WSR 20-12-042 EXPEDITED RULES DEPARTMENT OF SOCIAL AND HEALTH SERVICES

(Economic Services Administration) [Filed May 27, 2020, 4:09 p.m.]

Title of Rule and Other Identifying Information: The department is proposing to amend WAC 388-436-0060 How much money can I receive from the disaster cash assistance program (DCAP)?

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The community services division (CSD) is proposing to amend WAC 388-436-0060 through the expedited rule-making process for housekeeping purposes. These amendments will correct a typographical error.

Reasons Supporting Proposal: These amendments meet the criteria for expedited adoption as set forth in RCW 34.05.353, specifically subsection (1)(c): "The proposed rules only correct typographical errors, make address or name changes, or clarify language of a rule without changing its effect."

Statutory Authority for Adoption: RCW 74.04.050, 74.04.055.

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: Sarah Garcia, P.O. Box 45470, Olympia, WA 98504, 360-522-2214.

This notice meets the following criteria to use the expedited adoption process for these rules:

Corrects typographical errors, make address or name changes, or clarify language of a rule without changing its effect.

Explanation of the Reason the Agency Believes the Expedited Rule-Making Process is Appropriate: The proposed change is minor and only corrects a typographical error.

NOTICE

THIS RULE IS BEING PROPOSED UNDER AN EXPEDITED RULE-MAKING PROCESS THAT WILL ELIMINATE THE NEED FOR THE AGENCY TO HOLD PUBLIC HEARINGS, PREPARE A SMALL BUSINESS ECONOMIC IMPACT STATEMENT, OR PROVIDE RESPONSES TO THE CRITERIA FOR A SIGNIFICANT LEGISLATIVE RULE. IF YOU OBJECT TO THIS USE OF THE EXPEDITED RULE-MAKING PROCESS, YOU MUST EXPRESS YOUR OBJECTIONS IN WRITING AND THEY MUST BE SENT TO DSHS Rules Coordinator, Department of Social and Health Services, P.O. Box 45850, Olympia, WA 98504, phone 360-664-6097, fax 360-664-6185, email DSHSRPAURulesCoordinator@dshs.wa.gov, AND RECEIVED BY 5:00 p.m., August 3, 2020.

May 27, 2020 Katherine I. Vasquez Rules Coordinator AMENDATORY SECTION (Amending WSR 08-18-008, filed 8/22/08, effective 9/22/08)

WAC 388-436-0060 How much money can I receive from the disaster cash assistance program (DCAP)? The amount of money you can get from DCAP depends on your available resources, income and household size as determined below:

- (1) Available resources and income are determined by using WAC 388-436-0035. Excluded resources and income is in WAC 388-436-0040.
- (2) We determine your income based on gross anticipated income for the month of application.
- (3) The maximum amount of money you can receive depends on the size of your household as determined by WAC ((388-456-0050(2))) 388-436-0050(2).
- (4) Your household consists of anyone living with you who you have financial responsibility for or with whom you share financial responsibility for the household such as:
 - (a) Your spouse;
 - (b) Domestic partner; or
 - (c) Your children or step-children.
- (5) How much DCAP you may receive is determined according to calculations described in WAC 388-436-0050 (3).

WSR 20-12-092 EXPEDITED RULES DEPARTMENT OF LABOR AND INDUSTRIES

[Filed June 2, 2020, 11:36 a.m.]

Title of Rule and Other Identifying Information: Plumbing, chapter 296-400A WAC, Plumber certification rules.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: This rule making addresses the 2020 plumber law (chapter 153, Laws of 2020, SB 6170) addresses following:

- Creating a residential service plumbing certificate.
- Modifying the acceptable supervisory ratios of plumber trainees to certified plumbers and authorizes remote supervision in certain circumstances.
- Increasing the number of members on the advisory board of plumbers.
- Adjusting fees related to journey level and specialty plumber certification.

Reasons Supporting Proposal: This rule is the result of the entire industry working together for several years. It addresses issues in the plumbing industry that have not been updated for thirty-five years. There is a current shortage of service plumbers due to high training hour requirements, workforce aging, and an increasing need for that work. This creates a vacuum where the industry is flooded with untrained and uncertified people working in homes. The rule maintains the House Bill Report - 5 - SB 6170 integrity of the existing law while ensuring that qualified workers are put in people's homes. The definition of plumbing is limited to work within a building and the rule is limited to work that certified

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plumbers do. The industry is prepared to handle any added costs through options such as fees.

Statutory Authority for Adoption: Chapter 153, Laws of 2020, SB 6170.

Statute Being Implemented: Chapter 153, Laws of 2020, SB 6170.

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

Name of Proponent: Labor and industries (L&I), governmental.

Name of Agency Personnel Responsible for Drafting, Implementation, and Enforcement: Dean Simpson, Tumwater, Washington, 360-902-5571.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: This rule creates a new license type and new categories for plumber registrations. This rule also increases penalty amounts L&I can assess for infractions committed under RCW 18.106.020.

This notice meets the following criteria to use the expedited adoption process for these rules:

Content is explicitly and specifically dictated by statute. Explanation of the Reason the Agency Believes the Expedited Rule-Making Process is Appropriate: The proposed rule does not have material or substantive difference from state rule and will be adopted without a change to technical meaning or effect [to] the state requirements.

NOTICE

THIS RULE IS BEING PROPOSED UNDER AN EXPEDITED RULE-MAKING PROCESS THAT WILL ELIMINATE THE NEED FOR THE AGENCY TO HOLD PUBLIC HEARINGS, PREPARE A SMALL BUSINESS ECONOMIC IMPACT STATEMENT, OR PROVIDE RESPONSES TO THE CRITERIA FOR A SIGNIFICANT LEGISLATIVE RULE. IF YOU OBJECT TO THIS USE OF THE EXPEDITED RULE-MAKING PROCESS, YOU MUST EXPRESS YOUR OBJECTIONS IN WRITING AND THEY MUST BE SENT TO Beverly Clark, Labor & Industries (L&I), P.O. Box 44470, Olympia, WA 98504-4470, phone 360-902-6272, fax 360-902-5292, email Beverly.Clark@Lni.wa.gov, AND RECEIVED BY August 3. 2020.

June 2, 2020 Joel Sacks Director

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

WAC 296-400A-005 What definitions do I need to know to understand these rules? Unless a different meaning is clearly required by the context, the following terms and definitions are important:

"Advisory board" is the state advisory board of plumbers.

"Assist" means a friend, neighbor, or other person (including a certified plumber) may assist a householder, at his or her residence, in the performance of plumbing work on the condition that the householder is present when the work is

performed and the person assisting the householder does not accept money or other forms of compensation for the volunteer work. For the purposes of this subsection, a residence is a single-family residence.

"Audit" means an assessment, evaluation, examination or investigation of, contractor's accounts, books and records for the purpose of verifying the contractor's compliance with RCW 18.106.320.

"Backflow assembly" or "backflow prevention assembly" or "backflow preventer" is a device as described in the *Uniform Plumbing Code* used to prevent the undesired reversal of flow of water or other substances through a cross-connection into the public water system or consumer's potable water system.

"Backflow assembly tester" is an individual certified by the department of health to perform tests to backflow assemblies.

"Calendar day" means each day of the week, including weekends and holidays.

"Continuing education" is approved plumbing and electrical courses for journey level, domestic pump specialty plumbers, and residential specialty plumbers, to meet the requirements to maintain their plumbing certification and for trainees or individuals to become certified plumbers in Washington.

"Continuing education course provider" is an entity approved by the department, in consultation with the state advisory board of plumbers, to provide continuing education training for journey level, domestic pump specialty plumbers, residential specialty plumbers, and trainees. All training course providers must comply with the requirements in WAC 296-400A-028.

"Continuity affidavit" is a form developed by the department that is used to verify whether medical gas pipe installation work (brazing process) has been performed biannually. This form is provided to the department at the time of renewal by the person holding the medical gas piping installer endorsement and requires the notarized signature of the employer of the medical gas piping installer or another qualified verifier as determined by the department. Continuity is a visual examination by the employer of the brazing that was performed. The medical gas installer must also review the current medical gas code and sign the affidavit stating that they have done so.

"Contractor" means any person, corporate or otherwise, who engages in, or offers or advertises to engage in, any work covered by the provisions of chapter 18.106 RCW by way of trade or business, or any person, corporate or otherwise, who employs anyone, or offers or advertises to employ anyone, to engage in any work covered by the provisions of chapter 18.106 RCW and is registered as a contractor under chapter 18.27 RCW.

"Control" means that the journey level plumber, specialty plumber, or temporary permit plumber is physically on-site at the start of each day and each and every job site to diagnose, direct, and lay out the plumbing work the trainee is to perform.

"Course of study" means classroom training and practical work experience in the plumbing industry as defined in WAC 296-400A-100.

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- "Department" is the department of labor and industries.
- "Director" is the director of the department of labor and industries or designee.
- "Dispatcher" means the contractor's employee who authorized the work assignment of the person employed in violation of chapter 18.106 RCW.
- "Journey level plumber" is anyone who has learned the commercial plumbing trade and has been issued a journey level certificate of competency by the department. A journey level plumber may work on plumbing projects including residential, commercial and industrial worksite locations.
- "Medical gas piping installer" is anyone who has been issued a medical gas piping installer endorsement of competency by the department.
- "Medical gas piping systems" are piping systems that convey or involve oxygen, nitrous oxide, high pressure nitrogen, medical compressed air, ((or)) and other medical gas or equipment including, but not limited to, medical vacuum systems.
- "Multiunit" is a multi-single family residence contained in a building or group of buildings that do not exceed three stories on any portion of the building.
- "Plumbing" is that craft involved in installing, altering, repairing and renovating potable water systems, liquid waste systems and medical gas piping systems in the footprint of a building. Potable water systems, liquid waste systems, and medical gas piping systems are defined by the current *Uniform Plumbing Code* (UPC) and amendments adopted by the state building code council. All piping, fixtures, pumps and plumbing appurtenances that are used for rain water catchment and a reclaimed water system are included in the definition of liquid waste systems. ((The installation of water softening or water treatment equipment into a water system is not considered plumbing.))
- "Records" include, but are not limited to, all bids, invoices, billing receipts, time cards and payroll records that show the work was performed, advertised, or bid.
- "Residential service" is limited to performing residential service in single-family dwellings and duplexes and can only repair or replace previously existing fixtures, piping, and fittings that are outside the interior wall or above the floor
- "Specialty plumber" is anyone who has been issued a specialty plumbers certificate of competency by the department limited to:
- (a) Installation, maintenance and repair of plumbing for single-family dwellings, duplexes and apartment buildings which do not exceed three stories;
- (b) Maintenance and repair of backflow assemblies located within a residential or commercial building or structure. For the purposes of this subsection, "maintenance and repair" includes cleaning and replacing internal parts of an assembly, but does not include installing or replacing backflow assemblies.
- (c) "Domestic pump specialty" means the installation, maintenance, and repair of a domestic water pumping system consisting of the pressurization, treatment, and filtration components of a domestic water system consisting of: One or more pumps; pressure, storage, and other tanks; filtration and treatment equipment; if appropriate, a pitless adapter; along

- with valves, transducers, and other plumbing components that:
- (i) Are used to acquire, treat, store, or move water suitable for either drinking or other domestic purposes, including irrigation, to:
- (A) A single-family dwelling, duplex, or other similar place of residence;
- (B) A public water system, as defined in RCW 70.119.020 and as limited under RCW 70.119.040; or
- (C) A farm owned and operated by a person whose primary residence is located within thirty miles of any part of the farm;
- (ii) Are located within the interior space including, but not limited to, an attic, basement, crawl space, or garage, of a residential structure, which space is separated from the living area of the residence by a lockable entrance and fixed walls, ceiling, or floor;
- (iii) If located within the interior space of a residential structure, are connected to a plumbing distribution system supplied and installed into the interior space by either:
- (A) A person who, pursuant to RCW 18.106.070 or 18.106.090, possesses a valid temporary permit or certificate of competency as a journey level plumber, specialty plumber, or trainee, as defined in this chapter; or
- (B) A person exempt from the requirement to obtain a certified plumber to do such plumbing work under RCW 18.106.150.

For the purposes of the domestic pump specialty, residential structure includes any improvement to real property where that property is primarily used as a residence.

"Story" is defined by the current building codes and amendments adopted by the state building code council which includes basements or garages.

"Supervision" for the purpose of these rules means within sight and sound. Supervision requirements are met when the supervising plumber is on the premises and within sight and sound of the individual who is being trained. "Exception" for remote service trainee supervision available via mobile phone or a similar device on residential structure and meeting all other requirements under RCW 18.106.070 and the requirements for service plumbing under RCW 18.106.010.

"Trainee plumber" is anyone who has been issued a trainee certificate and is learning or being trained in the plumbing trade with direct supervision of either a journey level plumber or specialty plumber working in their specialty.

"Training course provider" is an entity approved by the department, in consultation with the state advisory board of plumbers, to provide medical gas piping installer training. All training course providers must comply with the requirements in WAC 296-400A-026.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

WAC 296-400A-010 Plumbing certificate types and scope of work. (1) Journey level plumber (PL01): A journey level plumber may work on all phases of plumbing projects including residential, commercial and industrial worksite locations.

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- (2) **Residential specialty plumber (PL02):** Installation, maintenance and repair of all phases of plumbing for single-family dwellings, duplexes and apartment buildings which do not exceed three stories.
- (3) "Residential service" is limited to performing residential service in single-family dwellings and duplexes and can only repair or replace previously existing fixtures, piping, and fittings that are outside the interior wall or above the floor. Does not include like-in-kind replacement of household appliances or other small utilization equipment that requires limited electric power and limited waste and/or water connections.
- (4) Backflow specialty plumber (PL30): Maintenance and repair of backflow assemblies located within a residential or commercial building or structure. For the purposes of this subsection, "maintenance and repair" includes cleaning and replacing internal parts of an assembly, but does not include installing or replacing backflow assemblies. A plumber trainee must have a PT31 certificate in order to work as a backflow specialty plumber under the supervision of a certified backflow specialty plumber, certified residential specialty plumber or certified journey level plumber. PT31 trainee requires one hundred percent supervision.
- (((4))) (5) Pump and irrigation specialty plumber (PL03): Installation, maintenance and repair of equipment that is used to acquire, treat, store, or move water suitable for either drinking or other domestic purposes, including irrigation or to a domestic water pumping system consisting of the pressurization, treatment, and filtration components of a domestic water system consisting of: One or more pumps; pressure, storage, and other tanks; filtration and treatment equipment. For the purposes of this subsection, if located within the interior space of a residential structure as stated in RCW 18.106.010 (((10))) (14)(c), only the equipment and piping defined by RCW 18.106.010 (((10))) (14)(c) are included in this specialty and other parts of the system must be worked on by the appropriate certification.
- (((5))) (6) Limited volume domestic pump specialty plumber (PL03A): Installation, maintenance and repair of equipment that is used to acquire, treat, store, or move water suitable for either drinking or other domestic purposes on pumping systems not exceeding one hundred gallons per minute. A domestic water pumping system consisting of the pressurization, treatment, and filtration components of a domestic water system consisting of: One or more pumps; pressure, storage, and other tanks; filtration and treatment equipment. For the purposes of this subsection, if located within the interior space of a residential structure as stated in RCW 18.106.010 (((10))) (14)(c), only the equipment and piping to stated equipment in this locked room can be worked on by this certification; other parts of the system must be worked on by the appropriate certification.
- (((6))) (7) **Plumber trainee (PT00 and PT31):** Is an individual learning the trade or craft of plumbing. Trainees are required to have and maintain a valid plumber's training certificate. Trainees will be accredited for those hours worked within the scope of their supervising plumber. Any plumber trainee may perform plumbing work within the scope of their supervising journey level or specialty plumber.

A trainee must keep a record of the hours worked as a trainee as required by WAC 296-400A-120(3).

((((7))) (<u>8</u>) Certified journey level electricians, certified residential specialty electricians, or electrical trainees (EL01 and EL02): According to RCW 18.106.150 (2)(b), a current plumbing certificate of competency or plumber trainee card is not required for: Certified journey level electricians, certified residential specialty electricians, or electrical trainees working for a general or residential specialty electrical contractor (EC01 or EC02) and performing exempt work under RCW 18.27.090(18). A plumber trainee must have an electrical trainee (ET00) certificate in order to work with a journey level electrician or residential specialty electrician.

The plumbing work must be directly and immediately appropriate to the like-in-kind replacement of a household fixture or its component(s) that requires limited power and waste/water connections.

An example would be replacing the heating element (a component) of an electric hot water heater. An electrician performing a like-in-kind replacement of an electric hot water tank could only disconnect and then reconnect the water supply lines to the tank and drain line from the temperature and pressure relief valve. Gas hot water tanks are not part of the electrician's exemption.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

WAC 296-400A-020 How do I obtain a certificate of competency? You can obtain a certificate of competency by completing the following requirements for:

- (1) Journey level, residential, residential service, and domestic pump specialty plumber certificate:
- (a) Submitting a competency examination application to the department;
- (b) Paying the examination fee shown in WAC 296-400A-045(1);
- (c) Submitting the required evidence of competency and experience to the department as required under WAC 296-400A-120 and 296-400A-121;
- (d) Providing documentation to the department with continuing education requirements;
 - (e) Passing the competency examination;
- (f) In lieu of (a), (b), and (c) of this subsection and with the approval of the advisory board, the department may accept the successful passage of an examination administered by a nationally recognized testing entity;
- (g) For domestic pump specialty plumbers, in lieu of (a), (b), and (c) of this subsection and with the approval of the advisory board, the department may accept a certification issued by professional trade association; and
- (h) Paying the certification issuance fee within ninety days of notification of passing the written examination. Failure to pay within ninety days will require reexamination.
- (2) Backflow assembly maintenance and repair specialty certificate:
- (a) Submitting a competency examination application to the department;

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- (b) Submitting evidence of a current backflow assembly tester certification issued by the department of health;
- (c) Paying the application and certificate fee shown in WAC 296-400A-045(1);
 - (d) Passing the competency examination; and
- (e) Paying the certification issuance fee within ninety days of notification of passing the written examination. Failure to pay within ninety days will require reexamination.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

- WAC 296-400A-022 What procedure is required for renewal of a journey level medical gas endorsement? (1) Maintain an active Washington state journey level certification.
- (2) Submit affidavit of continuity verifying that brazing has been performed every six months during the renewal cycle.
- (3) Submit affidavit of review of current medical gas code adopted by the Washington state building code council.
- (4) Pay the appropriate fee: If renewal occurs before expiration of current endorsement, the renewal fee shown in WAC 296-400A-045; if renewal occurs within ninety days of expiration of current endorsement, you must pay a double renewal fee; if the current endorsement has been expired for ninety-one days or more, you must take an examination relating to medical gas installation administered by the department and pay the examination application fee shown in WAC 296-400A-045. Medical gas endorsement is renewed every ((two)) three years.
- (5) Contractors must accurately verify and attest to brazing performed by the journey level by sending an affidavit of continuity to the department or in lieu of the biannual braze requirement from the contractor, a performed brazed coupon test documenting that the coupon was certified as passing from a department approved medical gas training course provider would be accepted.
- (6) If affidavit of continuity and/or affidavit of review are not received within ninety days of expiration, the applicant will be required to retake the examination and pay the appropriate fees prior to being placed in active status.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

- WAC 296-400A-023 What process is required for renewal of plumber certificates of competency? (1) An individual must apply for renewal of their plumbing certificate before the expiration date of the certificate. The individual may not apply for renewal more than ninety days prior to the expiration date. ((Journey level residential specialty and backflow specialty plumber certificates are renewed every two years. Domestic pump specialty)) Plumber certificates are renewed every three years.
- (2) An individual may renew their certificate within ninety days after the expiration date without reexamination if the individual pays the doubled renewal fee referenced in RCW 18.106.070.
- (3) All applications for renewal received more than ninety days after the expiration date of the plumbing certifi-

cate require that the plumber pass the appropriate competency examination before being recertified.

- (4) All applicants for plumbing certificate renewal must:
- (a) Submit a complete renewal application;
- (b) Pay all appropriate fees; and
- (c) Provide accurate evidence that the individual has completed the continuing education requirements described in WAC 296-400A-028 (excluding backflow specialty).

If an individual files inaccurate or false evidence of continuing education information when renewing a plumbing certificate, the individual's plumbing certificate may be suspended or revoked.

- (5) A journey level, domestic pump specialty, ((er)) residential specialty, or residential service plumber certificate holder who has not completed the required hours of continuing education on or before the renewal date must pay a doubled fee according to RCW 18.106.070. Also, if the required hours of continuing education are not completed within ninety days after the expiration date the applicant will be required to retake the examination and pay the appropriate fees prior to being placed in active status.
- (6) Backflow specialty plumber certificate holders must submit evidence of an active backflow assembly tester certification issued by the department of health within ninety days of their expiration date. If the backflow assembly tester evidence is not submitted within ninety days after the expiration date, the applicant will be required to retake the examination and pay the appropriate fees prior to being placed in active status.
- (7) An individual may renew a suspended plumbing certificate by submitting a complete renewal application including obtaining and submitting the continuing education required for renewal. However, the certificate will remain in a suspended status for the duration of the suspension period.
- (8) An individual may not renew a revoked plumbing certificate.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

WAC 296-400A-028 What are the requirements for continuing education and classroom training?

What are the general and continuing education course requirements for journey level, residential specialty plumbers, domestic pump specialty plumbers, and plumber trainees?

- (1) Journey level, residential specialty plumber, <u>residential service</u>, domestic pump specialty plumber, and plumber trainee.
- (a) To be eligible for renewal of a journey level ((plumber or)), residential specialty, or residential service plumber certificate, the individual must have completed at least ((sixteen)) twenty-four hours of approved continuing education for each ((two)) three years of the prior certification period. Individuals will be required in the prior ((two)) three-year period to have completed a minimum of ((eight)) twelve hours of plumbing code and a minimum of four hours of electrical trade related classes from the currently adopted Washington state plumbing and electrical codes. The remain-

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ing ((four)) eight hours may be plumbing or electrical trade related classes.

- (b) Domestic pump specialty plumbers must renew their domestic pump specialty certificate once every three years, on or before the individual's birthday. Individuals will be required to complete twenty-four hours of approved continuing education. The continuing education may comprise both electrical and plumbing education with a minimum of twelve of the required twenty-four hours of continuing education in plumbing for each three-year renewal cycle.
- (c) Plumber trainees must complete at least eight hours per year of training from an approved continuing education course for each year of the prior certification period. Trainees will be required during a two-year period to complete at least eight hours of plumbing code and at least four hours of electrical trade related classes from the currently adopted Washington state plumbing and electrical codes. The remaining four hours may be plumbing or electrical trade related classes.
- (d) Any portion of a year of a prior plumber certification period is equal to one year for the purposes of the required continuing education.
- (2) An individual will not be given credit for the same approved continuing education course taken more than once in their renewal cycle. No credit will be granted for any course not approved by the department.
- (3) Continuing education requirements do not apply to backflow specialty plumbers under chapter 18.106 RCW and this chapter.

Approval process - Continuing education course.

- (4) The advisory board of plumbers or plumbing board subcommittee will review each continuing education course. The advisory board of plumbers or plumbing board subcommittee will recommend approval or disapproval to the department. The department will either approve or disapprove the course.
- (5) To be considered for approval, a continuing education course must consist of not less than two hours of instruction and must be open to monitoring by a representative of the department and/or the plumbing board at no charge. If the department determines that the continuing education course does not meet or exceed the minimum requirements for approval, the department may revoke the course approval or reduce the number of credited hours.
 - (6) Approved courses must be based on:
- (a) Currently adopted edition of the *Uniform Plumbing Code* with amendments as adopted by the state building code council and currently adopted *National Electrical Code*;
- (b) Chapters 18.106 or 19.28 RCW or chapters 296-400A or 296-46B WAC; or
- (c) Materials and methods as they pertain to the industrial practices of plumbing or electrical construction, building management systems, plumbing or electrical maintenance, or workplace health and safety.
- (7) Code-update courses must be based on the currently adopted *Uniform Plumbing Code* with amendments as adopted by the state building code council or currently adopted *National Electrical Code*.

