</sup>  | All Occupants          |
| Group F                   | Annually                | Employees              |
| Group I                   | Quarterly on each shift | Employees <sup>b</sup> |
| Group R-1                 | Quarterly on each shift | Employees              |
| Group R-2 <sup>f</sup>    | Quarterly on each shift | Employees              |
| Group R2 <sup>d</sup>     | Four Annually           | All Occupants          |
| High-rise buildings       | Annually                | Employees              |

a. The frequency shall be allowed to be modified in accordance with Section 408.3.2.  
 b. Fire and evacuation drills in residential care assisted living facilities shall include complete evacuation of the premises in accordance with Section 408.10.5. Where occupants receive habilitation or rehabilitation training, fire prevention and fire safety practices shall be included as part of the training program.  
 c. Group B buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.

d. Applicable to Group R-2 college and university buildings in accordance with Section 408.3.  
 e. Day cares collocated on a Group E campus shall participate in emergency drills occurring on the campus.  
 f. Applicable to boarding homes, group homes, and residential treatment facilities licensed by the state of Washington.

**405.3 Leadership.** Responsibility for the planning and conduct of drills shall be assigned to competent persons designated to exercise leadership.

**405.4 Time.** Drills shall be held at unexpected times and under varying conditions to simulate the unusual conditions that occur in case of an emergency.

**405.5 Recordkeeping.** Records shall be maintained of required emergency evacuation drills and include the following information:

1. Identity of the person conducting the drill.
2. Date and time of the drill.
3. Notification method used.
4. Staff members on duty and participating.
5. Number of occupants participating.
6. Special conditions simulated.
7. Problems encountered and corrective actions taken.
8. Weather conditions when occupants were evacuated.
9. Time required to accomplish complete evacuation, lockdown, or shelter-in-place.

**405.6 Notification.** Where required by the fire code official, prior notification of emergency drills shall be given to the fire code official.

**405.7 Initiation.** Emergency drills shall be initiated in accordance with Sections 405.7.1 through 405.7.3.

**405.7.1 Fire evacuation drills.** Where a fire alarm system is provided, emergency evacuation drills shall be initiated by activating the fire alarm system. The fire alarm monitoring company shall be notified prior to the activation of the fire alarm system for drill proposed and again at the conclusion of the transmission and restoration of the fire alarm system to normal mode.

EXCEPTION: Drills conducted between the hours of 9:00 p.m. and 6:00 a.m., in Group R-2 boarding homes, group homes, and residential treatment facilities licensed by the state of Washington.

**405.7.2 Shelter-in-place drills.** Shelter-in-place drills shall be initiated by the shelter-in-place alert signal, generated by the alerting system in accordance with Section 915.

**405.7.3 Lockdown drills.** Lockdown drills shall be initiated by the lockdown alert signal.

**405.8 Accountability.** As building occupants arrive at the assembly point, efforts shall be made to determine if all occupants have been successfully evacuated and/or have been accounted for in the lockdown or shelter-in-place.

**405.9 Recall and reentry.** The recall signal initiation means shall be manually operated and under the control of the person in charge of the premises or the official in charge of the incident. No one shall reenter the premises until authorized to do so by the official in charge.

**SECTION 406 EMPLOYEE TRAINING AND RESPONSE PROCEDURES**

**406.1 General.** Employees in the occupancies listed in Section 404.2.1 shall be trained in the emergency procedures described in their emergency plans. Training shall be based on these plans and as described in Section 404.2 and 404.3.

**406.2 Frequency.** Employees shall receive training in the contents of the emergency plans and their duties as part of new employee orientation and at least annually thereafter. Records shall be kept and made available to the fire code official upon request.

**406.3 Employee training program.** Employees shall be trained in fire prevention, evacuation, sheltering-in-place, lockdown and fire safety in accordance with Sections 406.3.1 through 406.3.4.

**406.3.1 Fire prevention training.** Employees shall be apprised of the fire hazards of the materials and processes to which they are exposed. Each employee shall be instructed in the proper procedures for preventing fires in the conduct of their assigned duties.

**406.3.2 Evacuation training.** Employees shall be familiarized with the fire alarm and evacuation signals, their assigned duties in the event of an alarm or emergency, evacuation routes, areas of refuge, exterior assembly areas and procedures for evacuation.

**406.3.3 Emergency shelter-in-place and lockdown training.** Where a facility has a shelter-in-place or lockdown plan, employees shall be trained on the alert and recall signals, communication system, location of emergency supplies, the use of the incident notification and alarm system, and their assigned duties and procedures in the event of an alarm or emergency.

**406.3.4 Fire safety training.** Employees assigned firefighting duties shall be trained to know the locations and proper use of portable fire extinguishers or other manual firefighting equipment and the protective clothing or equipment required for its safe and proper use.

**SECTION 407 HAZARD COMMUNICATION**

**407.1 General.** The provisions of Sections 407.2 through 407.7 shall be applicable where hazardous materials subject to permits under Section 2701.5 are located on the premises or where required by the fire code official.

**407.2 Material safety data sheets.** Material safety data sheets (MSDS) for all hazardous materials shall be either readily available on the premises as a paper copy, or where approved, shall be permitted to be readily retrievable by electronic access.

**407.3 Identification.** Individual containers of hazardous materials, cartons or packages shall be marked or labeled in accordance with applicable federal regulations. Buildings, rooms and spaces containing hazardous materials shall be identified by hazard warning signs in accordance with Section 2703.5.

**407.4 Training.** Persons responsible for the operation of areas in which hazardous materials are stored, dispensed, handled or used shall be familiar with the chemical nature of the materials and the appropriate mitigating actions necessary in the event of a fire, leak or spill. Responsible persons shall be designated and trained to be liaison personnel for the fire department. These persons shall aid the fire department in preplanning emergency responses and identification of the locations where hazardous materials are located, and shall have access to material safety data sheets and be knowledgeable in the site emergency response procedures.

**407.5 Hazardous materials inventory statement.** Where required by the fire code official, each application for a permit shall include a hazardous materials inventory statement (HMIS) in accordance with Section 2701.5.2.

**407.6 Hazardous materials management plan.** Where required by the fire code official, each application for a permit shall include a hazardous materials management plan (HMMP) in accordance with Section 2701.5.1. The fire code official is authorized to accept a similar plan required by other regulations.

**407.7 Facility closure plans.** The permit holder or applicant shall submit to the fire code official a facility closure plan in accordance with Section 2701.6.3 to terminate storage, dispensing, handling or use of hazardous materials.

**SECTION 408 USE AND OCCUPANCY-RELATED REQUIREMENTS**

**408.1 General.** In addition to the other requirements of this chapter, the provisions of this section are applicable to specific occupancies listed herein.

**408.2 Group A occupancies.** Group A occupancies shall comply with the requirements of Sections 408.2.1 and 408.2.2 and Sections 401 through 406.

**408.2.1 Seating plan.** The fire safety and evacuation plans for assembly occupancies shall include the information required by Section 404.3 and a detailed seating plan, occupant load and occupant load limit. Deviations from the approved plans shall be allowed provided the occupant load limit for the occupancy is not exceeded and the aisles and exit accessways remain unobstructed.

**408.2.2 Announcements.** In theaters, motion picture theaters, auditoriums and similar assembly occupancies in Group A used for noncontinuous programs, an audible announcement shall be made not more than 10 minutes prior to the start of each program to notify the occupants of the location of the exits to be used in the event of a fire or other emergency.

**EXCEPTION:** In motion picture theaters, the announcement is allowed to be projected upon the screen in a manner approved by the fire code official.

**408.3 Group E occupancies and Group R-2 college and university buildings.** Group E occupancies shall comply with the requirements of Sections 408.3.1 through 408.3.4 and Sections 401 through 406. Group R-2 college and university buildings shall comply with the requirements of Sections 408.3.1 and 408.3.3 and Sections 401 through 406.

**408.3.1 First emergency evacuation drill.** The first emergency evacuation drill of each school year shall be conducted within 10 days of the beginning of classes.

**408.3.2 Emergency evacuation drill deferral.** In severe climates, the fire code official shall have the authority to modify the emergency evacuation drill frequency specified in Section 405.2.

**408.3.3 Time of day.** Emergency evacuation drills shall be conducted at different hours of the day or evening, during the changing of classes, when the school is at assembly, during the recess or gymnastic periods, or during other times to avoid distinction between drills and actual fires. In Group R-2 college and university buildings, one required drill shall be held during hours after sunset or before sunrise.

**408.3.4 Assembly points.** Outdoor assembly areas shall be designated and shall be located a safe distance from the building being evacuated so as to avoid interference with fire department operations. The assembly areas shall be arranged to keep each class separate to provide accountability of all individuals.

**408.4 Group H-5 occupancies.** Group H-5 occupancies shall comply with the requirements of Sections 408.4.1 through 408.4.4 and Sections 401 through 407.

**408.4.1 Plans and diagrams.** In addition to the requirements of Sections 404 and 407.6, plans and diagrams shall be maintained in approved locations indicating the approximate plan for each area, the amount and type of HPM stored, handled and used, locations of shutoff valves for HPM supply piping, emergency telephone locations and locations of exits.

**408.4.2 Plan updating.** The plans and diagrams required by Section 408.4.1 shall be maintained up to date and the fire code official and fire department shall be informed of all major changes.

**408.4.3 Emergency response team.** Responsible persons shall be designated the on-site emergency response team and trained to be liaison personnel for the fire department. These persons shall aid the fire department in preplanning emergency responses, identifying locations where HPM is stored, handled and used, and be familiar with the chemical nature of such material. An adequate number of personnel for each work shift shall be designated.

**408.4.4 Emergency drills.** Emergency drills of the on-site emergency response team shall be conducted on a regular basis but not less than once every three months. Records of drills conducted shall be maintained.

**408.5 Group I-1 occupancies.** Group I-1 occupancies shall comply with the requirements of Sections 408.5.1 through 408.5.5 and Sections 401 through 406.

**408.5.1 Fire safety and evacuation plan.** The fire safety and evacuation plan required by Section 404 shall include special staff actions including fire protection procedures necessary for residents and shall be amended or revised upon admission of any resident with unusual needs.

**408.5.2 Staff training.** Employees shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Such instruction shall be reviewed by the staff at least every two months. A copy of the plan shall be readily available at all times within the facility.

**408.5.3 Resident training.** Residents capable of assisting in their own evacuation shall be trained in the proper actions to take in the event of a fire. The training shall include actions to take if the primary escape route is blocked. Where the resident is given rehabilitation or habilitation training, training in fire prevention and actions to take in the event of a fire shall be a part of the rehabilitation training program. Residents shall be trained to assist each other in case of fire to the extent their physical and mental abilities permit them to do so without additional personal risk.

**408.5.4 Drill frequency.** Emergency evacuation drills shall be conducted at least six times per year, two times per year on each shift. Twelve drills shall be conducted in the first year of operation. Drills are not required to comply with the time requirements of Section 405.4.

**408.5.5 Resident participation.** Emergency evacuation drills shall involve the actual evacuation of residents to a selected assembly point.

**408.6 Group I-2 occupancies.** Group I-2 occupancies shall comply with the requirements of Sections 408.6.1 and 408.6.2 and Sections 401 through 406. Drills are not required to comply with the time requirements of Section 405.4.

**408.6.1 Evacuation not required.** During emergency evacuation drills, the movement of patients to safe areas or to the exterior of the building is not required.

**408.6.2 Coded alarm signal.** When emergency evacuation drills are conducted after visiting hours or when patients or residents are expected to be asleep, a coded announcement is allowed instead of audible alarms.

**408.7 Group I-3 occupancies.** Group I-3 occupancies shall comply with the requirements of Sections 408.7.1 through 408.7.4 and Sections 401 through 406.

**408.7.1 Employee training.** Employees shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment. Training of new staff shall be provided promptly upon entrance on duty. Refresher training shall be provided at least annually.

**408.7.2 Staffing.** Group I-3 occupancies shall be provided with 24-hour staffing. Staff shall be within three floors or 300 feet (91,440 mm) horizontal distance of the access door of each resident housing area. In Use Conditions 3, 4 and 5, as defined in Chapter 2, the arrangement shall be such that the staff involved can start release of locks necessary for emergency evacuation or rescue and initiate other necessary emergency actions within 2 minutes of an alarm.

**EXCEPTION:** Staff shall not be required to be within three floors or 300 feet (9144 mm) in areas in which all locks are unlocked remotely and automatically in accordance with Section 408.4 of the *International Building Code*.

**408.7.3 Notification.** Provisions shall be made for residents in Use Conditions 3, 4 and 5, as defined in Chapter 2, to readily notify staff of an emergency.

**408.7.4 Keys.** Keys necessary for unlocking doors installed in a means of egress shall be individually identifiable by both touch and sight.

**408.8 Group R-1 occupancies.** Group R-1 occupancies shall comply with the requirements of Sections 408.8.1 through 408.8.3 and Sections 401 through 406.

**408.8.1 Evacuation diagrams.** A diagram depicting two evacuation routes shall be posted on or immediately adjacent to every required egress door from each hotel, motel or dormitory sleeping unit.

**408.8.2 Emergency duties.** Upon discovery of a fire or suspected fire, hotel, motel and dormitory employees shall perform the following duties:

1. Activate the fire alarm system, where provided.
2. Notify the public fire department.
3. Take other action as previously instructed.

**408.8.3 Fire safety and evacuation instructions.** Information shall be provided in the fire safety and evacuation plan required by Section 404 to allow guests to decide whether to evacuate to the outside, evacuate to an area of refuge, remain in place, or any combination of the three.

**408.9 Group R-2 occupancies.** Group R-2 occupancies shall comply with the requirements of Sections 408.9.1 through 408.9.3 and Sections 401 through 406.

**408.9.1 Emergency guide.** A fire emergency guide shall be provided which describes the location, function and use of fire protection equipment and appliances accessible to residents, including fire alarm systems, smoke alarms, and portable fire extinguishers. The guide shall also include an emergency evacuation plan for each dwelling unit.

**408.9.2 Maintenance.** Emergency guides shall be reviewed and approved in accordance with Section 401.2.

**408.9.3 Distribution.** A copy of the emergency guide shall be given to each tenant prior to initial occupancy.

**408.10 Group R-4 occupancies.** This section is not adopted.

**408.11 Covered mall buildings.** Covered mall buildings shall comply with the provisions of Sections 408.11.1 through 408.11.3.

**408.11.1 Lease plan.** A lease plan shall be prepared for each covered mall building. The plan shall include the following information in addition to that required by Section 404.3.2:

1. Each occupancy, including identification of tenant.
2. Exits from each tenant space.
3. Fire protection features, including the following:
  - 3.1. Fire department connections.
  - 3.2. Fire command center.
  - 3.3. Smoke management system controls.
  - 3.4. Elevators, elevator machine rooms and controls.
  - 3.5. Hose valve outlets.
  - 3.6. Sprinkler and standpipe control valves.
  - 3.7. Automatic fire-extinguishing system areas.

3.8. Automatic fire detector zones.

3.9. Fire barriers.

**408.11.1.1 Submittal.** The lease plan shall be submitted to the fire code official, and shall be maintained on-site for immediate reference by responding fire service personnel.

**408.11.1.2 Revisions.** The lease plans shall be reviewed and revised annually or as often as necessary to keep them current. Modifications or changes in tenants or occupancies shall not be made without prior approval of the fire code official and building official.

**408.11.2 Tenant identification.** Each occupied tenant space provided with a secondary exit to the exterior or exit corridor shall be provided with tenant identification by business name and/or address. Letters and numbers shall be posted on the corridor side of the door, be plainly legible and shall contrast with their background.

EXCEPTION: Tenant identification is not required for anchor stores.

**408.11.3 Maintenance.** Unoccupied tenant spaces shall be:

1. Kept free from the storage of any materials.
2. Separated from the remainder of the building by partitions of at least 0.5-inch-thick (12.7 mm) gypsum board or an approved equivalent to the underside of the ceiling of the adjoining tenant spaces.
3. Without doors or other access openings other than one door that shall be kept key locked in the closed position except during that time when opened for inspection.
4. Kept free from combustible waste and be broom swept clean.

AMENDATORY SECTION (Amending WSR 07-01-093, filed 12/19/06, effective 7/1/07)

#### WAC 51-54-0500 Chapter 5—Fire service features.

##### SECTION 503 FIRE APPARATUS ACCESS ROADS.

**503.1 Where required.** Fire apparatus access roads shall be provided and maintained in accordance with locally adopted street, road, and access standards.

**503.1.1 Buildings and facilities,** is not adopted.

**503.1.2 Additional access,** is not adopted.

**503.1.3 High-piled storage,** is not adopted.

**503.2 Specifications.** This section is not adopted.

**503.3 Marking.** This section is not adopted.

**503.4 Obstruction of fire apparatus access roads.** This section is not adopted.

~~((508.3))~~ **507.3 Fire flow** requirements for buildings or portions of buildings and facilities shall be determined by an approved method.

EXCEPTION: Fire flow is not required for structures under 500 square feet with a B, U or R-1 occupancy where structures are at least 30 feet from any other structure and are used only for recreation.

NEW SECTION

**WAC 51-54-0600 Chapter 6—Building services and systems.**

**SECTION 609 COMMERCIAL KITCHEN HOODS**

**[M] 609.2 Where required.** A Type I hood shall be installed at or above all commercial cooking appliances and domestic cooking appliances used for commercial purposes that produce grease laden vapors.

**EXCEPTION:** A Type I hood shall not be required to be installed in R-2 occupancies licensed by the state of Washington.

**609.3 Operations, inspection and maintenance.** Commercial cooking systems shall be operated, inspected and maintained in accordance with Sections 609.3.1 through 609.3.4 and Chapter 11 of NFPA 96.

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency and appear in the Register pursuant to the requirements of RCW 34.08.040.

AMENDATORY SECTION (Amending WSR 07-01-093, filed 12/19/06, effective 7/1/07)

**WAC 51-54-0800 Chapter 8—Interior finish, decorative materials and furnishings.**

~~((801.1 Scope. The provisions of this chapter shall govern interior finish, interior trim, furniture, furnishings, decorative materials and decorative vegetation in buildings. Sections 803 through 808 of this code shall be applicable to existing buildings. Section 803 of the International Building Code and Sections 804 through 808 of this code shall be applicable to new buildings.))~~

**806.1.1 Restricted occupancies.** Natural cut trees shall be prohibited in the following occupancies:

1. Group I(~~(-1, I-2, I-3, I-4,))~~; and
2. R-2 Occupancies providing licensed care to clients in one of the categories listed in IBC Section 310.1 regulated by either the Washington department of health or the department of social and health services.

**806.1.2 Support devices.** The support device that holds the tree in an upright position shall be of a type that is stable and that meets all of the following criteria:

1. The device shall hold the tree securely and be of adequate size to avoid tipping over of the tree.
2. The device shall be capable of containing a minimum supply of water in accordance with Table 806.1.2.
3. The water level, when full, shall cover the tree stem at least 2 inches (51 mm). The water level shall be maintained above the fresh cut and checked at least once daily.

~~((806.1.3 Dryness. The tree shall be removed from the building whenever the tree needles or leaves fall off readily when a tree branch is shaken or if the needles are brittle and break when bent between the thumb and the index finger, or whenever determined necessary by the fire code official. The tree shall be checked daily for dryness.))~~

**Table 806.1.2—Support Stand Water Capacity**

| Tree Stem Diameter (inches) | Minimum Support Stand Water Capacity (gallons) | Typical Daily Water Transpiration Amount (gallons) |
|-----------------------------|--|--|
| Up to 4                     | 1  | 1/4 to 1   |
| 4 to 6                      | 1 1/2  | 1 1/4 to 1 1/2                                     |
| 7 to 8                      | 2  | 1 3/4 to 2   |
| 9 to 12                     | 3  | 2 1/4 to 3   |
| 13 and over                 | 4  | Over 3   |

AMENDATORY SECTION (Amending WSR 09-04-027, filed 1/28/09, effective 7/1/10)

**WAC 51-54-0900 Chapter 9—Fire protection systems.**

**902.1 Definitions.**

ALERT SIGNAL. See Section 402.1.

ALERTING SYSTEM. See Section 402.1.