- (a) Correspondence and online courses in the plumbing code or industry related plumbing category require thirty-five questions per hour of credit. Exams and answers required with course application.
- (b) Correspondence and online courses in the industry related electrical category require twenty-five questions per hour of credit. Exams and answers required with course application.
- (c) Classroom training requires one hour of instruction for each hour of credit.
- (d) Course outline must support the number of hours requested.

Application - For continuing education course approval.

- (8) All applications for course approval must be on forms provided by the department. The plumbing board and the department will only consider the written information submitted with the application when considering approval of the continuing education training course.
- (9) The department will provide continuing education application forms to sponsors upon request. The course sponsor must submit an original completed application for course approval and three copies (unless submitted electronically using department prescribed technology) to the department. The department must receive the complete course application from the sponsor in writing at least forty-five days before the first class requested for approval is offered.
- (10) A complete application for course approval must include:
 - (a) The appropriate course application fee;
- (b) Course title, number of classroom instruction hours, and whether the training is open to the public;
- (c) Sponsor's name, address, contact's name and phone number;
- (d) Course outline (general description of the training, including specific *Uniform Plumbing Code* or currently adopted *National Electrical Code* articles referenced);
 - (e) Lists of resources (texts, references, visual aids);
- (f) Names and qualifications of instructors. Course instructors must show prior instructor qualification and experience similar to that required by the work force training and education coordinating board under chapter 28C.10 RCW;
 - (g) Any additional documentation to be considered; and
- (h) A sample copy of the completion certificate issued to the course participants.
- (11) The course sponsor seeking approval of a continuing education course will be notified of the subcommittee's decision within five days of the completed review of the application.
- (12) If the application is not approved, the rejection notice will include an explanation of the reason(s) for rejection. If the course sponsor disagrees with the subcommittee's decision, the course sponsor may request a reconsideration hearing by the full plumbing board. A request to appeal course rejection must be received by the department forty-five days before a regularly scheduled board meeting. The course sponsor must submit, to the department, any additional information to be considered during the hearing, in writing, at least thirty days before the board hearing. The

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course sponsor must provide at least twenty copies of any written information to be submitted to the board.

Offering - Continuing education course.

- (13) The course sponsor may offer an approved course for up to three years without additional approval. However, if the course is classified as code-update or code-related and a new edition of the *Uniform Plumbing Code* or *National Electrical Code* is adopted within the course approval period, the course approval will be considered automatically revoked and the course sponsor must submit a new application for review by the department and approval by the plumbing board subcommittee. On new code cycle years new code courses can be approved and taught three months prior to the formal adoption date.
- (14) A continuing education course attended or completed by an individual before final approval by the plumbing board subcommittee cannot be used to meet the plumbing certificate renewal requirements.

Documentation - Washington approved training course attendance/completion.

- (15) The department is not responsible for providing verification of an individual's continuing education history with the course sponsor.
- (16) The course sponsor must provide the department with an accurate and typed course attendance/completion roster for each course given.
- (a) The attendance/completion roster must be provided within thirty days of course completion.
- (b) In addition, the course sponsor may provide the attendance/completion roster in an electronic format provided by the department.
- (c) The attendance/completion roster must show each participant's name, Washington certificate number, course number, location of course, date of completion, and instructor's name. The typed roster must contain the signature of the course sponsor's authorized representative.
- (17) If the course sponsor fails to submit the required attendance/completion rosters within thirty days of the course completion, the department may revoke or suspend the course approval.
- (18) Course sponsors must award a certificate to each participant completing the course from which the participant will be able to obtain:
 - (a) Name of course sponsor;
 - (b) Name of course;
 - (c) Date of course;
 - (d) Course approval number;
 - (e) The number of continuing education units; and
 - (f) The type of continuing education units.
- (19) The department will only use a copy of the sponsor's attendance/completion roster as final evidence that the participant completed the training course.
- (20) The department will keep an electronic copy of submitted rosters of the continuing education courses on file only for audit purposes. The department is not responsible for the original of any completion certificate issued.

Documentation - Out-of-state training course attendance/completion.

- (21) To apply continuing education units earned out-ofstate from course sponsors who do not have state of Washington approved courses, one of the following conditions must be met:
- (a) The individual must request that the course sponsor submit a complete continuing education course application and requirements as described in this section for in-state courses.

Application for course approval will not be considered more than three years after the date of the course.

(b) The department must have entered into a reciprocal agreement with the state providing course approval.

The participant must provide a copy of an accurate and completed award or certificate from the course sponsor identifying the course location, date of completion, participant's name, and Washington certificate number.

The department will only accept a copy of the sponsor's certificate or form as evidence that the participant attended and completed the course.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

WAC 296-400A-029 What is the implementation schedule for the continuing education course requirements?

- Individuals that renew between July 1, ((2005)) 2020, and June 30, ((2006)) 2021, are required to complete ((eight)) sixteen hours of continuing education courses.
- Effective July 1, ((2006)) 2021, all journey level and residential specialty renewals will require ((sixteen)) twenty-four hours of continuing education.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

WAC 296-400A-035 How can I be placed on inactive status? (1) To be placed on inactive status, you must meet these three requirements:

- (a) You must currently be a certified plumber;
- (b) Have your inactive status request submitted and approved by the department prior to the expiration date of your plumbing certificate; and
 - (c) Not be working in the plumbing trade.

Inactive status means that you are not currently working in the plumbing trade and you are not required to pay the certificate renewal fee or required continuing education.

- (2) To be reinstated from inactive status, you must meet these requirements:
- (a) If you have been in inactive status for less than five years, you may return to active status, without reexamination, by paying the reinstatement fee shown in WAC 296-400A-045 and meet continuing education requirements for your certification.
- (i) Journey level and residential specialty plumbers are required to meet a minimum of ((sixteen)) twenty-four hours continuing education with a minimum of ((eight)) twelve hours of plumbing code and a minimum of ((four)) eight

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hours being in electrical training before being reinstated. The remaining four hours can be from any of the approved categories.

- (ii) Domestic pump plumbers are required to complete twenty-four hours, with a minimum of twelve hours of plumbing classes before being reinstated.
- (b) If you have been in inactive status for five or more years, you are required to reapply and pass the competency examination pursuant to WAC 296-400A-020 and pay the appropriate fees shown in WAC 296-400A-045.

(3) Inactive status does not apply to medical gas endorsements.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

WAC 296-400A-045 What fees will I have to pay? The following are the department's plumbers nonrefundable fees: Fees related to journey level and specialty plumber certification:

Type of Fee	Period Covered by Fee	Dollar Amount of Fee
Examination application	Per examination	\$((151.90)) <u>160.85</u>
Domestic pump specialty application fee******	Per application	\$((151.90)) <u>160.85</u>
Reciprocity application*	Per application	\$((151.90)) <u>160.85</u>
Trainee certificate**	One year or when hours are updated	\$((45.20)) <u>47.85</u>
Temporary permit (not applicable for backflow assembly maintenance and repair specialty)	((Four months)) One hundred twenty days	\$((75.40)) <u>79.85</u>
Journey level ((or)), residential specialty, or residential service certificate renewal or 1st card***	((Two)) <u>Three</u> years	\$((121.60)) <u>193.15</u>
Domestic pump specialty plumber certificate renewal or 1st card***	Three years	\$((182.50)) <u>193.25</u>
Backflow assembly maintenance and repair specialty certificate renewal or 1st card***	((Two)) <u>Three</u> years	\$((83.90)) <u>133.25</u>
Medical gas endorsement application	Per application	\$((55.90)) <u>59.20</u>
Medical gas endorsement renewal or 1st card***	((Two)) <u>Three</u> years	\$((83.60)) <u>132.80</u>
Medical gas endorsement examination fee****		See note below.
Medical gas endorsement training course fee*****		See note below.
Domestic pump specialty examination fee****		See note below.
Reinstatement fee for residential and journey level certificates		\$((243.90)) <u>258.30</u>
Reinstatement fee for backflow assembly maintenance and repair specialty certificates		\$((140.30)) <u>148.55</u>
Reinstatement fee for domestic pump		\$((365.20)) <u>386.75</u>
Replacement fee for all certificates		\$((20.50)) <u>21.70</u>
Refund processing fee		\$((32.60)) <u>34.50</u>
Unsupervised trainee endorsement		\$((32.60)) <u>34.50</u>
Inactive status fee		\$((32.60)) <u>34.50</u>
Certified letter fee/verification of licensure		\$((32.60)) <u>34.50</u>
Documents copied from a plumber's file		((2.00)) 2.10 per page maximum copy charge $((30.00))$ 31.75

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Type of Fee

Continuing education new course fee*****

Continuing education renewal course fee*****

Continuing education classes provided by the department

Period Covered by Fee

Dollar Amount of Fee

\$((197.50)) <u>209.15</u>

\$((98.60)) <u>104.40</u>

(12)) <u>12.70</u> per continuing education training hour

(8) 8.45 per continuing education training hour for correspondence and internet courses

- * Reciprocity application is only allowed for applicants that are applying work experience toward certification that was obtained in state(s) with which the department has a reciprocity agreement. The reciprocity application is valid for one year.
- ** The trainee certificate will expire one year from the date of issuance and must be renewed on or before the date of expiration. Trainee update fee required when hours are submitted outside of renewal period.
- *** This fee applies to either the original issuance or a renewal of a certificate. If you have passed the plumbers certificate of competency examination or the medical gas piping installer endorsement examination and paid the certificate fee, you will be issued a plumber certificate of competency or a medical gas endorsement that will expire on your birth date.
 - The two-year renewal of a Medical Gas Piping Installer Endorsement must include a continuity affidavit verifying that brazing work has been performed every six months during the renewal cycle.
- **** This fee is paid directly to a nationally recognized testing agency under contract with the department. It covers the cost of preparing and administering the written competency examination and the materials necessary to conduct the practical competency examination required for the medical gas piping system installers endorsement or the domestic pump or pump and irrigation examination. This fee is not paid to the department.
- ***** This fee is paid directly to a training course provider approved by the department, in consultation with the state advisory board of plumbers. It covers the cost of providing training courses required for the medical gas piping system installer endorsement. This fee is not paid to the department.
- ***** This fee is for a three-year period or code cycle.
- ****** The domestic pump specialty application is valid for one year.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

WAC 296-400A-120 What do I need to know about plumber trainee certificates? General.

(1) Journey level and specialty plumber original trainee certificates:

The department will issue an original trainee certificate when the trainee applicant submits a complete trainee certificate application including:

- (a) Date of birth, mailing address, Social Security number; and
 - (b) All appropriate fees as listed in WAC 296-400A-045.
- (c) If an individual has previously held a plumbing trainee certificate, then that individual is not eligible for a subsequent original trainee certificate.
- (d) All applicants for a plumbing trainee certificate must be at least sixteen years of age and must follow requirements as defined in WAC 296-125-030.
 - (2) Renewal.
- (a) The department issues separate trainee certificates once a year.
- (b) The plumbing trainee may not apply for renewal more than ninety days prior to the expiration date. Plumber trainee certificates are valid for one year.
 - (c) All applicants for trainee certificate of renewal must:
 - (i) Submit a complete renewal application;
 - (ii) Pay all appropriate fees; and
- (iii) Completed the continuing education requirements described in chapter 296-400A WAC. Backflow trainees are exempt from continuing education requirements.

- (d) If an individual files inaccurate or false evidence of continuing education information when renewing a plumbing trainee certificate, the individual's certificate may be suspended or revoked.
- (e) An individual who has not completed the required hours of continuing education can renew a trainee certificate; however, the training certificate will be placed in an inactive status. The inactive training certificate will be returned to active status upon validation by the department of the required continuing education.
- (f) If continuing education hours have not been met, trainee certificates will become expired/inactive and any plumbing work experience obtained by the trainee in expired/inactive status will not be credited.
- (g) An individual may not renew a revoked trainee certificate.
- (h) Apprentices registered in an approved program according to chapter 49.04 RCW who are obtaining class-room training consistent with the continuing education requirements under chapter 18.106 RCW and this chapter, as approved by the department, are deemed to have met the continuing education requirements necessary to renew a trainee certificate. Included under this exemption are active trainees that are not in the formal approved program according to chapter 49.04 RCW but are attending all hours of required classroom training along with the apprentices and meeting the work experience as required under chapter 18.106 RCW and this chapter. The plumber craft training school will be required to supply the department the necessary documentation to prove there was full hourly attendance of these train-

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ees as is required of the apprentices while they attend the classroom training.

- (i) The trainee will not be issued a renewal or reinstated training certificate if the individual owes the department money as a result of an outstanding final judgment.
 - (3) Ratio/supervision.
 - (a) Commercial/residential.
- (i) A certified residential specialty plumber, residential service plumber, or domestic pump specialty plumber working on a commercial job site may work as a journey level trainee only if they have a current trainee certificate on their person while performing commercial plumbing work.
- (ii) On a job site, the ratio of certified plumbers to plumbers trainees must be:
- (A) One residential specialty plumber or journey level working on a residential plumbing job site may supervise no more than ((two)) three trainees. Supervision must be a minimum of seventy-five percent of the time spent on each and every job site.
- (B) One journey level plumber working on a commercial job site may supervise no more than one trainee or one residential specialty plumber who holds a current trainee certificate. Supervision must be a minimum of seventy-five percent of the time spent on each and every job site.
 - (b) Domestic pump.

One appropriate domestic pump specialty plumber or one journey level plumber working on a domestic pump system may supervise no more than ((two)) three trainees. Supervision must be a minimum of seventy-five percent of the time spent on each and every job site.

(c) Medical gas.

A plumber trainee or specialty plumber who has a current trainee certificate with the state of Washington and has successfully completed or is enrolled in an approved medical gas piping installer training course may work on medical gas piping systems. Work may only occur when there is direct supervision by an active Washington state certified journey level plumber with an active medical gas piping installer endorsement issued by the department. Supervision must be one hundred percent of the time spent on each and every job site on a one-to-one ratio.

(d) Backflow.

A backflow specialty plumber, a journey level plumber on a commercial job site, or a residential specialty plumber on a residential job site must supervise one backflow trainee to perform maintenance and repair work on every backflow assembly on potable water systems inside every commercial or residential building. The ratio must be one to one for one hundred percent of the time on each and every job site.

- (4) Affidavits of experience.
- (a) At the time of renewal, the holder must provide the department with an accurate list of the holder's employers in the plumbing construction industry for the previous annual period. The individual must submit a completed, signed, and notarized affidavit(s) of experience. The affidavit of experience must accurately attest to:
- (i) The plumbing installation work performed for each employer the individual worked for in the plumbing trade during the previous period;

- (ii) The correct plumbing category the individual worked in: and
- (iii) The actual number of hours worked in each category, worked under the proper supervision of a Washington certified journey level plumber, certified domestic pump specialty plumber, or residential specialty plumber.
- (b) The trainee should ask each employer and/or apprenticeship-training director for an accurately completed, signed, and notarized affidavit of experience for the previous certification period. The employer(s) or apprenticeship training director(s) must provide the previous period's affidavit of experience to the individual within twenty days of the request.
- (c) If hours for previous period are not submitted within the thirty days after renewing a plumbing training certificate, the individual may not receive credit for these previous period hours.
- (d) Trainee hours will not be credited if the trainee owes outstanding penalties for violations of this chapter.
- (e) Trainee hours will not be credited during periods of time when the trainee card is expired or inactive.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

- WAC 296-400A-121 What do I need to know about trainee experience and plumber examination requirements for the journey level and specialty plumber? (1) You may take the journey level examination after completing 8,000 hours and not less than four years of documented training which must include 4,000 hours of commercial plumbing experience under direct supervision of a certified journey level plumber.
- (2) You may take the residential specialty plumber examination after completing 6,000 hours and not less than three years of documented training under direct supervision of a certified residential specialty or journey level plumber.
- (((2) You may take the journey level examination after completing 8,000 hours and not less than four years of documented training which must include 4,000 hours of commercial plumbing experience under direct supervision of a certified journey level plumber.))
- (3) You may take the residential service plumbing examination after completing 4,000 hours and not less than two years of documented training. The first year and 2,000 hours of supervision must be under direct supervision of a certified journey level or residential specialty plumber. The second year and 2,000 hours of trainee could be under a residential service plumber.
 - (4) For domestic pump specialty plumbers:
- (a) To be eligible for a limited volume domestic pump specialty plumbers examination defined by RCW 18.106.010 (((10))) (14)(c), the trainee must complete 2,000 hours practical experience working under the direct supervision of a certified limited volume domestic pump specialty plumber, a certified unrestricted domestic pump specialty plumber, or a journey level plumber on pumping systems not exceeding one hundred gallons per minute. The experience may be obtained at the same time the individual is meeting the experience required by RCW 19.28.191, or equivalent experience

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may be accepted as determined by rule by the department in consultation with the advisory board. Restricted domestic pump specialty trainees who have completed at least 720 hours of on-the-job training and passed the competency examination required by WAC 296-400A-020 may work unsupervised for the remainder of the time required for work experience to become a restricted domestic pump specialty plumber.

- (b) To be eligible for an unrestricted domestic pump specialty plumbers examination defined by RCW 18.106.010 (((10))) (14)(c), the trainee must complete 4,000 hours but not less than two years, of practical experience working under the direct supervision of a certified unrestricted domestic pump specialty plumber or a journey level plumber on pumping systems. The experience may be obtained at the same time the individual is meeting the experience required by RCW 19.28.191 or equivalent experience may be accepted as determined by rule by the department in consultation with the advisory board.
- (((4))) (5) To be eligible for a backflow assembly maintenance and repair specialty examination, the trainee must furnish written evidence that they have a valid backflow assembly tester certification administered and enforced by the department of health.
- (((5))) (6) Individuals are required to complete 16 hours of continuing education with a minimum of 4 hours of industry related electrical training prior to testing for journey level, domestic pump, or residential specialty plumber certification.
- $((\frac{(6)}{)})$ <u>(7)</u> Effective January 1, 2005, all plumber trainees will be required to meet the current hour requirements to test.
- (((7))) (8) Apprentice/trade school endorsement requirements. An individual who has a current journey level plumber, domestic pump specialty plumber, or residential specialty plumber trainee certificate and who has successfully completed or is currently enrolled in an approved apprenticeship program or in a technical school program in the plumbing construction trade in a school approved by the work force training and education coordinating board, may work without direct on-site supervision during the last six months of meeting the practical experience requirements of this chapter. In order to work without direct on-site supervision applicable to the type (residential or journey level) of training hours for which certification is being sought by the individual, this individual must obtain an apprentice/trade school trainee endorsement by submitting the applicable forms provided by the department and paying the applicable fees. This individual may work without direct on-site supervision until he or she receives the remaining hours required to be eligible to take the applicable examination. This individual may not supervise trainees. (See RCW 18.106.070.)
- (((8))) (9) Any applicant who fails an examination will be required to wait at least until the next scheduled examination date and location and work under the direct supervision of a certified plumber while holding an active trainee card, until they have passed the exam and their certificate of competency has been issued. Examinations are held the first Thursday of every month, unless that date falls on a holiday. Applications must be submitted and received by the plumbing certification program office two weeks before the next scheduled date.

(((9))) (10) Failure to reschedule or appear on the scheduled exam date will result in forfeiture of the examination fee

AMENDATORY SECTION (Amending WSR 10-06-051, filed 2/24/10, effective 4/1/10)

- WAC 296-400A-300 What procedures does the department follow when issuing a notice of infraction? (1) If an authorized representative of the department determines that an individual has violated plumber certification requirements, including medical gas piping installer endorsement requirements, the department must issue a notice of infraction describing the reasons for the infraction.
- (2) For plumber certification violations, the department may issue a notice of infraction to:
- (a) An individual who is plumbing without a current plumber certificate; and
- (b) The employer of the individual who is plumbing without a current plumber certificate; and
- (c) The employer's authorizing agent or foreman that made the work assignment to the individual who is plumbing without a current plumber certificate; and
- (d) An individual for not having their department issued certification card and governmental issued photo identification in their possession on the job site.
- (3) For medical gas piping installer endorsement violations, the department may issue a notice of infraction to:
- (a) An individual who is installing medical gas piping systems without a current plumber certificate and a current medical gas piping installer endorsement; and
- (b) The employer of the individual who is installing medical gas piping systems without a current plumber certificate and a current medical gas piping installer endorsement; and
- (c) The employer's authorizing agent or foreman that made the work assignment to the individual who is installing medical gas piping systems without a current plumber certificate and a current medical gas piping installer endorsement; and
- (d) An individual for not having their department issued certification card and governmental issued photo identification in their possession on the job site.
- (4) The department may issue an infraction to a contractor advertising or performing work under this chapter or chapter 18.27 RCW who is not properly registered under chapter 18.27 RCW.
- (5) An individual may appeal a notice of infraction by complying with the appropriate provisions of RCW 18.106.220.
- (6) If good cause is shown, ((an administrative law judge)) the director may waive, reduce or suspend any monetary penalties resulting from the infraction.
- (7) Any monetary penalties collected under this chapter, must be deposited in the plumbing certificate fund.
- (8) The notice shall be accompanied by a certified check for two hundred dollars. The check shall be returned to the assessed party if the decision of the department is not sustained by the ALJ. If the ALJ sustains the decision of the

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department, the amount of the check shall be applied by the department.

AMENDATORY SECTION (Amending WSR 16-08-100, filed 4/5/16, effective 5/16/16)

WAC 296-400A-400 What are the monetary penalties for violating certification requirements? (1) A person cited for an infraction under chapter 18.106 RCW or this chapter will be assessed a monetary penalty based upon the following schedule:

(a) Individual or dispatcher

First Infraction $$((250.00)) \ \underline{100.00}$$ Second Infraction $$((500.00)) \ \underline{200.00}$$ Third Infraction $$((750.00)) \ \underline{500.00}$$

Fourth ((and each addi ((Not more than)) \$1,000.00

tional)) Infraction

 Fifth Infraction
 \$2,000.00

 Sixth Infraction
 \$4,000.00

Seventh and each addi- Not more than \$5,000.00

tional infraction

(b) Contractor ((or dispatcher))

First Infraction \$((250.00)) 500.00Second Infraction \$((500.00)) 1,000.00

Third ((and each addi- ((Not more than \$1,000.00))

tional)) Infraction \$2,000.00 Fourth Infraction \$4,000.00

Fifth and each additional Not more than \$5,000.00

infraction

- (2) Each day a person is in violation is considered a separate infraction.
- (3) Each job site at which a person is in violation is considered a separate infraction.
- (4) A warning for first-time violation of chapter 18.106 RCW and this chapter may be issued only once to an individual. Second or additional violations must be assessed a monetary penalty based on the escalating schedule; starting with the first infraction penalty amount under individual or dispatcher.

WSR 20-12-097 EXPEDITED RULES DEPARTMENT OF AGRICULTURE

[Filed June 3, 2020, 6:44 a.m.]

Title of Rule and Other Identifying Information: Chapter 16-19 WAC, Custom farm slaughterers, custom slaughtering establishments, and customer meat facilities; chapter 16-125 WAC, Farm milk storage tanks and bulk milk tanker—Requirements; chapter 16-129 WAC, Labeling and advertising of products resembling genuine dairy products; chapter 16-130 WAC, Direct sellers; chapter 16-139 WAC, Penal-

ties; chapter 16-142 WAC, Perishable packaged food goods—Pull dating; chapter 16-144 WAC, Processing frozen desserts; chapter 16-165 WAC, Food inspection; chapter 16-167 WAC, Intrastate commerce in foods; chapter 16-168 WAC, Approved independent sanitation consultants for food storage warehouses; and chapter 16-170 WAC, Special permits for slaughtering poultry;

The department is proposing amendments or readoption of these rules to reflect the restructuring of chapter 69.04 RCW that moved the food related requirements into chapter 15.130 RCW.

The department is also cleaning up and clarifying the language in these chapters to remove references to other repealed statutes and to outdated regulations. In particular, the department is replacing references to 21 C.F.R. Part 110, which is no longer applicable, with references to 21 C.F.R. Part 117, which contains the current federal food safety regulations. The department is also changing the section headers away from the question and answer format.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Effective June 7, 2018, all of the provisions regarding the regulation of food under chapter 69.04 RCW were moved under chapter 15.130 RCW. RCW 15.130.120(7) states that, "Rules the department adopted under the authority of chapter 69.04 RCW remain effective until June 30, 2022, or until the department repeals or amends the rules, whichever is first."

The department is readopting all of the rules that were originally adopted under the authority of chapter 69.04 RCW and replacing all of the references to chapter 69.04 RCW in these rules with references to chapter 15.130 RCW. The department is also proposing to remove or replace any references to statutes, rules or federal regulations that have been repealed or are no longer relevant, including replacement of 21 C.F.R. Part 110 with 21 C.F.R. Part 117.

The department is proposing to change the section titles in several chapters that are in a Q&A format to a statement/phrase format to be consistent throughout the chapters.

Reasons Supporting Proposal: Per RCW 15.130.120(7), all of the rules that were adopted by the department under the authority of chapter 69.04 RCW will only remain effective until June 30, 2022, unless the department repeals or amends the rules before then. Amendment or readoption of rules initially adopted under chapter 69.04 RCW is necessary so that these rules remain in effect. It is also necessary to remove references within the rules to chapter 69.04 RCW and replace them with references to chapter 15.130 RCW.

Replacing references to outdated and repealed statutes, rules and federal regulations is necessary to accurately reflect the current statute authorizing these rules and other regulations that are used to administer these programs.

Statutory Authority for Adoption: RCW 15.130.120, 69.07.020, 69.10.055, 16.49.025.

Statute Being Implemented: Chapters 15.130, 69.07, 69.10, and 16.49 RCW.

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

Name of Proponent: Washington state department of agriculture, governmental.

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Name of Agency Personnel Responsible for Drafting, Implementation, and Enforcement: David Smith, 1111 Washington Street S.E., Olympia, WA 98504, 360-902-1952.

This notice meets the following criteria to use the expedited adoption process for these rules:

Adopts or incorporates by reference without material change federal statutes or regulations, Washington state statutes, rules of other Washington state agencies, shoreline master programs other than those programs governing shorelines of statewide significance, or, as referenced by Washington state law, national consensus codes that generally establish industry standards, if the material adopted or incorporated regulates the same subject matter and conduct as the adopting or incorporating rule.

Corrects typographical errors, make address or name changes, or clarify language of a rule without changing its effect.

This notice meets the following criteria to use the expedited repeal process for these rules:

The statute on which the rule is based has been repealed and has not been replaced by another statute providing statutory authority for the rule.

The rule is no longer necessary because of changed circumstances.

Explanation of the Reason the Agency Believes the Expedited Rule-Making Process is Appropriate: Readopting these rules under the authority of chapter 15.130 RCW and replacing references to chapter 69.04 RCW with chapter 15.130 RCW meets the criteria for expedited adoption under RCW 34.05.353(1) by adopting Washington state statutes or rules. Removing references to other repealed or outdated statutes or rules meets the criteria for expedited adoption under RCW 34.05.353 (2)(a) and (c) because the references are no longer necessary. Changing the section titles from a Q&A format to a statement/phrase format meets the criteria for expedited adoption under RCW 34.05.353 (1)(c) by clarifying the rule language without changing its effect.

NOTICE

THIS RULE IS BEING PROPOSED UNDER AN EXPEDITED RULE-MAKING PROCESS THAT WILL ELIMINATE THE NEED FOR THE AGENCY TO HOLD PUBLIC HEARINGS, PREPARE A SMALL BUSINESS ECONOMIC IMPACT STATEMENT, OR PROVIDE RESPONSES TO THE CRITERIA FOR A SIGNIFICANT LEGISLATIVE RULE. IF YOU OBJECT TO THIS USE OF THE EXPEDITED RULE-MAKING PROCESS, YOU MUST EXPRESS YOUR OBJECTIONS IN WRITING AND THEY MUST BE SENT TO Gloriann Robinson, Agency Rules Coordinator, Washington State Department of Agriculture, P.O. Box 42560, Olympia, WA 98504-2560, phone 360-902-1802, fax 360-902-2092, email wsdarules comments@agr.wa.gov, AND RECEIVED BY August 3, 2020.

June 3, 2020 Steve Fuller Assistant Director AMENDATORY SECTION (Amending WSR 99-12-021, filed 5/24/99, effective 6/24/99)

WAC 16-19-320 Labeling and packaging requirements. (1) All inspected meat and meat food products stored or prepared for the owner thereof, including packages or containers containing any uninspected meat food products, must be marked "NOT FOR SALE" in letters three-eighths of an inch in height immediately upon receipt and immediately after preparing.

(2) All meat food product labels and meat food product packaging must conform to requirements of chapter 19.94 RCW, the Weights and Measures Act and chapter ((69.04)) 15.130 RCW, ((Intrastate Commerce in Food, Drugs, and Cosmetics)) Food Safety and Security Act, now in effect or as amended, and rules adopted under those chapters.

AMENDATORY SECTION (Amending WSR 99-18-032, filed 8/25/99, effective 9/25/99)

- WAC 16-125-120 Bulk milk tanker requirements. All bulk milk tankers operating in the state of Washington must comply with the provisions of 3A standard 05-14. Additional requirements are:
- (1) Trucks and trailers with remote pumps, mounted on tractor or front trailer, and a system of external hoses and/or piping may be used: Provided, That
- (a) External flexible hoses meet the following requirements:
- (i) Hoses are the thick walled rubber type and meet 3A standards 18-01, 62-01 and 63-01 except for pump box hoses.
 - (ii) Hoses are capped with a sanitary cap when not in use.
- (b) Piping along the length of the trailer is of the fixed type and meets the following requirements:
- (i) The pipe is stainless steel and meets the requirements of 3A standards 63-02 and 33-01. Other materials may be used if they are approved by the Milk Safety Branch of the Food and Drug Administration.
- (ii) The sanitary piping is enclosed in an insulated holder and both the sanitary piping and the holder are capped with a dust tight cap when disconnected.
- (c) Sanitary air that meets the requirements of 3A standard 64-04 may be used to remove residual milk from the external piping system.
- (d) Any milk in the external piping system that exceeds forty-five degrees Fahrenheit is discarded.
- (e) Adequate facilities must be provided at all receiving stations for the proper cleaning and sanitizing of tankers including the external lines and valves.
- (2) All external valves on a tanker must be provided with a means of protection against dust, dirt, and road debris.
- (a) Outlet valves must be protected by dust tight covers that will comply with 3A standard 05-14.
- (b) Inlet valves and valves with attached hoses must be protected by a relatively dust tight cover. This cover may be:
- (i) Stainless steel with an opening for the connection of hoses that is sealed with a flexible material that will prevent the entrance of dust, dirt, or road debris.
- (ii) A flexible mounting made of rubber or other approved material that is close fitting, smooth, impervious, and easily removable for cleaning.

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- (iii) Any other cover for which plans have been submitted to and approved by the director.
- (c) All valves not connected to hoses must have a sanitary cap and an approved dust cover on them.
- (3) Markings on each truck or trailer must be sufficient to identify the owner of the truck or trailer.
- (4) Cleaning and bactericidal treatment of all product contact surfaces including valves, hoses, covers, connections, appurtenances, pumps, and pump compartment of each tanker, when used, must be accomplished at least once every twenty-four hours after first use. If the tanker is not used for hauling milk for seventy-two hours after cleaning and sanitizing it must be sanitized again before it may be used for hauling milk. After sanitization each tanker must be tagged to show the date washed, place washed, and initials or signature of the person who washed the tanker. This wash tag must not be removed until the tanker is rewashed. It shall be the responsibility of the bulk milk hauler to ensure that the wash tag is present and that the tank is in fact clean prior to commencing his route.
- (5) ((Plans and drawings relating to tankers submitted to the director will be treated with confidentiality except as required under Public Disclosure Act, chapter 42.17 RCW.
- (6))) Bulk milk tankers must meet the requirements under chapter ((69.04)) 15.130 RCW and the rules adopted thereunder for transportation of food.

AMENDATORY SECTION (Amending WSR 14-23-053, filed 11/17/14, effective 12/18/14)

WAC 16-130-010 Purpose of this chapter. The purpose of this chapter is to implement RCW ((69.04.345)) 15.130.400 by establishing rules relating to the issuance of licenses to operate as a direct seller and to establish the requirements that apply to direct sellers.

AMENDATORY SECTION (Amending WSR 14-23-053, filed 11/17/14, effective 12/18/14)

- WAC 16-130-020 Definitions. (1) In addition to the definitions contained in this section, the definitions found in chapters ((69.04)) 15.130 and 69.07 RCW, chapters 16-165, 16-167, and 246-215 WAC, and Title 21 of the Code of Federal Regulations may apply.
- (2) For the purposes of this chapter, the following definitions apply:
 - "Department" means the department of agriculture.
- "Direct seller" means an entity licensed by the department that receives prepackaged food from a food processor that is either licensed or inspected, or both, by a state or federal regulatory agency or the department and that delivers the food directly to consumers clients who only placed and paid for an order on the entity's website, as long as:
- (a) The food is delivered by the entity without opening the processor's original packaging and without dividing it into smaller packages;
 - (b) There is no interim storage by the entity; and
- (c) The food is delivered by means of vehicles that are equipped with either refrigeration or freezer units, or both, and that meet the requirements of rules authorized by this chapter.

"Director" means the director of the department of agriculture.

"Food handling area" means all premises and facilities utilized for food transport by a direct seller.

AMENDATORY SECTION (Amending WSR 14-23-053, filed 11/17/14, effective 12/18/14)

- WAC 16-130-030 Direct seller license applications. (1) All direct sellers must be licensed annually by the department. Licenses expire on December 31st following issuance except that licenses issued during 2014 will not expire until December 31, 2015.
- (2) Applications for new and renewal licenses must be submitted on the form provided by the department, and must include:
 - (a) A completed application form;
- (b) The physical address of the business premises within the state of Washington of the direct seller where required records will be maintained;
- (c) A current list of all leased, rented or owned vehicles, other than vehicles that are rented for less than forty-five days, intended for use within Washington state by the direct seller to deliver food; and
- (d) An annual license fee of five thousand four hundred dollars.
- (3) The department will not refund license fees after receipt of a direct seller license or renewal license applica-
- (4) Prior to licensing, the department may inspect the vehicles and food handling areas of the direct seller to determine them to be in compliance with the requirements of chapter ((69.04)) 15.130 RCW and this rule.
- (5) Until a license is issued by the department, direct sellers must comply with all applicable permitting requirements contained in food service establishment rules adopted by the state board of health and any local health jurisdiction.
- (6) To obtain an application for a direct seller license, contact the department at:

Washington State Department of Agriculture Food Safety Consumer Services Division

P.O. Box 42560

Olympia, WA 98504-2560 Phone: 360-902-1876

Fax: 360-902-2087 Website: http://agr.wa.gov.

<u>READOPTED SECTION</u> (Readopting WSR 14-23-053, filed 11/17/14, effective 12/18/14)

- WAC 16-130-040 Direct sell requirements. (1) The license or a copy of the license must be present in all vehicles and food handling areas utilized by the direct seller.
- (2) Direct sellers must maintain all areas of vehicles utilized for food transportation and food handling areas in a sanitary manner. Vehicles and food handling areas must be kept clean and inspected each day by the direct seller.
- (3) Direct sellers must keep records to document daily cleaning and sanitary inspections of vehicles and food handling areas. Records of daily vehicle inspections must be

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maintained with the vehicle for the previous thirty days. Food handling area inspection records and vehicle inspection records older than thirty days must be maintained by the direct seller at the direct seller's business premises for twelve months. Vehicle and package temperature logs must be maintained by the direct seller at the direct seller's business premises for twelve months.

- (4) Direct sellers are required to protect food from contaminations while in transport.
- (a) Food must be transported under conditions that protect food against physical, chemical and microbial contamination
- (b) Food must be protected against deterioration of the food and its container.
- (c) Food must be kept in a temperature controlled environment to adequately protect the food from deterioration or degradation and to minimize microbial growth. Refrigerated food temperatures must be maintained at forty-one degrees Fahrenheit or below, and frozen food temperatures must be maintained at thirty-two degrees Fahrenheit or below at all times and a food labeled frozen by the food processor must be received frozen by the consumer.
- (d) Ensure the separation of raw materials, including raw seafood, meat, poultry and raw fruits and vegetables in a fashion to avoid cross-contamination of other food products, particularly ready-to-eat foods.
- (e) Raw materials may not come in direct contact with other food in the same container or in any other cross-contaminating circumstances.
- (5) The direct seller must maintain the following records at the direct seller's business premises and make available for inspection by the department:
- (a) A current list of all leased, rented or owned vehicles, other than vehicles that are rented for less than forty-five days, intended for use in Washington state by the direct seller to deliver food:
- (b) All records of vehicles intended for use in Washington state rented for less than forty-five days for at least twelve months following the termination of the rental period;
- (c) Temperature logs of all vehicles and packages in real time for all food while in transport from initial pickup to delivery;
- (d) Consumer client lists indicating what products were purchased, when products were delivered, and location where the product was delivered to consumer client;
- (e) Records of product purchases that are offered or sold to consumer clients that include manufacturer of product, distributor of product, date and time of receipt of product by direct seller, and date and time of delivery of product by direct seller; and
- (f) Records indicating disposition of any products not sold or received by consumer clients.
 - (6) All records required under this section must be:
- (a) Maintained so that the information they intend to convey is clear and understandable;
- (b) Available to the department upon request at the direct seller's business premises or in a vehicle as applicable; and
- (c) Retained at the direct seller's business premises for six months after the expiration of the license.

AMENDATORY SECTION (Amending WSR 14-23-053, filed 11/17/14, effective 12/18/14)

- **WAC 16-130-050 Inspections.** (1) The department will conduct routine inspections of all vehicles, food handling areas, refrigeration equipment, and product packaging used by the direct seller.
- (2) The department will conduct audits of all required records including cleaning and sanitary inspections, temperature logs, lists of all leased, rented or owned vehicles, vehicle rental records, purchases, sales, and other food handling and sanitation records as appropriate.
- (3) During an investigation, the department may sample food products transported by the direct seller for laboratory testing to ensure food is being handled and maintained in a safe and sanitary manner.
- (4) The department may inspect the records, vehicles, food handling areas, refrigeration equipment, and product packaging used by a direct seller whenever the department has reason to believe the direct seller is in violation of the requirements of chapter ((69.04)) 15.130 RCW or this chapter. Inspections will be made at reasonable times and, when possible, during regular business hours.
- (5) The department will investigate any complaints against a direct seller for violations of chapter ((69.04)) 15.130 RCW or this chapter, or for otherwise failing to maintain and distribute food in a safe and sanitary manner.
- (6) The department may inspect records, vehicles, food handling areas, refrigeration equipment, and product packaging used by a direct seller in response to a food recall, foodborne illness outbreak, consumer complaint, other public health emergency, or when required by federal, state or local regulation. In such situations, the direct seller will provide to the department its customer list and all known contact information. The direct seller must notify customers of a recall, foodborne illness outbreak, or other relevant event when directed by the department.

AMENDATORY SECTION (Amending WSR 14-23-053, filed 11/17/14, effective 12/18/14)

- WAC 16-130-060 Suspension, revocation, and denial of registrations. (1) A direct seller license and applications for direct seller licenses are governed by the procedures set forth in chapter 34.05 RCW.
- (2) The director may deny, suspend, or revoke a direct seller application or license if it is determined that an applicant or direct seller has committed any of the following acts:
- (a) Refused, neglected, or failed to comply with the provisions of chapter ((69.04)) 15.130 RCW, the rules adopted under this chapter, or any order issued by the director;
- (b) Refused, neglected, or failed to keep and maintain required records;
 - (c) Refused the department access to required records;
- (d) Refused the department access to any portion or area of vehicles, food handling areas, refrigeration equipment, and product packaging used by a direct seller; or
- (e) Failure to submit an application for a license meeting the requirements of this chapter or failure to pay the annual license or renewal fee.

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(3) The director may summarily suspend a license issued under this chapter if the director finds that a direct seller is operating under conditions that constitute an immediate danger to public health or if the director is denied access to the records, vehicles, food handling areas, refrigeration equipment, and product packaging used by a direct seller where the access was sought for the purposes of enforcing or administering this chapter.

<u>REAPOPTED SECTION</u> (Readopting WSR 86-21-007, filed 10/3/86)

- WAC 16-129-050 Requirements for signs in theatres or other commercial food service establishments which prepare and sell popcorn for human consumption at the point of sale. (1) Popcorn flavored with butter Sign shall be in a conspicuous location of durable material in contrasting letters not less than 3/4 inch high stating "Flavored with butter" or words to that effect.
- (2) Popcorn flavored in semblance of butter Sign shall be in a conspicuous location of durable material in contrasting letters not less than 3/4 inch high stating "Imitation butter flavor" and listing the ingredients contained in the flavor in contrasting letters not less than 1/2 inch high in descending order of predominance.

AMENDATORY SECTION (Amending WSR 98-02-023, filed 12/31/97, effective 1/31/98)

- WAC 16-139-001 Promulgation and purpose. This chapter is promulgated by the director of agriculture for the purpose of establishing fair, uniform and equitable means for assessing civil penalties and licensing actions authorized under RCW 16.49.444, 19.32.060, ((69.04.880,)) 69.07.060, 69.07.110, 69.07.150(2), 69.10.030 ((and)), 69.10.050, and 15.130.555. The rules adopted in WAC 16-139-005 through 16-139-060 apply to violations of chapters 16.49 RCW (Custom slaughtering), 19.32 RCW (Food lockers), ((69.04 RCW (Intrastate commerce in food, drugs, and cosmetics),)) 69.07 RCW((5)) (Washington Food Processing Act) ((and)), 69.10 RCW (Food storage warehouses), and 15.130 RCW (Food Safety and Security Act). The director also declares:
- (1) Education and technical assistance play an important role in the prevention, correction or abatement of food safety violations and are the department's preferable alternative to regulatory action. However, at times regulatory action is necessary to deter violations of food safety laws and rules, to educate persons about the consequences of such violations, and to compel compliance with food safety laws for the protection of consumers. The department initiates such actions when educational measures, technical assistance, warning letters, compliance agreements or other remedial measures fail to achieve compliance; and
- (2) Any regulatory action taken by the department against any person who violates the provisions of chapters 16.49, ((19.32, 69.04,)) 69.07 ((and)), 69.10, and 15.130 RCW, and rules adopted thereunder shall be commensurate with the seriousness of the violation under the circumstances; and
- (3) Each person shall be treated fairly in accordance with the rules set forth in this chapter.

AMENDATORY SECTION (Amending WSR 98-02-023, filed 12/31/97, effective 1/31/98)

WAC 16-139-005 Definitions. (1) Definitions:

- (a) "Violation" means commission of an act or acts prohibited by chapter 16.49, ((19.32, 69.04,)) 69.07 ((or)), 69.10, or 15.130 RCW, including rules adopted under them.
- (b) "Prior violation" means the same or a similar violation committed by a person within the previous three years.
- (c) "Critical violation" means a violation resulting in food adulteration that could cause injury or illness in consumers or that has the potential to contribute to conditions resulting in such adulteration.
- (d) "Significant violation" means a violation resulting in food adulteration or food being prepared under unsanitary conditions not apparently related to a public health danger or that has the potential to contribute to conditions resulting in such adulteration and if not corrected could lead to a critical violation.
- (e) "Economic violation" means a violation which affects the purchaser economically, either due to misbranding or adulteration where inferior or substandard quality product is substituted, by hiding defects or by false or misleading labeling.
- (f) "Other violation" means a violation of chapter 16.49, ((19.32, 69.04, 69.07 or)) 69.07, 69.10, or 15.130 RCW, not covered under the penalty schedules in WAC 16-139-020 or 16-139-030, including, but not limited to, violation of embargo, mutilation of embargo notices, sale of food from an unlicensed processor, operating without a required license, refusal of inspection or access, interference with the director or the director's designee, or economic and labeling violations
- (g) "Same," with respect to violations, means an identical recurrence or an exact repetition of a previous violation, or a continuation of a previous violation.
- (h) "Similar," with respect to violations, means related in appearance or nature; alike though not identical.
- (i) "Knowingly" means that the alleged violator had previous warning, knew or reasonably should have known that a condition could result in adverse effects or that a violation would occur.
- (j) "Potential," with respect to violations, means that a violation may result in food adulteration or a risk to health or that the violation supports conditions that may contribute to food adulteration or a risk to health.
- (k) "Probable," with respect to violations, means that a violation is reasonably likely to result in food adulteration or a risk to health.
- (2) Additional definitions for terms used in this chapter are found in the following provisions of law:
- (a) ((Washington Food, Drug and Cosmetic)) Food Safety and Security Act, chapter ((69.04)) 15.130 RCW.
- (b) Washington Food Processing Act, chapter 69.07 RCW.
- (c) Current Good Manufacturing Practice ((in Manufacturing, Packing or Holding)), Hazard Analysis, and Risk-Based Preventative Controls for Human Food, Title 21, Code of Federal Regulations, Chapter 1, Subchapter B, Part ((110)) 117.
 - (d) Food storage warehouses, chapter 69.10 RCW.

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(e) Custom Slaughter Act, chapter 16.49 RCW.

<u>READOPTED SECTION</u> (Readopting WSR 98-02-023, filed 12/31/97, effective 1/31/98)

- WAC 16-139-010 Calculation of penalty. (1) Median penalty selection. In the disposition of administrative cases, the department shall determine the penalty as follows:
- (a) The department shall first determine the correct penalty assignment schedule table listed in either WAC 16-139-020 (critical violations), WAC 16-139-030 (significant violations), or WAC 16-139-040 (economic and other violations), that is applied based on the type of violation alleged.
- (b) The department shall then determine the penalty range based on whether there have been prior violations in last three years.
 - (c) The department shall then determine:
- (i) The probability of a violation causing a risk to health under WAC 16-139-020 (critical violations); or
- (ii) The probability of a violation resulting in food adulteration under WAC 16-139-030 (significant violations); or
- (iii) Whether the violation was knowing under WAC 16-139-040 (economic and other violations).
- (d) The scheduled penalty is then applied unless a proportionate adjustment is made. In no case will a penalty less than the minimum penalty listed for the violation be applied.
- (2) Proportionate adjustment of median penalty. The department reserves the right to proportionately increase the civil penalty and proportionately decrease the licensing action under certain circumstances. Such circumstances include situations where licensing action as a deterrent is ineffective and includes, but is not limited to, violations by persons who are not licensed. Likewise, the department reserves the right to proportionately decrease the civil penalty and proportionately increase the licensing action when circumstances in a particular case demonstrate the ineffectiveness of a civil penalty action as a deterrent.

READOPTED SECTION (Readopting WSR 98-02-023, filed 12/31/97, effective 1/31/98)

WAC 16-139-020 Penalty assignment schedule— Critical violations.