**PORTABLE SCHOOL CLASSROOM.** A structure, transportable in one or more sections, which requires a chassis to be transported, and is designed to be used as an educational space with or without a permanent foundation. The structure shall be trailerable and capable of being demounted and relocated to other locations as needs arise.

~~((903.2.2))~~ **903.2.3 Group E.** An automatic sprinkler system shall be provided for Group E Occupancies.

- EXCEPTIONS:**
1. Portable school classrooms, provided aggregate area of any cluster or portion of a cluster of portable school classrooms does not exceed 5,000 square feet (1465 m<sup>2</sup>); and clusters of portable school classrooms shall be separated as required (~~(in Chapter 5 of)~~) by the building code.
  2. Group E Occupancies with an occupant load of 50 or less, calculated in accordance with Table 1004.1.1.

~~((903.2.7))~~ **903.2.8 Group R.** An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area.

- EXCEPTION:**
- Group R-1 if all of the following conditions apply:
1. The Group R fire area is no more than 500 square feet and is used for recreational use only.
  2. The Group R fire area is on only one story.
  3. The Group R fire area does not include a basement.
  4. The Group R fire area is no closer than 30 feet from another structure.
  5. Cooking is not allowed within the Group R fire area.
  6. The Group R fire area has an occupant load of no more than 8.
  7. A hand held (portable) fire extinguisher is in every Group R fire area.

~~((903.6.2 Nightclub. An automatic sprinkler system shall be provided throughout Group A-2 nightclubs as defined in this code. An existing nightclub constructed prior to July 1, 2006, shall be provided with automatic sprinklers not later than December 1, 2009.))~~

**SECTION 906—PORTABLE FIRE EXTINGUISHERS**

**906.1 Where required.** Portable fire extinguishers shall be installed in the following locations:

1. In new and existing Group A, B, E, F, H, I, M, R-1, R-2, R-4 and S occupancies.
2. Within 30 feet (9144 mm) of commercial cooking equipment.
3. In areas where flammable or combustible liquids are stored, used or dispensed.
4. On each floor of structures under construction, except Group R-3 occupancies, in accordance with Section 1415.1.
5. Where required by the sections indicated in Table 906.1.
6. Special-hazard areas, including, but not limited to, laboratories, computer rooms and generator rooms, where required by the fire code official.

**SECTION 907—FIRE ALARM AND DETECTION SYSTEMS**

**[F] 907.2.8 Group R-1.** Fire alarm systems, smoke alarms and carbon monoxide alarms shall be installed in Group R-1 occupancies as required in this section and Section 907.2.8.4.

**[F] 907.2.8.4. Carbon monoxide alarms.** For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedroom in sleeping units within which fuel-fired appliances are installed, and in sleeping units that have attached garages.

**[F] 907.2.8.4.1 Existing sleeping units.** Existing sleeping units within which fuel-fired appliances exist or that have attached garages shall be equipped with carbon monoxide alarms by January 1, 2013.

**[F] 907.2.8.4.2 Alarm requirements.** Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

**[F] 907.2.9 Group R-2.** Fire alarm systems, smoke alarms and carbon monoxide alarms shall be installed in Group R-2 occupancies as required in Sections 907.2.9.1 through 907.2.9.3.

**907.2.9.1 Group R-2 boarding homes.** A manual fire alarm system shall be installed in Group R-2 occupancies where the building contains a boarding home licensed by the state of Washington.

EXCEPTION: In boarding homes licensed by the state of Washington, manual fire alarm boxes in resident sleeping areas shall not be required at exits if located at all constantly attended staff locations, provided such staff locations are visible, continuously accessible, located on each floor, and positioned so no portion of the story exceeds a horizontal travel distance of 200 feet to a manual fire alarm box.

**[F] 907.2.9.3 Carbon monoxide alarms.** For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedroom in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages.

**[F] 907.2.9.3.1 Existing dwelling units.** Existing dwelling units within which fuel-fired appliances exist or that have attached garages shall be equipped with carbon monoxide alarms by January 1, 2013.

**[F] 907.2.10 Group R-3.** Carbon monoxide alarms shall be installed in Group R-3 occupancies as required in Sections 907.2.10.1 through 907.2.10.3.

**[F] 907.2.10.1 Carbon monoxide alarms.** For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedroom in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages.

**[F] 907.2.10.2 Existing dwelling units.** Existing dwelling units within which fuel-fired appliances exist or that have attached garages shall be equipped with carbon monoxide alarms by January 1, 2013.

EXCEPTION: Owner-occupied Group R-3 residences legally occupied prior to July 1, 2010.

**[F] 907.2.10.3 Alarm requirements.** Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

**909.6.3 Elevator shaft pressurization.** Where elevator shaft pressurization is required to comply with Exception 6 of IBC Section ((707.14.1)) 708.14.1, the pressurization system shall comply with and be maintained in accordance with IBC ((707.14.2)) 708.14.2.

**909.6.3.1 Activation.** The elevator shaft pressurization system shall be activated by a fire alarm system which shall include smoke detectors or other approved detectors located near the elevator shaft on each floor as approved by the building official and fire code official. If the building has a fire alarm panel, detectors shall be connected to, with power supplied by, the fire alarm panel.

**909.6.3.2 Power system.** The power source for the fire alarm system and the elevator shaft pressurization system shall be in accordance with Section 909.11.

**SECTION 915 ALERTING SYSTEMS**

**915.1 General.** An approved alerting system shall be provided in buildings and structures as required in chapter 4 and this section, unless other requirements are provided by another section of this code.

EXCEPTION: Approved alerting systems in existing buildings, structures or occupancies.

**915.2 Power source.** Alerting systems shall be provided with power supplies in accordance with Section 4.4.1 of NFPA 72 and circuit disconnecting means identified as "EMERGENCY ALERTING SYSTEM."

EXCEPTION: Systems which do not require electrical power to operate.

**915.3 Duration of Operation.** The alerting system shall be capable of operating under nonalarm condition (quiescent load) for a minimum of 24 hours and then shall be capable of

operating during an emergency condition for a period of 15 minutes at maximum connected load.

**915.4 Combination system.** Alerting system components and equipment shall be allowed to be used for other purposes.

**915.4.1 System priority.** The alerting system use shall take precedence over any other use.

**915.4.2 Fire alarm system.** Fire alarm systems sharing components and equipment with alerting systems must be in accordance with Section 6.8.4 of NFPA 72.

**915.4.2.1 Signal priority.** Recorded or live alert systems generated by an alerting system that shares components with a fire alarm system shall, when actuated, take priority over fire alarm messages and signals.

**915.4.2.2 Temporary deactivation.** Should the fire alarm system be in the alarm mode when such an alerting system is actuated, it shall temporarily cause deactivation of all fire alarm-initiated audible messages or signals during the time period required to transmit the alert signal.

**915.4.2.3 Supervisory signal.** Deactivation of fire alarm audible and visual notification signals shall cause a supervisory signal for each notification zone affected in the fire alarm system.

**915.5 Audibility.** Audible characteristics of the alert signal shall be in accordance with Section 7.4.1 of NFPA 72 throughout the area served by the alerting system.

**915.6 Visibility.** Visible and textual notification appliances shall be permitted in addition to alert signal audibility.

**EXCEPTION:** Areas served by approved visual or textual notification, where the visible notification appliances are not also used as a fire alarm signal, are not required to be provided with audibility complying with Section 915.6.

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency and appear in the Register pursuant to the requirements of RCW 34.08.040.

#### **NEW SECTION**

**WAC 51-54-1007 Section 1007—Accessible means of egress.**

**1007.1 Accessible means of egress required.** Accessible means of egress shall comply with this section. Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress are required by Section 1015.1 or 1021.1 from any accessible space, each accessible portion of the space shall be served by not less than two accessible means of egress.

**EXCEPTIONS:**

1. Accessible means of egress are not required in alterations to existing buildings.
2. One accessible means of egress is required from an accessible mezzanine level in accordance with Section 1007.3, 1007.4 or 1007.5.
3. In assembly areas with sloped or stepped aisles, one accessible means of egress is permitted where the common path of travel is accessible and meets the requirements in Section 1028.8.

4. In parking garages, accessible means of egress are not required to serve parking areas that do not contain accessible parking spaces.

**1007.8 Two-way communication.** A two-way communication system shall be provided at the elevator landing on each accessible floor that is one or more stories above or below the story of exit discharge complying with Sections 1007.8.1 and 1007.8.2.

**EXCEPTIONS:**

1. Two-way communication systems are not required at the elevator landing where two-way communication is provided within the areas of refuge in accordance with Section 1007.6.3.
2. Two-way communication systems are not required on floors provided with exit ramps conforming to provisions of Section 1010.

**1007.8.1 System requirements.** Two-way communication systems shall provide communication between each required location and the fire command center or a central control point location approved by the fire department. Where the central control point is not constantly attended, a two-way communication system shall have a timed automatic telephone dial-out capability to a monitoring location. The two-way communication system shall include both audible and visible signals. The two-way communication system shall have a battery backup or an approved alternate source of power that is capable of 90 minutes use upon failure of the normal power source.

#### **NEW SECTION**

**WAC 51-54-1008 Section 1008—Doors, gates and turnstiles.**

**1008.1.9.3 Locks and latches.** Locks and latches shall be permitted to prevent operation of doors where any of the following exists:

1. Places of detention or restraint.
2. In buildings in occupancy Group A having an occupant load of 300 or less, Groups B, F, M and S, and in places of religious worship, the main exterior door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:

2.1 The locking device is readily distinguishable as locked;

2.2 A readily visible sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background; and

2.3 The use of the key-operated locking device is revocable by the building official for due cause.

3. Where egress doors are used in pairs, approved automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts has no door-knob or surface-mounted hardware.

4. Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt, or security chain, provided such devices are openable from the inside without the use of a key or a tool.

5. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.

6. Approved, listed locks without delayed egress shall be permitted in Group R-2 boarding homes licensed by Washington state, provided that:

6.1. The clinical needs of one or more patients require specialized security measures for their safety.

6.2. The doors unlock upon actuation of the automatic sprinkler system or automatic fire detection system.

6.3. The doors unlock upon loss of electrical power controlling the lock or lock mechanism.

6.4. The lock shall be capable of being deactivated by a signal from a switch located in an approved location.

6.5. There is a system, such as a keypad and code, in place that allows visitors, staff persons and appropriate residents to exit. Instructions for exiting shall be posted within six feet of the door.

#### **1008.1.9.6 Special locking arrangements in Group I-2.**

Approved locks shall be permitted in a Group I-2 Occupancy where the clinical needs of persons receiving care require such locking. Locks shall be permitted in such occupancies where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907, provided that the doors unlock in accordance with Items 1 through 6 below.

1. The doors unlock upon actuation of the automatic sprinkler system or automatic fire detection system.

2. The doors unlock upon loss of power controlling the lock or lock mechanism.

3. The door locks shall have the capability of being unlocked by a signal from the fire command center, a nursing station or other approved location.

4. The procedures for the operation(s) of the unlocking system shall be described and approved as part of the emergency planning and preparedness required by Chapter 4 of the International Fire Code.

5. There is a system, such as a keypad and code, in place that allows visitors, staff persons and appropriate residents to exit. Instructions for exiting shall be posted within six feet of the door.

6. Emergency lighting shall be provided at the door.

EXCEPTION: Items 1, 2, 3, and 5 shall not apply to doors to areas where persons which because of clinical needs require restraint or containment as part of the function of a Group I-2 mental hospital provided that all clinical staff shall have the keys, codes or other means necessary to operate the locking devices.

#### **NEW SECTION**

#### **WAC 51-54-1009 Section 1009—Stairways and handrails.**

**1009.15 Stairways in individual dwelling units.** Stairs or ladders within an individual dwelling unit used for access to areas of 200 square feet (18.6 m<sup>2</sup>) or less, and not containing the primary bathroom or kitchen, are exempt from the requirements of Section 1009.

#### **NEW SECTION**

#### **WAC 51-54-1010 Section 1010—Ramps.**

**1010.1 Scope.** The provisions of this section shall apply to ramps used as a component of a means of egress.

EXCEPTIONS:

1. Other than ramps that are part of the accessible routes providing access in accordance with Sections 1108.2 through 1108.2.4 and 1108.2.6, ramped aisles within assembly rooms or spaces shall conform with the provisions in Section 1028.11.

2. Curb ramps shall comply with ICC A117.1.

3. Vehicle ramps in parking garages for pedestrian exit access shall not be required to comply with Sections 1010.3 through 1010.9 when they are not an accessible route serving accessible parking spaces or other required accessible elements.

4. In a parking garage where one accessible means of egress serving accessible parking spaces or other accessible elements is provided, a second accessible means of egress serving that area may include a vehicle ramp that does not comply with Sections 1010.4 through 1010.8.

#### **NEW SECTION**

#### **WAC 51-54-1014 Exit access.**

**1014.2.2 Group I-2. General.** Habitable spaces and suites in Group I-2 Occupancies are permitted to comply with this Section 1014.2.2.

**1014.2.2.1 Exit access doors.** Habitable spaces and suites in Group I-2 occupancies shall have an exit access door leading directly to a corridor.

EXCEPTION: Rooms with exit doors opening directly to the outside at ground level.

**1014.2.2.2 Exit access through suites.** Exit access from areas not classified as a Group I-2 Occupancy suite shall not pass through a suite. In a suite required to have more than one exit, one exit access may pass through an adjacent suite if all other requirements of Section 1014.2 are satisfied.

**1014.2.2.3 Separation.** Suites in Group I-2 Occupancies shall be separated from other portions of the building by a smoke partition complying with Section 711. Partitions within suites are not required to be smoke-resistant or fire-resistance-rated unless required by another section of this Code.

**1014.2.2.4 Suites containing patient sleeping areas.** Patient sleeping areas in Group I-2 Occupancies shall be permitted to be divided into suites with one intervening room if one of the following conditions is met:

1. The intervening room within the suite is not used as an exit access for more than eight patient beds.

2. The arrangement of the suite allows for direct and constant visual supervision by nursing personnel.

**1014.2.2.4.1 Area.** Suites of sleeping rooms shall not exceed 5,000 square feet (465 m<sup>2</sup>).

**1014.2.2.4.2 Exit access.** Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1,000 square feet (93 m<sup>2</sup>) shall have at least two exit access doors located in accordance with Section 1015.2.



**1014.2.2.4.3 Travel distance.** The travel distance between any point in a suite of sleeping rooms and an exit access door of that suite shall not exceed 100 feet (30,480 mm). The travel distance between any point in a Group I-2 Occupancy patient sleeping room and an exit access door in that room shall not exceed 50 feet (15,240 mm).

**1014.2.2.5 Suites not containing patient sleeping areas.** Areas other than patient sleeping areas in Group I-2 Occupancies shall be permitted to be divided into suites that comply with Sections 1014.2.2.5.1 through 1014.2.2.5.4.

**1014.2.2.5.1 Area.** Suites of rooms, other than patient sleeping rooms, shall not exceed 10,000 square feet (929 m<sup>2</sup>).

**1014.2.2.5.2 Exit access.** Any room or suite of rooms, other than patient sleeping rooms, of more than 2,500 square feet (232 m<sup>2</sup>) shall have at least two exit access doors located in accordance with Section 1015.2.

**1014.2.2.5.3 One intervening room.** For rooms other than patient sleeping rooms, suites of rooms are permitted to have one intervening room if the travel distance within the suite to the exit access door is not greater than 100 feet (30,480 mm).

**1014.2.2.5.4 Two intervening rooms.** For rooms other than patient sleeping rooms located within a suite, exit access travel from within the suite shall be permitted through two intervening rooms where the travel distance to the exit access door is not greater than 50 feet (15,240 mm)

#### NEW SECTION

**WAC 51-54-1015 Exit and exit access doorways.** Reserved.

#### NEW SECTION

**WAC 51-54-1017 Corridors.** Reserved.

#### NEW SECTION

**WAC 51-54-1018 Section 1018—Corridors.**

**1018.5 Air movement in corridors.** Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts.

#### EXCEPTIONS:

1. Use of a corridor as a source of makeup air for exhaust systems in rooms that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted, provided that each such corridor is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor.
2. Where located within a dwelling unit, the use of corridors for conveying return air shall not be prohibited.
3. Where located within tenant spaces of one thousand square feet (93 m<sup>2</sup>) or less in area, utilization of corridors for conveying return air is permitted.
4. Incidental air movement from pressurized rooms within health care facilities, provided that a corridor is not the primary source of supply or return to the room.
5. Where such air is part of an engineered smoke control system.

6. Air supplied to corridors serving residential occupancies shall not be considered as providing ventilation air to the dwelling units subject to the following:

- 6.1 The air supplied to the corridor is one hundred percent outside air; and
- 6.2 The units served by the corridor have conforming ventilation air independent of the air supplied to the corridor; and
- 6.3 For other than high-rise buildings, the supply fan will automatically shut off upon activation of corridor smoke detectors which shall be spaced at no more than thirty feet (9,144 mm) on center along the corridor; or
- 6.4 For high-rise buildings, corridor smoke detector activation will close required smoke/fire dampers at the supply inlet to the corridor at the floor receiving the alarm.

**1018.6 Corridor continuity.** Fire-resistance-rated corridors shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms.

#### EXCEPTIONS:

1. Foyers, lobbies or reception rooms constructed as required for corridors shall not be construed as intervening rooms.
2. In Group R-2 boarding homes and residential treatment facilities licensed by Washington state, seating areas shall be allowed to be open to the corridor provided:
  - 2.1 The seating area is constructed as required for the corridor;
  - 2.2 The floor is separated into at least two compartments complying with Section 407.4;
  - 2.3 Each individual seating area does not exceed 150 square feet, excluding the corridor width;
  - 2.4 The combined total space of seating areas per compartment does not exceed 300 square feet, excluding the corridor width;
  - 2.5 Combustible furnishings located within the seating area shall be in accordance with the International Fire Code Section 805; and
  - 2.6 Emergency means of egress lighting is provided as required by Section 1006 to illuminate the area.

#### NEW SECTION

**WAC 51-54-1019 Number of exits and continuity.** Reserved.

AMENDATORY SECTION (Amending WSR 07-01-093, filed 12/19/06, effective 7/1/07)

**WAC 51-54-1100 Aircraft-fueling vehicles.**

~~((1106.5.1 Positioning of aircraft fuel servicing vehicles. Aircraft fueling vehicles shall not be located, parked or permitted to stand in a position where such units would obstruct egress from an aircraft should a fire occur during fuel transfer operations. Tank vehicles shall not be located, parked or permitted to stand under any portion of an aircraft except during refueling.))~~

#### NEW SECTION

**WAC 51-54-2200 Chapter 22—Motor fuel-dispensing facilities and repair garages.**

**2202.1 Definitions.**

**MOTOR VEHICLE.** Includes, but not limited to, a vehicle, machine, tractor, trailer or semitrailer, or any combination thereof, propelled or drawn by mechanical power and designed for use upon the highways in the transportation of passengers or property. It does not include a vehicle, locomotive or car operated exclusively on a rail or rails, or a trolley bus operated by electric power derived from a fixed overhead wire, furnishing local passenger transportation similar to street-railway service. The term "motor vehicle" also includes freight containers or cargo tanks used, or intended for use, in connection with motor vehicles.

AMENDATORY SECTION (Amending WSR 04-01-105, filed 12/17/03, effective 7/1/04)

**WAC 51-54-3300 Chapter 33—Explosives and fireworks.**

**3301.1 Scope.** The provisions of this chapter shall govern the possession, manufacture, storage, handling, sale and use of explosives, explosive materials, and small arms ammunition. The manufacture, storage, handling, sale and use of fireworks shall be governed by chapter 70.77 RCW, and by chapter ((212-12)) 212-17 WAC and local ordinances consistent with chapter 212-17 WAC.

((Exceptions))

EXCEPTIONS:

1. The Armed Forces of the United States, Coast Guard or National Guard.
2. Explosives in forms prescribed by the official United States Pharmacopoeia.
3. The possession, storage and use of small arms ammunition when packaged in accordance with DOT packaging requirements.
4. The possession, storage and use of not more than 1 pound (0.454 kg) of commercially manufactured sporting black powder, 20 pounds (9 kg) of smokeless powder and 10,000 small arms primers for hand loading of small arms ammunition for personal consumption.
5. The use of explosive materials by federal, state and local regulatory, law enforcement and fire agencies acting in their official capacities.
6. Special industrial explosive devices in which the aggregate contain less than 50 pounds (23 kg) of explosive materials.
7. The possession, storage and use of blank industrial-power load cartridges when packaged in accordance with DOT packaging regulations.
8. Transportation in accordance with DOT 49 CFR Parts 100-178.
9. Items preempted by federal regulations.