LEVEL	DEGREE OF RISK TO HEALTH	PENALTY
1st Violation in a 3- year period	A. POTENTIAL	\$200 and 2-day license suspension
	B. PROBABLE	\$1000 and 7-day license suspension
2nd Violation in a 3- year period	A. POTENTIAL	\$400 and 4-day license suspension
	B. PROBABLE	\$1000 and 14-day license suspension
3rd Violation in a 3- year period	A. POTENTIAL	\$800 and 8-day license suspension
	B. PROBABLE	\$1000 and 30-day license suspension

<u>READOPTED SECTION</u> (Readopting WSR 98-02-023, filed 12/31/97, effective 1/31/98)

WAC 16-139-030 Penalty assignment schedule—Significant violations.

LEVEL	POTENTIAL FOR FOOI ADULTERATION	D PENALTY
1st Violation in a 3-year period	A. POTENTIAL	\$100 and 1-day license suspension
	B. PROBABLE	\$200 and 2-day license suspension
2nd Violation in a 3-year period	A. POTENTIAL	\$200 and 2-day license suspension
	B. PROBABLE	\$400 and 4-day license suspension
3rd Violation in a 3-year period	A. POTENTIAL	\$400 and 4-day license suspension
	B. PROBABLE	\$800 and 8-day license suspension

AMENDATORY SECTION (Amending WSR 98-02-023, filed 12/31/97, effective 1/31/98)

WAC 16-139-040 Penalty assignment schedule— Economic and other violations of chapters 16.49, ((19.32, 69.04,)) 69.07, ((and)) 69.10, and 15.130 RCW.

DECREE OF

	DEGREE OF	
	KNOWLEDGE OF	
LEVEL	VIOLATION	PENALTY
1st Violation in a 3-year period	A. UNKNOWING	\$100 and 1-day license suspension
	B. KNOWING	\$200 and 2-day license suspension
2nd Violation in a 3-year period	A. UNKNOWING	\$200 and 2-day license suspension
	B. KNOWING	\$400 and 4-day license suspension
3rd Violation in a 3-year period	A. UNKNOWING	\$300 and 3-day license suspension
	B. KNOWING	\$1000 and 10-day license suspension

READOPTED SECTION (Readopting WSR 98-02-023, filed 12/31/97, effective 1/31/98)

WAC 16-139-050 Other dispositions of alleged violations. Nothing herein shall prevent the department from:

- (1) Choosing not to pursue a case administratively.
- (2) Issuing a notice of correction in lieu of pursuing administrative action.
- (3) Negotiating settlement(s) of cases on such terms and for such reasons as it deems appropriate. Prior violation(s) covered by a prior settlement agreement may be used by the department for the purpose of determining the appropriate penalty for the current alleged violation(s) if not prohibited by the agreement.

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AMENDATORY SECTION (Amending WSR 98-02-023, filed 12/31/97, effective 1/31/98)

WAC 16-139-060 Disposition of collected penalty money. Money collected by the department as civil penalties for violation of chapters 16.49, ((69.04, and)) 69.10, and 15.130 RCW shall be directed to the state general fund. Money collected by the department as civil penalties for violations of chapter 69.07 RCW shall be utilized for food processing industry technical advisement and assistance in meeting food safety regulations and requirements and food safety education and training of food safety program personnel.

AMENDATORY SECTION (Amending WSR 99-13-048, filed 6/9/99, effective 7/10/99)

WAC 16-142-100 ((What is the)) Purpose ((for this)) of rule((?)). The purpose for this rule is to establish uniform standards for pull date labeling and safe storage conditions for perishable packaged food goods as described in RCW ((69.04.900 through 69.04.920)) 15.130.300.

AMENDATORY SECTION (Amending WSR 99-13-048, filed 6/9/99, effective 7/10/99)

WAC 16-142-110 ((What is the)) Purpose ((for)) of pull dates((?)). The purpose for pull dates is to inform the consumer of the expected length of shelf life for perishable packaged foods in order to allow them a reasonable amount of time to use the product under proper care and storage conditions.

AMENDATORY SECTION (Amending WSR 99-13-048, filed 6/9/99, effective 7/10/99)

WAC 16-142-120 ((What does the)) Pull date ((indicate?)) indication. The pull date indicates the last day that the product can be sold and still allow the purchaser a reasonable amount of time to use the product under normal usage and storage conditions.

AMENDATORY SECTION (Amending WSR 99-13-048, filed 6/9/99, effective 7/10/99)

WAC 16-142-130 ((Can products be sold)) Selling products after the pull date((?)). ((Yes,)) Products can be sold after the pull date has expired if they are still wholesome, not a danger to health and clearly labeled indicating that the pull date has expired. They must be separated from products that are still within pull date.

AMENDATORY SECTION (Amending WSR 99-13-048, filed 6/9/99, effective 7/10/99)

WAC 16-142-140 ((How must the)) Pull date ((be shown?)) format. The pull date must first show the month then the day of the month. The month can either be identified with three letters indicating the month such as DEC for December or by numbers indicating the month from one for January through twelve for December. The day of the month must be shown using two numbers such as 06 for the sixth day or 19 for the nineteenth day. When both the month and

day of the month are shown by numbers they must be separated by a space or dash. The pull date must be separated from other numbers or letters on the label so as to prevent confusion.

AMENDATORY SECTION (Amending WSR 99-13-048, filed 6/9/99, effective 7/10/99)

WAC 16-142-150 ((Can)) Changing a pull date((s be changed?)). ((No,)) Pull dates on perishable packaged foods subject to pull dating may not be changed, crossed-out or concealed.

AMENDATORY SECTION (Amending WSR 99-13-048, filed 6/9/99, effective 7/10/99)

WAC 16-142-160 ((Where must the)) Location of pull date ((be placed?)). The pull date must be placed on the label in a conspicuous location, that is clearly discernible. The pull date must be legible and of a type size consistent with the size of other required labeling.

AMENDATORY SECTION (Amending WSR 99-13-048, filed 6/9/99, effective 7/10/99)

WAC 16-142-170 ((What are the)) Storage conditions and temperature requirements for perishable packaged foods((?)). Storage conditions and temperature requirements for perishable packaged foods are the same as required under chapter 246-215 WAC rules and regulations of the state board of health for food service and chapter 69.10 RCW Food storage warehouses.

AMENDATORY SECTION (Amending Order 1069, filed 9/20/67, effective 11/1/67)

WAC 16-144-010 Definitions. (($\frac{(a)}{(a)}$)) The definitions and standards contained in chapters (($\frac{15.32}{(a)}$)) $\frac{15.36}{(a)}$ and (($\frac{69.04}{(a)}$)) $\frac{15.130}{(a)}$ RCW shall apply (($\frac{(a)}{(a)}$)) clearly indicates otherwise.

(((b))) (1) Frozen desserts means ice cream, frozen custard, ice milk, nonfat frozen dairy dessert, dietetic frozen desserts, fruit sherbets, and water ices. Such terms shall also include any food product which is prepared or manufactured and which contains as an ingredient a substantial portion of any of the above mentioned frozen desserts.

(((e))) (2) The terms "pasteurization," "pasteurized" and similar terms used in this ((order)) chapter shall mean heating every particle of the product to a temperature of not less than 155 degrees Fahrenheit and holding continuously for at least thirty minutes in approved and properly operated equipment or heating to a temperature of not less than 175 degrees Fahrenheit for not less than 25 seconds continuously in approved and properly operated equipment.

(((d))) (3) All frozen desserts shall be manufactured, processed, and pasteurized to conform with a bacteriological standard of not to exceed 50,000 per milliliter and a coliform limit not exceeding 10 per milliliter as determined by Standard Methods for the Examination of Dairy Products of the American Public Health Association, and the 11th Edition of

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Official Methods of Analyses of the Association of Official Agricultural Chemist. The frozen desserts shall be properly pasteurized as evidenced by the phosphatase test.

(4) Harmful microorganisms means bacteria or other microorganisms which have been shown to be capable of causing disease in humans by consumption or contact.

AMENDATORY SECTION (Amending WSR 95-16-062, filed 7/26/95, effective 8/26/95)

- WAC 16-144-146 ((How may)) Transporting frozen dessert mix ((be transported)) without requiring repasteurization((?)). Frozen dessert mixes must be transported in:
- (1) Single service containers which meet the requirements for Grade A milk products under Appendix J of the pasteurized milk ordinance (PMO)((-)): or
- (2) Containers with single service liners which meet the requirements for Grade A milk products under Appendix J of the PMO.

AMENDATORY SECTION (Amending WSR 95-16-062, filed 7/26/95, effective 8/26/95)

WAC 16-144-147 ((Can)) Transporting frozen dessert mix ((be transported)) in milk tank trucks or milk cans((?)). ((No.)) Transport of mix in milk trucks or milk cans is not allowed. The risk of post pasteurization contamination is too great without final pasteurization at the plant where the mix is frozen and packaged.

AMENDATORY SECTION (Amending WSR 95-16-062, filed 7/26/95, effective 8/26/95)

WAC 16-144-148 ((What)) Required temperature ((must)) to hold frozen dessert mix ((be held at?)). Frozen dessert mix is required to be held at forty-five degrees Fahrenheit or less at all times.

AMENDATORY SECTION (Amending WSR 95-16-062, filed 7/26/95, effective 8/26/95)

- WAC 16-144-149 ((How long may)) Holding frozen dessert mix ((be held)) after pasteurization((?)). (1) Frozen dessert mix containers approved under WAC 16-144-146 must bear a pull date which establishes the last day it may be used. This pull date must meet the requirements for pull dating of perishable packaged food under chapters ((69.04)) 15.130 RCW and 16-142 WAC.
- (2) Pasteurized frozen dessert mix may be held for up to seventy-two hours in storage tanks before it must be repasteurized.

AMENDATORY SECTION (Amending WSR 95-16-062, filed 7/26/95, effective 8/26/95)

WAC 16-144-150 ((\frac{What}{)}) Ingredients that must be added to ((\frac{the}{)}) frozen dessert mix before final pasteurization((?)). If used, the following ingredients must be added to frozen dessert mix prior to final pasteurization:

- (1) All dairy products including milk solids, whey, nonfat dry milk, condensed milk, cream, skim milk, and other milk products.
 - (2) Egg products.
- (3) Reconstituted or recombined dry mixes including cocoa and cocoa products which are mixed with water or other liquids.
 - (4) Liquid sweeteners.
 - (5) Dry sugars.
- (6) Emulsifiers or stabilizers which do not meet one of the requirements under WAC 16-144-151.

AMENDATORY SECTION (Amending WSR 95-16-062, filed 7/26/95, effective 8/26/95)

WAC 16-144-151 ((What)) Ingredients ((may be added)) allowed to be added to the frozen dessert mix after final pasteurization or at the freezer((?)). The following ingredients can be added to frozen dessert mix after final pasteurization or at the freezer:

- (1) Ingredients which have been subjected to prior heat treatment sufficient to kill harmful microorganisms.
 - (2) Ingredients with 0.85% water activity or less.
 - (3) High acid ingredients with pH 4.7 or less.
- (4) Roasted nuts or confectionery chips (added at the freezer).
 - (5) Harmless lactic acid forming bacteria cultures.
 - (6) Fruits and vegetables (added at the freezer).
- (7) Ingredients with high alcohol content (i.e., fifteen percent or more by volume).
- (8) Ingredients which have been subjected to any other process approved by the director which will ensure that the finished product is free of harmful microorganisms.

REPEALER

The following section of the Washington Administrative Code is repealed:

WAC 16-144-145 Requirements for frozen dessert mix processing, handling, transportation and pasteurization.

AMENDATORY SECTION (Amending WSR 99-13-001, filed 6/3/99, effective 7/4/99)

WAC 16-165-100 Food establishments—Inspection criteria—Purpose. The purpose of the following rules is to:

- (1) Establish an inspection criteria and a rating system that will be used to determine whether food processing establishments which process, handle or store food in intrastate commerce, are in compliance with chapters 16.49, ((69.04,)) 69.07 ((and)), 69.10, and 15.130 RCW, and regulations adopted thereunder, including Title 21 C.F.R.
- (2) Identify steps leading to enforcement actions by the department.
- (3) Establish criteria for licensing food establishments under chapters 69.07 and 69.10 RCW.

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READOPTED SECTION (Readopting WSR 99-13-001, filed 6/3/99, effective 7/4/99)

WAC 16-165-110 Food processor licensing—New application—Inspection criteria. To qualify for a new food processing plant license issued under chapter 69.07 RCW, the Washington Food Processing Act, a food processing facility must first make application to the department. After the department receives a complete application, the department will inspect the facility. The facility must be in compliance with the following requirements prior to issuance of a license:

The food processing facility must achieve a score of ninety points or higher on the prelicensing inspection AND be in compliance with licensing criteria. Refer to WAC 16-165-140 for the inspection criteria. For the purposes of licensing, a food processing facility may incur a one-point debit of a licensing criteria that has sliding scale.

AMENDATORY SECTION (Amending WSR 99-13-001, filed 6/3/99, effective 7/4/99)

WAC 16-165-120 Food establishments—Definitions. (1) Definitions for terms used in this chapter may be found in

- chapters ((69.04,)) 69.07 ((and)), 69.10, and 15.130 RCW, and Title 21 C.F.R. as adopted, unless otherwise provided in this chapter.
- (2) For the purposes of this chapter, the following definitions apply:
- (a) "Adequate" means that which is needed to accomplish the intended purpose in keeping with good public health practice.
- (b) "Critical violation" means a violation of the inspection criteria that is a direct violation of RCW ((69.04.040 (1), (2), (3) or (4)))) 15.130.200 with respect to adulterated food or a violation that results in food adulteration that could cause injury or illness in consumers, or that has the potential to contribute to conditions resulting in such adulteration.
- (c) "Department" means the department of agriculture of the state of Washington (WSDA).
 - (d) "Director" means the director of agriculture.
- (e) "Establishment or food establishment" means any premise, plant, building, room, area, or facility which processes, prepares, handles or stores food or food products for sale in intrastate commerce including food processors, food storage warehouses, custom slaughter operations, refrigerated lockers, and dairy manufacturing plants.
- (f) "Licensing criteria violation" means any violation of the inspection criteria required to be in compliance prior to the issuance of a food processor's license under chapter 69.07 RCW.
- (g) "Sanitize" means to adequately treat food contact surfaces by a process that is effective in destroying vegetative cells of microorganisms of public health significance, and in substantially reducing numbers of other undesirable microorganisms, but without adversely affecting the product or its safety for the consumer.
- (h) "Significant violation" means any violation of the inspection criteria not deemed to be a critical violation as defined in WAC 16-165-140(2).

AMENDATORY SECTION (Amending WSR 99-13-001, filed 6/3/99, effective 7/4/99)

- WAC 16-165-130 Food establishments—Inspection criteria definitions—Interpretations. WSDA will use the definitions and interpretations in this section to determine if a food establishment inspection complies with the inspection criteria.
- (1) "Clean and adequate protective clothing and hair restraints" means the clothing or the outside layer of clothing, which can occasionally or incidentally contact food, either directly or indirectly, is:
 - (a) Clean at the start of the work shift; and
- (b) Changed when the clothing becomes so soiled during the course of the work shift that contamination of food, food packaging or food contact surfaces becomes imminent; and
- (c) Suitable to the specific food processing operation for protection against the contamination of food, food packaging, and food contact surfaces.

Clean and effective hair restraints, such as hairnets, or beard nets if appropriate, are worn for the protection of food from contamination. Hats, caps, scarves or other head cover are acceptable if the hair is properly contained to protect food from contamination. Hair spray and/or tying back the hair in ponytails, etc., are not considered effective hair restraints.

- (2) "Adequate washing and sanitizing of hands as necessary" means washing and sanitizing hands thoroughly to protect against contamination of food from undesirable microorganisms in an adequate handwash facility by:
 - (a) Using proper handwashing methods which consist of:
 - (i) Applying soap to hands;
 - (ii) Using warm water;
 - (iii) Scrubbing hands thoroughly;
- (iv) Rinsing and drying hands using methods that prevent food contamination;
- (b) Washing hands before beginning work, after each absence from the work station, and any time hands become soiled or contaminated; and
- (c) Sanitizing hands when appropriate in addition to, but not in place of, the proper handwashing methods.
- (3) "Garments and personal belongings stored appropriately; not a source of contamination" means personal belongings and garments, either personal or plant supplied, are stored or kept separately from food processing, handling and storage operations such as in an area, locker, cupboard, or other closeable unit that is dedicated to the storing or hanging of personal belongings and clothing so not to become a source of contamination to food, food packaging or food contact surfaces; and

No food, packaging materials, utensils or equipment used in the food processing operation are kept, stored or ((eomingled)) commingled with personal belongings or garments.

- (4) "Processes separated as required" means there is a separation of processes for the purpose of reducing potential contamination in food processing operations where contamination is likely to occur. One or more of the following means may accomplish this:
 - (a) Location;
 - (b) Time;
 - (c) Partition;

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- (d) Air flow:
- (e) Enclosed systems; or
- (f) Other effective method.
- (5) "Adequate light" means a minimum of 25 foot candles at the working surfaces of food processing areas and a minimum of 10 foot candles at the floor level in all other food processing areas.
- (6) "Detergents, sanitizers and toxic materials properly identified" means:
- (a) Labeling any container containing detergent, sanitizer or toxic material with the:
 - (i) Product name;
 - (ii) Chemical description;
 - (iii) Directions for use;
 - (iv) Any required precautionary and warning statements;
 - (v) First-aid instructions;
- (vi) Name and address of the manufacturer or distributor; and
- (vii) Any other additional information required by the federal Environmental Protection Agency or other laws or rules; or
- (b) Small transport or use containers for detergents, sanitizers or toxic materials are used only under the following conditions:
- (i) The contents are properly identified on the container. Labeling the container with the common name is acceptable if the original storage container is on hand and properly identified:
- (ii) No food container is used as a container for detergents, sanitizers or toxic materials;
- (iii) No container used for detergents, sanitizers or toxic materials, is used as a food container.
- (7) "Product contact surfaces clean and maintained in a sanitary condition, cleaned and sanitized prior to each use or as essential" means:
- (a) Product contact surfaces of equipment, utensils, containers and other articles used in the processing of food, when its continued use is apparent, are not soiled with any residue or contaminant that could adulterate food products as defined in RCW ((69.04.210)) 15.130.200; and
- (b) Food residues are removed from food product contact surfaces frequently enough to prevent residues from becoming unwholesome or unfit for food, decomposed, filthy, putrid, or injurious to health; and
- (c) The food product contact surfaces are sanitized prior to use and after cleaning.
- (8) "Product contact surfaces clean and maintained in a sanitary condition, cleaned and sanitized prior to each use or as essential: Critical violation" means it is a critical violation if a food product contact surface comes into contact with potentially hazardous food and the surface is not sanitized after cleaning or prior to use.

Product contact surfaces that become contaminated, but are cleaned and sanitized prior to use are not considered a critical violation.

(9) "Nonproduct contact surfaces of equipment cleaned and maintained in a sanitary condition" means nonproduct contact surfaces of equipment used in the processing of food are kept reasonably free from dirt, old food residues, foreign material, dust, mold, mildew, slime and

other accumulations that occur because of day-to-day food processing operations.

(10) "In-use food contact equipment and utensils appropriately stored: Protected from contamination between uses" means the utensils used in the processing of foods, such as knives, scrapers, scoops, shovels, cutters, and other hand tools and equipment, are placed or stored in a manner to prevent food contact surfaces from being contaminated with filth. Filth includes, but is not limited to, microorganisms, unsuitable toxic chemicals, and microscopic physical contaminants.

Storage and placement of utensils or equipment in the following manner is considered inappropriate storage:

- (a) In contact with the floor, dirty equipment frames, other insanitary nonfood contact surfaces;
- (b) In contact with containers of nonpotable water (other than sterilizing solutions); and
 - (c) In contact with other contaminants.
- (11) "In-use food contact equipment and utensils appropriately stored: Protected from contamination between uses: Critical violation" means that it is a critical violation when a utensil or piece of equipment is or has been stored in such a manner that it becomes obviously contaminated with filth and its continued use is apparent.

Utensils and equipment that become contaminated are not considered a critical violation if the utensils and equipment are cleaned and sanitized prior to the next use.

- (12) Water supply—"Safe and of sanitary quality" means the water supply used in the processing of food is potable from an approved source and is monitored in accordance with applicable laws and rules. Water from an approved source and monitored in accordance with applicable laws and rules means:
- (a) Food processors who produce bottled water meet the requirements of 21 C.F.R., Part 129 and comply with the state department of health, division of drinking water requirements for a group A water system (chapter 246-290 WAC).
- (b) Food processors who produce ice comply with the state department of health, division of drinking water requirements for a group A water system (chapter 246-290 WAC).
- (c) Food processors with twenty-five or more employees and operating sixty days or more annually comply with the state department of health, division of drinking water requirements for a group A water system (chapter 246-290 WAC).
- (d) Processors with less than twenty-five employees or operating less than sixty days annually, except single-family residences employing only household members, comply with the state department of health, division of drinking water requirements for a group B water system (chapter 246-291 WAC).
- (e) Processors that operate from single-family residences on private water supplies meet the department of health, division of drinking water requirements for a group B water system (chapter 246-291 WAC) with respect to monitoring for bacteriological, chemical and physical properties. Processors that do not use water as an ingredient or incorporate water into their product need only meet the bacteriological testing requirements.
- (f) Water used for certain purposes within the food processing operation (such as circulated water used in the wash-

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ing of soil from raw agricultural commodities or fluming) is acceptable if:

- (i) The water does not impart harmful or deleterious substances or additives to food products; and
- (ii) The food products in contact with the water undergo a final potable water wash/rinse; and
- (iii) The water meets the requirements of the good manufacturing practices under 21 C.F.R., Part ((110)) 117.
- (13) "Current satisfactory water test" means analysis verifying the bacteriological, physical and chemical safety of the water has been conducted according to appropriate group A or B water system monitoring schedules or, in the case of bottled water operations, according to the requirements of Title 21 C.F.R., Part 129 and that reports of such analysis are on file at the processing facility and available for review by WSDA during routine facility inspection.
 - (14) "Ice from an approved source" means:
- (a) Ice is manufactured on the premises of a food establishment with water that is safe and of sanitary quality; or
- (b) Ice is supplied by an establishment that is under license and inspection of a federal, state or local government agency, and proof of the water's potability is on file with the food processing plant using the ice.
- (15) "Ice properly handled" means ice is processed, handled and held according to sanitary practices provided in 21 C.F.R., Part ((110)) 117, and ice used in the processing of food is protected from contamination by taking the necessary precautions during its manufacture, storage, transport and use. Necessary precautions include, but are not limited to:
 - (a) Storage bins and containers of water are covered;
- (b) All storage and packaging containers, including ice house or storage room contact surfaces, are sanitary, readily cleanable, and do not impart deleterious materials to the ice. Wooden totes are not to be used for the transporting or holding of ice;
- (c) Scoops, shovels and other utensils used in the handling of ice are in a sanitary condition, properly stored, readily cleanable, and do not impart deleterious materials to the ice;
- (d) The ice does not come into contact with floor areas where foot traffic is possible; and
- (e) Equipment used to manufacture ice is in a sanitary condition, readily cleanable and does not impart any deleterious or other foreign substances to the ice.
- (16) "No cross connections, no back siphonage" means there is no backflow from or cross connection between piping systems that discharge waste water sewage and piping systems that carry water for food manufacturing. This includes any cross connection between a potable water system and:
- (a) A system in which the water contains boiler additives; or
 - (b) A CIP (clean in place) system; or
- (c) A recirculating system used to wash or flume food products, such as raw fruits or vegetables.
- (17) "Adequate floor drains and plumbing to convey wastes and sewage from the plant, into approved sewage disposal system" means:
- (a) Plumbing is designed, sized, installed and maintained in accordance with applicable state and local plumbing codes

- so that sewage and liquid disposable waste is readily conveyed from the plant;
- (b) Floor drainage is sufficient to prevent excessive pooling of water or other disposable waste;
- (c) Plumbing and drains do not provide a source of contamination to food, potable water, food contact surfaces or food packaging material or create any insanitary condition; and
- (d) Sewage is disposed into a municipal sewer system or other system approved by a federal, state or local agency having jurisdiction.
- (18) "Adequate, readily accessible toilet facilities" means:
- (a) A food establishment provides its employees with toilet facilities that are located within a reasonable distance to the work area, and the toilet facilities are maintained in accordance with 21 C.F.R., Part ((110.37)) 117, and:
- (i) Toilet facilities are located on the premises of a licensed food establishment; or
- (ii) If the food establishment shares space in a multiple building complex, toilet facilities are located within the complex and within a reasonable distance from the work area; or
- (iii) A domestic toilet facility is sufficient if the food processing operation is a family operation where only family members are employed and if the domestic toilet facility meets applicable requirements provided in 21 C.F.R., Part ((110.37)) 117.
- (b) Outhouses, chemical toilets or other nonflush toilets may not be used in a food establishment.
- (19) "Toilets clean, in good repair, not opening directly into process areas, self-closing doors" means toilet rooms are kept clean, free of trash and litter, in good repair and all toilet room doors are self-closing and do not open directly into a food processing area.
- (20) "Handwash facilities adequate and convenient, with hot and cold or tempered water" means food handlers in a food establishment have access to one or more handwashing facilities with hot, cold, or tempered running water, and:
- (a) There is at least one handwash facility located in the food processing area in a location convenient to each food handling area when hands come into contact with or manipulate unwrapped or unpackaged ready to eat food. (Hand sanitizing stations may be required if appropriate); or
- (b) Handwash facilities are located in rest rooms or other areas in operations where food is not manipulated by hand and hands do not contact the food; or
- (c) Handwash facilities are located in rest rooms or other areas and hand sanitizing stations are located in food processing areas in operations where food would normally undergo further preparation (for example washing, cleaning, cooking or other processing) either in the plant or by the consumer that would adequately eliminate physical, chemical and microbiological contaminants introduced by handling.
- (21) "Hand dips provided as necessary" means hand sanitizing stations are provided, and properly positioned and maintained in all food operations as provided in subsection (20)(c) of this section.
- (a) For the purposes of this subsection "properly positioned" means:

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- (i) Food handlers have ready access to hand sanitizing stations when returning from the toilet, handwash stations, lunch and breaks and whenever necessary while working; and
- (ii) At least one hand sanitizing station is inside the process room entryways on each side of the processing table, lines and equipment where food is manipulated by hand, and at least one hand sanitizing station for every ten food handlers at processing tables, lines and equipment.
- (b) For the purposes of this subsection "properly maintained" means sanitizing solutions are checked and recharged to a strength equal to 10 PPM chlorine or 25 PPM iodine, and changed every four hours while in use.
- (c) Hand sanitizing stations are recommended for all food operations provided for in subsection (20)(c) of this section
- (22) "Food protected from contamination in storage" means food is stored under conditions that protect food against physical, chemical and microbial contamination, as well as against deterioration of the food and the container.
- (23) "Food protected from contamination in storage: Critical violation" means it is a critical violation when:
- (a) A storage situation allows potential contamination of products. This includes, but is not limited to, the storing of raw materials in such a fashion that they cross-contaminate finished food products, particularly ready to eat food. For example, the storage of raw fish and seafood, meat, poultry and other food which inherently contains pathogenic and spoilage microorganisms, as well as soil and other foreign material, is in direct contact with other food in the same container or in any other cross-contaminating circumstance with finished food products; or
- (b) Raw materials or food products from unapproved or uncertified sources are used that are inherently associated with food-borne illnesses. Raw products include, but are not limited to:
 - (i) Unpasteurized milk and dairy products;
- (ii) Unpasteurized eggs used in products which are not heated to pasteurization temperatures during processing;
 - (iii) Home canned low-acid foods;
 - (iv) Raw uncertified shellfish; and
 - (v) Uninspected meat products.
- (24) "Adequate records maintained as required" means all records are maintained as provided under Title 21 C.F.R., Part 113 Thermally Processed Low-Acid Foods Packaged in Hermetically Sealed Containers; Part 114, ((Acid)) Acidified Foods; Part 129, Processing and Bottling of Bottled Drinking Water; and any other law or rule requiring recordkeeping, EXCEPT that water tests under Part 129 are covered under subsection (13) of this section, "Current satisfactory water test."
- (25) "Adequate records maintained as required: Critical violation" means it is a critical violation when a record is not maintained on any food process and/or controls as provided for in subsection (24) of this section, or so poorly maintained that the information intended to be conveyed by the record is lacking or cannot be determined.
- (26) "Products coded as required" means all products are coded as provided under Title 21 C.F.R., Part 113, Thermally Processed Low-Acid Foods Packaged in Hermetically

- Sealed Containers; Part 114, Acidified Foods; Part 129, Processing and Bottling of Bottled Drinking Water; and any other law or rule requiring that products be coded.
- (27) "Products coded as required: Critical violation" means it is a critical violation when a product is not coded as required in subsection (26) of this section, or so inadequately coded with respect to the food product, the plant where manufactured, the date manufactured, time or batch manufactured, cannot be readily identified.
- (28) "Packaging material properly handled and stored" means:

A food contact surface of food packaging material is protected from potential sources of contamination during handling and storage. This includes, but is not limited to:

- (a) Boxes, liners and other primary containers are stored off floors or other insanitary surfaces;
- (b) Top containers in a nested stack of lined or primary containers are inverted or otherwise protected;
- (c) All single service containers, caps, roll stock, liner jars, bottles, jugs and other preformed containers are stored in closed sanitary tubes, wrappings, boxes or cartons prior to use:
- (d) The forming, make-up or other package assembly is conducted in a manner that precludes contamination; and
- (e) The handling of packaging material and containers prior to filling or wrapping is conducted so not to expose them to contamination by dust, foreign material or other contaminants.
- (29) "Potentially hazardous food" means any food, whole or in part, capable of supporting the germination, growth and/or toxin production by infectious or toxic microorganisms is at temperatures between 38°F and 145°F, and/or food is otherwise harmful to health.

AMENDATORY SECTION (Amending WSR 99-13-001, filed 6/3/99, effective 7/4/99)

- WAC 16-165-140 Food establishment—Inspection criteria. The food inspection criteria shall be in accordance with the following table for determining:
- (1) If a food establishment is in compliance with chapters 16.49, ((69.04,)) 69.07 ((and)), 69.10, and 15.130 RCW, and rules adopted thereunder;
 - (2) The debit value for each significant violation; and
- (3) Whether a violation is critical, or a licensing requirement:

INSPECTION CRITERIA Critical Inspection Criteria		
Criteria Item-Critical*		Licensing Requirement?
1.	Food products free from adulteration.	Yes
2.	Persons with apparent infections or communicable diseases properly restricted.	Yes

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	INSPECTION CRITERIA Critical Inspection Criteria		
	Criteria Item-Critical*	Licensing Requirement?	
3.	Adequate washing and sanitizing of hands as necessary, gloves used in food handling sanitary conditions.	Yes	
4.	Product contact surfaces clean and maintained in a sanitary con- dition; cleaned and sanitized prior to each use or as essential.	Yes	
5.	In use food contact equipment and utensils appropriately stored; protected from contamination between uses.	No	
6.	Water used safe and of adequate sanitary quality; from approved source.	Yes	
7.	No cross connections; no back-siphonage.	Yes	
8.	Ice from approved source.	Yes	
9.	Hot and cold water, under pressure, in areas where foods are processed or equipment washed.	Yes	
10.	Adequate, readily accessible toilet facilities provided.	Yes	
11.	No evidence of human defecation or urination about the premises.	Yes	
12.	Handwash facilities adequate and convenient, including hot and cold or tempered water.	Yes	
13.	Food protected from contamination in storage.	No	
14.	Critical control points and factors such as time, temperature, pressure, flow rate, pH, Aw, inhibitors adequate to ensure safety of product.	Yes	
15.	Process registered as required; processes approved as required.	Yes	
16.	Persons involved in LACF, acidified food, pasteurized operation licensed or certified as required.	No	
17.	Adequate records maintained as required.	No	
18.	Products coded as required.	No	

INSPECTION CRITERIA Critical Inspection Criteria		
	Criteria Item-Critical*	Licensing Requirement?
19.	Required critical control point monitoring devices such as retort thermometers, recorder/control- lers, pH meters, approved, accu- rate and in place.	Yes
20.	Required critical control point monitoring, measurements, test, and analysis on products and containers performed as required.	No
21.	Potentially hazardous foods maintained at proper temperatures.	Yes

^{*}A critical violation results in an establishment not being in substantial compliance, therefore no debit values are assigned.

	INSPECTION CRITERIA Significant Inspection Criteria			
Cri	teria Item-Significant	Debit Value	Licensing Requirement?	
1.	Jewelry, watches other personal items not a source of contamina- tion.	1	No	
2.	Clean and adequate protective clothing and hair restraints.	1-2	No	
3.	Use of tobacco, eating and drinking of food and beverages and gum chewing restricted to appropriate areas.	1	No	
4.	Garments and personal belongings stored appropriately, not a source of potential contamination.	2	No	
5.	Employee work procedures preclude contamination.	1-2	No	
6.	Grounds: Free from pest attractions, breeding places, harborage, excessive dust and other contaminants.	1	No	

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INSPECTION CRITERIA				
	Significant Inspection Criteria			
Cri	teria Item-Significant	Debit Value	Licensing Requirement?	
7.	Suitable size and loca-		-	
	tion, construction			
	including walls, floors,			
	ceiling, counters,			
	shelving, other fix- tures, smooth, readily			
	cleanable and in good			
	repair.	1-5	Yes	
8.	Processes separated as			
	required.	1-2	Yes	
9.	No operations in			
	domestic living or			
	sleeping quarters			
	(including domestic kitchens).	0	Yes	
10.	Adequate light.	1-2	Yes	
11.	Lights; glass over food	1 2	105	
11.	protected; breakproof.	1	No	
12.	Adequate ventilation			
	to minimize vapors,			
	steams, noxious	1.0	37	
12	fumes.	1-2	Yes	
13.	Drip or condensate from ceiling, fixtures,			
	pipes, ducts not a			
	potential source of			
	contamination.	1-3	No	
14.	Screened or protected			
	to exclude pests.	1-2	No	
15.	Building, fixtures,			
	facilities clean; includ-	1 5	37	
1.0	ing transport vehicles.	1-5	Yes	
16.	Detergents, sanitizers, toxic materials safely			
	used and stored.	1-3	No	
17.	Detergents, sanitizers		1.0	
''.	and toxic materials			
	properly identified.	1-2	No	
18.	Product contact sur-			
	faces clean and main-			
	tained in a sanitary			
	condition; cleaned and			
	sanitized prior to each use or as essential.	1-2	No	
	ase of as essential.	1 4	110	

INSPECTION CRITERIA Significant Inspection Criteria			
Crit	teria Item-Significant	Debit Value	Licensing Requirement?
19.	Nonproduct contact surfaces of equipment clean and maintained in a sanitary condition.	1-2	No
20.	In use food contact equipment and utensils appropriately stored; protected from con- tamination between		
21.	Effective measures taken to exclude pests from the facility. No harborage/breeding	1-2	No No
22.	Pesticides safely used and stored.	1-3	No
23.	No evidence of rodents, insects, birds or other animals.	1-5	Yes
24.	Current satisfactory water supply test.	5	Yes
25.	Water supply sufficient in quantity for intended operations.	2	Yes
26.	Adequate floor drains and plumbing to con- vey wastes and sewage from plant.	1-2	Yes
27.	Sewage and waste lines protected not a source of contamina- tion.	1-2	Yes
28.	Adequate offal, rubbish and waste disposal.	1-2	Yes
29.	Toilet facilities clean and in good repair, no direct opening to pro- cess area, self-closing door.	1-2	Yes
30.	Soap and single service towels or suitable drying devices provided at handwash facilities. Adequate refuse receptacles provided.	1-2	No

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	INSPECTION CRITERIA Significant Inspection Criteria			
Crit	teria Item-Significant	Debit Value	Licensing Requirement?	
31.	Readily understand- able handwash signs provided at handwash facilities.	1	No	
32.	Hand dips provided as necessary.	1-2	No	
33.	Design, material and workmanship durable, readily cleanable and in good repair. Contact surfaces nontoxic and corrosion resistant.	1-3	Yes	
34.	Design and use pre- clude contamination with lubricants, fuel, contaminated water, paint, rust, compressed air/gas and other con- taminants.	1-3	No	
35.	Freezers and cold storage units equipped with adequate thermometers.	1	No	
36.	Incoming raw materials, ingredients or processed food from an approved source, in an obvious sanitary condition. Items inspected on receipt, suitable for intended use, segregated as necessary and properly stored (clean storage containers, facilities, products properly covered), frozen foods stored frozen, properly thawed; ingredients properly identified; raw materials washed or cleaned as required.	1-5	No	
37.	Adequate records maintained as required - Noncritical.	1	No	
38.	Products coded as required - Noncritical.	1	No	

	INSPECTION CRITERIA Significant Inspection Criteria			
	Crit	teria Item-Significant	Debit Value	Licensing Requirement?
	39.	Required monitoring, measurements, tests, analysis on products and containers per- formed as required - Noncritical.	1	No
	40.	No contaminating material used, stored or transported with supplies, ingredients or processed foods.	1-2	No
•	41.	Packing material properly handled and stored.	1	No
	42.	Food products not misbranded, including pull dates.	1	Yes
	43.	Cleaning operations - conducted to minimize contamination.	1-3	No

READOPTED SECTION (Readopting WSR 99-13-001, filed 6/3/99, effective 7/4/99)

WAC 16-165-150 Food establishment inspection rating system—Inspection score. (1) A food establishment is rated as follows at the completion of an inspection conducted by the department:

- (a) A food establishment will be debited the point value assigned to the inspection item listed in WAC 16-165-140 for each violation found during an inspection.
- (b) The sum of the points debited for an inspection are subtracted from the maximum point value of one hundred. The remaining sum is the establishment's score for that inspection.
- (c) When the department on a food establishment inspection identifies a critical violation, no score will be listed unless the critical violation is satisfactorily corrected during the inspection.
- (2) An establishment is considered in substantial compliance with the inspection criteria if:
 - No critical violations are found, or if critical violations are found and corrected prior to completion of the inspection; and
 - The establishment's inspection score is ninety points or above.

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AMENDATORY SECTION (Amending WSR 99-13-001, filed 6/3/99, effective 7/4/99)

- WAC 16-165-160 Food establishments—Basis for enforcement action. (1) The department may issue a notice of correction for:
- (a) Food establishments that score less than ninety points on an inspection; or
- (b) Critical violations found during an inspection of a food establishment.
- (2) The department may review and consider initiating enforcement action, such as license suspension, civil penalties, and/or other penalties provided in chapters 16.49, ((69.04,)) 69.07, ((or)) 69.10, or 15.130 RCW when:
- (a) Food establishments score less than ninety points on two separate inspections within a consecutive three-year period; or
- (b) Food establishments fail to correct critical violations during an inspection.
 - (3) Nothing herein shall prevent the department from:
 - (a) Choosing not to pursue a case administratively.
- (b) Issuing a notice of correction in lieu of pursuing administrative action.
- (c) Negotiating settlement(s) of cases on such terms and for such reasons as it deems appropriate.

READOPTED SECTION (Readopting WSR 16-22-061, filed 10/31/16, effective 12/1/16)

- WAC 16-167-010 General. (1) Consistent with the concept of uniformity where possible with the federal regulations adopted under the Federal Food, Drug and Cosmetic Act, 21 U.S.C. 301 et seq., this chapter adopts the version of the referenced federal rule current at the time this rule becomes effective.
- (2) To promote continued uniformity with federal rules; amendments to the federal rules referenced in this chapter are hereby incorporated and enforceable under this chapter upon the effective date of the federal amendment provided:
- (a) The director of the Washington state department of agriculture or his or her authorized representative (director) gives notice of the federal rule amendment at the time it is published as a final rule in the Federal Register;
- (b) The notice is published, at a minimum, in the state register and on the agency's web site; and
- (c) The director has not otherwise determined that the amendment should not be adopted as provided in subsection (3) of this section.
- (3) If the director determines that a proposed amendment to a federal rule referenced in this chapter should not be adopted, the director shall initiate rule making under chapter 34.05 RCW to amend this chapter to reflect the version of the federal rule, if any, effective under this chapter.

<u>READOPTED SECTION</u> (Readopting WSR 16-22-061, filed 10/31/16, effective 12/1/16)

WAC 16-167-020 Pesticide chemicals. The following federal regulations are adopted as Washington tolerances for pesticide chemicals: 40 C.F.R. Chapter I Part 180 - Toler-

- ances and Exemptions for Pesticide Chemical Residues in Food.
- (1) Subpart A Definitions and Interpretative Regulations.
 - (2) Subpart C Specific Tolerances.

READOPTED SECTION (Readopting WSR 16-22-061, filed 10/31/16, effective 12/1/16)

- WAC 16-167-030 Food additives. The following federal regulations prescribing the conditions under which such food additives may safely be used are adopted as Washington food additive regulations. 21 C.F.R. Chapter I.
 - (1) Part 170 Food Additives.
- (2) Part 172 Food Additives Permitted for Direct Addition to Food for Human Consumption.
- (3) Part 173 Secondary Direct Food Additives Permitted in Food for Human Consumption.
 - (4) Part 174 Indirect Food Additives: General.
- (5) Part 175 Indirect Food Additives: Adhesives and Components of Coatings.
- (6) Part 176 Indirect Food Additives: Paper and Paperboard Components.
 - (7) Part 177 Indirect Food Additives: Polymers.
- (8) Part 178 Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers.
- (9) Part 179 Irradiation in the Production, Processing and Handling of Food.
- (10) Part 180 Food Additives Permitted in Food or in Contact with Food on an Interim Basis Pending Additional Study.
 - (11) Part 181 Prior-Sanctioned Food Ingredients.
- (12) Part 182 Substances Generally Recognized as Safe.
- (13) Part 184 Direct Food Substances Affirmed as Generally Recognized as Safe.
- (14) Part 186 Indirect Food Substances Affirmed as Generally Recognized as Safe.
- (15) Part 189 Substances Prohibited From Use in Human Food.

READOPTED SECTION (Readopting WSR 16-22-061, filed 10/31/16, effective 12/1/16)

- WAC 16-167-040 Color additives. The following federal regulations prescribing the use or limited use of such color additives are adopted as Washington color additive regulations. 21 C.F.R. Chapter I.
 - (1) Part 70 Color Additives.
- (2) Part 73 Listing of Color Additives Exempt From Certification.
- (3) Part 74 Listing of Color Additives Subject to Certification.
- (4) Part 81 General Specifications and General Restrictions for Provisional Color Additives for Use in Foods, Drugs and Cosmetics.
- (5) Part 82 Listing of Certified Provisionally Listed Colors and Specifications.

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READOPTED SECTION (Readopting WSR 16-22-061, filed 10/31/16, effective 12/1/16)

WAC 16-167-050 General requirements. The following provisions of 21 C.F.R. Chapter I are adopted as Washington requirements for regulating food in intrastate commerce.

- (1) The following parts in Subchapter A General.
- (a) Part 1 General Enforcement Regulations.
- (i) Subpart A General Provisions.
- (ii) Subpart B General Labeling Requirements.
- (iii) Subpart O Sanitary Transportation of Human and Animal Food.
- (b) Part 2 General Administrative Rulings and Decisions.
 - (i) Subpart A General Provisions.
 - (ii) Subpart B Human and Animal Foods.
 - (c) Part 7 Enforcement Policy.
- (2) All parts of Subchapter B Food for Human Consumption, except for Part 119.

<u>READOPTED SECTION</u> (Readopting WSR 16-22-061, filed 10/31/16, effective 12/1/16)

WAC 16-167-900 Access to publications adopted under this chapter. (1) Electronic access to Titles 21 and 40 C.F.R. is available at https://www.gpo.gov/fdsys/search/home.action. Print copies of the titles can be purchased from the U.S. Government Bookstore online at https://bookstore.gpo.gov/catalog/laws-regulations/code-federal-regulations-cfrs-print or, if you do not have electronic access, contact the U.S. Government Publishing Office, P.O. Box 979050, St. Louis, MO 63197-9000; phone 1-866-512-1800.

(2) Electronic access to the FDA's Manual of Compliance Policy Guides is available at http://www.fda.gov/ICECI/ComplianceManuals/CompliancePolicyGuidanceManual/default.htm. If you do not have electronic access, contact the Food and Drug Administration, 1093 New Hampshire Avenue, Silver Spring, MD 20993-0002; phone 1-888-463-6332.

AMENDATORY SECTION (Amending WSR 98-03-089, filed 1/21/98, effective 2/21/98)

WAC 16-168-010 ((Independent sanitation consultants What is the purpose of these rules?)) Purpose of rule. The purpose of ((WAC 16-168-010 through 16-168-090)) this chapter is to establish minimum qualifications, application approval procedures, list maintenance and reporting requirements for independent sanitation consultants.

AMENDATORY SECTION (Amending WSR 98-03-089, filed 1/21/98, effective 2/21/98)

WAC 16-168-020 ((Independent sanitation consultants—Where does the department get authority to establish these rules?)) Promulgation. The department is given authority under RCW 69.10.055 for ((promulgating)) adopting these rules.

AMENDATORY SECTION (Amending WSR 98-03-089, filed 1/21/98, effective 2/21/98)

WAC 16-168-030 ((Independent sanitation consultants Where can I find the definitions for terms used in this rule?)) Definitions. The definitions for terms used in this chapter may be found in chapters ((69.04 and)) 69.10 and 15.130 RCW and WAC 16-167-050(2)(((k))). For the purposes of this chapter, the term "we" means department as defined in chapter 69.10 RCW.

AMENDATORY SECTION (Amending WSR 98-03-089, filed 1/21/98, effective 2/21/98)

WAC 16-168-050 ((What are the)) Minimum qualifications for an independent sanitation consultant((2)). The minimum qualifications for an independent sanitation consultant are:

Education and experience:

- (1) A bachelor's degree in biology, chemistry, microbiology, food science, dairy science or a related natural science plus three years experience inspecting food storage warehouses or similar operations for compliance with the Current Good Manufacturing Regulations, 21 C.F.R. part 110 (GMPs); or
- (2) Three years of college completed with study in the above subjects plus five years experience inspecting food storage warehouses or similar operations for compliance with the GMPs; or
- (3) Two years of college completed with study in the above subjects plus seven years experience inspecting food storage warehouses or similar operations for compliance with the GMPs; or
- (4) Eight years experience inspecting food storage warehouses or similar operations for compliance with the GMPs plus verifiable training in pest control, cleaning practices, food storage warehouse inspection or application of the GMPs.

AMENDATORY SECTION (Amending WSR 98-03-089, filed 1/21/98, effective 2/21/98)

WAC 16-168-060 ((How do I apply)) Applying for approval as an independent sanitation consultant((?)). The steps in applying for approval as an independent sanitation consultant are:

- (1) Obtain an application from the department.
- (2) Complete the application, listing your qualifications.
- (3) Each applicant must sign the application and have his/her signature notarized.
- (4) Return the application to the address on the application.

AMENDATORY SECTION (Amending WSR 98-03-089, filed 1/21/98, effective 2/21/98)

WAC 16-168-070 ((How will I know if my application for independent sanitation consultant was approved?)) Notification of application decision. (1) On approval of ((your)) an application for independent sanitation consultant, ((we)) the department will send ((you)) an

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identification card and place ((your)) the name of the independent sanitation consultant on a list of approved independent sanitation consultants that is available on request from the department.