**3301.1.1 Explosive material standard.** In addition to the requirements of this chapter, NFPA 495 shall govern the manufacture, transportation, storage, sale, handling and use of explosive materials. See also chapter 70.74 RCW and chapter 296-52 WAC.

AMENDATORY SECTION (Amending WSR 04-01-105, filed 12/17/03, effective 7/1/04)

**WAC 51-54-3400 Chapter 34—Flammable and combustible liquids.**

((3402.1 Definitions.

~~**MOTOR VEHICLE.** For the purposes of this chapter, the term motor vehicle includes, but is not limited to, a vehicle, machine, tractor, trailer, or semi-trailer, or any combination thereof, propelled or drawn by mechanical power and used upon the highways in the transportation of passengers or property. The term "motor vehicle" also includes freight containers or cargo tanks used, or intended for use, in connection with motor vehicles. For reference, see 49 CFR Pt. 171.8 (October 1994).~~

~~**3404.2.7.10.1 Leaking tank disposition.** Leaking tanks shall be handled in accordance with WAC 173-360-325.~~

~~**3404.2.7.11 Tank lining.** Steel tanks are allowed to be lined only for the purpose of protecting the interior from corrosion or providing compatibility with a material to be stored. Only those liquids tested for compatibility with the lining material are allowed to be stored in lined tanks. Lining of leaking underground storage tanks shall be done in accordance with the provisions of WAC 173-360-325.~~

~~**3404.2.8.7 Arrangement.** Tanks shall be listed for above-ground use, and each tank shall be in its own vault.~~

((EXCEPTION: Below-grade vaults may contain a maximum of three tanks.

~~Compartmentalized tanks shall be allowed and shall be considered as a single tank. Adjacent vaults shall be allowed to share a common wall. The common wall shall be liquid and vapor tight and shall be designed to withstand the load imposed when the vault on either side of the wall is filled with water.))~~

**3404.2.11 Underground tanks.** Underground storage of flammable and combustible liquids in tanks shall comply with Section 3404.2 and Sections 3404.2.11.1 through 3404.2.11.5.2. Corrosion protection shall comply with WAC 173-360-305.

**3405.4.1 Unit with a capacity of 60 gallons or less.** Solvent distillation units used to recycle Class I, II or III-A liquids having a distillation chamber capacity of 60 gallons or less shall be listed, labeled and installed in accordance with Section 3405.4 and UL 2208.

EXCEPTIONS:

1. Solvent distillation units installed in dry-cleaning plants in accordance with Chapter 12.
2. Solvent distillation units used in continuous through-put industrial processes where the source of heat is remotely supplied using steam, hot water, oil or other heat transfer fluids, the temperature of which is below the autoignition point of the solvent.
3. Approved research, testing and experimental processes.

~~((3406.5.4 Dispensing from tank vehicles and tank cars. Class I, II or III liquids shall be transferred from a tank vehicle or tank car only into an approved atmospheric tank or approved portable tank, except as provided in Sections 3406.5.4.1 through 3406.5.4.5.~~

~~**3406.5.4.1 Marine craft and special equipment.** Liquids intended for use as motor fuels are allowed to be transferred from tank vehicles into the fuel tanks of marine craft and special equipment when approved by the fire code official, and when:~~

1. The tank vehicle's specific function is that of supplying fuel to fuel tanks.

2. The operation is not performed where the public has access or where there is unusual exposure to life and property.

3. The dispensing line does not exceed 50 feet in length.

4. The dispensing nozzle is approved.

5. Each premises is issued a separate permit in accordance with Section 105.6.17.)

**3406.5.4.5 Commercial, industrial, governmental or manufacturing.** Dispensing of Class II and III motor vehicle fuel from tank vehicles into the fuel tanks of motor vehicles located at commercial, industrial, governmental or manufacturing establishments is allowed where permitted, provided such dispensing operations are conducted in accordance with the following: (Those sections not noted here remain unchanged.)

~~((6. Mobile fueling shall not take place within 15 feet of streets, alleys, public ways, buildings, property lines, combustible storage or storm drains.~~

**EXCEPTIONS:**

1. The distance to storm drains can be eliminated if an approved storm drain cover or an approved equivalent that will prevent any fuel from reaching the drain is in place prior to fueling or home being placed within 15 feet of the drain. When placement of a storm drain cover will cause the accumulation of excessive water or difficulty in safely conducting the fueling, it shall not be used and the fueling shall not take place within 15 feet of a drain.

2. The distance to storm drains can be eliminated for drains that direct intake to approved oil-water separators.)

12. Fuel delivery vehicles shall be equipped with spill clean-up supplies in accordance with the department of ecology's (~~Stormwater Management Manual for Western Washington, Volume IV—Source Control BMP (Publication No. 99-14))~~ Source Control Best Management Practices. Such supplies shall be readily available for ~~((employment))~~ deployment by the operator at all times.

~~17. Fuel dispensing is prohibited within 25 feet of any source of ignition.~~

25. Operators shall place a drip pan or absorbent, in good condition, under each fuel fill opening prior to and during all dispensing operations. Drip pans shall be liquid tight. The pan or absorbent shall have a capacity of at least 3 gallons. Spills retained in the drip pan or absorbent pillow need not be reported. Operators, when fueling, shall have on their persons an absorbent pad capable of capturing diesel foam overfills. Except during fueling, the nozzle shall face upwards and an absorbent pad shall be kept under the nozzle to prevent drips. Contaminated absorbent pads shall be disposed of regularly in accordance with local, state and federal requirements.

26. All persons and parties with an interest in the property (i.e., property owner, lessor, real estate company, property manager as well as operators of the property) must give consent in writing to allow the mobile fueling to occur on the property. Managers, lessees, renters and other persons cannot solely give permission. Each person or party must indicate that they are under the risk of spills) and include nonwater absorbents capable of absorbing 15 gallons (56.76 L) of diesel fuel, storm drain plug or cover kit, a nonwater absorbent

containment boom of a minimum 10-foot-long (3038 mm) length with a 12-gallon (45.41 L) absorbent capacity, a non-metallic shovel, and two 5-gallon (19 L) buckets with lids.

NEW SECTION

**WAC 51-54-3800 Chapter 38—Liquefied petroleum gases.**

**Section 3808.1 Scope.** Storage, handling and transportation of liquefied petroleum gas (LP-gas) and the installation of LP-gas equipment pertinent to systems for such uses shall comply with this chapter and NFPA 58. Properties of LP-gas shall be determined in accordance with Appendix B of NFPA 58.

**EXCEPTION:**

The use and storage of listed propane fired barbecue grills on R-2 decks and balconies with an approved container not exceeding a water capacity of 20 pounds (9 kg) that maintain a minimum clearance of 18 inches on all sides, unless listed for lesser clearances.

NEW SECTION

**WAC 51-54-4500 Chapter 45—Marinas.**

**SECTION 4501**

**4501.1.2 Permits.** For permits to operate marine motor fuel-dispensing stations, application of flammable or combustible finishes, and hot works, see Section 105.6.

**SECTION 4502 DEFINITIONS**

**4502.1 Definitions.** The following words and terms shall, for the purpose of this chapter and as used elsewhere in this code, have the meanings shown herein.

**COVERED BOAT MOORAGE** is a pier or system of floating or fixed access ways to which vessels on water may be secured and any portion of which are covered by a roof.

**GRAVITY-OPERATED DROP OUT VENTS** are automatic smoke and heat vents containing heat-sensitive glazing designed to shrink and drop out of the vent openings when exposed to fire.

**SECTION 4504 FIRE-PROTECTION EQUIPMENT**

**4504.2 Standpipes.** Marinas shall be equipped throughout with Class I manual, dry standpipe systems in accordance with NFPA 303. Systems shall be provided with outlets located such that no point on the marina pier or float system exceeds 150 feet from a standpipe outlet.

**4504.3 Access and water supply.** Piers and wharves shall be provided with fire apparatus access roads and water-supply systems with on-site fire hydrants when required and approved by the fire code official. At least one fire hydrant capable of providing the required fire flow shall be provided within an approved distance of standpipe supply connections.

**4504.4 Portable fire extinguishers.** One 4A40BC fire extinguisher shall be provided at each standpipe outlet. Additional fire extinguishers, suitable for the hazards involved, shall be provided and maintained in accordance with Section 906.

**4504.7 Smoke and heat vents.** Approved automatic smoke and heat vents shall be provided in covered boat moorage areas exceeding 2,500 sq. ft. (232 m<sup>2</sup>) in area, excluding roof overhangs.

EXCEPTION: Smoke and heat vents are not required in areas protected by automatic sprinklers.

**4504.7.1 Design and installation.** Where smoke and heat vents are required they shall be installed near the roof peak, evenly distributed and arranged so that at least one vent is over each covered berth. The effective vent area shall be calculated using a ratio of one square foot of vent to every fifteen square feet of covered berth area (1:15). Each vent shall provide a minimum opening size of 4 ft. x 4 ft.

**4504.7.1.1 Smoke and heat vents.** Smoke and heat vents shall operate automatically by actuation of a heat-responsive device rated at between 100°F (56°C) above ambient.

EXCEPTION: Gravity-operated drop out vents.

**4504.7.1.2 Gravity-operated drop out vents.** Gravity-operated drop out vents shall fully open within 5 minutes after the vent cavity is exposed to a simulated fire represented by a time-temperature gradient that reaches an air temperature of 500°F (260°C) within 5 minutes.

**4504.8 Draft curtains.** Draft curtains shall be provided in covered boat moorage areas exceeding 2,500 sq. ft. (232 m<sup>2</sup>) in area, excluding roof overhangs.

EXCEPTION: Draft curtains are not required in areas protected by automatic sprinklers.

**4504.8.1 Draft curtain construction.** Draft curtains shall be constructed of sheet metal, gypsum board or other approved materials that provide equivalent performance to resist the passage of smoke. Joints and connections shall be smoke tight.

**4504.8.2 Draft curtain location and depth.** The maximum area protected by draft curtains shall not exceed 2,000 sq. ft. (186 m<sup>2</sup>) or two slips or berths, whichever is smaller. Draft curtains shall not extend past the piling line. Draft curtains shall have a minimum depth of 4 feet and shall not extend closer than 8 feet (2438 mm) to the walking surface of the pier.

AMENDATORY SECTION (Amending WSR 07-01-093, filed 12/19/06, effective 7/1/07)

**WAC 51-54-4600 Chapter 46—((Marinas)) Existing buildings.**

((SECTION 4601

**4601.1 Scope.** Marina facilities shall be in accordance with this chapter.

**4601.1.1 Plans and approvals.** Plans for marina fire protection facilities shall be approved prior to installation. The work shall be subject to final inspection and approval after installation.

**4601.1.2 Permits.** Permits are required to use open flame devices for maintenance or repair on vessels, floats, piers or wharves.

~~SECTION 4602—DEFINITIONS.~~

~~**4602.1 Definitions.** The following words and terms shall, for the purpose of this chapter and as used elsewhere in this code, have the meanings shown herein.~~

~~**COVERED BOAT MOORAGE** is a pier or system of floating or fixed access ways to which vessels on water may be secured and any portion of which are covered by a roof.~~

~~**DRAFT CURTAIN** is a structure arranged to limit the spread of smoke and heat along the underside of the ceiling or roof.~~

~~**FLOAT** is a floating structure normally used as a point of transfer for passengers and goods, or both, for mooring purposes.~~

~~**GRAVITY-OPERATED DROP-OUT VENTS** are automatic smoke and heat vents containing heat sensitive glazing designed to shrink and drop out of the vent opening when exposed to fire.~~

~~**MARINA** is any portion of the ocean or inland water, either naturally or artificially protected, for the mooring, servicing or safety of vessels and shall include artificially protected works, the public or private lands ashore, and structures or facilities provided within the enclosed body of water and ashore for the mooring or servicing of vessels or the servicing of their crews or passengers.~~

~~**PIER** is a structure built over the water, supported by pilars or piles, and used as a landing place, pleasure pavilion or similar purpose.~~

~~**VESSEL** is watercraft of any type, other than seaplanes on the water, used or capable of being used as a means of transportation. Included in this definition are nontransportation vessels such as houseboats and boathouses.~~

~~**WHARF** is a structure or bulkhead constructed of wood, stone, concrete or similar material built at the shore of a harbor, lake or river for vessels to lie alongside of, and piers or floats to be anchored to.~~

~~SECTION 4603—GENERAL PRECAUTIONS.~~

~~**4603.1 Combustible debris.** Combustible debris and rubbish shall not be deposited or accumulated on land beneath marina structures, piers or wharves.~~

~~**4603.2 Sources of ignition.** Open flame devices used for lighting or decoration on the exterior of a vessel, float, pier or wharf shall be approved.~~

~~**4603.3 Flammable or combustible liquid spills.** Spills of flammable or combustible liquids at or upon the water shall be reported immediately to the fire department or jurisdictional authorities.~~

~~**4603.4 Rubbish containers.** Containers with tight fitting or self-closing lids shall be provided for the temporary storage of combustible trash or rubbish.~~

~~**4603.5 Electrical equipment.** Electrical equipment shall be installed and used in accordance with its listing and Section 605 as required for wet, damp and hazardous locations.~~

~~SECTION 4604—FIRE PROTECTION EQUIPMENT.~~

~~**4604.1 General.** Marinas, piers, wharves, floats with facilities for mooring or servicing five or more vessels, and marine~~

motor vehicle fuel dispensing stations shall be equipped with fire protection equipment in accordance with Section 4604.

**4604.2 Standpipes.** Marinas shall be equipped throughout with Class I manual, dry standpipe systems in accordance with NFPA 303. Systems shall be provided with outlets located such that no point on the marina pier or float system exceeds 150 feet from a standpipe outlet.

**4604.2.1 Identification of standpipe outlets.** Standpipe outlet locations shall be clearly identified by a flag or other approved means designed to be readily visible from the pier accessing the float system.

**4604.3 Access and water supply.** Piers and wharves shall be provided with fire apparatus access roads and water supply systems with on-site fire hydrants when required and approved by the fire code official. At least one fire hydrant capable of providing the required fire flow shall be provided within an approved distance of standpipe supply connections.

**4604.4 Portable fire extinguishers.** One 4A40BC fire extinguisher shall be provided at each standpipe outlet. Additional fire extinguishers, suitable for the hazards involved, shall be provided and maintained in accordance with Section 906.

**4604.5 Communications.** A telephone not requiring a coin to operate or other approved, clearly identified means to notify the fire department shall be provided on the site in a location approved by the code official.

**4604.6 Equipment staging areas.** Space shall be provided on all float systems for the staging of emergency equipment. Staging areas shall provide a minimum of 4 feet wide by 10 feet long clear area exclusive of walkways and shall be located at each standpipe outlet. Staging areas shall be provided with barriers having a minimum height of 4" and maximum space between the bottom barrier edge and surface of the staging area of 2" on the outboard sides to prevent loss of equipment overboard. A sign reading "Fire Equipment Staging Area - Keep Clear" shall be provided at each staging area to prevent obstruction.

**4604.7 Smoke and heat vents.** Approved automatic smoke and heat vents shall be provided in covered boat moorage areas exceeding 2,500 sq. ft. (232 m<sup>2</sup>) in area, excluding roof overhangs.

EXCEPTION: Smoke and heat vents are not required in areas protected by automatic sprinklers.

**4604.7.1 Design and installation.** Where smoke and heat vents are required they shall be installed near the roof peak, evenly distributed and arranged so that at least one vent is over each covered berth. The effective vent area shall be calculated using a ratio of one square foot of vent to every fifteen square feet of covered berth area (1:15). Each vent shall provide a minimum opening size of 4 ft. x 4 ft.

**4604.7.1.1 Smoke and heat vents.** Smoke and heat vents shall operate automatically by actuation of a heat responsive device rated at between 100°F (56°C) above ambient.

EXCEPTION: Gravity-operated drop out vents.

**4604.7.1.2 Gravity-operated drop out vents.** Gravity operated drop out vents shall fully open within 5 minutes after the vent cavity is exposed to a simulated fire represented by a time-temperature gradient that reaches an air temperature of 500°F (260°C) within 5 minutes.

**4604.8 Draft curtains.** Draft curtains shall be provided in covered boat moorage areas exceeding 2,500 sq. ft. (232 m<sup>2</sup>) in area, excluding roof overhangs.

EXCEPTION: Draft curtains are not required in areas protected by automatic sprinklers.

**4604.8.1 Draft curtain construction.** Draft curtains shall be constructed of sheet metal, gypsum board or other approved materials that provide equivalent performance to resist the passage of smoke. Joints and connections shall be smoke tight.

**4604.8.2 Draft curtain location and depth.** The maximum area protected by draft curtains shall not exceed 2,000 sq. ft. (186 m<sup>2</sup>) or two slips or berths, whichever is smaller. Draft curtains shall not extend past the piling line. Draft curtains shall have a minimum depth of 4 feet and shall not extend closer than 8 feet (2438 mm) to the walking surface of the pier.

#### **SECTION 4605 - MARINE MOTOR VEHICLE FUEL DISPENSING STATIONS.**

**4605.1 Fuel dispensing.** Marine motor vehicle fuel dispensing stations shall be in accordance with Chapter 22.) **CHAPTER 46 CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS**

#### **SECTION 4601 GENERAL**

**4601.1 Scope.** The provisions of this chapter shall apply to existing buildings constructed prior to the adoption of this Code.

**4601.2 Intent.** The intent of this chapter is to provide a minimum degree of fire and life safety to persons occupying buildings by providing for alterations to such existing buildings that do not comply with the minimum requirements of the International Building Code.

**4601.3 Permits.** Permits shall be required as set forth in Section 105.7 and the International Building Code and this Code.

**4601.4 Owner notification.** Where a building is found to be in noncompliance, the fire code official shall duly notify the owner of the building. Upon receipt of such notice, the owner shall, subject to the following time limits, take necessary actions to comply with the provisions of this chapter.

**4601.4.1 Construction documents.** Construction documents for the necessary alterations shall be completed within a time schedule approved by the fire code official.

**4601.4.2 Completion of work.** Work on the required alterations to the building shall be completed within a time schedule approved by the fire code official.

**4601.4.3 Extension of time.** The fire code official is authorized to grant necessary extensions of time when it can be shown that the specified time periods are not physically practical or pose an undue hardship. The granting of an extension

of time for compliance shall be based on the showing of good cause and subject to the filing of an acceptable systematic plan of correction with the fire code official.

**SECTION 4602 DEFINITIONS**

**4602.1 Definitions.** The following word and term shall, for the purpose of this chapter and as used elsewhere in this Code, have the meaning shown herein.

**EXISTING.** Buildings, facilities or conditions that are already in existence, constructed or officially authorized prior to the adoption of this Code.

**SECTION 4603 FIRE SAFETY REQUIREMENTS FOR EXISTING BUILDINGS**

**4603.1 Required construction.** Existing buildings shall comply with not less than the minimum provisions specified in Table 4603.1 and as further enumerated in Sections 4603.2 through 4603.7.3.

The provisions of this chapter shall not be construed to allow the elimination of fire protection systems or a reduction in the level of fire safety provided in buildings constructed in accordance with previously adopted codes.

EXCEPTION: Group U occupancies.

**4603.2 Elevator operation.** Existing elevators with a travel distance of 25 feet (7620 mm) or more above or below the main floor or other level of a building and intended to serve the needs of emergency personnel for firefighting or rescue purposes shall be provided with emergency operation in accordance with ASME A17.3.

**4603.3 Vertical openings.** Interior vertical shafts, including, but not limited to, stairways, elevator hoistways, service and utility shafts, that connect two or more stories of a building, shall be enclosed or protected as specified in Sections 4603.3.1 through 4603.3.7.

**4603.3.1 Group I occupancies.** In Group I occupancies, interior vertical openings connecting two or more stories shall be protected with 1-hour fire-resistance-rated construction.

**4603.3.2 Three to five stories.** In other than Group I occupancies, interior vertical openings connecting three to five stories shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system shall be installed throughout the building in accordance with Section 903.3.1.1 or 903.3.1.2.

- EXCEPTIONS:
1. Vertical opening protection is not required for Group R-3 occupancies.
  2. Vertical opening protection is not required for open parking garages and ramps.
  3. Vertical opening protection is not required for escalators.

**4603.3.3 More than five stories.** In other than Group I occupancies, interior vertical openings connecting more than five stories shall be protected by 1-hour fire-resistance-rated construction.

- EXCEPTIONS:
1. Vertical opening protection is not required for Group R-3 occupancies.
  2. Vertical opening protection is not required for open parking garages and ramps.
  3. Vertical opening protection is not required for escalators.

**TABLE 4603.1  
OCCUPANCY AND USE REQUIREMENTS**

| SECTION  | USE       |                         |                      | OCCUPANCY CLASSIFICATION |   |   |   |     |     |     |     |     |     |     |     |     |   |     |     |     |     |   |   |
|----------|-----------|-------------------------|----------------------|--------------------------|---|---|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|-----|---|---|
|          | High Rise | Atrium and covered mall | Underground building | A                        | B | E | F | H-1 | H-2 | H-3 | H-4 | H-5 | I-1 | I-2 | I-3 | I-4 | M | R-1 | R-2 | R-3 | R-4 | S |   |
| 4603.2   | R         |                         | R                    | R                        | R | R | R | R   | R   | R   | R   | R   | R   | R   | R   | R   | R | R   | R   | R   | R   | R | R |
| 4603.3.1 | R         |                         | R                    |                          |   |   |   |     |     |     |     |     |     | R   | R   | R   | R |     |     |     |     |   |   |
| 4603.3.2 | R         |                         | R                    | H                        | R | R | R | R   | R   | R   | R   | R   |     |     |     |     | R | R   | R   |     |     | R | R |
| 4603.3.3 | R         |                         | R                    | H                        | R | R | R | R   | R   | R   | R   | R   |     |     |     |     | R | R   | R   |     |     | R | R |
| 4603.3.4 |           | R                       |                      |                          |   |   |   |     |     |     |     |     |     |     |     |     |   |     |     |     |     |   |   |
| 4603.3.5 |           |                         |                      |                          | R |   |   |     |     |     |     |     |     |     |     |     | R |     |     |     |     |   |   |
| 4603.3.6 |           |                         |                      | H                        |   | R | R | R   | R   | R   | R   | R   | R   | R   | R   | R   | R | R   | R   | R   | R   | R | R |
| 4603.3.7 |           |                         |                      | H                        |   | R | R | R   | R   | R   | R   | R   | R   | R   | R   | R   | R | R   | R   | R   | R   | R | R |
| 4603.4   |           |                         |                      | H                        |   |   |   | R   | R   | R   |     |     |     |     |     |     | R |     |     |     |     |   |   |
| 4603.5   | R         |                         | R                    | H                        | R | R | R | R   | R   | R   | R   | R   | H   | R   | R   | R   | R | R   | R   |     |     | R | R |
| 4603.6.1 |           |                         |                      |                          |   |   | R |     |     |     |     |     |     |     |     |     |   |     |     |     |     |   |   |
| 4603.6.2 |           |                         |                      |                          |   |   |   |     |     |     |     |     |     | R   |     |     |   |     |     |     |     |   |   |
| 4603.6.3 |           |                         |                      |                          |   |   |   |     |     |     |     |     |     |     | R   |     |   |     |     |     |     |   |   |
| 4603.6.4 |           |                         |                      |                          |   |   |   |     |     |     |     |     |     |     |     | R   |   |     |     |     |     |   |   |
| 4603.6.5 |           |                         |                      |                          |   |   |   |     |     |     |     |     |     |     |     |     |   | R   |     |     |     |   |   |
| 4603.6.6 |           |                         |                      |                          |   |   |   |     |     |     |     |     |     |     |     |     |   |     | R   |     |     |   |   |
| 4603.6.7 |           |                         |                      |                          |   |   |   |     |     |     |     |     |     |     |     |     |   |     |     |     |     | R | R |
| 4603.7   |           |                         |                      |                          |   |   |   |     |     |     |     |     |     |     |     |     |   |     |     |     |     | R | R |
| 4604.4   | R         | R                       | R                    | H                        | R | R | R | R   | R   | R   | R   | R   | R   | R   | R   | R   | R | R   | R   | R   | R   | R | R |

R = The building is required to comply.

**4603.3.4 Atriums and covered malls.** In other than Group I occupancies, interior vertical openings in a covered mall building or a building with an atrium shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system shall be installed throughout the building in accordance with Section 903.3.1.1 or 903.3.1.2.

- EXCEPTIONS:
1. Vertical opening protection is not required for Group R-3 occupancies.

2. Vertical opening protection is not required for open parking garages and ramps.

**4603.3.5 Escalators in Group B and M occupancies.** Escalators creating vertical openings connecting any number of stories shall be protected by either 1-hour fire-resistance-rated construction or an automatic fire sprinkler system in accordance with Section 903.3.1.1 installed throughout the

building, with a draft curtain and closely spaced sprinklers around the escalator opening.

**4603.3.6 Escalators connecting four or fewer stories.** In other than Group B and M occupancies, escalators creating vertical openings connecting four or fewer stories shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 shall be installed throughout the building, and a draft curtain with closely spaced sprinklers shall be installed around the escalator opening.

**4603.3.7 Escalators connecting more than four stories.** In other than Group B and M occupancies, escalators creating vertical openings connecting five or more stories shall be protected by 1-hour fire-resistance-rated construction.

**4603.4 Sprinkler systems.** An automatic sprinkler system shall be provided in all existing buildings in accordance with Sections 4603.4.1 and 4603.4.2.

**4603.4.1 Pyroxylin plastics.** An automatic sprinkler system shall be provided throughout existing buildings where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg). Vaults located within buildings for the storage of raw pyroxylin shall be protected with an approved automatic sprinkler system capable of discharging 1.66 gallons per minute per square foot (68 L/min/m<sup>2</sup>) over the area of the vault.

**4603.4.2 Group I-2.** An automatic sprinkler system shall be provided throughout existing Group I-2 fire areas. The sprinkler system shall be provided throughout the floor where the Group I-2 occupancy is located, and in all floors between the Group I-2 occupancy and the level of exit discharge.

**4603.4.3 Nightclub.** An automatic sprinkler system shall be provided throughout Group A-2 nightclubs as defined in this code. An existing nightclub constructed prior to July 1, 2006, shall have been provided with automatic sprinklers not later than July 1, 2010.

**4603.5 Standpipes.** Existing structures with occupied floors located more than 50 feet (15,240 mm) above or below the lowest level of fire department vehicle access shall be equipped with standpipes installed in accordance with Section 905. The standpipes shall have an approved fire department connection with hose connections at each floor level above or below the lowest level of fire department access. The fire code official is authorized to approve the installation of manual standpipe systems to achieve compliance with this section where the responding fire department is capable of providing the required hose flow at the highest standpipe outlet.

**4603.6 Fire alarm systems.** An approved fire alarm system shall be installed in existing buildings and structures in accordance with Sections 4603.6.1 through 4603.6.7 and provide occupant notification in accordance with Section 907.6 unless other requirements are provided by other sections of this code.

EXCEPTION: Occupancies with an existing, previously approved fire alarm system.

**4603.6.1 Group E.** A fire alarm system shall be installed in existing Group E occupancies in accordance with Section 907.2.3.

EXCEPTIONS:

1. A manual fire alarm system is not required in a building with a maximum area of 1,000 square feet (93 m<sup>2</sup>) that contains a single classroom and is located no closer than 50 feet (15,240 mm) from another building.
2. A manual fire alarm system is not required in Group E occupancies with an occupant load less than 50.

**4603.6.2 Group I-1.** An automatic fire alarm system shall be installed in existing Group I-1 residential care/assisted living facilities in accordance with Section 907.2.6.1.

EXCEPTIONS:

1. Manual fire alarm boxes in resident or patient sleeping areas shall not be required at exits if located at all nurses' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that travel distances required in Section 907.5.2 are not exceeded.
2. Where each sleeping room has a means of egress door opening directly to an exterior egress balcony that leads directly to the exits in accordance with WAC 51-50-1019, and the building is not more than three stories in height.

**4603.6.3 Group I-2.** An automatic fire alarm system shall be installed in existing Group I-2 occupancies in accordance with Section 907.2.6.2.

EXCEPTION:

- Manual fire alarm boxes in resident or patient sleeping areas shall not be required at exits if located at all nurses' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that travel distances required in Section 907.5.2.1 are not exceeded.

**4603.6.4 Group I-3.** An automatic and manual fire alarm system shall be installed in existing Group I-3 occupancies in accordance with Section 907.2.6.3.

**4603.6.5 Group R-1.** A fire alarm system and smoke alarms shall be installed in existing Group R-1 occupancies in accordance with Sections 4603.6.5.1 through 4603.6.5.2.1.

**4603.6.5.1 Group R-1 hotel and motel manual fire alarm system.** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-1 hotels and motels more than three stories or with more than 20 sleeping units.

EXCEPTIONS:

1. Buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping unit has direct access to a public way, exit court or yard.
2. Manual fire alarm boxes are not required throughout the building when the following conditions are met:
  - 2.1. The building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2;
  - 2.2. The notification appliances will activate upon sprinkler water flow; and
  - 2.3. At least one manual fire alarm box is installed at an approved location.

**4603.6.5.1.1 Group R-1 hotel and motel automatic smoke detection system.** An automatic smoke detection system that activates the occupant notification system in accordance with

Section 907.6 shall be installed in existing Group R-1 hotels and motels throughout all interior corridors serving sleeping rooms not equipped with an approved, supervised sprinkler system installed in accordance with WAC 51-50-0903.

**EXCEPTION:** An automatic smoke detection system is not required in buildings that do not have interior corridors serving sleeping units and where each sleeping unit has a means of egress door opening directly to an exit or to an exterior exit access that leads directly to an exit.

**4603.6.5.2 Group R-1 boarding and rooming houses manual fire alarm system.** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-1 boarding and rooming houses.

**EXCEPTION:** Buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping unit has direct access to a public way, exit court or yard.

**4603.6.5.2.1 Group R-1 boarding and rooming houses automatic smoke detection system.** An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-1 boarding and rooming houses throughout all interior corridors serving sleeping units not equipped with an approved, supervised sprinkler system installed in accordance with WAC 51-50-0903.

**EXCEPTION:** Buildings equipped with single-station smoke alarms meeting or exceeding the requirements of Section 907.2.10.1 and where the fire alarm system includes at least one manual fire alarm box per floor arranged to initiate the alarm.

**4603.6.6 Group R-2.** An automatic or manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-2 occupancies more than three stories in height or with more than 16 dwelling or sleeping units.

**EXCEPTIONS:**

1. Where each living unit is separated from other contiguous living units by fire barriers having a fire-resistance rating of not less than 0.75 hour, and where each living unit has either its own independent exit or its own independent stairway or ramp discharging at grade.
2. A separate fire alarm system is not required in buildings that are equipped throughout with an approved supervised automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and having a local alarm to notify all occupants.
3. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that dwelling units either have a means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended corridors designed in accordance with Section 1023.6, Exception 4.

**4603.6.7 Group R-4.** This section not adopted.

**EXCEPTIONS:** 1. Where there are interconnected smoke alarms meeting the requirements of Section 907.2.11 and

there is at least one manual fire alarm box per floor arranged to continuously sound the smoke alarms.

2. Other manually activated, continuously sounding alarms approved by the fire code official.

**4603.7 Single and multiple-station smoke alarms.** Single and multiple-station smoke alarms shall be installed in existing Group R occupancies and in dwellings not classified as Group R occupancies in accordance with Sections 4603.7.1 through 4603.7.3.

**4603.7.1 Where required.** Existing Group R occupancies and dwellings not classified as Group R occupancies not already provided with single-station smoke alarms shall be provided with single-station smoke alarms. Installation shall be in accordance with Section 907.2.10, except as provided in Sections 4603.7.2 and 4603.7.3.

**4603.7.2 Interconnection.** Where more than one smoke alarm is required to be installed within an individual dwelling or sleeping unit, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

**EXCEPTIONS:**

1. Interconnection is not required in buildings that are not undergoing alterations, repairs or construction of any kind.
2. Smoke alarms in existing areas are not required to be interconnected where alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for interconnection without the removal of interior finishes.

**4603.7.3 Power source.** Single-station smoke alarms shall receive their primary power from the building wiring provided that such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms with integral strobes that are not equipped with battery backup shall be connected to an emergency electrical system. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

**EXCEPTIONS:**

1. Smoke alarms are permitted to be solely battery operated in existing buildings where no construction is taking place.
2. Smoke alarms are permitted to be solely battery operated in buildings that are not served from a commercial power source.
3. Smoke alarms are permitted to be solely battery operated in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for building wiring without the removal of interior finishes.

#### **SECTION 4604 MEANS OF EGRESS FOR EXISTING BUILDINGS**

Means of egress in existing buildings shall comply with Section 1030 and 4604.2 through 4604.23.

**EXCEPTION:** Means of egress conforming to the requirements of the building code under which they were constructed and Section 1030 shall not be required to comply with 4604.2 through 4604.21, if in the opinion of the fire



code official, they do not constitute a distinct hazard to life.

**4604.1.1 Evaluation.** Existing buildings that were not required to comply with a building code at the time of construction shall comply with the minimum egress requirements when specified in Table 4603.1 as further enumerated in Sections 4604.2 through 4604.23 and, in addition, shall have a life safety evaluation prepared, consistent with the requirements of Section 104.7.2. The life safety evaluation shall identify any changes to the means of egress that are necessary to provide safe egress to occupants and shall be subject to review and approval by the fire and building code officials. The building shall be modified to comply with the recommendations set forth in the approved evaluation.

**4604.2 Elevators, escalators and moving walks.** Elevators, escalators and moving walks shall not be used as a component of a required means of egress.

EXCEPTIONS: 1. Elevators used as an accessible means of egress where allowed by Section 1007.4.  
2. Previously approved escalators and moving walks in existing buildings.

**4604.3 Exit sign illumination.** Exit signs shall be internally or externally illuminated. The face of an exit sign illuminated from an external source shall have an intensity of not less than 5 foot-candles (54 lux). Internally illuminated signs shall provide equivalent luminance and be listed for the purpose.

EXCEPTION: Approved self-luminous signs that provide evenly illuminated letters shall have a minimum luminance of 0.06 foot-lamberts (0.21 cd/m<sup>2</sup>).

**4604.4 Power source.** Where emergency illumination is required in Section 4604.5, exit signs shall be visible under emergency illumination conditions.

EXCEPTION: Approved signs that provide continuous illumination independent of external power sources are not required to be connected to an emergency electrical system.

**4604.5 Illumination emergency power.** The power supply for means of egress illumination shall normally be provided by the premises' electrical supply. In the event of power supply failure, illumination shall be automatically provided from an emergency system for the following occupancies where such occupancies require two or more means of egress:

**1. Group A having 50 or more occupants.**

EXCEPTION: Assembly occupancies used exclusively as a place of worship and having an occupant load of less than 300.

**2. Group B buildings three or more stories in height, buildings with 100 or more occupants above or below a level of exit discharge serving the occupants or buildings with 1,000 or more total occupants.**

**3. Group E in interior stairs, corridors, windowless areas with student occupancy, shops and laboratories.**

**4. Group F having more than 100 occupants.**

EXCEPTION: Buildings used only during daylight hours which are provided with windows for natural light in accordance with the International Building Code.

**5. Group I.**

**6. Group M.**

EXCEPTION: Buildings less than 3,000 square feet (279 m<sup>2</sup>) in gross sales area on one story only, excluding mezzanines.

**7. Group R-1.**

EXCEPTION: Where each sleeping unit has direct access to the outside of the building at grade.

**8. Group R-2.**

EXCEPTION: Where each dwelling unit or sleeping unit has direct access to the outside of the building at grade.

**9. Group R-4.**

EXCEPTION: Where each sleeping unit has direct access to the outside of the building at ground level.

**4604.5.1 Emergency power duration and installation.** In other than Group I-2, the emergency power system shall provide power for not less than 60 minutes and consist of storage batteries, unit equipment or an on-site generator. In Group I-2, the emergency power system shall provide power for not less than 90 minutes and consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 4604.

**4604.6 Guards.** Guards complying with this section shall be provided at the open sides of means of egress that are more than 30 inches (762 mm) above the floor or grade below.

**4604.6.1 Height of guards.** Guards shall form a protective barrier not less than 42 inches (1067 mm) high.

EXCEPTIONS: 1. Existing guards on the open side of stairs shall be not less than 30 inches (760 mm) high.  
2. Existing guards within dwelling units shall be not less than 36 inches (910 mm) high.  
3. Existing guards in assembly seating areas.

**4604.6.2 Opening limitations.** Open guards shall have balusters or ornamental patterns such that a 6-inch-diameter (152 mm) sphere cannot pass through any opening up to a height of 34 inches (864 mm).

EXCEPTIONS: 1. At elevated walking surfaces for access to, and use of, electrical, mechanical or plumbing systems or equipment, guards shall have balusters or be of solid materials such that a sphere with a diameter of 21 inches (533 mm) cannot pass through any opening.  
2. In occupancies in Group I-3, F, H or S, the clear distance between intermediate rails measured at right angles to the rails shall not exceed 21 inches (533 mm).  
3. Approved existing open guards.

**4604.7 Minimum required egress width.** The means of egress width shall not be less than as required by the code under which constructed but not less than as required by this section. The total width of means of egress in inches (mm) shall not be less than the total occupant load served by the means of egress multiplied by the factors in Table 4604.7 and not less than specified elsewhere in this section. Multiple means of egress shall be sized such that the loss of any one means of egress shall not reduce the available capacity to less than 50 percent of the required capacity. The maximum

capacity required from any story of a building shall be maintained to the termination of the means of egress.

**TABLE 4604.7  
EGRESS WIDTH PER OCCUPANT SERVED**

| <b>OCCUPANCY</b>                          | <b>WITHOUT SPRINKLER SYSTEM</b>            |  | <b>WITH SPRINKLER SYSTEM<sup>a</sup></b>   |  |
|---|--|--|--|--|
|   | <b>Stairways<br/>(inches per occupant)</b> | <b>Other egress components<br/>(inches per occupant)</b> | <b>Stairways<br/>(inches per occupant)</b> | <b>Other egress components<br/>(inches per occupant)</b> |
| Occupancies other than those listed below | 0.3  | 0.2  | 0.2  | 0.15   |
| Hazardous: H-1, H-2, H-3 and H-4          | Not permitted                              | Not permitted  | 0.3  | 0.2  |
| Institutional: I-2                        | Not permitted                              | Not permitted  | 0.3  | 0.2  |

For SI: 1 inch = 25.4 mm.

a. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

**4604.8 Size of doors.** The minimum width of each door opening shall be sufficient for the occupant load thereof and shall provide a clear width of not less than 28 inches (711 mm). Where this section requires a minimum clear width of 28 inches (711 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a clear opening width of 28 inches (711 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. Means of egress doors in an occupancy in Group I-2 used for the movement of beds shall provide a clear width not less than 41.5 inches (1054 mm). The height of doors shall not be less than 80 inches (2032 mm).

**EXCEPTIONS:**

1. The minimum and maximum width shall not apply to door openings that are not part of the required means of egress in occupancies in Groups R-2 and R-3.
2. Door openings to storage closets less than 10 square feet (0.93 m<sup>2</sup>) in area shall not be limited by the minimum width.
3. Width of door leaves in revolving doors that comply with Section 1008.1.4.1 shall not be limited.
4. Door openings within a dwelling unit shall not be less than 78 inches (1981 mm) in height.
5. Exterior door openings in dwelling units, other than the required exit door, shall not be less than 76 inches (1930 mm) in height.
6. Exit access doors serving a room not larger than 70 square feet (6.5 m<sup>2</sup>) shall be not less than 24 inches (610 mm) in door width.

**4604.9 Opening force for doors.** The opening force for interior side-swinging doors without closers shall not exceed a 5-pound (22 N) force. For other side-swinging, sliding and folding doors, the door latch shall release when subjected to a force of not more than 15 pounds (66 N). The door shall be set in motion when subjected to a force not exceeding 30 pounds (133 N). The door shall swing to a full open position when subjected to a force of not more than 50 pounds (222 N). Forces shall be applied to the latch side.