(2) If ((we are)) the department is not able to approve ((your)) an application for independent sanitation consultant, ((we)) the department will notify ((you)) the applicant and ((tell you)) explain why within twenty-five working days after receiving the application.

AMENDATORY SECTION (Amending WSR 98-03-089, filed 1/21/98, effective 2/21/98)

WAC 16-168-075 ((How long will I stay on the)) List of approved independent sanitation consultants((?)). ((Your name)) The department will maintain a list of approved independent sanitation consultants. The names of approved independent sanitation consultants will stay on the list ((of approved independent sanitation consultants)) as long as ((you)) they continue to indicate that ((you)) they wish to remain on the list. The department will mail out information requests by April 1st of each even-numbered year to all approved independent sanitation consultants.

 $((\frac{\text{If you want}}{\text{you}}))$ $(\underline{1})$ $\underline{\text{To}}$ remain on the list, the independent sanitation consultant must fill out the request with $((\frac{\text{your}}{\text{your}}))$ current information, indicate that $((\frac{\text{you}}{\text{you}}))$ they want to remain on the list and return it to the department no later than May $1\underline{\text{st}}$.

((If you do not want to remain on)) (2) To be removed from the list, ((you ean)) the independent sanitation consultant should return the request indicating ((you)) they no longer wish to be listed as an approved independent sanitation consultant by May 1st. ((If you do not)) Failure to return the request ((your name will also be)) will also result in being removed from the list.

(3) It is the responsibility of the independent sanitation consultants to notify the department of address changes. If ((we are)) the department is unable to locate ((you)) an independent sanitation consultant at the address or telephone number ((listed with us, we will remove your name)) provided, that name will be removed from the list.

 $((\frac{\text{Your}}{\text{Our}})) (\underline{4}) \underline{\text{A}}$ name will $((\frac{\text{return}}{\text{request}})) \underline{\text{be returned}}$ to the list upon receipt of $((\frac{\text{your}}{\text{Our}})) \underline{\text{the}}$ request and new information.

AMENDATORY SECTION (Amending WSR 98-03-089, filed 1/21/98, effective 2/21/98)

WAC 16-168-080 ((What would cause the department to deny or withdraw approval of my application for approved)) Reasons for denial or withdrawal of approval as an independent sanitation consultant((?)). The department may withdraw or deny approval of independent sanitation consultants or applicants under the following circumstances:

- (1) For failing to meet the minimum qualifications in WAC 16-168-050.
- (2) For knowingly making false or inaccurate statements regarding qualifications on an application.
- (3) For failing to accurately report violative conditions present in food storage warehouse at the time of inspection.

(4) For knowingly making or acquiescing in false or inaccurate statements on inspection reports as to the date of the inspection, findings, corrective actions taken, or any other statement material to the compliance status of a warehouse.

AMENDATORY SECTION (Amending WSR 98-03-089, filed 1/21/98, effective 2/21/98)

WAC 16-168-090 ((Do I have a right to appeal denial of my application or withdrawal of my approved status as an independent sanitation consultant?)) Appeal rights. ((Yes, you have a)) Applicants and approved independent sanitation consultants have the right to appeal denial of approval or withdrawal of approval as an independent sanitation consultant under provisions of chapter 34.05 RCW, the Administrative Procedure Act and chapter 16-08 WAC, the department's practice and procedure rules.

AMENDATORY SECTION (Amending WSR 98-03-089, filed 1/21/98, effective 2/21/98)

WAC 16-168-100 ((What are the)) Reporting requirements ((for food storage warehouse inspections made by independent sanitation consultants?)). ((You)) Independent sanitation consultants can meet reporting requirements ((for independent sanitation consultants)) by using a standard food storage warehouse inspection form provided by the department or by using ((your)) their own form if it covers and indicates visual inspection of at least the following points:

STORAGE CONDITIONS

- 1. Are incoming lots examined visually for damage or contamination prior to placement in storage?
- 2. Are food products stored off the floor and away from walls?
- 3. Does firm maintain a morgue area for damaged and returned goods, sufficiently away from main storage area?
- 4. Are morgue items disposed of in a proper and timely manner to prevent a source of pest breeding and harborage?
- 5. Are fertilizers, toxic chemicals, and other potential adulterants adequately separated from human food storage areas?
- 6. Are rodenticides and insecticides properly used and stored?
- 7. Are refrigerated storage and frozen storage maintained at proper temperatures, 45 degrees or less?
- 8. Are cold storage units equipped with suitable thermometers?
- 9. Is storage area free of evidence of current insect, rodent, bird, etc., activity?

BUILDING AND GROUNDS

1. Are outside premises free from spillage, trash, etc., which may attract or harbor rodents or other pests?

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- 2. Is adequate drainage provided to avoid contamination of facilities and products?
- 3. Is the building of suitable construction and generally in good physical repair?
- 4. Are floors, walls and ceilings constructed of easily cleanable materials and kept clean?
- 5. Are doors, windows and other openings protected to eliminate entry by insects, rodents and other pests? Are open windows screened and are loading doors kept closed when not in use?
- 6. Is interior lighting sufficient to allow adequate inspection and cleaning of premises?
- 7. Are food products and processing areas protected against contamination from breakage of light bulbs and other glass fixtures?
- 8. Does firm have a scheduled cleaning and pest control program, including at least weekly inspection by qualified employees?

SANITARY OPERATIONS

- 1. Is cleaning of facilities done in such a manner as to avoid contamination of food products?
- 2. Are detergents, sanitizers, hazardous materials and other supplies used in a safe and effective manner?
- 3. Are cleaning compounds and hazardous materials kept in original containers, stored separate from food products?
- 4. Is all refuse properly stored and protected where necessary from insects, rodents and other pests and disposed of in an adequate manner?

TOILETS, DRESSING ROOMS AND EMPLOYEES

- 1. Are toilets and dressing rooms in good repair, clean, properly ventilated and adequately separated from storage areas?
- 2. Are handwashing facilities clean and supplied with soap, hot water and sanitary towels?

REPEALER

The following section of the Washington Administrative Code is repealed:

WAC 16-168-040 How is independent sanitation consultant defined in RCW 69.10.005(5)?

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-010 ((What is the)) Purpose of ((this chapter?)) rule. The purpose of this chapter is to implement chapter 69.07 RCW by establishing rules relating to the:

(1) Issuance of special permits regulating the slaughter, preparation and sale of one thousand or fewer whole raw poultry in a calendar year by the agricultural producer when

the poultry are sold directly to the ultimate consumer at the producer's farm.

(2) Conditions under which poultry identified in this chapter are slaughtered, prepared and sold that are generally patterned after those established by the state board of health for temporary food service establishments under chapter 246-215 WAC but are tailored to poultry slaughter, preparation, and sale activities.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-020 ((What)) Definitions ((are important to this chapter?)). (1) In addition to the definitions contained in this section, definitions found in chapters ((69.04 and)) 69.07 and 15.130 RCW, chapter 246-215 WAC and Title 21 C.F.R. may apply.

- (2) For the purposes of this chapter, the following definitions apply:
- "Adequate" means that which is needed to accomplish the intended purpose in keeping with good public health practices.
- "Agricultural producer" means a person or persons who raise poultry and who slaughter and sell one thousand or fewer whole raw poultry from their farm directly to the ultimate consumer.
- "Authorized person" means a person or persons who work with the agricultural producer in the preparation and slaughter of poultry under this chapter.
- "Department" means the Washington state department of agriculture (WSDA).
 - "Director" means the director of the WSDA.
- "Potable water" means water that is in compliance with chapter 16-165 WAC and with the Washington state department of health's drinking water quality standards in chapters 246-290 and 246-291 WAC.
- "Poultry" means domesticated fowl that is valued for its meat or eggs such as chickens, turkeys, ducks or geese.
- "Sanitize" means to adequately treat poultry slaughtering, preparation and sale surfaces by a process that is effective in destroying vegetative cells of microorganisms of public health significance, and in substantially reducing numbers of other undesirable microorganisms, but without adversely affecting the whole raw poultry or its safety for the consumer.
- "Special permit" means a permit to slaughter poultry issued under RCW 69.07.103. The permit expires on December 31st and is issued for either one or two years as requested by the permit applicant.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-030 ((Who is required)) Requirement to obtain a special permit ((to slaughter, prepare and sell poultry?)). An agricultural producer of poultry who slaughters and prepares one thousand or fewer poultry in a calendar year and sells the poultry as whole raw poultry from their farm to the ultimate consumer, must obtain a special permit before slaughter of the poultry.

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WAC 16-170-035 ((How can I obtain a special permit?)) Applications. (1) An application for a special permit may be obtained by:

Writing to:

Washington State Department of Agriculture Food Safety Program P.O. Box 42560 Olympia, WA 98504-2560; or Calling 360-902-1876; or Faxing to 360-902-2087; or Accessing website http://agr.wa.gov.

- (2) The department must receive the completed special permit application packet along with check or money order for the permit fee at least six weeks prior to the planned slaughter of poultry. In accordance with RCW 69.07.103(4), the fee for the special permit is seventy-five dollars for one year, or one hundred twenty-five dollars for two years.
 - (3) The special permit application packet must include:
 - (a) A completed application form;
 - (b) A diagram of the slaughter/preparation site;
- (c) A description of the processing steps or a process flow diagram;
- (d) The proposed days or dates of slaughter for the current year;
- (e) A description of the rinse water and offal disposal procedures; and
- (f) Documentation verifying that the water used at the slaughter/preparation site complies with the requirements in WAC 16-170-155. If the well, spring or other private water supply, the water must have a passing bacterial test conducted within sixty days of submitting the application to the department. A copy of the test results must be attached to the special permit application.
- (4) Once WSDA receives the special permit application, the applicant will be contacted to schedule an on-site inspection. The inspection must occur before the special permit can be further processed or issued.
- (5) Once received, the special permit must be prominently and conspicuously posted at the slaughter site so customers are able to see it.
- (6) Slaughtering, preparing and selling poultry regulated by this chapter is prohibited prior to receipt of the special permit.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-036 ((What other)) Additional information ((must I submit to the department if I am issued)) required for a two-year special permit((?)). A two-year special permit holder must submit to the department the following information at least six weeks prior to slaughtering poultry during the second year of the permit:

- (1) The proposed second year days or dates of slaughter; and
- (2) If the site utilized a well, spring or other private water supply, a copy of a passing bacterial test conducted within

sixty days prior to submitting the second year slaughter dates to the department.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-037 ((What type of slaughter/preparation)) Site diagram ((is required?)) requirements. (1) The site diagram must clearly show the location of all poultry slaughter and preparation equipment, contact work surfaces, chilling equipment, equipment washing and sanitizing sinks or tubs, handwashing areas, rinse water and offal collection areas and poultry rearing areas.

(2) All items illustrated on the site diagram under subsection (1) of this section must be clearly labeled.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-041 ((Must I reapply for a special permit if there is a)) Significant change in ((the)) conditions ((under which my))—Two-year special permit ((was issued?)). (1) If there is a significant change in the conditions under which the two-year special permit is issued, you must reapply for a special permit under WAC 16-170-035. Significant change under this section means a substantial change in the information previously submitted to the department under WAC 16-170-035.

(2) If the special permit holder was issued a two-year special permit and must reapply for a permit under this section, the department will apply fifty dollars of the two-year permit fee towards the new permit application fee.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-050 ((Must I notify the department before I change the dates I plan to slaughter my poultry?)) Change of slaughter dates. The department must be notified at least one week in advance if slaughter of poultry regulated by this chapter is planned on dates other than those previously reported to the department. The department may be notified by mail, email, fax, or by telephone followed by a written confirmation.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-060 ((What happens when I reach the one thousand poultry limit in the statute?)) Slaughter limit. The special permit issued under this chapter provides for the slaughter of a total of one thousand or fewer whole raw poultry to the ultimate consumer. Agricultural producers who slaughter more than one thousand poultry in a calendar year must comply with the requirements of chapter 69.07 RCW.

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WAC 16-170-070 ((What are the)) Site requirements ((for slaughtering, preparing and selling poultry covered by this chapter?)). At a minimum, the poultry slaughter/preparation site must:

- (1) Be constructed or assembled to minimize insects, pests, birds, dust, mud and overhead contamination;
- (2) Include adequate lighting to illuminate the areas where poultry are slaughtered, prepared and sold;
 - (3) Have an adequate handwashing station;
 - (4) Be readily accessible to a toilet facility;
 - (5) Include potable running water;
- (6) Include a means of safely disposing of rinse water and offal; and
- (7) Means of properly cooling slaughtered poultry unless the customer takes possession within four hours.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-075 ((What)) Equipment requirements ((apply to the equipment used to slaughter, prepare and sell poultry covered by this chapter?)). All equipment used to slaughter, prepare and sell poultry must be readily cleanable and in good repair.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-080 ((Can a)) <u>Use of</u> mobile processing unit ((be used to slaughter, prepare and sell poultry covered by this chapter?)). If the mobile processing unit (MPU) is a self-contained processing unit that meets all of the conditions designed for the sanitary processing of poultry under this chapter, a MPU may be used.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

- WAC 16-170-090 ((Who can be in my poultry))
 Access to slaughter site ((while the slaughter-preparation process is taking place?)). (1) Only authorized persons may be present in the poultry slaughter site while the slaughter-preparation process is taking place. Unauthorized persons must be kept out of the site.
- (2) Any authorized person infected with a communicable disease, has open sores or infected cuts on hands, is vomiting or has diarrhea is prohibited from working in the poultry slaughter site.
- (3) Authorized persons are prohibited from smoking, eating or drinking while in the poultry slaughter site.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-100 ((Must I wear)) Protective clothing ((while slaughtering, processing and selling poultry covered by this chapter?)). Anyone slaughtering, preparing and selling poultry covered by this chapter must:

- (1) Wear clean and adequate clothing.
- "Clean and adequate" means that the clothing must be:
- (a) Clean at the start of the slaughter-preparation-sale process; and
- (b) Changed when the clothing becomes soiled when contamination of the raw whole poultry, any process work surface, the equipment used to chill slaughtered poultry or the bags used to transport poultry that are sold becomes imminent; and
- (c) Suitable to the specific part of the process (slaughter, preparation or sale).
- (2) Remove hand jewelry that cannot be adequately sanitized during periods when carcasses are handled by hand. If such hand jewelry cannot be removed, impermeable or disposable gloves must be worn.
- (3) Maintain gloves, if they are used in processing, in an intact, clean, and sanitary condition. The gloves should be of an impermeable material.
- (4) Clean and effective hair restraints, such as hairness or beard nets are not required, but hats, caps, scarves or other head covers are recommended to prevent contamination of the whole raw poultry being slaughtered, prepared and sold.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-110 ((Can I store)) Storage of personal garments and belongings ((in my poultry slaughter site?)). All personal garments and belongings must be stored separately and apart from the poultry slaughter site to ensure that they do not become a source of contamination to the raw whole poultry, slaughter and preparation work surfaces and equipment, and the bags used to transport poultry that are sold.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-115 ((Can I store)) Storage of detergents, sanitizers and other materials ((in my poultry slaughter site?)). (1) Commercially purchased detergents, sanitizers and other materials related to the process may be stored in the poultry slaughter site if they are properly labeled with:

- (a) Product name;
- (b) Chemical description;
- (c) Directions for use;
- (d) Any required precautionary and warning statements;
- (e) First-aid instructions;
- (f) Name and address of the manufacturer or distributor; and
- (g) Any other information required by the U.S. Environmental Protection Agency or other laws or rules.
- (2) Small "transport" or "use" containers containing detergents, sanitizers or other materials may be stored in the slaughter site but only under the following conditions:
- (a) The contents must be properly identified on the container. Labeling the container with the common name is acceptable if the original commercially purchased storage container is on hand and properly identified.

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- (b) Food containers must not be used as containers for detergents, sanitizers or toxic materials.
- (c) Containers used for detergents, sanitizers or other materials must not be used as food containers.

- WAC 16-170-120 ((Must I wash my hands before slaughtering poultry?)) Handwashing requirements. (1) Anyone involved in the poultry slaughter process must adequately wash their hands:
 - (a) Before the poultry slaughtering process begins;
- (b) Between the slaughtering and preparation steps in the process;
- (c) Between the poultry preparation and sale steps in the process;
- (d) After each absence from the poultry slaughter site; and
 - (e) Any time hands become contaminated.
- (2) "Adequately washing hands" means thoroughly washing hands to prevent contaminating the slaughtered poultry. Adequate handwashing methods consist of:
 - (a) Applying soap to hands;
 - (b) Using warm water;
 - (c) Scrubbing your hands thoroughly; and
- (d) Using methods to rinse and dry hands that prevent contamination.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

- WAC 16-170-125 ((Are)) Handwashing stations ((required at my poultry slaughter site?)). (1) Anyone involved in the poultry slaughter process must have access to at least one handwashing station equipped with warm running water, hand soap, and paper towels.
- (2) Handwashing stations must be conveniently located in the poultry slaughter site and near toilet facilities.
- (3) If handwashing stations are not conveniently located in the poultry slaughter site and near toilet facilities, five-gallon insulated containers with continuous flow spigots filled with warm water between one hundred and one hundred and twenty degrees Fahrenheit with pump type liquid soap, paper towels and five-gallon buckets to catch rinse water are required on-site and near the toilet facilities.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-130 ((Can I use)) Hand dips ((at my poultry slaughter site?)) and hand sanitizing stations. (1) "Hand dips" or "hand sanitizing stations" are recommended but not required in the poultry slaughter site. Sanitizing hands using hand dips or hand sanitizing stations is not a substitute for adequate handwashing methods. However, if hand dips are used, they must be properly positioned and maintained.

- (2) "Properly maintained" means sanitizing solutions are:
- (a) Checked and recharged to a strength equal to 100 PPM chlorine or 25 PPM iodine; and

(b) Changed every four hours while in use.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

- WAC 16-170-135 ((Do I need a toilet near my poultry slaughter site?)) Toilet requirements. (1) At least one toilet must be available and conveniently located at the poultry slaughter site.
- (2) A domestic toilet is sufficient if the poultry slaughter operation is a family operation where only family members are employed. However, if the operation has employees, toilet facilities must be provided at the slaughtering site or employees must be allowed to use the domestic toilet.
- (3) Portable chemical toilets may be used at the poultry slaughter site if they are conveniently located with a self-closing door, screened to exclude insects, and properly maintained.
- (4) All nondomestic toilet areas must be kept clean, free of trash and litter, and in good repair. All doors used to enter the nondomestic toilet area must be self-closing and must not open directly into the poultry slaughter site.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

- WAC 16-170-140 ((What)) Offal and rinse water disposal requirements ((apply to my poultry slaughter site?)). The poultry slaughter site must be designed and maintained to ensure that the:
- (1) Offal and rinse water the site generates are readily and safely removed; and
- (2) Offal and rinse water do not create an unsanitary condition or contaminate:
 - (a) The raw whole poultry;
- (b) Any potable water stored and used at the slaughter site;
 - (c) Any product contact surfaces at the slaughter site; or
- (d) Any bags used to package raw whole poultry sold to the ultimate consumers.
- (3) The rinse water disposal system must not allow any backflow from or cross connection between the piping that discharges rinse water and the piping that carries potable water to the poultry slaughter area.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

- WAC 16-170-145 ((How do I store my poultry)) Storage requirements for slaughter equipment and utensils ((to prevent contamination?)). (1) All of the poultry slaughter equipment and utensils must be stored so they will not become contaminated between uses.
- (2) All utensils used to slaughter and prepare poultry, such as knives, scrapers, scoops, shovels, cutters, and other hand tools and equipment, must be placed or stored to prevent contact surfaces from being contaminated.
- (3) Contaminated equipment and utensils must be cleaned and sanitized before they are used again.

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- WAC 16-170-150 ((How do I ensure that my poultry slaughter contact surfaces are clean and maintained in a sanitary condition?)) Cleaning and sanitizing requirements. (1) All contact surfaces of equipment, utensils, containers and other articles used in the slaughter and preparation of poultry, must be kept free of any residue or contaminant that could contaminate or adulterate (as defined in RCW ((69.04.210)) 15.130.200), the raw whole poultry carcass.
- (2) Residues and contaminants must frequently be removed from all slaughter and preparation contact surfaces to prevent the residues from becoming:
- (a) Unwholesome or unfit for the raw whole poultry carcass;
 - (b) Decomposed, filthy, or putrid; or
 - (c) Injurious to public health.
- (3) All poultry slaughter and preparation contact surfaces must be sanitized:
 - (a) Before they are used; and
 - (b) After they are cleaned.
- (4) A separate bucket of sanitizer must be kept in the poultry slaughter site for rinsing/storing the wipe down cloths used to sanitize all slaughter equipment and slaughter/preparation contact surfaces. The sanitizing solution in the bucket should be at a minimum 100 ppm (mg/L) for chlorine solution or 50 ppm (mg/L) for iodine solution.
- (5) Any noncarcass contact surfaces of equipment used in the slaughter of poultry must be kept reasonably free of dirt, old slaughter/preparation residues, foreign material, dust, mold, mildew, slime and other accumulations that occur as a result of the slaughter/preparation operation.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

WAC 16-170-155 ((What requirements apply to the water used in my poultry slaughter site?)) Water requirements. (1) Any water used in the slaughter, preparation or sale of your poultry must be of a safe and sanitary quality, which means the water supply is potable from an approved source and is monitored according to applicable laws and rules.

- (2) Processors that operate from single-family residences on private water supplies need only meet bacteriological testing requirements. Optionally, potable water may be hauled onto the poultry slaughter site for use by the processor as long as the transport vehicle and water are of safe and sanitary quality.
- (3) Water used from a private water system for the slaughter, preparation or sale of poultry must be sampled and tested at least annually. Copies of water test reports must be on file at the farm and available for review by WSDA during routine slaughter site inspections.
- (4) Any ice manufactured on the farm for use in the poultry slaughter process must be manufactured from potable water.
- (5) All ice used at the poultry slaughter site that is not manufactured on the farm must be from an approved source.

(6) All ice used at the poultry slaughter site must be properly handled and stored to protect against contamination.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

- WAC 16-170-170 ((What requirements apply to the storing and handling of the bags I give my customers to transport the poultry they purchase from me?)) Packaging requirements. (1) All bags used to package the slaughtered whole poultry must be new, of food grade quality and properly handled and stored, which means they must be protected from potential sources of contamination when they are handled and stored.
- (2) Methods of properly handling and storing bags at the poultry slaughter site include, but are not limited to:
- (a) All bags must be stored off of the floor or any other unsanitary surfaces.
- (b) All bags must be stored in closed boxes or cartons before they are used.
- (c) Bags must be removed from the closed box or carton in a way that prevents contamination.
- (d) When a slaughtered whole poultry is inserted into a bag, the bag must be handled so it and the poultry is not exposed to contamination by dust, foreign material or other contaminants.
- (e) Any bag dropped on the floor or some other unsanitary surface must not be used.

AMENDATORY SECTION (Amending WSR 09-16-035, filed 7/28/09, effective 8/28/09)

- WAC 16-170-175 ((What)) Requirements ((apply to)) for the chilling and storing of slaughtered poultry((?)). (1) All slaughtered poultry must be chilled to a temperature at or below forty-five degrees Fahrenheit within four hours of slaughter unless the customer takes possession of the slaughtered poultry during this time.
- (2) Chilling poultry may be accomplished through the use of mechanical refrigeration, an ice chest using ice from an approved source (see WAC 16-170-155), or by being immersed in cold running water.
- (3) A temperature control (TC) must be used to monitor slaughter cool down temperature by inserting a calibrated thermometer into the thickest portion of the first slaughtered poultry carcass and monitoring the temperature to ensure proper chilling at or below forty-five degrees Fahrenheit within four hours of slaughter.
- (4)(a) Slaughtered poultry can be stored for up to forty-eight hours before they are sold.
- (b) During their storage period, poultry carcass temperatures must be kept at or less than forty-five degrees Fahrenheit by mechanical refrigeration equipped with a thermometer or by maintaining the carcasses in a properly designed storage container with the use of a temperature control (TC) as outlined in subsection (3) of this section.
- (5) All chilled and/or stored poultry carcasses must be protected from physical, chemical, microbial contamination and deterioration.

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WAC 16-170-180 ((What)) Recordkeeping requirements ((apply to my special permit poultry slaughter operation?)). (1) At a minimum, the following records must be kept at the special permit holder's farm:

- (a) A record of the poultry slaughter dates;
- (b) The number of poultry by species slaughtered on each slaughter date and the cumulative total of poultry by species slaughtered;
- (c) The temperature control log monitoring proper poultry slaughter cool down and storage; and
- (d) The water testing records if required by WAC 16-170-155.
- (2) All records required under subsection (1) of this section must be:
- (a) Maintained so that the information they intend to convey is clear and understandable.
- (b) Available at the farm and available to department inspectors upon request.
- (c) Retained at the farm for six months after the expiration of the special permit.

WSR 20-12-098 EXPEDITED RULES DEPARTMENT OF AGRICULTURE

[Filed June 3, 2020, 6:44 a.m.]

Title of Rule and Other Identifying Information: Chapter 16-149 WAC, Cottage foods, the department is proposing amendments to this rule to align with the revised labeling requirements in HB 2217 (chapter 171, Laws of 2020), and to reflect the restructuring of chapter 69.04 RCW that moved the food related requirements into chapter 15.130 RCW.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Effective June 11, 2020, HB 2217 (chapter 171, Laws of 2020) requires the label on cottage food products to list the permit number issued to the cottage food business instead of the physical address. The department is amending WAC 16-149-110 to mirror this change in the statute.

Effective June 7, 2018, all of the provisions regarding the regulation of food under chapter 69.04 RCW were moved under chapter 15.130 RCW. The department is replacing the reference to chapter 69.04 RCW in WAC 16-149-020 with a reference to chapter 15.130 RCW.

Reasons Supporting Proposal: During the 2020 legislative session, the Washington state legislature passed an amendment to the labeling requirements for licensed cottage food operators. The amendment removes the requirement for the label to contain the address of the cottage food business, instead it requires the operator to list their permit number. Ensuring that the rule language regarding labeling requirements matches what is in statute is necessary to reduce confusion for stakeholders and to ensure compliance.

Replacing the reference to chapter 69.04 RCW with chapter 15.130 RCW is necessary to accurately reflect the appropriate statute.

Statutory Authority for Adoption: RCW 69.22.020.

Statute Being Implemented: Chapter 69.22 RCW; and chapter 171, Laws of 2020.

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: David Smith, 1111 Washington Street S.E., Olympia, WA 98504, 360-902-1952.

This notice meets the following criteria to use the expedited adoption process for these rules:

Adopts or incorporates by reference without material change federal statutes or regulations, Washington state statutes, rules of other Washington state agencies, shoreline master programs other than those programs governing shorelines of statewide significance, or, as referenced by Washington state law, national consensus codes that generally establish industry standards, if the material adopted or incorporated regulates the same subject matter and conduct as the adopting or incorporating rule.

Content is explicitly and specifically dictated by statute. Explanation of the Reason the Agency Believes the Expedited Rule-Making Process is Appropriate: Replacing references to chapter 69.04 RCW with chapter 15.130 RCW and changing the labeling requirement to include the permit number rather than the physical address of the cottage food business meets the criteria for expedited adoption under RCW 34.05.353 (1)(b) by adopting Washington state statutes and RCW 34.05.353 (1)(d) because the content is explicitly and specifically dictated by statute.

NOTICE

THIS RULE IS BEING PROPOSED UNDER AN EXPEDITED RULE-MAKING PROCESS THAT WILL ELIMINATE THE NEED FOR THE AGENCY TO HOLD PUBLIC HEARINGS, PREPARE A SMALL BUSINESS ECONOMIC IMPACT STATEMENT, OR PROVIDE RESPONSES TO THE CRITERIA FOR A SIGNIFICANT LEGISLATIVE RULE. IF YOU OBJECT TO THIS USE OF THE EXPEDITED RULE-MAKING PROCESS, YOU MUST EXPRESS YOUR OBJECTIONS IN WRITING AND THEY MUST BE SENT TO Gloriann Robinson, Agency Rules Coordinator, Washington State Department of Agriculture, P.O. Box 42560, Olympia, WA 98504-2560, phone 360-902-1802, fax 360-902-2092, email wsdarules comments@agr.wa.gov, AND RECEIVED BY August 3, 2020.

June 3, 2020 Steve Fuller Assistant Director

AMENDATORY SECTION (Amending WSR 16-06-014, filed 2/19/16, effective 3/21/16)

WAC 16-149-020 **Definitions.** (1) In addition to the definitions contained in this section and chapter 69.22 RCW, the definitions found in chapters ((69.04,)) 69.06, ((and))

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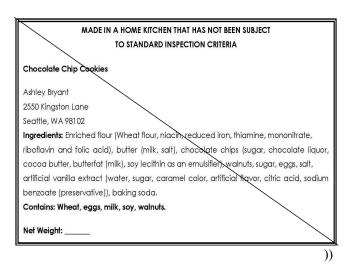
- 69.07<u>, and 15.130</u> RCW, chapters 16-165, 16-167, and 246-215 WAC, and Title 21 C.F.R. may apply.
- (2) For the purposes of this chapter, the following definitions apply:
- "Adequate" means that which is needed to accomplish the intended purpose in keeping with good public health practices.
- "Approved source" means a food source that is routinely and regularly inspected by a regulatory authority.
- "Authorized person" means a person or persons who work with the cottage food operator in the preparation of cottage food products under this chapter.
 - "C.F.R." means the Code of Federal Regulations.
- "Consumer" means a person who is a member of the public, takes possession of food for personal and nonbusiness use; is not functioning as an operator of a food establishment, such as a restaurant, bed and breakfast, or other business operation, or food processing plant; and does not offer the food for resale.
- "Cottage food operation" means a person who produces cottage food products only in the home kitchen of that person's primary domestic residence in Washington and only for sale directly to the consumer.
- "Cottage food operation permit" means a permit to produce and sell cottage food products under chapter 69.22 RCW.
- "Cottage food products" means nonpotentially hazardous baked goods, candies, jams, jellies, preserves, and fruit butters as defined in 21 C.F.R. 150 as it existed on July 22, 2011; and other nonpotentially hazardous foods identified in WAC 16-149-120.
 - "Department" means the department of agriculture.
- "Director" means the director of the department of agriculture.
- "Domestic residence" means a single-family dwelling or an area within a rental unit where a single person or family actually resides. A domestic residence does not include:
- (a) A group or communal residential setting within any type of structure; or
 - (b) An outbuilding, shed, barn, or other similar structure.
- **"Food worker card"** means a food and beverage service worker's permit as required under chapter 69.06 RCW.
- "Home kitchen" means a kitchen primarily intended for use by the residents of a home. It may contain one or more stoves or ovens, which may be a double oven, designed for residential use.
- "Labeling" means written, printed or graphic matter affixed to or used in connection with the sales of a cottage food product and intended to communicate the characteristics of the cottage food product including, but not limited to, the origin, ingredients, quality, quantity, or nutritional benefits of the product.
- "Master or base recipe" means a standard mixture of ingredients from which variations may be created by adding small amounts of differing flavorings, dried fruits, nuts, candies, or the like. For example, variations of master or base muffin recipe may be created by adding walnuts to create a walnut muffin, adding cranberries and orange zest to create orange cranberry muffins, and so on.

- "Permitted area" means the portion of a domestic residence housing a home kitchen where the preparation, packaging, storage, or handling of cottage food products occurs.
- "Pet" means any domesticated animal, regardless of species or number of legs, kept in the domestic residence.
- "Potable water" means water that is in compliance with the Washington state department of health's drinking water quality standards in chapters 246-290 and 246-291 WAC.
- "Potentially hazardous food" means foods requiring temperature control for safety because they are capable of supporting the rapid growth of pathogenic or toxigenic microorganisms, or the growth and toxin production of *Clostridium botulinum*.

AMENDATORY SECTION (Amending WSR 16-06-014, filed 2/19/16, effective 3/21/16)

- WAC 16-149-110 Labeling. (1) A cottage food operation may only sell cottage food products which are prepackaged (except for certain products as outlined in subsection (2) of this section) with a label affixed that contains the following information (printed in English):
- (a) The name and ((address)) permit number issued under RCW 69.22.030 of the business of the cottage food operation;
 - (b) The name of the cottage food product;
- (c) The ingredients of the cottage food product, in descending order of predominance by weight. Ingredients made from subcomponents must also list the subcomponents. For example, "imitation vanilla extract (water, sugar, caramel color, artificial flavor, citric acid, sodium benzoate (preservative))";
- (d) The net weight or net volume of the cottage food product, metric weight is not required;
- (e) Allergen information as specified by federal labeling requirements;
- (f) If any nutritional claim is made, appropriate nutritional information as specified by federal labeling requirements; and
- (g) The following statement printed in at least the equivalent 11-point type in a color that provides a clear contrast to the background label: "Made in a Home Kitchen that has not been subject to standard inspection criteria." ((A label sample is shown below.

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- (2) The department may allow large cakes or a container of bulk products to be handled and labeled in the following manner:
- (a) Be protected from contamination during transportation to the consumer.
- (b) Have a product label sheet with all the required information as listed in subsection (1) of this section provided to the consumer.

WSR 20-12-102 EXPEDITED RULES BUILDING CODE COUNCIL

[Filed June 3, 2020, 8:52 a.m.]

Title of Rule and Other Identifying Information: Chapter 51-11R WAC, 2018 Washington State Energy Code, Residential.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: This filing corrects various internal code references and typographical errors.

Reasons Supporting Proposal: Upon review of the filed copy for the adoption of the 2018 Energy Code under WSR 20-01-047, there were a number of section references that were not updated to correlate with the revisions to the code text. There are also areas where the grammar is corrected and terms are revised for consistency between figures and text.

Statutory Authority for Adoption: RCW 19.27A.045.

Statute Being Implemented: Chapter 19.27A RCW.

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

Name of Proponent: Governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Krista Braaksma, 1500 Jefferson Street S.E., Olympia, 360-407-9278; and Enforcement: Local jurisdictions.

This notice meets the following criteria to use the expedited adoption process for these rules:

Corrects typographical errors, make address or name changes, or clarify language of a rule without changing its effect.

NOTICE

THIS RULE IS BEING PROPOSED UNDER AN EXPEDITED RULE-MAKING PROCESS THAT WILL ELIMINATE THE NEED FOR THE AGENCY TO HOLD PUBLIC HEARINGS, PREPARE A SMALL BUSINESS ECONOMIC IMPACT STATEMENT, OR PROVIDE RESPONSES TO THE CRITERIA FOR A SIGNIFICANT LEGISLATIVE RULE. IF YOU OBJECT TO THIS USE OF THE EXPEDITED RULE-MAKING PROCESS, YOU MUST EXPRESS YOUR OBJECTIONS IN WRITING AND THEY MUST BE SENT TO Diane Glenn, Chair, Washington State Building Code Council, P.O. Box 41449, Olympia, WA 98504-1449, phone 360-407-9255, email sbcc@des.wa.gov, AND RECEIVED BY August 18, 2020.

June 2, 2020 Diane Glenn Council Chair

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-10400 Section R104—Inspections.

R104.1 General. Construction or work for which a permit is required shall be subject to inspection by the *code official* or his or her designated agent, and such construction or work shall remain visible and able to be accessed for inspection purposes until *approved*. It shall be the duty of the permit applicant to cause the work to remain visible and able to be accessed for inspection purposes. Neither the *code official* nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material, product, system or building component required to allow inspection to validate compliance with this code.

R104.2 Required inspections. The *code official* or his or her designated agent, upon notification, shall make the inspections set forth in Sections R104.2.1 through R104.2.5.

R104.2.1 Footing and foundation inspection. Inspections associated with footings and foundations shall verify compliance with the code as to *R*-value, location, thickness, depth of burial and protection of insulation as required by the code and approved plans and specifications.

R104.2.2 Framing and rough-in inspection. Inspections at framing and rough-in shall be made before application of interior finish and shall verify compliance with the code as to types of insulation and corresponding *R*-values and their correct location and proper installation; fenestration properties (*U*-factor and SHGC) and proper installation; and air leakage controls as required by the code and approved plans and specifications.

R104.2.2.1 Wall insulation inspection. The ((building)) <u>code</u> <u>official</u>, upon notification, shall make a wall insulation inspection in addition to those inspections required in Section R109 of the International Residential Code. This inspection

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shall be made after all wall and cavity insulation is in place and prior to cover.

R104.2.3 Plumbing rough-in inspection. Inspections at plumbing rough-in shall verify compliance as required by the code and approved plans and specifications as to types of insulation and corresponding *R*-values and protection, and required controls.

R104.2.4 Mechanical rough-in inspection. Inspections at mechanical rough-in shall verify compliance as required by the code and approved plans and specifications as to installed HVAC equipment type and size, required controls, system insulation and corresponding *R*-value, system air leakage control, programmable thermostats, dampers, whole-house ventilation and minimum fan efficiency.

EXCEPTION: Systems serving multiple dwelling units shall be inspected in accordance with Section C104.2.4.

R104.2.5 Final inspection. The building shall have a final inspection and not be occupied until *approved*.

R104.3 Reinspection. A building shall be reinspected when determined necessary by the *code official*.

R104.4 Approved inspection agencies. The *code official* is authorized to accept reports of third-party inspection agencies not affiliated with the building design or construction, provided such agencies are *approved* as to qualifications and reliability relevant to the building components and systems they are inspecting.

R104.5 Inspection requests. It shall be the duty of the holder of the permit or their duly authorized agent to notify the *code official* when work is ready for inspection. It shall be the duty of the permit holder to provide access to and means for inspections of such work that are required by this code.

R104.6 Reinspection and testing. Where any work or installation does not pass an initial test or inspection, the necessary corrections shall be made so as to achieve compliance with this code. The work or installation shall then be resubmitted to the *code official* for inspection and testing.

R104.7 Approval. After the prescribed tests and inspections indicate that the work complies in all respects with this code, a notice of approval shall be issued by the *code official*.

R104.7.1 Revocation. The *code official* is authorized to, in writing, suspend or revoke a notice of approval issued under the provisions of this code wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure, premise, or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-20215 Section R202.15—O.

OPAQUE DOOR. A door that is not less than 50 percent opaque in surface area.

((PHLOT LIGHT, CONTINUOUSLY BURNING. A small gas flame used to ignite gas at a larger burning. Once lit, a continuous

pilot light remains in operation until manually interrupted. Pilot light ignition systems with the ability to switch between intermittent and continuous mode are considered continuous. PHOT LIGHT, INTERMITTENT. A pilot which is automatically ignited when an appliance is called on to operate and which remains continuously ignited during each period of main burner operation. The pilot is automatically extinguished when each main burner operating cycle is completed.

PHLOT LIGHT, INTERRUPTED. A pilot which is automatically ignited prior to the admission of fuel to the main burner and which is automatically extinguished after the main flame is established.

PHLOT LIGHT, ON DEMAND. A pilot which, once placed into operation, is intended to remain ignited for a predetermined period of time following an automatic or manual operation of the main burner gas valve.))

AMENDATORY SECTION (Amending WSR 13-04-055, filed 2/1/13, effective 7/1/13)

WAC 51-11R-20216 Section R202.16—P. PILOT LIGHT, CONTINUOUSLY BURNING. A small gas flame used to ignite gas at a larger burning. Once lit, a continuous pilot light remains in operation until manually interrupted. Pilot light ignition systems with the ability to switch between intermittent and continuous mode are considered continuous. PILOT LIGHT, INTERMITTENT. A pilot which is automatically ignited when an appliance is called on to operate and which remains continuously ignited during each period of main burner operation. The pilot is automatically extinguished when each main burner operating cycle is completed.

PILOT LIGHT, INTERRUPTED. A pilot which is automatically ignited prior to the admission of fuel to the main burner and which is automatically extinguished after the main flame is established.

PILOT LIGHT, ON-DEMAND. A pilot which, once placed into operation, is intended to remain ignited for a predetermined period of time following an automatic or manual operation of the main burner gas valve.

PROPOSED DESIGN. A description of the proposed building used to estimate annual energy use for determining compliance based on total building performance.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-30310 Section R303.1—Identification.

R303.1 Identification. Materials, systems and equipment shall be identified in a manner that will allow a determination of compliance with the applicable provisions of this code.

R303.1.1 Building thermal envelope insulation. An *R*-value identification mark shall be applied by the manufacturer to each piece of *building thermal envelope* insulation 12 inches (305 mm) or greater in width. Alternately, the insulation installers shall provide a certification listing the type, manufacturer and *R*-value of insulation installed in each element of the *building thermal envelope*. For blown or sprayed insulation (fiberglass and cellulose), the initial installed thickness, settled thickness, settled *R*-value, installed density,

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coverage area and number of bags installed shall be *listed* on the certification. For sprayed polyurethane foam (SPF) insulation, the installed thickness of the areas covered and *R*-value of installed thickness shall be *listed* on the certification. For insulated siding, the *R*-value shall be labeled on the product's package and shall be listed on the certification. The insulation installer shall sign, date and post the certification in a conspicuous location on the job site.

EXCEPTION:

For roof insulation installed above the deck, the *R*-value shall be labeled as required by the material standards specified in Table 1508.5 of the *International Building Code* or Table R906.2 of the *International Residential Code*.

R303.1.1.1 Blown or sprayed roof/ceiling insulation. The thickness of blown-in or sprayed roof/ceiling insulation (fiberglass or cellulose) shall be written in inches (mm) on markers that are installed at least one for every 300 square feet (28 m²) throughout the attic space. The markers shall be affixed to the trusses or joists and marked with the minimum initial installed thickness with numbers a minimum of 1 inch (25 mm) in height. Each marker shall face the attic access opening. Spray polyurethane foam thickness and installed *R*-value shall be *listed* on certification provided by the insulation installer.

((EXCEPTION:

For roof insulation installed above the deck, the *R*-value shall be labeled as required by the material standards specified in Table 1508.5 of the *International Building-Code* or Table R906.2 of the *International Residential Code*.))

R303.1.2 Insulation mark installation. Insulating materials shall be installed such that the manufacturer's *R*-value mark is readily observable upon inspection.

R303.1.3 Fenestration product rating. *U*-factors of fenestration products (windows, doors and skylights) shall be determined in accordance with NFRC 100.

EXCEPTION:

Where required, garage door *U*-factors shall be determined in accordance with either NFRC 100 or ANSI/DASMA 105.

U-factors shall be determined by an accredited, independent laboratory, and labeled and certified by the manufacturer.

Products lacking such a labeled *U*-factor shall be assigned a default *U*-factor from Table R303.1.3(1), R303.1.3(2) or R303.1.3(4). The solar heat gain coefficient (SHGC) and visible transmittance (VT) of glazed fenestration products (windows, glazed doors and skylights) shall be determined in accordance with NFRC 200 by an accredited, independent laboratory, and labeled and certified by the manufacturer. Products lacking such a labeled SHGC or VT shall be assigned a default SHGC or VT from Table R303.1.3(3).

EXCEPTIONS

- 1. Units without NFRC ratings produced by a *small business* may be assigned default *U*-factors from Table R303.1.3(5) for vertical fenestration.
- 2. Owner-built, nonoperable wood frame window consisting of a double pane unit with low-e (E = 0.04 or less), 1/2-inch air space with argon fill.

R303.1.4 Insulation product rating. The thermal resistance (*R*-value) of insulation shall be determined in accordance

with the U.S. Federal Trade Commission *R*-value rule (C.F.R. Title 16, Part 460) in units of $h \times ft^2 \times {}^{\circ}F/Btu$ at a mean temperature of 75°F (24°C).

R303.1.4.1 Insulated siding. The thermal resistance (*R*-value) of insulated siding shall be determined in accordance with ASTM C1363. Installation for testing shall be in accordance with the manufacturer's installation instructions.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-30311 Table R303.1.3(1)—Default glazed fenestration U-factor.

TABLE R303.1.3(1) DEFAULT GLAZED WINDOW, GLASS DOOR AND SKYLIGHT U-FACTOR

FRAME TYPE	SINGLE PANE	DOUBLE PANE	
Metal	1.20	0.80	SKYLIGHT
Metal with Thermal Break ^a	1.10	0.65	See Table R303.1.3(4)
Nonmetal or Metal Clad	0.95	0.55	
Glazed Block		0.60	

^a Metal Thermal Break = A metal thermal break framed window shall incorporate the following minimum design characteristics:

AMENDATORY SECTION (Amending WSR 13-04-055, filed 2/1/13, effective 7/1/13)

WAC 51-11R-30314 Table R303.1.3(4)—Default U-factors for skylights.

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¹⁾ The thermal conductivity of the thermal break material shall be not more than 3.6 Btu-in/h/ft²/°F;

²⁾ The thermal break material must produce a gap in the frame material of not less than 0.210 inches; and

³⁾ 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))) 1) and 2) above.

TABLE R303.1.3(4) DEFAULT *U*-FACTORS FOR SKYLIGHTS

	Frame Type						
Fenestration Type	Aluminum Without Thermal Break	Aluminum With Thermal Break	Reinforced Vinyl/Aluminum- Clad Wood or Vinyl	Wood or Vinyl-Clad Wood/Vinyl Without Rein- forcing			
Single Glazing			·				
glass	U-1.58	U-1.51	U-1.40	U-1.18			
acrylic/polycarb	U-1.52	U-1.45	U-1.34	U-1.11			
Double Glazing							
air	U-1.05	U-0.89	U-0.84	U-0.67			
argon	U-1.02	U-0.86	U-0.80	U-0.64			
Double Glazing, e = 0.20							
air	U-0.96	U-0.80	U-0.75	U-0.59			
argon	U-0.91	U-0.75	U-0.70	U-0.54			
Double Glazing, e = 0.10							
air	U-0.94	U-0.79	U-0.74	U-0.58			
argon	U-0.89	U-0.73	U-0.68	U-0.52			
Double Glazing, e = 0.05							
air	U-0.93	U-0.78	U-0.73	U-0.56			
argon	U-0.87	U-0.71	U-0.66	U-0.50			
Triple Glazing							
air	U-0.90	U-0.70	U-0.67	U-0.51			
argon	U-0.87	U-0.69	U-0.64	U-0.48			
Triple Glazing, e = 0.20							
air	U-0.86	U-0.68	U-0.63	U-0.47			
argon	U-0.82	U-0.63	U-0.59	U-0.43			
Triple Glazing, $e = 0.20$ on 2 surfaces							
air	U-0.82	U-0.64	U-0.60	U-0.44			
argon	U-0.79	U-0.60	U-0.56	U-0.40			
Triple Glazing, e = 0.10 on 2 surfaces							
air	U-0.81	U-0.62	U-0.58	U-0.42			
argon	U-0.77	U-0.58	U-0.54	U-0.38			
Quadruple Glazing, e = 0.10 on 2 surfaces							
air	U-0.78	U-0.59	U-0.55	U-0.39			
argon	U-0.74	U-0.56	U-0.52	U-0.36			
krypton	U-0.70	U-0.52	U-0.48	U-0.32			

Notes for Table R303.1.3(4)

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 $^{1.\} U-factors\ are\ applicable\ to\ ((\frac{both}{}))\ glass\ and\ plastic,\ flat\ and\ domed\ units,\ all\ spacers\ and\ gaps.$

^{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 1 to Table R303.1.3(1).

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-40220 Section R402.2—Specific insulation requirements.