**4604.10 Revolving doors.** Revolving doors shall comply with the following:

1. A revolving door shall not be located within 10 feet (3048 mm) of the foot or top of stairs or escalators. A dispersal area shall be provided between the stairs or escalators and the revolving doors.
2. The revolutions per minute for a revolving door shall not exceed those shown in Table 4604.10.
3. Each revolving door shall have a conforming side-hinged swinging door in the same wall as the revolving door and within 10 feet (3048 mm).

**EXCEPTIONS:**

1. A revolving door is permitted to be used without an adjacent swinging door for street-floor elevator lobbies provided a stairway, escalator or door from other parts of the building does not discharge through the lobby and the lobby does not have any occupancy or use other than as a means of travel between elevators and a street.
2. Existing revolving doors where the number of revolving doors does not exceed the number of swinging doors within 20 feet (6096 mm).

**4604.10.1 Egress component.** A revolving door used as a component of a means of egress shall comply with Section 4604.10 and all of the following conditions:

1. Revolving doors shall not be given credit for more than 50 percent of the required egress capacity.
2. Each revolving door shall be credited with not more than a 50-person capacity.
3. Revolving doors shall be capable of being collapsed when a force of not more than 130 pounds (578 N) is applied within 3 inches (76 mm) of the outer edge of a wing.

**4604.11 Stair dimensions for existing stairs.** Existing stairs in buildings shall be permitted to remain if the rise does not exceed 8 1/4 inches (210 mm) and the run is not less than 9 inches (229 mm). Existing stairs can be rebuilt.

**EXCEPTION:**

Other stairs approved by the fire code official.

**TABLE 4604.10  
REVOLVING DOOR SPEEDS**

| <b>INSIDE<br/>DIAMETER</b> | <b>POWER-DRIVEN-<br/>TYPE SPEED<br/>CONTROL<br/>(RPM)</b> | <b>MANUAL-TYPE<br/>SPEED<br/>CONTROL<br/>(RPM)</b> |
|----------------------------|---|--|
| 6' 6"                      | 11  | 12   |
| 7' 0"                      | 10  | 11   |
| 7' 6"                      | 9   | 11   |
| 8' 0"                      | 9   | 10   |
| 8' 6"                      | 8   | 9  |
| 9' 0"                      | 8   | 9  |
| 9' 6"                      | 7   | 8  |
| 10' 0"                     | 7   | 8  |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

**4604.11.1 Dimensions for replacement stairs.** The replacement of an existing stairway in a structure shall not be required to comply with the new stairway requirements of WAC 51-11-1009 where the existing space and construction will not allow a reduction in pitch or slope.

**4604.12 Winders.** Existing winders shall be allowed to remain in use if they have a minimum tread depth of 6 inches (152 mm) and a minimum tread depth of 9 inches (229 mm) at a point 12 inches (305 mm) from the narrowest edge.

**4604.13 Circular stairways.** Existing circular stairs shall be allowed to continue in use provided the minimum depth of tread is 10 inches (254 mm) and the smallest radius shall not be less than twice the width of the stairway.

**4604.14 Stairway handrails.** Stairways shall have handrails on at least one side. Handrails shall be located so that all portions of the stairway width required for egress capacity are within 44 inches (1118 mm) of a handrail.

EXCEPTION: Aisle stairs provided with a center handrail are not required to have additional handrails.

**4604.14.1 Height.** Handrail height, measured above stair tread nosings, shall be uniform, not less than 30 inches (762 mm) and not more than 42 inches (1067 mm).

**4604.15 Slope of ramps.** Ramp runs utilized as part of a means of egress shall have a running slope not steeper than one unit vertical in 10 units horizontal (10 percent slope). The slope of other ramps shall not be steeper than one unit vertical in 8 units horizontal (12.5 percent slope).

**4604.16 Width of ramps.** Existing ramps are permitted to have a minimum width of 30 inches (762 mm) but not less than the width required for the number of occupants served as determined by Section 1005.1.

**4604.17 Fire escape stairs.** Fire escape stairs shall comply with Sections 4604.17.1 through 4604.17.7.

**4604.17.1 Existing means of egress.** Fire escape stairs shall be permitted in existing buildings but shall not constitute more than 50 percent of the required exit capacity.

**4604.17.2 Protection of openings.** Openings within 10 feet (3048 mm) of fire escape stairs shall be protected by fire door assemblies having a minimum 3/4-hour fire-resistance rating.

EXCEPTION: In buildings equipped throughout with an approved automatic sprinkler system, opening protection is not required.

**4604.17.3 Dimensions.** Fire escape stairs shall meet the minimum width, capacity, riser height and tread depth as specified in Section 4604.10.

**4604.17.4 Access.** Access to a fire escape from a corridor shall not be through an intervening room. Access to a fire escape stair shall be from a door or window meeting the criteria of Section 1005.1. Access to a fire escape stair shall be directly to a balcony, landing or platform. These shall be no higher than the floor or window sill level and no lower than 8 inches (203 mm) below the floor level or 18 inches (457 mm) below the window sill.

**4604.17.5 Materials and strength.** Components of fire escape stairs shall be constructed of noncombustible materials. Fire escape stairs and balconies shall support the dead load plus a live load of not less than 100 pounds per square foot (4.78 kN/m<sup>2</sup>). Fire escape stairs and balconies shall be provided with a top and intermediate handrail on each side. The fire code official is authorized to require testing or other satisfactory evidence that an existing fire escape stair meets the requirements of this section.

**4604.17.6 Termination.** The lowest balcony shall not be more than 18 feet (5486 mm) from the ground. Fire escape stairs shall extend to the ground or be provided with counter-balanced stairs reaching the ground.

EXCEPTION: For fire escape stairs serving 10 or fewer occupants, an approved fire escape ladder is allowed to serve as the termination.

**4604.17.7 Maintenance.** Fire escapes shall be kept clear and unobstructed at all times and shall be maintained in good working order.

**4604.18 Corridors.** Corridors serving an occupant load greater than 30 and the openings therein shall provide an effective barrier to resist the movement of smoke. Transoms, louvers, doors and other openings shall be kept closed or self-closing.

EXCEPTIONS:

1. Corridors in occupancies other than in Group H, which are equipped throughout with an approved automatic sprinkler system.
2. Patient room doors in corridors in occupancies in Group I-2 where smoke barriers are provided in accordance with the International Building Code.
3. Corridors in occupancies in Group E where each room utilized for instruction or assembly has at least one-half of the required means of egress doors opening directly to the exterior of the building at ground level.
4. Corridors that are in accordance with the International Building Code.

**4604.18.1 Corridor openings.** Openings in corridor walls shall comply with the requirements of the International Building Code.

- EXCEPTIONS:**
1. Where 20-minute fire door assemblies are required, solid wood doors at least 1.75 inches (44 mm) thick or insulated steel doors are allowed.
  2. Openings protected with fixed wire glass set in steel frames.
  3. Openings covered with 0.5-inch (12.7 mm) gypsum wallboard or 0.75-inch (19.1 mm) plywood on the room side.
  4. Opening protection is not required when the building is equipped throughout with an approved automatic sprinkler system.

**4604.18.2 Dead ends.** Where more than one exit or exit access doorway is required, the exit access shall be arranged such that dead ends do not exceed the limits specified in Table 4604.17.2.

**EXCEPTION:** A dead-end passageway or corridor shall not be limited in length where the length of the dead-end passageway or corridor is less than 2.5 times the least width of the dead-end passageway or corridor.

**4604.18.3 Exit access travel distance.** Exits shall be located so that the maximum length of exit access travel, measured from the most remote point to an approved exit along the natural and unobstructed path of egress travel, does not exceed the distances given in Table 4604.17.2.

**4604.18.4 Common path of egress travel.** The common path of egress travel shall not exceed the distances given in Table 4604.18.2.

**4604.19 Stairway discharge identification.** A stairway in an exit enclosure which continues below its level of exit discharge shall be arranged and marked to make the direction of egress to a public way readily identifiable.

**EXCEPTION:** Stairs that continue one-half story beyond their levels of exit discharge need not be provided with barriers where the exit discharge is obvious.

**4604.20 Exterior stairway protection.** Exterior exit stairs shall be separated from the interior of the building as required in Section 1026.6. Openings shall be limited to those necessary for egress from normally occupied spaces.

- EXCEPTIONS:**
1. Separation from the interior of the building is not required for buildings that are two stories or less above grade where the level of exit discharge serving such occupancies is the first story above grade.
  2. Separation from the interior of the building is not required where the exterior stairway is served by an exterior balcony that connects two remote exterior stairways or other approved exits, with a perimeter that is not less than 50 percent open. To be considered open, the opening shall be a minimum of 50 percent of the height of the enclosing wall, with the top of the opening not less than 7 feet (2134 mm) above the top of the balcony.
  3. Separation from the interior of the building is not required for an exterior stairway located in a building or structure that is permitted to have unenclosed interior stairways in accordance with Section 1022.
  4. Separation from the interior of the building is not required for exterior stairways connected to open-ended corridors, provided that:
    - 4.1. The building, including corridors and stairs, is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
    - 4.2. The open-ended corridors comply with Section 1018.
    - 4.3. The open-ended corridors are connected on each end to an exterior exit stairway complying with Section 1026.
    - 4.4. At any location in an open-ended corridor where a change of direction exceeding 45 degrees occurs, a clear opening of not less than 35 square feet (3 m<sup>2</sup>) or an exterior stairway shall be provided. Where clear openings are provided, they shall be located so as to minimize the accumulation of smoke or toxic gases.

**TABLE 4604.18.2  
COMMON PATH, DEAD-END AND TRAVEL DISTANCE LIMITS (by occupancy)**

| OCCUPANCY  | COMMON PATH LIMIT    |                    | DEAD-END LIMIT       |                    | TRAVEL DISTANCE LIMIT |                    |
|--|----------------------|--------------------|----------------------|--------------------|-----------------------|--------------------|
|  | Unsprinklered (feet) | Sprinklered (feet) | Unsprinklered (feet) | Sprinklered (feet) | Unsprinklered (feet)  | Sprinklered (feet) |
| Group A  | 20/75 <sup>a</sup>   | 20/75 <sup>a</sup> | 20 <sup>b</sup>      | 20 <sup>b</sup>    | 200                   | 250                |
| Group B  | 75                   | 100                | 50                   | 50                 | 200                   | 250                |
| Group E  | 75                   | 75                 | 20                   | 50                 | 200                   | 250                |
| Group F-1, S-1 <sup>d</sup>  | 75                   | 100                | 50                   | 50                 | 200                   | 250                |
| Group F-2, S-2 <sup>d</sup>  | 75                   | 100                | 50                   | 50                 | 300                   | 400                |
| Group H-1  | 25                   | 25                 | 0                    | 0                  | 75                    | 75                 |
| Group H-2  | 50                   | 100                | 0                    | 0                  | 75                    | 100                |
| Group H-3  | 50                   | 100                | 20                   | 20                 | 100                   | 150                |
| Group H-4  | 75                   | 75                 | 20                   | 20                 | 150                   | 175                |
| Group H-5  | 75                   | 75                 | 20                   | 20                 | 150                   | 200                |
| Group I-1  | 75                   | 75                 | 20                   | 50                 | 200                   | 250                |
| Group I-2 (Health Care)  | NR <sup>e</sup>      | NR <sup>e</sup>    | NR                   | NR                 | 150                   | 200 <sup>c</sup>   |
| Group I-3 (Detention and Correctional—Use Conditions II, III, IV, V) | 100                  | 100                | NR                   | NR                 | 150 <sup>c</sup>      | 200 <sup>c</sup>   |
| Group I-4 (Day Care Centers)   | NR                   | NR                 | 20                   | 20                 | 200                   | 250                |
| Group M (Covered Mall)   | 75                   | 100                | 50                   | 50                 | 200                   | 400                |
| Group M (Mercantile)   | 75                   | 100                | 50                   | 50                 | 200                   | 250                |
| Group R-1 (Hotels)   | 75                   | 75                 | 50                   | 50                 | 200                   | 250                |

**TABLE 4604.18.2  
COMMON PATH, DEAD-END AND TRAVEL DISTANCE LIMITS (by occupancy)**

| OCCUPANCY                                    | COMMON PATH LIMIT    |                    | DEAD-END LIMIT       |                    | TRAVEL DISTANCE LIMIT |                    |
|--|----------------------|--------------------|----------------------|--------------------|-----------------------|--------------------|
|  | Unsprinklered (feet) | Sprinklered (feet) | Unsprinklered (feet) | Sprinklered (feet) | Unsprinklered (feet)  | Sprinklered (feet) |
| Group R-2 (Apartments)                       | 75                   | 75                 | 50                   | 50                 | 200                   | 250                |
| Group R-3 (One- and Two-Family)              | NR                   | NR                 | NR                   | NR                 | NR                    | NR                 |
| Group R-4 (Residential Care/Assisted Living) | NR                   | NR                 | NR                   | NR                 | NR                    | NR                 |
| Group U                                      | 75                   | 75                 | 20                   | 50                 | 200                   | 250                |

For SI: 1 foot = 304.8 mm.

a. 20 feet for common path serving 50 or more persons; 75 feet for common path serving less than 50 persons.

b. See Section 1028.9.5 for dead-end aisles in Group A occupancies.

c. This dimension is for the total travel distance, assuming incremental portions have fully utilized their allowable maximums. For travel distance within the room, and from the room exit access door to the exit, see the appropriate occupancy chapter.

d. See the International Building Code for special requirements on spacing of doors in aircraft hangars.

e. Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1,000 square feet (93 m<sup>2</sup>) shall have at least two exit access doors placed a distance apart equal to not less than one-third of the length of the maximum overall diagonal dimension of the patient sleeping room or suite to be served, measured in a straight line between exit access doors.

NR = No requirements.

**4604.21 Minimum aisle width.** The minimum clear width of aisles shall be:

1. Forty-two inches (1067 mm) for aisle stairs having seating on each side.

EXCEPTION: Thirty-six inches (914 mm) where the aisle serves less than 50 seats.

2. Thirty-six inches (914 mm) for stepped aisles having seating on only one side.

EXCEPTION: Thirty inches (760 mm) for catchment areas serving not more than 60 seats.

3. Twenty inches (508 mm) between a stepped aisle handrail or guard and seating when the aisle is subdivided by the handrail.

4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.

EXCEPTION: Thirty-six inches (914 mm) where the aisle serves less than 50 seats.

5. Thirty-six inches (914 mm) for level or ramped aisles having seating on only one side.

EXCEPTION: Thirty inches (760 mm) for catchment areas serving not more than 60 seats.

6. Twenty-three inches (584 mm) between a stepped stair handrail and seating where an aisle does not serve more than five rows on one side.

**4604.22 Stairway floor number signs.** Existing stairs shall be marked in accordance with Section 1022.8.

**4604.23 Egress path markings.** Existing buildings of Group A, B, E, I, M and R-1 having occupied floors located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access shall be provided with luminous egress path markings in accordance with Section 1024.

EXCEPTION: Open, unenclosed stairwells in historic buildings designated as historic under a state or local historic preservation program.

**SECTION 4605 REQUIREMENTS FOR OUTDOOR OPERATIONS**

**4605.1 Tire storage yards.** Existing tire storage yards shall be provided with fire apparatus access roads in accordance with Sections 4605.1.1 and 4605.1.2.

**4605.1.1 Access to piles.** Access roadways shall be within 150 feet (45,720 mm) of any point in the storage yard where storage piles are located, at least 20 feet (6096 mm) from any storage pile.

**4605.1.2 Location within piles.** Fire apparatus access roads shall be located within all pile clearances identified in Section 2505.4 and within all fire breaks required in Section 2505.5.

**NEW SECTION**

**WAC 51-54-4700 Chapter 47—Referenced standards.**

NFPA 967 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations. . . . . 609.3

**NEW SECTION**

**WAC 51-54-4800 Appendix K—Wildland and Urban Interface Code.**

**K101.5 Additions or alterations.** Additions or alterations may be made to any building or structure without requiring the existing building or structure to comply with all of the requirements of this code, provided the addition or alteration conforms to that required for a new building or structure.

EXCEPTION: Provisions of this code that specifically apply to existing conditions are retroactive. See Sections 402.3, 601.1 and Appendix A.

Additions or alterations shall not cause the existing building or structure to become unsafe. An unsafe condition shall be deemed to have been created if an addition or alteration will cause the existing building or structure to become structurally unsafe or overloaded; will not provide adequate access in compliance with the provisions of this code or will obstruct existing exits or access; will create a fire hazard; will reduce required fire resistance or will otherwise create conditions dangerous to human life.

**K108.3 Site plan.** In addition to the requirements for plans in the *International Building Code*, the code official may require site plans which include topography, width and percent of grade of access roads, landscape and vegetation details, locations of structures or building envelopes, existing or proposed overhead utilities, occupancy classification of buildings, types of ignition resistant construction of buildings, structures and their appendages, roof classification of buildings, and site water supply systems. The code official is authorized to waive or modify the requirement for a site plan.

**K108.4 Vegetation management plans.** When required by the code official or when utilized by the permit applicant pursuant to Section 502, vegetation management plans shall be prepared and shall be submitted to the code official for review and approval as part of the plans required for a permit. See Appendix B.

**K108.7 Vicinity plan.** When required by the code official, the requirements for site plans shall include details regarding the vicinity within 300 feet (91, 440 mm) of property lines, including other structures, slope, vegetation, fuel breaks, water supply systems and access roads.

**K402.1.1 Access.** New subdivisions, as determined by this jurisdiction, shall be provided with fire apparatus access roads in accordance with the *International Fire Code*.

**K402.1.2 Water supply.** New subdivisions as determined by this jurisdiction shall be provided with water supply in accordance with the *International Fire Code*.

**K402.2 Individual structures.** Individual structures shall comply with Sections 402.2.1 and 402.2.2.

**K402.2.1 Access.** Individual structures hereafter constructed or relocated into or within wildland-urban interface areas shall be provided with fire apparatus access in accordance with the *International Fire Code*.

**K402.2.2 Water supply.** Individual structures hereafter constructed or relocated into or within wildland-urban interface areas shall be provided with a conforming water supply in accordance with the *International Fire Code*.

- EXCEPTIONS:
1. Structures constructed to meet the requirements for the class of ignition-resistant construction specified in Table 503.1 for a nonconforming water supply.
  2. Buildings containing only private garages, carports, sheds and agricultural buildings with a floor area of not more than 600 square feet (56 m<sup>2</sup>).

**K402.3 Existing conditions.** Existing address markers, roads and fire protection equipment shall be in accordance with the *International Fire Code*.

**TABLE K503.1  
IGNITION-RESISTANT CONSTRUCTION<sup>a</sup>**

|                                     | Fire Hazard Severity      |               |                           |               |                           |               |
|-------------------------------------|---------------------------|---------------|---------------------------|---------------|---------------------------|---------------|
|                                     | Moderate Hazard           |               | High Hazard               |               | Extreme Hazard            |               |
|                                     | Water Supply <sup>b</sup> |               | Water Supply <sup>b</sup> |               | Water Supply <sup>b</sup> |               |
| <b>Defensible Space<sup>c</sup></b> | Conforming                | Nonconforming | Conforming                | Nonconforming | Conforming                | Nonconforming |
| Nonconforming                       | IR 2                      | IR 1          | IR 1                      | IR 1 N.C.     | IR 1 N.C.                 | Not Permitted |
| Conforming                          | IR 3                      | IR 2          | IR 2                      | IR 1          | IR 1                      | IR 1 N.C.     |
| 1.5 x Conforming                    | Not Required              | IR 3          | IR 3                      | IR 2          | IR 2                      | IR 1          |

- a. Access shall be in accordance with Section 402.
- b. Water supply shall be in accordance with Section 402.1.  
IR 1 = Ignition-resistant construction in accordance with Section 504.  
IR 2 = Ignition-resistant construction in accordance with Section 505.  
IR 3 = Ignition-resistant construction in accordance with Section 506.  
N.C. = Exterior walls shall have a fire-resistance rating of not less than 1 hour and the exterior surfaces of such walls shall be noncombustible. Usage of log wall construction is allowed.
- c. Conformance based on Section 603.

**K403 Access.** This section not adopted.

**K404 Water supply.** This section not adopted.

APPENDIX B-VEGETATION MANAGEMENT PLAN - THIS APPENDIX IS ADOPTED.

APPENDIX C-FIRE DANGER RATING SYSTEM - THIS APPENDIX IS ADOPTED.

**WSR 09-17-143  
PROPOSED RULES  
BUILDING CODE COUNCIL**  
[Filed August 19, 2009, 11:31 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-05-052.

Title of Rule and Other Identifying Information: Amendment of chapters 51-56 and 51-57 WAC, Adoption and amendment of the 2009 Edition of the Uniform Plumbing Code (UPC) and standards.

Hearing Location(s): Holiday Inn Select Renton, One Grady Way South, Renton, WA, on September 29, 2009, at 10:00 a.m.; and at the Spokane City Council Chambers, West 808 Spokane Falls Boulevard, Spokane, WA, on October 5, 2009, at 9:00 a.m.

Date of Intended Adoption: November 12, 2009.

Submit Written Comments to: Peter DeVries, Council Chair, P.O. Box 42525, Olympia, WA 98504-2525, e-mail sbcc@commerce.wa.gov, fax (360) 586-9383, by October 5, 2009.

Assistance for Persons with Disabilities: Contact Sue Mathers by September 15, 2009, TTY (360) 586-0772 or (360) 725-2966.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposed rules adopt the most recently published edition of the UPC and make changes to the state amendments to this code.

1. **Section 210** - The definition for "hot water" is amended for consistency with the state health code.

2. **Section 218** - The definition for "plumbing system" was modified to include reclaimed water systems.

3. **Section 402.3.1.3.1** - A new section on waterless urinals was added to the model code and is reflected in the state amendment on Water Efficient Standards.

4. **Sections 407.4 and 411.7** - The clear space in front of water closets and the minimum shower size were amended for consistency with the International Residential Code (IRC).

5. **Section 606.1** - Requirements for hot water at fixtures were amended for consistency with the IRC; bidets were added to the list of fixtures requiring limiting devices for consistency with Section 416.3.

6. **Section 603.1** - This section was revised to be consistent with the amendment in Section 603.3.3.

7. **Section 603.4.23** - The amendment to this section has been deleted. This language now appears in the model code so the amendment is not necessary.

8. **Section 908.2.1** - The requirements for horizontal wet venting were revised in the 2009 UPC. This new state amendment adds bidets to the list of allowable fixtures and deletes the requirement that water closets must be connected downstream of any other fixture drain.

9. **Section 1313.3** - The state amendment was revised to refer back to the UPC for all systems falling outside the jurisdiction of the department of health or social and health services.

10. **Chapter 16** - Part I: An explanatory statement was added as to why Part I is not adopted. Part II was revised at the national level to include additional sources of water. The state amendment further refines the requirements for reused water and, rather than including rainwater in the definition and regulation of reclaimed water, added Part III dedicated to rainwater systems.

The remaining modifications to the state amendments are editorial in nature, making revisions to coordinate with number changes or date changes.

Reasons Supporting Proposal: RCW 19.27.031 and 19.27.074.

Statutory Authority for Adoption: RCW 19.27.031 and 19.27.074.

Statute Being Implemented: Chapters 19.27 and 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: The council is seeking comments on the issues proposed in the rules shown below.

Name of Proponent: Washington state building code council, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Krista Braaksma, P.O. Box 42525, Olympia, WA 98504-2525, (360) 725-2964; and Enforcement: Local jurisdictions.

No small business economic impact statement has been prepared under chapter 19.85 RCW. During review of the proposed changes, the technical advisory group did not identify any items with potential disproportionate cost impact to small business.

A cost-benefit analysis is not required under RCW 34.05.328. The state building code council is not listed in this section as one of the agencies required to comply with this statute.

August 1, 2009

Peter D. DeVries

Council Chair

AMENDATORY SECTION (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-003 Uniform Plumbing Code.** The ((2006)) 2009 edition of the Uniform Plumbing Code, published by the International Association of Plumbing and Mechanical Officials, is hereby adopted by reference with the following additions, deletions and exceptions: Provided that chapters 12 and 15 of this code are not adopted. Provided further, that those requirements of the Uniform Plumbing Code relating to venting and combustion air of fuel fired appliances as found in chapter 5 and those portions of the code addressing building sewers are not adopted.

AMENDATORY SECTION (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-008 Implementation.** The Uniform Plumbing Code adopted by chapter 51-56 WAC shall become effective in all counties and cities of this state on July 1, ((2007)) 2010, unless local government residential amendments have been approved by the state building code council.

AMENDATORY SECTION (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-0200 Chapter 2—Definitions.**

**205.0 Certified Backflow Assembly Tester** - A person certified by the Washington state department of health under chapter 246-292 WAC to inspect (for correct installation and approval status) and test (for proper operation) approved backflow assemblies.

**210.0 Hot Water** - ((This definition is not adopted.)) Water at a temperature exceeding or equal to 100°F.

**218.0 Plumbing System** - Includes all potable water, building supply and distribution pipes, all reclaimed water systems, all plumbing fixtures and traps, all drainage and vent pipe(s), and all building drains including their respective joints and connection, devices, receptors, and appurtenances within the property lines of the premises and shall include potable water piping, potable water treating or using equipment, medical gas and medical vacuum systems, and water

heaters: Provided, That no certification shall be required for the installation of a plumbing system within the property lines and outside a building.

AMENDATORY SECTION (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-0300 Chapter 3—General regulations.**

**301.1.3 Standards.** Standards listed or referred to in this chapter or other chapters cover materials which will conform to the requirements of this code, when used in accordance with the limitations imposed in this or other chapters thereof and their listing. Where a standard covers materials of various grades, weights, quality, or configurations, there may be only a portion of the listed standard which is applicable. Design and materials for special conditions or materials not provided for herein are allowed to be used by special permission of the authority having jurisdiction after the authority having jurisdiction has been satisfied as to their adequacy in accordance with Section 301.2.

**311.4** Except as hereinafter provided in Sections 908.0, 909.0, 910.0, and Appendix L (~~Section L 6.0, 7.0 and 8.0~~), no vent pipe shall be used as a soil or waste pipe, nor shall any soil or waste pipe be used as a vent.

**313.6** No water, soil, or waste pipe shall be installed or permitted outside of a building or in an exterior wall unless, where necessary, adequate provision is made to protect such pipe from freezing. All hot and cold water pipes installed outside the conditioned space shall be insulated to a minimum R-3.

**313.7** All pipe penetrating floor/ceiling assemblies and fire-resistance rated walls or partitions shall be protected in accordance with the requirements of the building code.

AMENDATORY SECTION (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-0400 Chapter 4—Plumbing fixtures and fixture fittings.**

**402.0 Water-Conserving Fixtures and Fittings.**

**402.1** The purpose of this section shall be to implement water conservation performance standards in accordance with RCW 19.27.170.

**402.2 Application.** This section shall apply to all new construction and all remodeling involving replacement of plumbing fixtures and fittings in all residential, hotel, motel, school, industrial, commercial use, or other occupancies determined by the council to use significant quantities of water. Plumbing fixtures, fittings and appurtenances shall conform to the standards specified in this section and shall be provided with an adequate supply of potable water to flush and keep the fixtures in a clean and sanitary condition without danger of backflow or cross-connection.

**402.3 Water Efficiency Standards.**

**402.3.1 Standards for Vitreous China Plumbing Fixtures.**

**402.3.1.1** The following standards shall be adopted as plumbing materials, performance standards, and labeling standards for water closets and urinals. Water closets and urinals shall meet either the ANSI/ASME standards or the CSA standard.

|                           |  |
|---------------------------|--|
| ANSI/ASME A112.19.2M-1998 | Vitreous China Plumbing Fixtures                     |
| ANSI/ASME A112.19.6-1995  | Hydraulic Requirements for Water Closets and Urinals |
| CSA B45                   | CSA Standards on Plumbing Fixtures                   |

**402.3.1.2** The maximum water use allowed in gallons per flush (gpf) or liters per flush (lpf) for any of the following water closets shall be the following:

|                                     |                 |
|-------------------------------------|-----------------|
| Tank-type toilets                   | 1.6 gpf/6.0 lpf |
| Flushometer-valve toilets           | 1.6 gpf/6.0 lpf |
| Flushometer-tank toilets            | 1.6 gpf/6.0 lpf |
| Electromechanical hydraulic toilets | 1.6 gpf/6.0 lpf |

**EXCEPTIONS:**

1. Water closets located in day care centers, intended for use by young children may have a maximum water use of 3.5 gallons per flush or 13.25 liters per flush.
2. Water closets with bed pan washers may have a maximum water use of 3.5 gallons per flush or 13.25 liters per flush.
3. Blow out bowls, as defined in ANSI/ASME A112.19.2M, Section 5.1.2.3 may have a maximum water use of 3.5 gallons per flush or 13.25 liters per flush.

**402.3.1.3** The maximum water use allowed for any urinal shall be 1.0 gallons per flush or 3.78 liters per flush.

**402.3.1.3.1 Nonwater Urinals.** Nonwater urinals shall be listed and comply with the applicable standards referenced in Table 14-1. Nonwater urinals shall have a barrier liquid sealant to maintain a trap seal. Nonwater urinals shall permit the uninhibited flow of waste through the urinal to the sanitary drainage system. Nonwater urinals shall be cleaned and maintained in accordance with the manufacturer's instructions after installation. Where nonwater urinals are installed, they shall have a water distribution line rough-in to the urinal location to allow for the installation of an approved backflow prevention device in the event of a retrofit.

**402.3.1.4** No urinal or water closet that operates on a continuous flow or continuous flush basis shall be permitted.

**402.3.1.5** This section does not apply to fixtures installed before the effective date of this Section, that are removed and relocated to another room or area of the same building after the effective date of this Section.

**402.3.2 Standards for Plumbing Fixture Fittings.**

**402.3.2.1** The following standards are adopted as plumbing material, performance requirements, and labeling standards for plumbing fixture fittings. Faucets, aerators, and shower heads shall meet either the ANSI/ASME standard or the CSA standard.

|                           |                           |
|---------------------------|---------------------------|
| ANSI/ASME A112.18.1M-1996 | Plumbing Fixture Fittings |
|---------------------------|---------------------------|



CSA B125

Plumbing Fittings

**402.3.2.2** The maximum water use allowed for any shower head is 2.5 gallons per minute or 9.5 liters per minute.

EXCEPTION: Emergency use showers shall be exempt from the maximum water usage rates.

**402.3.2.3** The maximum water use allowed in gallons per minute (gpm) or liters per minute (lpm) for any of the following faucets and replacement aerators is the following:

|   |                 |
|---|-----------------|
| Lavatory faucets                            | 2.5 gpm/9.5 lpm |
| Kitchen faucets                             | 2.5 gpm/9.5 lpm |
| Replacement aerators                        | 2.5 gpm/9.5 lpm |
| Public lavatory faucets other than metering | 0.5 gpm/1.9 lpm |

**402.4 Metering Valves.** Lavatory faucets located in restrooms intended for use by the general public shall be equipped with a metering valve designed to close by spring or water pressure when left unattended (self-closing).

EXCEPTIONS: 1. Where designed and installed for use by persons with a disability.  
2. Where installed in day care centers, for use primarily by children under 6 years of age.

**402.5 Implementation.**

**402.5.1** The standards for water efficiency and labeling contained within Section 402.3 shall be in effect as of July 1, 1993, as provided in RCW 19.27.170 and amended July 1, 1998.

**402.5.2** No individual, public or private corporation, firm, political subdivision, government agency, or other legal entity, may, for purposes of use in the state of Washington, distribute, sell, offer for sale, import, install, or approve for installation any plumbing fixtures or fittings unless the fixtures or fittings meet the standards as provided for in this Section.

((Section 402.6 is not adopted.))

**407.5 Setting.** Fixtures shall be set level and in proper alignment with reference to adjacent walls. No water closet or bidet shall be set closer than fifteen (15) inches (381 mm) from its center to any side wall or obstruction nor closer than thirty (30) inches (762 mm) center to center to any similar fixture. The clear space in front of any water closet or bidet shall be not less than twenty-one (21) inches (533 mm). No urinal shall be set closer than twelve (12) inches (305 mm) from its center to any side wall or partition nor closer than twenty-four (24) inches (610 mm) center to center.

EXCEPTION: The installation of paper dispensers or accessibility grab bars shall not be considered obstructions.

**411.2 Location of Floor Drains.** Floor drains shall be installed in the following areas:

**411.2.1** Toilet rooms containing two (2) or more water closets or a combination of one (1) water closet and one (1) urinal, except in a dwelling unit. The floor shall slope toward the floor drains.

**411.2.2** Laundry rooms in commercial buildings and common laundry facilities in multifamily dwelling buildings.

**411.7 Shower compartments, regardless of shape, shall have a minimum finished interior of nine hundred (900) square inches (0.58 m<sup>2</sup>) and shall also be capable of encompassing a thirty inch (762 mm) circle. The minimum required area and dimensions shall be measured at a height equal to the top of the threshold and at a point tangent to its centerline. The area and dimensions shall be maintained to a point of not less than seventy (70) inches (1.778 mm) above the shower drain outlet with no protrusions other than the fixture valve or valves, shower head, soap dishes, shelves, and safety grab bars or rails. Fold-down seats in accessible shower stalls shall be permitted to protrude into the thirty (30) inch (762 mm) circle.**

EXCEPTIONS: 1. Showers that are designed to comply with ICC/ANSI A117.1.  
2. The minimum required area and dimension shall not apply for a shower receptor having overall dimensions of not less than thirty (30) inches (762 mm) in width and sixty (60) inches (1,524 mm) in length.

**412.0 Minimum Number of Required Fixtures.** For minimum number of plumbing fixtures required, see Building Code chapter 29 and Table 2902.1.

Sections 412.1 through ((412.7)) 412.6 and Table 4-1 are not adopted.

AMENDATORY SECTION (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-0500 Chapter 5—Water heaters.**

**501.0 General.** The regulations of this chapter shall govern the construction, location, and installation of fuel burning and other water heaters heating potable water. The minimum capacity for water heaters shall be in accordance with the first hour rating listed in Table 5-1. See the Mechanical Code for combustion air and installation of all vents and their connectors. All design, construction, and workmanship shall be in conformity with accepted engineering practices, manufacturer's installation instructions, and applicable standards and shall be of such character as to secure the results sought to be obtained by this Code. No water heater shall be hereinafter installed which does not comply in all respects with the type and model of each size thereof approved by the authority having jurisdiction. A list of accepted gas ((equipment)) appliance standards is included in Table 14-1.

TABLE 5-1<sup>1,3</sup>

| Number of Bathrooms                      | 1 to 1.5 |    |    | 2 to 2.5 |    |    |    | 3 to 3.5 |    |    |    |
|--|----------|----|----|----------|----|----|----|----------|----|----|----|
|  | 1        | 2  | 3  | 2        | 3  | 4  | 5  | 3        | 4  | 5  | 6  |
| Number of Bedrooms                       |          |    |    |          |    |    |    |          |    |    |    |
| First Hour Rating <sup>2</sup> , Gallons | 42       | 54 | 54 | 54       | 67 | 67 | 80 | 67       | 80 | 80 | 80 |

Notes: <sup>1</sup>The first hour rating is found on the "Energy Guide" label.

<sup>2</sup>Nonstorage and solar water heaters shall be sized to meet the appropriate first hour rating as shown in the table.

<sup>3</sup>For replacement water heaters, see Section 101.4.1.1.1.

- 502.2 Chimney** – Delete definition.
- 502.3 Chimney, Factory-Built** – Delete definition.
- 502.4 Chimney, Masonry** – Delete definition.
- 502.5 Chimney, Metal** – Delete definition.
- 502.7 Direct Vent Appliance** – Delete definition.
- 502.8 Flue Collar** – Delete definition.
- 502.9 Gas Vent, Type B** – Delete definition.
- 502.10 Gas Vent, Type L** – Delete definition.
- 502.12 Vent** – Delete definition.
- 502.13 Vent Connector** – Delete definition.
- 502.14 Venting System** – Delete definition.
- 504.1 Inspection of Chimneys or Vents.** Delete paragraph.
- 505.1 Location.** Water heater installation in bedrooms and bathrooms shall comply with one of the following:
- (1) Fuel-burning water heaters may be installed in a closet located in the bedroom or bathroom provided the closet is equipped with a listed, gasketed door assembly and a listed self-closing device. The self-closing door assembly shall meet the requirements of Section 505.1.1. The door assembly shall be installed with a threshold and bottom door seal and shall meet the requirements of Section 505.1.2. All combustion air for such installations shall be obtained from the outdoors in accordance with the International Mechanical Code. The closet shall be for the exclusive use of the water heater.
- (2) Water heater shall be of the direct vent type.
- 506.2** All storage-type water heaters deriving heat from fuels or types of energy other than gas, shall be provided with, in addition to the primary temperature controls, an over-temperature safety protection device constructed, listed, and installed in accordance with nationally recognized applicable standards for such devices and a combination temperature and pressure relief valve.
- 507.0 Combustion Air.** For issues relating to combustion air, see the Mechanical Code.
- Sections 507.1 through ~~((507.10))~~ 507.9 are not adopted.
- Sections 508.6 through 508.9 are not adopted.
- 508.12 Delete entire section.
- 508.18 Venting of Flue Gases - Delete entire section.
- Sections 508.20 through 508.24.5 are not adopted.
- 510.0 Venting of Equipment.** Delete entire section.
- 511.0 Sizing of Category I Venting Systems.** Delete entire section.
- 512.0 Direct Vent Equipment.** Delete entire section.

Chapter 5, Part II is not adopted.

AMENDATORY SECTION (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-0600 Chapter 6—Water supply and distribution. 601.1** Except where not deemed necessary for safety or sanitation by the AHJ, each plumbing fixture shall be provided with an adequate supply of potable running water piped thereto in an approved manner, so arranged as to flush and keep it in a clean and sanitary condition without danger of backflow or cross-connection. Water closets and urinals shall be flushed by means of an approved flush tank or flushometer valve.

EXCEPTION: Listed fixtures that do not require water for their operation and are not connected to the water supply.

Kitchen sinks, lavatories, bathtubs, showers, bidets, laundry tubs and washing machine outlets shall be provided with hot and cold water. This requirement shall not supersede the requirements for individual temperature control limitations for public lavatories, bidets, bathtubs, whirlpool bathtubs and shower control valves.

**603.0 Cross-Connection Control.** Cross-connection control shall be provided in accordance with the provisions of this chapter. Devices or assemblies for protection of the public water system must be models approved by the department of health under WAC 246-290-490. The authority having jurisdiction shall coordinate with the local water purveyor where applicable in all matters concerning cross-connection control within the property lines of the premises.

No person shall install any water operated equipment or mechanism, or use any water treating chemical or substance, if it is found that such equipment, mechanism, chemical or substance may cause pollution or contamination of the domestic water supply. Such equipment or mechanism may be permitted only when equipped with an approved backflow prevention device or assembly.

**603.1 Approval of Devices or Assemblies.** Before any device or assembly is installed for the prevention of backflow, it shall have first been approved by the authority having jurisdiction. Devices or assemblies shall be tested for conformity with recognized standards or other standards acceptable to the authority having jurisdiction (~~((that are consistent with the intent of this code))~~). Backflow prevention devices and assemblies shall comply with Table 6-2, except for specific applications and provisions as stated in Section 603.4 through 603.4.22.

All devices or assemblies installed in a potable water supply system for protection against backflow shall be maintained in good working condition by the person or persons having control of such devices or assemblies. Such devices or assemblies shall be tested in accordance with Section 603.3.3 and WAC 246-290-490. If found to be defective or inoperative, the device or assembly shall be replaced or repaired. No device or assembly shall be removed from use or relocated or

other device or assembly substituted, without the approval of the authority having jurisdiction.

Testing shall be performed by a Washington state department of health certified backflow assembly tester.

TABLE 6-2  
Backflow Prevention Devices, Assemblies and Methods  
 The following line is deleted from the table:

| <u>Device, Assembly or Method</u>  | <u>Applicable Standards</u> | <u>Pollution (Low Hazard)</u> |                      | <u>Contamination (High Hazard)</u> |                      | <u>Installation</u>  |
|--|-----------------------------|-------------------------------|----------------------|------------------------------------|----------------------|--|
|  |                             | <u>Back Siphonage</u>         | <u>Back Pressure</u> | <u>Back Siphonage</u>              | <u>Back Pressure</u> |  |
| <u>Backflow preventer for carbonated beverage dispensers (two independent check valves with a vent to the atmosphere.)</u> | <u>ASSE 1022</u>            | <u>X</u>                      |                      |                                    |                      | <u>Installation includes carbonated beverage machines or dispensers. These devices operate under intermittent or continuous pressure conditions.</u> |

**603.3.3** For devices and assemblies other than those regulated by the Washington department of health in conjunction with the local water purveyor for the protection of public water systems, the authority having jurisdiction shall ensure that the premise owner or responsible person shall have the backflow prevention assembly tested by a Washington state department of health certified backflow assembly tester:

- (1) At the time of installation, repair or relocation; and
- (2) At least on an annual schedule thereafter, unless more frequent testing is required by the authority having jurisdiction.

**603.4.6.1** Potable water supplies to systems having no pumps or connections for pumping equipment, and no chemical injection or provisions for chemical injection, shall be protected from backflow by one of the following devices:

- (1) Atmospheric vacuum breaker.
- (2) Pressure vacuum breaker.
- (3) Spill-resistant pressure vacuum breaker.
- (4) Reduced pressure backflow preventer.
- (5) A double check valve may be allowed when approved by the water purveyor and the authority having jurisdiction.

**603.4.10 Potable Water Make Up Connections to Steam or Hot Water Boilers** shall be protected by an air gap or a reduced pressure principle backflow preventer.

**603.4.12 Potable Water Supply to Carbonators** shall be protected by a listed reduced pressure principle backflow preventer as approved by the authority having jurisdiction for the specific use. The backflow preventer shall be located in accordance with Section 603.3.4. The piping downstream of the backflow preventer shall not be of copper, copper alloy, or other material that is affected by carbon dioxide.

**603.4.14** Backflow preventers shall not be located in any area containing fumes or aerosols that are toxic, poisonous, infectious, or corrosive.

**603.4.16.1** Except as provided under Sections 603.4.16.2 and 603.4.16.3, potable water supplies to fire protection systems that are normally under pressure, including but not limited to standpipes and automatic sprinkler systems, except in one or two family residential flow-through or combination sprinkler systems piped in materials approved for potable water distribution systems, shall be protected from back-pressure and back-siphonage by one of the following testable devices:

- 1. Double check valve assembly.
- 2. Double check detector assembly.
- 3. Reduced pressure backflow preventer.
- 4. Reduced pressure detector assembly.

Potable water supplies to fire protection systems that are not normally under pressure shall be protected from backflow and shall meet the requirements of the appropriate standard(s) referenced in Table 14-1.

~~((603.4.23 Potable Water Supply to Swimming Pools, Spas and Hot Tubs shall be protected by an airgap or a reduced pressure principle backflow preventer when:~~

- ~~(1) The unit is equipped with a submerged fill line; or~~
- ~~(2) The potable water supply is directly connected to the unit circulation system.))~~

**604.15** Plastic water service piping may terminate within a building, provided the connection to the potable water distribution system shall be made as near as is practical to the point of entry and shall be accessible. Barbed insert fittings with hose clamps are prohibited as a transition fitting within the building.

**608.5** Relief valves located inside a building shall be provided with a drain, not smaller than the relief valve outlet, of galvanized steel, hard drawn copper piping and fittings, CPVC, or listed relief valve drain tube with fittings which will not reduce the internal bore of the pipe or tubing (straight lengths as opposed to coils) and shall extend from the valve to the outside of the building, with the end of the pipe not more than two (2) feet (610 mm) nor less than six (6) inches (152 mm) above the ground or the flood level of the area

receiving the discharge and pointing downward. Such drains may terminate at other approved locations. No part of such drain pipe shall be trapped or subject to freezing. The terminal end of the drain pipe shall not be threaded.

**EXCEPTION:** Replacement water heating equipment shall only be required to provide a drain pointing downward from the relief valve to extend between two feet (610 mm) and six inches (152 mm) from the floor. No additional floor drain need be provided.

**610.4** Systems within the range of Table ((6-5)) 6-6 may be sized from that table or by the method set forth in Section 610.5.

Listed parallel water distribution systems shall be installed in accordance with their listing.

**AMENDATORY SECTION** (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-0700 Chapter 7—Sanitary drainage.**

**701.1.2** ABS and PVC DWV piping installations shall be installed in accordance with ((IS 5 and IS 9)) applicable standards in Table 14-1. Except for individual single family dwelling units, materials exposed within ducts or plenums shall have a flame-spread index of not more than 25 and a smoke developed index of not more than 50, when tested in accordance with the Test for Surface-Burning Characteristics of the Building Materials (See the Building Code standards based on ASTM E-84 and ANSI/UL 723).

**704.3** Except where specifically required to be connected indirectly to the drainage system, or when first approved by the authority having jurisdiction, all plumbing fixtures, drains, appurtenances, and appliances shall be directly connected to the drainage system of the building or premises.

**710.3** The minimum size of any pump or any discharge pipe from a sump having a water closet connected thereto shall be not less than two (2) inches (52 mm).

Sections 710.3.1 through 710.3.3 are not adopted.

**CHAPTER 7, PART II—BUILDING SEWERS**

**Part II Building Sewers.** Delete all of Part II (Sections 713 through 723, and Tables 7-7 and 7-8).

**AMENDATORY SECTION** (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-0900 Chapter 9—Vents.**

**903.1.2** ABS and PVC DWV piping installations shall be installed in accordance with ((IS 5 and IS 9)) applicable standards in Table 14-1. Except for individual single family dwelling units, materials exposed within ducts or plenums shall have a flame-spread index of not more than 25 and a smoke developed index of not more than 50, when tested in accordance with the Test for Surface-Burning Characteristics of the Building Materials (see the Building Code standards based on ASTM E-84 and ANSI/UL 723).

((908.4.1)) **908.2.1 Where Permitted.** ((Any combination of fixtures within one (1) or two (2) bathrooms located on the

~~same floor level and serving dwelling units or sleeping units shall be permitted to be vented by a wet vent. The wet vent shall be considered the vent for the fixtures and shall extend from the connection of the dry vent along the direction of the flow in the drain pipe to the most downstream fixture drain connection to the horizontal branch drain. Only the fixtures within the bathroom(s) shall connect to the wet-vented horizontal branch drain. Any additional fixtures shall discharge downstream of the wet vent system and be conventionally vented.)) Water closets, bathtubs, showers, bidets, and floor drains within one or two bathroom groups located on the same floor level and for private use shall be permitted to be vented by a wet vent. The wet vent shall be considered the vent for the fixtures and shall extend from the connection of the dry vent along the direction of the flow in the drain pipe to the most downstream fixture drain or trap arm connection to the horizontal branch drain. Each wet-vented fixture drain or trap arm shall connect independently to the wet-vented horizontal branch drain. Each individual fixture drain or trap arm shall connect horizontally to the wet-vented horizontal branch drain or shall be provided with a dry vent. The trap to vent distance shall be in accordance with Table 10-1. Only the fixtures within the bathroom groups shall connect to the wet-vented horizontal branch drain. Any additional fixtures shall discharge downstream of the wet-vent system and be conventionally vented.~~

**AMENDATORY SECTION** (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-1300 Chapter 13—Health care facilities and medical gas and vacuum systems.**

**Part II Medical Gas and Vacuum Systems**

**1309.0 Scope.**

**1309.1** The provisions herein shall apply to the design, installation, testing, and verification of medical gas, medical vacuum systems, and related permanent equipment in hospitals, clinics, and other health care facilities.

**1309.2** The purpose of this chapter is to provide minimum requirements for the design, installation, testing and verification of medical gas, medical vacuum systems, and related permanent equipment, from the central supply system to the station outlets or inlets.

**1313.3 Minimum Station Outlets/Inlets.** Station outlets and inlets for medical gas and medical vacuum systems for facilities licensed or certified by Washington state department of health (DOH) or Washington state department of social and health services (DSHS) shall be provided as listed in chapter 246-320 WAC as required by the applicable licensing rules as applied by DOH construction review services. All other medical gas and medical vacuum systems shall be provided as listed in Table 13-3.

**1328.0 System Verification.**

**1328.1** Prior to any medical gas system being placed in service, each and every system shall be verified as described in section 1328.2.

**1328.1.1** Verification tests shall be performed only after all tests required in section 1327.0, Installer Performed Tests, have been completed.

Testing shall be conducted by a party technically competent and experienced in the field of medical gas and vacuum pipeline testing and meeting the requirements of ANSI/ASSE Standard 6030, Medical Gas Verifiers Professional Qualifications Standard.

Testing shall be performed by a party other than the installing contractor or material vendor.

When systems have been installed by in-house personnel, testing shall be permitted by personnel of that organization who meet the requirements of this section.

**AMENDATORY SECTION** (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-1400 Chapter 14—Referenced standards.**

TABLE 14-1

Standards for Materials, Equipment, Joints and Connections

Where more than one standard has been listed for the same material or method, the relevant portions of all such standards shall apply.

Add the following standard to those listed in Table 14-1:

| Standard Number           | Standard Title  | Application         |
|---------------------------|---|---------------------|
| <del>((NEPA 99-2005</del> | <del>Health Care Facilities</del>   | <del>Piping</del>   |
| <del>NEPA 99C-2005</del>  | <del>Gas and Vacuum Systems</del>   | <del>Piping))</del> |
| WAC 246-290-490           | Washington State Department of Health Cross-connection Control Requirements | Backflow Protection |

**AMENDATORY SECTION** (Amending WSR 07-01-094, filed 12/19/06, effective 7/1/07)

**WAC 51-56-1600 Chapter 16—Gray water systems.**

**Part I, Gray Water Systems, is not adopted.** Gray water shall not be used for irrigation except as permitted by the department of health rules.

**Part II**

**1613. Nonpotable Reuse Water Systems—General.**

(A) The provisions of Part II of this chapter shall apply to the installation, construction, alteration, and repair of nonpotable reuse water intended to supply uses such as water closets, urinals, and trap primers for floor drains, and floor sinks, irrigation, industrial processes, water features and other uses approved by the Authority Having Jurisdiction. Potable water supplied as makeup water in these systems shall be protected against back-pressure and backsiphonage in accordance with Sections 602.0 and 603.0.

(B) No permit for any nonpotable reuse water system shall be issued until complete plumbing plans, with appropriate data satisfactory to the Authority Having Jurisdiction, have been submitted and approved. No changes or connections shall be made to either the nonpotable water system or the potable water system within any site containing a nonpotable reuse water system without approval by the Authority Having Jurisdiction.

(C) Before the building is occupied, the installer shall perform the initial cross-connection test in the presence of the Authority Having Jurisdiction and other authorities having jurisdiction. The test shall be ruled successful by the Authority Having Jurisdiction before final approval is granted.

(D) A nonpotable reuse water system shall be designed by a person registered or licensed to perform plumbing design work.

**1614.0 Definitions.** Nonpotable reuse water shall include the following:

**Reclaimed Water** - Water derived in any part from wastewater with a domestic wastewater component that has been adequately and reliably treated, so that it can be used for beneficial purposes. Reclaimed water is not considered a wastewater (RCW 90.46.010);

**Greywater or Gray Water** - Domestic type flows from bathtubs, showers, bathroom sinks, washing machines, dishwashers, and kitchen or utility sinks. Gray water does not include flow from a toilet or urinal (RCW 90.46.010); and

Other nonpotable wastewater sources from appliances and fixtures excluding wastewater streams containing black water.

**For rainwater harvesting, see Part III.**

**1615.0 Permit.** It shall be unlawful for any person to construct, install, alter, or cause to be constructed, installed, or altered any nonpotable reused water system within a building or on a premises without first obtaining a permit to do such work from the Authority Having Jurisdiction.

**1616.0 Drawings and Specifications.** The Authority Having Jurisdiction shall be permitted to require any or all of the following information to be included with or in the plot plan before a permit is issued for a nonpotable reused water system.

(A) A plot plan drawn to scale and completely dimensioned, showing lot lines and structures, location of present and proposed potable water supplies and meters, water wells, streams, auxiliary water supply and systems, nonpotable reused water supply and meters, drain lines, and locations of private sewage disposal systems and 100 percent expansion areas or building sewer connected to the public sewer.

(B) Details of construction including riser diagrams or isometrics and a full description of the complete installation, including installation methods, construction, and materials as required by the Authority Having Jurisdiction. To the extent permitted by structural conditions, nonpotable reused water risers within the toilet room, including appurtenances such as air/vacuum relief valves, pressure reducing valves, etc., shall be installed in the opposite end of the room containing the served fixtures from the potable water risers or opposite

walls, as applicable. To the extent permitted by structural conditions, nonpotable reused water headers and branches off risers shall not be run in the same wall or ceiling cavity of the toilet room where potable water piping is run.

(C) Detailed initial and annual testing requirements as outlined elsewhere in this chapter.

**1617.0 Pipe Material/Pipe Identification.** Nonpotable reused water systems shall comply with Sections 1617.1 and 1617.2.

**1617.1 Pipe Materials.** Reclaimed water and nonpotable water reuse pipe, valves and fittings shall conform to the requirements of Sections 604.0, 605.0 and 606.0.

**1617.2 Color and Information.**

**1617.2.1 Reclaimed Water.** Reclaimed water systems shall have a purple background with black uppercase lettering with the words "CAUTION: RECLAIMED WATER, DO NOT DRINK." The minimum size of the letters and length of the color field shall conform to Table 6-1. Where used, a colored identification band shall be indicated every twenty feet (6,096 mm) not less than once per room, and shall be visible from the floor level. Marking is not required for pipe manufactured with purple color integral to the pipe and marked with black uppercase lettering to read "CAUTION: NONPOTABLE RECLAIMED WATER, DO NOT DRINK" in intervals not to exceed five feet (1,524 mm). All valves, except fixture supply control valves shall be equipped with a locking feature. All mechanical equipment that is appurtenant to the reclaimed water system shall be painted purple.

**1617.2.2 Other Nonpotable Reused Water.** Except as noted in Section 1617.2.1, nonpotable water systems shall have a yellow background with black uppercase lettering, with the words "CAUTION: NONPOTABLE WATER, DO NOT DRINK." Each nonpotable system shall be identified to designate the liquid being conveyed, and the direction of normal flow shall be clearly shown. The minimum size of the letters and length of the color field shall conform to Table 6-1.

The background color and required information shall be indicated every twenty feet but not less than once per room, and shall be visible from the floor level. Where concealed within construction, the piping shall be labeled on two opposing sides of the pipe within each stud or joist bay.

**1618.0 Installation.**

**1618.1 Collection Reservoir.** Nonpotable reuse water shall be collected in an approved reservoir constructed of durable, nonabsorbent and corrosion-resistant materials. The reservoir shall be a closed and gas-tight vessel. Access openings shall be provided to allow inspection and cleaning of the reservoir interior. The reservoir shall be sized to limit the retention time of nonpotable reuse water to a maximum of seventy-two hours.

**1618.1.1 Filtration.** Nonpotable reuse water entering the reservoir shall pass through an approved filter such as a media, sand or diatomaceous earth filter.

**1618.1.2 Required Valve.** A full-open valve shall be installed downstream of the last fixture connection to the

nonpotable reuse water discharge pipe before entering the required filter.

**1618.1.3 Overflow.** The collection reservoir shall be equipped with an overflow pipe of the same diameter as, or larger than, the influent pipe for the nonpotable reuse water. The overflow shall be indirectly connected to the sanitary drainage system.

**1618.1.4 Drain.** A drain shall be located at the lowest point of the collection reservoir and shall be indirectly connected to the sanitary drainage system. The drain shall be the same diameter as the overflow pipe required in Section 1618.1.3.

**1618.1.5 Disinfection.** Nonpotable reuse water shall be disinfected by an approved method that uses one or more disinfectants such as chlorine, iodine or ozone.

**1618.1.6 Makeup Water.** Potable water shall be supplied as a source of makeup water for nonpotable water systems that serve plumbing fixtures. The potable supply shall be protected against backflow in accordance with Chapter 6. A full-open valve shall be located on the makeup water supply line to the collection reservoir.

(A) Hose bibbs shall not be allowed on nonpotable reuse water piping systems.

(B) The nonpotable reuse water system and the potable water system within the building shall be provided with the required appurtenances (valves, air/vacuum relief valves, etc.) to allow for deactivation or drainage as required by this chapter for a cross-connection test in Section 1620.0.

(C) Nonpotable reuse water pipes shall not be run or laid in the same trench as potable water pipes. A ten foot (3,048 mm) horizontal separation shall be maintained between pressurized, buried reclaimed and potable water piping. Buried potable water pipes crossing pressurized nonpotable reuse water pipes shall be laid not less than twelve inches (305 mm) above the nonpotable reuse water pipes. Nonpotable reuse water pipes laid in the same trench or crossing building sewer or drainage piping shall be installed in compliance with Sections 609.0 and 720.0 of this code. Nonpotable reuse water pipes shall be protected similar to potable water pipes.

**1619.0 Signs.**

**1619.1 Commercial, Industrial and Institutional Room Entrance Signs.** In commercial, industrial, and institutional occupancies, all rooms using nonpotable reuse water for water closets and/or urinals shall be identified with signs. Each sign shall contain one-half inch (12.7 mm) letters of a highly visible color on a contrasting background. The location of the sign(s) shall be such that the sign(s) shall be visible to all users. The number and location of the signs shall be approved by the Authority Having Jurisdiction and shall contain the following text:

**TO CONSERVE WATER,**

**THIS BUILDING USES RECLAIMED WATER TO FLUSH TOILETS AND URINALS.**

**1619.2 Equipment Room Signs.** Each room containing nonpotable reuse water equipment shall have a sign posted with the following wording in one-inch (25.4 mm) letters on a purple background:

**CAUTION**

**NONPOTABLE RECLAIMED WATER. DO NOT DRINK.  
DO NOT CONNECT TO DRINKING WATER SYSTEM.**

**NOTICE**

**CONTACT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM.**

This sign shall be posted in a location that is visible to anyone working on or near nonpotable reuse water equipment.

**1619.3** Where water closets and/or urinals are flushed with nonpotable reuse water, the fixture shall be labeled:

**CAUTION**

**TO CONSERVE WATER, THIS BUILDING USES NONPOTABLE RECLAIMED WATER TO FLUSH TOILETS AND URINALS**

**1619.4 Valve Access Door Signs.** Each nonpotable reuse water valve within a wall shall have its access door into the wall equipped with a warning sign approximately six inches by six inches (152 mm x 152 mm) with wording in one-half inch (12.7 mm) letters on a purple background. The size, shape, and format of the sign shall be substantially the same as that specified in subsection (B) above. The signs shall be attached inside the access door frame and shall hang in the center of the access door frame. This sign requirement shall be applicable to any and all access doors, hatches, etc., leading to nonpotable reuse water piping and appurtenances.

**1620.0 Inspection and Testing.**

**1620.1** Nonpotable reuse water piping shall be inspected and tested as outlined in this code for testing of potable water piping.

**1620.2** An initial and subsequent annual inspection and test shall be performed on both the potable and nonpotable reuse water systems. The potable and nonpotable reuse water systems shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection as follows:

**1620.2.1 Visual Dual System Inspection.** Prior to commencing the cross-connection testing, a dual system inspection shall be conducted by the Authority Having Jurisdiction and other authorities having jurisdiction.

(i) Meter locations of the nonpotable reuse water and potable water lines shall be checked to verify that no modifications were made, and that no cross-connections are visible.

(ii) Pumps and equipment, equipment room signs, and exposed piping in the equipment room shall be checked.

(iii) Valves shall be checked to ensure that valve lock seals are still in place and intact. Valve control door signs shall be checked to verify that no signs have been removed.

**1620.2.2 Cross-Connection Test.** The following procedure shall be followed by the applicant in the presence of the Authority Having Jurisdiction and other authorities having jurisdiction to determine whether a cross connection occurred.

(i) The potable water system shall be activated and pressurized. The nonpotable reuse water system shall be shut down and completely drained.

(ii) The potable water system shall remain pressurized for a minimum period of time specified by the Authority Having Jurisdiction while the nonpotable reuse water system is empty. The minimum period the nonpotable reuse water system is to remain depressurized shall be determined on a case-by-case basis, taking into account the size and complexity of the potable and nonpotable reuse water distribution systems, but in no case shall that period be less than one hour.

(iii) Fixtures, potable and reclaimed, shall be tested and inspected for flow. Flow from any nonpotable reuse water system outlet shall indicate a cross-connection. No flow from a potable water outlet would indicate that it is connected to the nonpotable reuse water system.

(iv) The drain on the nonpotable reuse water system shall be checked for flow during the test and at the end of the period.

(v) The potable water system shall then be completely drained.

(vi) The nonpotable reuse water system shall then be activated and pressurized.

(vii) The nonpotable reuse water system shall remain pressurized for a minimum period of time specified by the Authority Having Jurisdiction while the potable water system is empty. The minimum period the potable water system is to remain depressurized shall be determined on a case-by-case basis, but in no case shall that period be less than one hour.

(viii) Fixtures, potable and reclaimed, shall be tested and inspected for flow. Flow from any potable water system outlet shall indicate a cross-connection. No flow from a nonpotable reuse water outlet would indicate that it is connected to the potable water system.

(ix) The drain on the potable water system shall be checked for flow during the test and at the end of the period.

(x) If there is no flow detected in any of the fixtures that would have indicated a cross-connection, the potable water system shall be repressurized.

**1620.2.3 Cross-Connection Discovered.** The following procedure, in the presence of the Authority Having Jurisdiction, shall be activated immediately:

(i) Nonpotable reuse water piping to the building shall be shut down at the meter, and the nonpotable reuse water riser shall be drained.

(ii) Potable water piping to the building shall be shut down at the meter.

(iii) The cross-connection shall be uncovered and disconnected.

(iv) The building shall be retested following procedures listed in subsections (B)(1) and (2) above.

(v) The potable water system shall be chlorinated with fifty ppm chlorine for twenty-four hours.

(vi) The potable water system shall be flushed after twenty-four hours, and a standard bacteriological test shall be performed. If test results are acceptable, the potable water system shall be permitted to be recharged.

**1620.3** An annual inspection of the nonpotable reuse water system, following the procedures listed in subsection 1620.0 (B)(1), shall be required. Annual cross-connection testing, following the procedures listed in subsection 1620.0 (B)(2), shall be required by the Authority Having Jurisdiction, unless

site conditions do not require it. In no event shall the test occur less often than once in four years. Alternate testing requirements shall be permitted by the Authority Having Jurisdiction.

**1621.0 Sizing.** Nonpotable reuse water piping shall be sized as outlined in this code for sizing potable water piping.

**1622.0 Abandonment of Nonpotable Reuse Water Systems.** Where nonpotable reuse water systems are abandoned, the procedure for abandonment shall be as required by the Authority Having Jurisdiction. Components of the abandoned system, including, but not limited to, pipe, tubing, fittings and valves shall not be used for potable water systems.

### **Part III**

**1623.0 Rainwater Harvesting Systems - General.** All components of the system not specifically addressed by the provisions of Part III of this chapter shall meet all applicable sections of this code, and any applicable manufacturer's installation instructions.

Engineered systems shall be installed per plans and specifications of the engineer of record.

**1624.0 Scope.** Applications for rainwater harvesting are unique for each application. For this reason, each rainwater harvesting system proposed for use must be engineered and site-specific and are subject to the approval of the Authority Having Jurisdiction. The requirement for the system to be engineered may be waived by the Authority Having Jurisdiction.

**1624.1 Water Uses.** Harvested rainwater uses may include water closets, urinals, hose bibbs, industrial applications, and irrigation purposes. Other uses may be allowed when first approved by the Authority Having Jurisdiction.

**1625.0 Definitions.** In addition to other definitions used in the Uniform Plumbing Code, the following definitions apply to rainwater harvesting systems.

**1625.1 Auxiliary Supply.** The piping arranged and protected from contamination to provide an alternate means of filling a cistern.

**1625.2 Cistern.** The central storage component of the rainwater harvesting system. Protection and maintenance of the cistern is essential for the health of the system.

**1625.3 Debris Excluder.** A screen or other device installed on the gutter or downspout system to prevent the accumulation of leaves, needles, or other debris in the system.

**1625.4 Flat.** Having a slope no greater than 1 in 50.

**1625.5 Piping System.** The system of pipes that conveys the harvested rainwater and distributes it to various fixtures.

**1625.6 Prefiltration.** A device to mechanically remove sediment and debris.

**1625.7 Pump or Pressure System.** The mechanical device necessary to distribute the harvested rainwater from the cistern to the designated fixtures.

**1625.8 Rainwater Harvesting System (RWS).** A cistern(s), pipe, fittings, pumps and other plumbing appurtenances required for and/or used to harvest and distribute rainwater.

**1625.9 Return Elbow.** A section of pipe with a 180-degree bend.

**1625.10 Roof Drainage System.** The roof drains, overflow drains, scuppers, gutters and downspouts used to convey the rainwater from the roof surface to the system.

**1625.11 Roof Surface.** The surface rainwater harvesting systems rely on for the collection of rainwater that has fallen on a building roof.

**1625.12 Roof Wash or Roof Washer.** A device or method for removal of sediment and debris from collected roof water by diverting initial rainfall from entry into the cistern(s).

**1625.13 Screen.** Corrosion resistant wire or other approved mesh having openings in determined sizes.

**1625.14 Slope or Sloping.** Having a slope greater than 1 in 50.

**1625.15 Transfer Pump.** The mechanical device to transfer collected water from downspouts to remote cistern(s).

**1626.0 Permit.** It shall be unlawful for any person to construct, install, alter, or cause to be constructed, installed, or altered any rainwater harvesting system within a building or on a premises without first obtaining a permit to do such work from the Authority Having Jurisdiction.

In addition to the permits required by this Code, the following additional permits may be required for the installation of a rainwater harvesting system: An electrical permit for the pump or other electrical controls; a building permit for cistern footings, foundations, enclosures and roof structures; a grading permit may be necessary for underground tanks. In addition, contact your regional office of the department of ecology.

**1626.1 Application.** The following information must be provided with each permit application for a rainwater harvesting system:

1. Site or plot plan, including site elevations.
2. A diagram of the rainwater harvesting system (including piping and equipment) and domestic potable water systems, including sizing and dimensions.
3. Specifications and manufacturer's installation instructions for cistern(s), pump(s), filtration and/or disinfection, and roof washing or pre-filtration system(s).

4. Engineering. Installation, including, but not limited to, the following systems, will require structural engineering: Cisterns that are located on top of a building structure or cisterns that are located on sloping sites.

Information in addition to that listed above may be necessary in some instances. The size and complexity of the building, site and system will determine the necessity for additional information.

**1627.0 General Provisions.** A rainwater harvesting system begins at the point of collection and terminates as waste after the water collected has been used in plumbing fixtures, industrial applications, or used for irrigation purposes. The parts



of the collection and distribution system include the roof surface, gutters and downspouts, roof washer, cistern, pump and the piping system.

**1627.1 Collection System.** Rainwater shall only be harvested from roof surfaces. Harvest shall not occur from the following locations:

1. Any vehicular or pedestrian area;
2. Surface water runoff; or
3. Bodies of standing water.

**1627.2 Collection Pretreatment.** Rainwater harvested from roof surfaces shall be pretreated by either a roof washing system or other filtration system of no more than 50 microns. The quantity of the first flush generated by the rainwater harvesting system during any rain event shall be calculated as the first 0.02 inch of rainfall per 24-hour period per square foot of roof area and shall be diverted away from the cistern. Discharge of any diverted water shall go to a location approved by the Administrative Authority.

EXCEPTIONS:

1. A first flush is not required where a post storage filtration or treatment system is installed and approved by the Administrative Authority.
2. A first flush is not required for systems used exclusively for irrigation purposes.

#### **1628.0 System Components.**

**1628.1 Roof Surface.** The roof surface may be constructed of any material accepted by the Administrative Authority.

EXCEPTION: Copper, zinc or lead roofing materials shall not be used.

**1628.2 Roof Drainage System.** Gutters and downspouts used to collect rainwater shall comply with the following:

1. Gutters and downspouts may be manufactured of any material. Gutter and downspout materials are not required to meet material specifications found in the Uniform Plumbing Code.

EXCEPTION: Copper or zinc gutters and downspouts shall not be used. If existing gutters and downspouts are already in place, the interior shall be coated with a NSF-quality epoxy paint.

2. Gutter and downspout systems leading to the cistern shall be fitted with debris excluders.

**1628.3 Roof Washers and Prefiltration.** All rainwater harvesting systems using impervious roof surfaces shall have at least one roof washer per downspout or prefiltration system. A roof washer or prefiltration system is not required for pervious roof surfaces such as green roofs. Roof washers and prefiltration systems shall meet the following design requirements.

**1628.3.1** All collected rainwater shall pass through a roof washer or prefiltration system before the water enters the cistern(s).

**1628.3.2** If more than one cistern is used, a roof washer or prefiltration system shall be provided for each cistern.

EXCEPTION: Where a series of cisterns are interconnected to supply water to a single system.

**1628.3.3** The following requirements apply to all roof washers.

**1628.3.3.1** The inlet to the roof washer shall be provided with a debris screen that protects the roof washer from the intrusion of waste and vermin.

**1628.3.3.2** The roof washer shall rely on manually operated valves or other devices to do the diversion.

**1628.3.3.8** Roof washers shall be readily accessible for regular maintenance.

**1628.3.4** Prefiltration screens or filters shall be maintained consistent with manufacturer's specifications.

**1628.4 Cisterns.** The following are the minimum requirements for cisterns.

#### **1628.4.1 General.**

**1628.4.1.1** All cisterns shall be listed for use with potable water.

**1628.4.1.2** Cisterns shall be capable of being filled from both the rainwater harvesting system and the public or private water system.

**1628.4.1.3** The municipal or on-site well water system shall be protected from cross-contamination in accordance with Section 603.4.5.

**1628.4.1.4** Backflow assemblies shall be maintained and tested in accordance with Section 603.3.3.

**1628.4.1.5** Cisterns may be used as storm water collection points that help to minimize flood damage, while providing a reservoir for later use.

**1628.4.1.6** Cisterns shall have access to allow inspection and cleaning.

**1628.4.2 Size.** Any cistern, or combination of cisterns used, shall be sized adequately for the intended use of the water.

**1628.4.2.1** For above grade cisterns, the ratio of the cistern size shall not be greater than 1:1 height to width, provided that for an engineered tank with an engineered foundation, the height may exceed the width, subject to approval of the Authority Having Jurisdiction. The ratio for below grade cisterns is not limited.

**1628.4.3 Location.** Cisterns may be installed either above or below grade. All cisterns shall be installed in accordance with the manufacturer's installation instructions. Where the installation requires a foundation, the foundation shall be flat and shall be capable of supporting the cistern weight when the cistern is full.

**1628.4.3.1 Below Grade Cisterns.** Below grade cisterns shall be provided with manhole risers a minimum of 8 inches above surrounding grade. Underground cisterns shall have tiedowns per manufacturer's specifications, or the excavated site must have a daylight drain or some other drainage mechanism to prevent floating of the cistern resulting from elevated ground water levels.

**1628.4.4 Protection.** Cisterns shall be protected from sunlight to inhibit algae growth and ensure life expectancy of tank.

**1628.4.5 Inlets, Outlets and Openings.** All cistern openings shall be protected from unintentional entry by humans or vermin. Manhole covers shall be provided and shall be secured to prevent tampering. Where an opening is provided that could allow the entry of personnel, the opening shall be marked, "DANGER - CONFINED SPACE."

Cistern outlets shall be located at least 4 inches above the bottom of the cistern.

**1628.4.6 Overflow.** The cistern shall be equipped with an overflow device.

**1628.4.6.1** The overflow device shall consist of a pipe equal to or greater than the cistern inlet and a minimum of 4 inches below any makeup device from other sources.

**1628.4.6.2** The overflow outlet shall be protected with a screen having openings no greater than 0.25 inches or a self-sealing cover.

**1628.4.6.3** The Authority Having Jurisdiction shall approve the discharge location of the overflow water.

**1628.5 Pump.** Where a pump is provided in conjunction with the rainwater harvesting system, the pump shall meet the following provisions.

**1628.5.1** The pump and all other pump components shall be listed and approved for use with potable water systems.

**1628.5.2** The pump shall be capable of delivering a minimum of 15 psi residual pressure at the highest outlet served. Minimum pump pressure shall allow for friction and other pressure losses. Maximum pressures shall not exceed 80 psi.

#### **1628.6 Piping.**

**1628.6.1** There shall be no direct connection of any rainwater harvesting pipe system and any domestic potable water pipe system.

**1628.6.2 Materials.** Pipe used to convey harvested rainwater shall be identified per Section 601.2 and Table 6-1. Fittings and other system components shall be listed for use in conjunction with specified piping. Both piping and fittings shall be installed as required by applicable code and standards.

**1628.6.2.1** All other products entering into the construction of a rainwater harvesting system shall be listed as required by code for the purpose intended, and suitable for use in a potable water system.

**1628.6.3 Color and Information.** All rainwater pipe shall be marked "CAUTION: NONPOTABLE RAINWATER, DO NOT DRINK" every four feet along its length, but in no case less than once per room. The pipe and lettering shall comply with Section 601.2. Where concealed within construction, the piping shall be labeled on two opposing sides of the pipe within each stud or joist bay.

#### **1629.0 Signs.**

**1629.1 Commercial, Industrial and Institutional Room Entrance Signs.** In commercial, industrial, and institutional occupancies, all rooms using nonpotable reuse water for water closets and/or urinals shall be identified with signs. Each sign shall contain one-half inch (12.7 mm) letters of a

highly visible color on a contrasting background. The location of the sign(s) shall be such that the sign(s) shall be visible to all users. The number and location of the signs shall be approved by the Authority Having Jurisdiction and shall contain the following text:

**TO CONSERVE WATER.**  
**THIS BUILDING USES RAINWATER TO FLUSH TOILETS AND URINALS.**

**1629.2 Equipment Room Signs.** Each room containing nonpotable reuse water equipment shall have a sign posted with the following wording in one-inch (25.4 mm) letters of a highly visible color on a contrasting background:

**CAUTION**  
**NONPOTABLE RAINWATER, DO NOT DRINK.**  
**DO NOT CONNECT TO DRINKING WATER SYSTEM.**  
**NOTICE**  
**CONTACT BUILDING MANAGEMENT**  
**BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM.**

This sign shall be posted in a location that is visible to anyone working on or near nonpotable reuse water equipment.

**1629.3** Every water closet or urinal supply, hose bibb or irrigation outlet shall be permanently identified with an indelibly marked placard stating:

**CAUTION**  
**NONPOTABLE RAINWATER, DO NOT DRINK**

#### **1630.0 Inspection and Testing.**

(A) Rainwater harvesting systems shall be inspected and tested as outlined in this code for testing of potable water piping.

(B) An initial inspection and test shall be performed on both the potable and rainwater harvesting systems. The potable and rainwater system shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection.

**1631.0 System Maintenance.** Rainwater harvesting systems shall be maintained in functioning order for the life of the system. It is the property owner's responsibility to maintain the system until the system is abandoned as prescribed in this code.

**1632.0 System Abandonment.** If the owner of a rainwater harvesting system elects to cease use of, or fails to properly maintain such system, they shall abandon the system. To abandon the system one shall:

1. Remove the system entirely; and
2. Replace the rainwater harvesting pipe system with an approved potable water supply pipe system. Where an existing potable pipe system is already in place, fixtures may be reconnected to the existing system.

Rainwater harvesting system abandonment and potable water installations require permit, inspection(s) and approval(s).

AMENDATORY SECTION (Amending WSR 07-03-043, filed 1/11/07, effective 7/1/07)

**WAC 51-57-003 Uniform Plumbing Code Standards.** The ((2006)) 2009 edition of the Uniform Plumbing Code Standards (Appendixes A, B and I), published by the International Association of Plumbing and Mechanical Officials are hereby adopted by reference.

AMENDATORY SECTION (Amending WSR 07-03-043, filed 1/11/07, effective 7/1/07)

**WAC 51-57-008 Implementation.** The Uniform Plumbing Code Standards adopted by chapter 19.27 RCW shall become effective in all counties and cities of this state on July 1, ((2007)) 2010, unless local government residential amendments have been approved by the state building code council.

#### WSR 09-17-144

#### WITHDRAWAL OF PROPOSED RULES GAMBLING COMMISSION

[Filed August 19, 2009, 11:54 a.m.]

We request that this letter be filed to provide notice of the withdrawal of WSR 09-15-072. This filing was inadvertently made supplemental to WSR 09-11-090. It was not the commission's intention to file a supplemental CR-102, as the change filed at their July 2009 meeting did not expand the petitioner's request, in actuality, the amendment filed by the commission reduced the petitioner's request. Because the change was not substantial and did not expand the petitioner's request, we are withdrawing the supplemental filing made under WSR 09-15-072.

The commission took final action on August 14, 2009, and the rule change was adopted under WSR 09-17-015.

Susan Arland  
Rules Coordinator

#### WSR 09-17-145

#### PROPOSED RULES HOME CARE

#### QUALITY AUTHORITY

[Filed August 19, 2009, 11:59 a.m.]

Original Notice.

Expedited rule making—Proposed notice was filed as WSR 09-13-095.

Title of Rule and Other Identifying Information: The home care quality authority is amending WAC 257-10-130 What information may be considered cause for denying an individual provider or prospective individual provider placement in the referral registry?

Hearing Location(s): Home Care Quality Authority Board Room, 4317 6th Avenue S.E., Suite 101, Lacey, WA 98503 (link to HCQA map available from <http://www.hcqa>.

[wa.gov/Contact/contact\\_hcqa.html](http://wa.gov/Contact/contact_hcqa.html), or by calling (360) 493-9350, on September 30, 2009, at 11:00 a.m.

Date of Intended Adoption: Not earlier than October 20, 2009.

Submit Written Comments to: Lisa Livingston, HCQA Rules Coordinator, P.O. Box 40940, Olympia, WA 98504-0940, delivery 4317 6th Avenue S.E., Suite 101, Lacey, WA 98503, e-mail [llivingston@hcqa.wa.gov](mailto:llivingston@hcqa.wa.gov), fax (360) 493-9380, by 5:00 p.m. on September 20, 2009.

Assistance for Persons with Disabilities: Contact Lisa Livingston by September 20, 2009, phone (360) 493-9350.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: To clarify reasons for removing an individual provider or prospective provider from the referral registry and to maintain consistency with other WAC, statute and policies related to fingerprint-based background check requirements for individual providers.

Reasons Supporting Proposal: See above.

Statutory Authority for Adoption: RCW 74.39A.280(3) Authority duties; Title 74 RCW.

Statute Being Implemented: RCW 74.39A.280(3).

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Home care quality authority, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Lisa Livingston, P.O. Box 40940, Olympia, WA 98504-0940, (360) 493-9350; and Enforcement: Rick Hall, P.O. Box 40940, Olympia, WA 98504-0940, (360) 493-9350.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The agency has determined that no new costs will be imposed on small businesses or nonprofit organizations.

A cost-benefit analysis is not required under RCW 34.05.328. Rule[s] are exempt per RCW 34.05.328(5).

December 30, 2008

R. A. Hall

Executive Director

AMENDATORY SECTION (Amending WSR 09-10-005, filed 4/22/09, effective 5/23/09)

**WAC 257-10-130 What information may be considered cause for denying an individual provider or prospective individual provider placement on the referral registry?** An individual provider may be denied placement on the referral registry for the following reasons:

(1) A background check that results in disqualifying crimes based on ((criteria as specified in chapter 43.43 RCW)) appropriate department of social and health services list of crimes and negative actions.

(2) Lack of disclosure on background authorization form.

(3) Inclusion on any state abuse and neglect directory.

(4) Information that a current and valid protective order exists and was issued in the state of Washington barring contact with children, vulnerable adults or persons with disabilities.

(5) A reasonable, good faith belief that an individual provider or prospective individual provider is unable to meet the care needs of consumers.

(6) The background check reveals an offense or pattern of offenses that the executive director determines may put consumers at risk.

(7) Department of social and health services IP contract is denied.