R402.2 Specific insulation requirements. In addition to the requirements of Section R402.1, insulation shall meet the specific requirements of Sections R402.2.1 through R402. 2.11.

R402.2.1 Ceilings with attic spaces. Where Section R402.1.1 would require R-49 in the ceiling, installing R-38 over 100 percent of the ceiling area requiring insulation shall be deemed to satisfy the requirement for R-49 wherever the full height of uncompressed R-38 insulation extends over the wall top plate at the eaves. This reduction shall not apply to the *U*-factor alternative approach in Section R402.1.3 and the total UA alternative in Section R402.1.4.

R402.2.1.1 Loose insulation in attic spaces. 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.

R402.2.3 Eave baffle. For air permeable insulations in vented attics, a baffle shall be installed adjacent to soffit and eave vents. Baffles shall maintain an opening equal to or greater than the size of the vent. The baffle shall extend over the top of the attic insulation. The baffle shall be permitted to be any solid material.

R402.2.4 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 that prevents damaging or compressing the insulation. A wood framed or equivalent baffle or retainer is required to 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.

EXCEPTION:

Vertical doors that provide access from conditioned to unconditioned spaces shall be permitted to meet the fenestration requirements of Table R402.1.1.

R402.2.5 Mass walls. Mass walls, where used as a component of the thermal envelope of a building, shall be one of the following:

- 1. Constructed of above-grade walls of concrete block, concrete, insulated concrete form, masonry cavity, brick (but not brick veneer), adobe, compressed earth block, rammed earth, mass timber, solid timber or solid logs.
- 2. Any other wall having a heat capacity greater than or equal to $6 \text{ Btu/ft}^2 \text{ x }^\circ\text{F} \text{ (123 kJ/m}^2 \text{ x K)}.$

R402.2.6 Steel-frame ceilings, walls, and floors. Steel-frame ceilings, walls, and floors shall comply with the *U*-factor requirements of Table R402.1.3.

R402.2.7 Floors. Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of the subfloor decking. 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. The floor framing cavity insulation shall be permitted to be in contact with the topside of sheathing or continuous insulation installed on the bottom side of floor framing where combined with insulation that meets or exceeds the minimum Wood Frame Wall *R*-value in Table R402.1.1 and extends from the bottom to the top of all perimeter floor framing members.
- 2. 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.
- 3. Substantial contact with the surface being insulated is not required in enclosed floor/ceiling assemblies containing ducts where full *R*-value insulation is installed between the duct and the exterior surface.

R402.2.8 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 and shall include R-5 rigid board providing a thermal break between the concrete wall and the slab.

R402.2.9 Slab-on-grade floors. The minimum thermal resistance (*R*-value) of the insulation around the perimeter of unheated or heated slab-on-grade floors shall be as specified in Table C402.1.1. The insulation 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 as shown in the table or to the top of the footing, whichever is less, or downward to at least the bottom of the slab and then horizontally to the interior or exterior for the total distance shown in the table. A two-inch by two-inch (maximum) pressure treated nailer may be placed at the finished floor elevation for attachment of interior finish materials. Insulation extending away from the building shall be protected by pavement or by a minimum of 10 inches (254 mm) of soil.

R402.2.9.1 Heated slab-on-grade floors. The entire area of a heated slab-on-grade floor 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 heated slab-on-grade floor, which results in increased convective flow below the heated slab-on-grade floor, the heated slab-on-grade floor shall be thermally isolated from the sub-slab gravel layer. R-10 heated slab-on-grade floor insulation is required for all compliance paths.

R402.2.10 ((Reserved.

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R402.2.11)) Masonry veneer. Insulation shall not be required on the horizontal portion of the foundation that supports a masonry veneer.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-40240 Section R402.4—Air leakage.

R402.4 Air leakage. The *building thermal envelope* shall be constructed to limit air leakage in accordance with the requirements of Sections R402.4.1 through R402.4.4.

R402.4.1 Building thermal envelope. The *building thermal envelope* shall comply with Sections R402.4.1.1 and R402.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

R402.4.1.1 Installation. The components of the *building thermal envelope* as listed in Table R402.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table R402.4.1.1, as applicable to the method of construction. Where required by the *code official*, an *approved* third party shall inspect all components and verify compliance.

R402.4.1.2 Testing. The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 5 air changes per hour. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals). For this test only, the volume of the home shall be the conditioned floor area in ft² (m²) multiplied by 8.5 feet (2.6 m). Where required by the *code official*, testing shall be conducted by an *approved* third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the *code official*. Testing shall be performed at any time after creation of all penetrations of the *building thermal envelope*. Once visual inspection has confirmed sealing (see Table R402.4.1.1), operable windows and doors manufactured by *small business* shall be permitted to be sealed off at the frame prior to the test.

EXCEPTION:

For dwelling units that are accessed directly from the outdoors, other than detached one family dwellings and townhouses, an air leakage rate not exceeding 0.4 cfm per square foot of the dwelling unit enclosure area shall be an allowable alternative. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals) in accordance with RESNET/ICC 380, ASTM E779 or ASTM E1827. For the purpose of this test only, the enclosure area is to be calculated as the perimeter of the dwelling unit, measured to the outside face of the exterior walls, and the centerline of party walls, times 8.5 feet, plus the ceiling and floor area. Doors and windows of adjacent dwelling units (including top and bottom units) shall be open to the outside during the test. This exception is not permitted for dwelling units that are accessed from corridors or other enclosed common areas.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weather-stripping or other infiltration control measures;

- 2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures;
- 3. Interior doors, if installed at the time of the test, shall be open, access hatches to conditioned crawl spaces and conditioned attics shall be open;
- 4. Exterior or interior terminations for continuous ventilation systems and heat recovery ventilators shall be sealed;
- 5. Heating and cooling systems, if installed at the time of the test, shall be turned off; and
- 6. Supply and return registers, if installed at the time of the test, shall be fully open.

EXCEPTIONS:

- $1. \ Additions \ less \ than \ 500 \ square \ feet \ of \ conditioned \\ floor \ area.$
- 2. Additions tested with the existing home having a combined maximum air leakage rate of 7 air changes per hour. To qualify for this exception, the date of construction of the existing house must be prior to the 2009 Washington State Energy Code.

R402.4.2 Fireplaces. New wood-burning fireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air. When using tight-fitting doors on factory-built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and listed for the fireplace. Where using tight-fitting doors on masonry fireplaces, the doors shall be listed and labeled in accordance with UL 907.

R402.4.2.1 Gas fireplace efficiency. All vented gas fireplace heaters rated to ANSI Z21.88 shall be listed and labeled with a fireplace efficiency (FE) rating of 50 percent or greater in accordance with CSA P.4.1. Vented gas fireplaces (decorative appliances) certified to ANSI Z21.50 shall be listed and labeled, including their FE ratings, in accordance with CSA P.4.1.

R402.4.3 Air leakage of fenestration. Windows, skylights and sliding glass doors shall have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m²), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/m²), when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and *listed* and *labeled* by the manufacturer.

EXCEPTIONS:

- 1. Field-fabricated fenestration products (windows, skylights and doors).
- 2. Custom exterior fenestration products manufactured by a small business provided they meet the applicable provisions of Chapter 24 of the *International Building Code*. Once visual inspection has confirmed the presence of a gasket, operable windows and doors manufactured by *small business* shall be permitted to be sealed off at the frame prior to the test.

R402.4.4 Combustion air openings. In Climate Zones 3 through 8, where open combustion air ducts provide combustion air to open combustion, space conditioning fuel burning appliances, the appliances and combustion air openings shall be located outside of the building thermal envelope, or enclosed in a room isolated from inside the thermal envelope. Such rooms shall be sealed and insulated in accordance with the envelope requirements of Table R402.1.1, where the walls, floors and ceilings shall meet the minimum of the below-grade wall *R*-value requirement. The door into the

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room shall be fully gasketed and any water lines and ducts in the room insulated in accordance with Section R403. The combustion air duct shall be insulated where it passes through conditioned space to a minimum of R-8.

EXCEPTIONS

- 1. Direct vent appliances with both intake and exhaust pipes installed continuous to the outside.
- 2. Fireplaces and stoves complying with Section R402.4.2 and Section R1006 of the *International Residential Code*

R402.4.5 Recessed lighting. Recessed luminaires installed in the *building thermal envelope* shall be Type IC-rated and certified under ASTM E283 as having an air leakage rate not more than 2.0 cfm (0.944 L/s) when tested at a 1.57 psf (75 Pa) pressure differential and shall have a label attached showing compliance with this test method. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-40351 Table R403.6.1—Mechanical ventilation system fan efficacy.

TABLE R403.6.1
MECHANICAL VENTILATION SYSTEM FAN EFFICACY^a

Fan Location	Air Flow Rate Minimum (cfm)	Minimum Effi- cacy (cfm/watt)	Air Flow Rate Maximum (cfm)
HRV or ERV	Any	1.2 cfm/watt	Any
Range hoods	Any	2.8	Any
In-line fan	Any	2.8	Any
Bathroom, util- ity room	10	1.4	< 90
Bathroom, util- ity room	90	2.8	Any

For SI: 1 cfm = 28.3 L/min.

a. When tested in accordance with HVI Standard 916.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-40360 Section R403.7—Equipment sizing.

R403.7 Equipment sizing and efficiency rating. Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other *approved* heating and cooling calculation methodologies. The output capacity of heating and cooling equipment shall not be greater than that of the smallest available equipment size that exceeds the loads calculated, including allowable oversizing limits. Equipment shall meet the minimum federal efficiency standards as referenced in Tables ((C403.2.3(1), C403.2.3(2), C403.2.3(3), C403.2.3(4), C403.2.3(5), C403.2.3(6), C403.2.3(7), C403.2.3(8) and C403.2.3(9))) C403.3.2(1), C403.3.2(2), C403.3.2(3), C403.3.2(4), C403.3.2(9) and C403.3.2(9) and

tested and rated in accordance with the applicable test procedure.

R403.7.1 Electric resistance zone heated units. All detached one- and two-family dwellings and multiple single-family dwellings (townhouses) up to three stories in height above grade plane using electric zonal heating as the primary heat source shall install an inverter-driven ductless mini-split heat pump in the largest zone in the dwelling. Building permit drawings shall specify the heating equipment type and location of the heating system.

EXCEPTION:

Total installed heating capacity of 2 kW per dwelling

unit or less.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-40530 Section R405.3—Performance-based compliance.

R405.3 Performance-based compliance. Compliance based on simulated energy performance requires that a proposed residence (*proposed design*) be shown to have an annual energy consumption based on carbon emissions of the fuels and energy use in the proposed building. Carbon emissions for both the standard reference design and the proposed design shall be calculated using Table R405.3. Energy use derived from simulation analysis shall be expressed in pounds of carbon ((and)) per square foot of *conditioned floor area* as follows:

- 1. For structures less than 1,500 square feet of conditioned floor area, the annual carbon emissions shall be less than or equal to 73 percent of the annual carbon emissions of the *standard reference design*.
- 2. For structures 1,500 to 5,000 square feet of conditioned floor area, the annual carbon emissions shall be no more than 56 percent of the *standard reference design*.
- 3. For structures over 5,000 square feet of conditioned floor area, the annual carbon emissions shall be no more than 50 percent of the *standard reference design*.
- 4. For structures serving Group R-2 occupancies, the annual carbon emissions shall be less than or equal to 70 percent of the annual energy consumption of the *standard reference design*.

TABLE R405.3 CARBON EMISSIONS FACTORS

Туре	CO2e (lb/unit)	Unit
Electricity	0.80	kWh
Natural gas	11.7	Therm
Oil	19.2	Gallon
Propane	10.5	Gallon
Othera	195.00	mmBtu
On-site renewable energy	0.00	

^a District energy systems may use alternative emission factors supported by calculations approved by the code official.

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AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-40551 Table R405.5.2(1)—Specifications for the standard reference and proposed designs.

TABLE R405.5.2(1) SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

	CIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED D	ESIGNS
BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Above-grade walls	Type: Mass wall if proposed wall is mass; otherwise wood	As proposed
	frame.	As proposed
	Gross area: Same as proposed	As proposed
	<i>U</i> -factor: From Table R402.1.3	As proposed
	Solar absorptance = 0.75	As proposed
	((Remittance)) Emittance = 0.90	
Below-grade walls	Type: Same as proposed	As proposed
	Gross area: Same as proposed	As proposed
	<i>U</i> -factor: From Table R402.1.3, with insulation layer on inte-	As proposed
	rior side of walls.	
Above-grade floors	Type: Wood frame	As proposed
	Gross area: Same as proposed	As proposed
	<i>U</i> -factor: From Table R402.1.3	As proposed
Ceilings	Type: Wood frame	As proposed
	Gross area: Same as proposed	As proposed
	<i>U</i> -factor: From Table R402.1.3	As proposed
Roofs	Type: Composition shingle on wood sheathing	As proposed
	Gross area: Same as proposed	As proposed
	Solar absorptance = 0.75	As proposed
	Emittance = 0.90	As proposed
Attics	Type: Vented with aperture = 1 ft ² per 300 ft ² ceiling area	As proposed
Foundations	Type: Same as proposed foundation wall area above and	As proposed
	below-grade	
	Soil characteristics: Same as proposed.	As proposed
Opaque doors	Area: 40 ft ²	As proposed
	Orientation: North	As proposed
	<i>U</i> -factor: Same as fenestration from Table R402.1.3.	As proposed
Vertical fenestration other	Total area ^h =	As proposed
than opaque doorsa	(a) The proposed glazing area; where proposed glazing area is	
	less than 15% of the conditioned floor area.	
	(b) 15% of the conditioned floor area; where the proposed	
	glazing area is 15% or more of the conditioned floor area.	
	Orientation: Equally distributed to four cardinal compass ori-	As proposed
	entations	
	(N, E, S & W).	
	<i>U</i> -factor: From Table R402.1.3	As proposed
	SHGC: From Table R402.1.1 except that for climates with no	As proposed
	requirement (NR) SHGC = 0.40 shall be used.	
	Interior shade fraction: 0.92 - (0.21 × SHGC for the standard	0.92 - (0.21 × SHGC as pro-
	reference design)	posed)
	External shading: None	As proposed
Skylights	None	As proposed
, 0		1 1

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BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Air exchange rate	Air leakage rate of 5 air changes per hour at a pressure of 0.2 inches w.g. (50 Pa). The mechanical ventilation rate shall be in addition to the air leakage rate and the same as in the proposed design, but no greater than $0.01 \times CFA + 7.5 \times (N_{br} + 1)$ where: $CFA = \text{conditioned floor area}$ $N_{br} = \text{number of bedrooms}$ - Energy recovery shall not be assumed for mechanical ventilation.	As proposed ^a . The mechanical ventilation rate ^b shall be in addition to the air leakage rate and shall be as proposed.
Mechanical ventilation	None, except where mechanical ventilation is specified by the proposed design, in which case: Annual vent fan energy use: $ kWh/yr = (1e_f) \times (0.0876 \times CFA + 65.7 \times (N_{br} + 1) $ where: $ e_f = the $	As proposed
Internal gains	IGain = $17,900 + 23.8 \times CFA + 4104 \times N_{br}$ (Btu/day per dwelling unit)	Same as standard reference design
Internal mass	An internal mass for furniture and contents of 8 pounds per square foot of floor area.	Same as standard reference design, plus any additional mass specifically designed as a thermal storage element ^c but not integral to the building envelope or structure.
Structural mass	For masonry floor slabs, 80% of floor area covered by R-2 carpet and pad, and 20% of floor directly exposed to room air.	As proposed
	For masonry basement walls, as proposed, but with insulation required by Table R402.1.3 located on the interior side of the walls.	As proposed
	For other walls, for ceilings, floors, and interior walls, wood frame construction.	As proposed
Heating systems ^{d, e}	Where the proposed design utilizes electric heating without a heat pump the standard reference design shall be an air source heat pump meeting the requirements of Section C403 of the WSEC—Commercial Provisions. For all other systems, the same system type as proposed, and the same system efficiency required by prevailing minimum federal standard. Capacity: Sized in accordance with Section R403.6	As proposed
Cooling systems ^{d, f}	Same system type as proposed. Same system efficiency as required by prevailing minimum federal standard. Capacity: Sized in accordance with Section R403.6.	As proposed
Service water heating ^{d, e, f, g}	Same system type as proposed. Same system efficiency as required by prevailing minimum federal standard. Use: Same as proposed design	As proposed gal/day = $30 + (10 \times N_{br})$

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BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Thermal distribution systems	Duct insulation: From Section R403.3.3. A thermal distribution system efficiency (DSE) of 0.93 shall be applied to both the heating and cooling system efficiencies for all systems. Exception: For nonducted heating and cooling systems that do not have a fan, the standard reference design distribution system efficiency (((DES)) DSE) shall be 1.	As specified in Table R405.5.2(2).
Thermostat	Type: Manual, cooling temperature setpoint = 75°F; Heating temperature setpoint = 72°F	Same as standard reference

For SI: 1 square foot = 0.93 m^2 , 1 British thermal unit = 1055 J, 1 pound per square foot = 4.88 kg/m^2 , 1 gallon (U.S.) = 3.785 L, $^{\circ}\text{C}$ = ($^{\circ}\text{F-3}$)/1.8, 1 degree = 0.79 rad

- Where required by the code official, testing shall be conducted by an approved party. Hourly calculations as specified in the ASHRAE Handbook of Fundamentals, or the equivalent, shall be used to determine the energy loads resulting from infiltration.
- b The combined air exchange rate for infiltration and mechanical ventilation shall be determined in accordance with Equation 43 of 2001 ASHRAE *Handbook* of *Fundamentals*, page 26.24 and the "Whole-house Ventilation" provisions of 2001 ASHRAE *Handbook* of *Fundamentals*, page 26.19 for intermittent mechanical ventilation.
- c Thermal storage element shall mean a component not part of the floors, walls or ceilings that is part of a passive solar system, and that provides thermal storage such as enclosed water columns, rock beds, or phase-change containers. A thermal storage element must be in the same room as fenestration that faces within 15 degrees (0.26 rad) of true south, or must be connected to such a room with pipes or ducts that allow the element to be actively charged.
- d For a proposed design with multiple heating, cooling or water heating systems using different fuel types, the applicable standard reference design system capacities and fuel types shall be weighted in accordance with their respective loads as calculated by accepted engineering practice for each equipment and fuel type present.
- e For a proposed design without a proposed heating system, a heating system with the prevailing federal minimum efficiency shall be assumed for both the standard reference design and proposed design.
- f For a proposed design home without a proposed cooling system, an electric air conditioner with the prevailing federal minimum efficiency shall be assumed for both the standard reference design and the proposed design.
- For a proposed design with a nonstorage-type water heater, a 40-gallon storage-type water heater with the prevailing federal minimum energy factor for the same fuel as the predominant heating fuel type shall be assumed. For the case of a proposed design without a proposed water heater, a 40-gallon storage-type water heater with the prevailing federal minimum efficiency for the same fuel as the predominant heating fuel type shall be assumed for both the proposed design and standard reference design.
- h For residences with conditioned basements, R-2 and R-4 residences and townhouses, the following formula shall be used to determine fenestration area:

 $AF = A_s \times FA \times F$

Where:

AF = Total fenestration area.

 A_s = Standard reference design total fenestration area.

FA = (Above-grade thermal boundary gross wall area)/(above-grade boundary wall area + 0.5 x below-grade boundary wall area).

F = (Above-grade thermal boundary wall area)/(above-grade thermal boundary wall area + common wall area) or 0.56, whichever is greater.

and where:

Thermal boundary wall is any wall that separates conditioned space from unconditioned space or ambient conditions.

Above-grade thermal boundary wall is any thermal boundary wall component not in contact with soil.

Below-grade boundary wall is any thermal boundary wall in soil contact.

Common wall area is the area of walls shared with an adjoining dwelling unit.

L and CFA are in the same units.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-40700 Section R407—Certified passive house.

R407.1 General. Projects shall comply with Section R407.2 or R407.3.

R407.2 Passive House Institute U.S. (PHIUS). Projects shall comply with PHIUS+ 2018 Passive Building Standard, including its USDOE Energy Star and Zero Energy Ready Home co-requisites, and performance calculations by PHIUS-approved software. Projects shall also comply with the provisions of Table R405.2.

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- **R407.2.1 PHIUS documentation.** Prior to the issuance of a building permit, the following items must be provided to the ((building)) <u>code</u> <u>official</u>:
 - 1. A list of compliance features.
 - 2. A PHIUS precertification letter.

Prior to the issuance of a certificate of occupancy, the following item must be provided to the ((building)) <u>code</u> official:

- 1. A PHIUS+ 2018 (or later) project certificate.
- **R407.3** Passive House Institute (PHI). Projects shall comply with Low Energy Building Standard, version 9f or later, including performance calculations by PHI-approved software. Projects shall also comply with the provisions of Section R401 through R404.
- **R407.3.1 PHI documentation.** Prior to the issuance of a building permit, the following items must be provided to the ((building)) code official:
 - 1. A list of compliance features.
- 2. A statement from a passive house certifier that the modeled energy performance is congruent with the plans and specifications, and that the modeled performance meets said standard.

Prior to the issuance of a certificate of occupancy, the following item must be provided to the ((building)) <u>code</u> official:

1. A PHI Low Energy Building project certificate.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-50100 Section R501—General.

- **R501.1 Scope.** The provisions of this chapter shall control the alteration, repair, addition and change of occupancy of existing buildings and structures.
- **R501.1.1** Additions, alterations, or repairs. Additions, alterations, or repairs to an existing building, building system or portion thereof shall comply with Sections R502, R503 or R504. Unaltered portions of the existing building or building supply system shall not be required to comply with this code.
- R501.1.2 Thermostats for accessory dwelling units. Where a separate dwelling unit, that provides independent facilities for living, sleeping, cooking, bathing and sanitation, is established within or attached to an existing dwelling unit, the heating and cooling for the newly-created dwelling unit shall be controllable with a separate programmable thermostat in accordance with Section R403.1.1.
- **R501.2 Existing buildings.** Except as specified in this chapter, this code shall not be used to require the removal, alteration or abandonment of, nor prevent the continued use and maintenance of, an existing building or building system lawfully in existence at the time of adoption of this code.
- **R501.3 Maintenance.** Buildings and structures, and parts thereof, shall be maintained in a safe and sanitary condition. Devices and systems that are required by this code shall be maintained in conformance with the code edition under which installed. The owner or the owner's authorized agent shall be responsible for the maintenance of buildings and

structures. The requirements of this chapter shall not provide the basis for removal or abrogation of energy conservation, fire protection and safety systems and devices in existing structures.

R501.4 Compliance. Alterations, repairs, additions and changes of occupancy to, or relocation of, existing buildings and structures shall comply with the provisions for alterations, repairs, additions and changes of occupancy or relocation, respectively, in this code and the *International Residential Code*, *International Building Code*, *International Existing Building Code*, *International Fire Code*, *International Fuel Gas Code*, *International Mechanical Code*, *Uniform Plumbing Code*, *International Property Maintenance Code*, and NFPA 70.

R501.5 New and replacement materials. Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for repairs, provided hazards to life, health or property are not created. Hazardous materials shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

R501.6 Historic buildings. The ((building)) <u>code</u> official may modify the specific requirements of this code for historic buildings and require alternate provisions which will result in a reasonable degree of energy efficiency. This modification may be allowed for those buildings or structures that are listed in the state or national register of historic places; designated as a historic property under local or state designation law or survey; certified as a contributing resource with a national register listed or locally designated historic district; or with an opinion or certification that the property is eligible to be listed on the national or state register of historic places either individually or as a contributing building to a historic district by the state historic preservation officer or the keeper of the *National Register of Historic Places*.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-50300 Section R503—Alterations.

R503.1 General. 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 to the provisions of this code than the existing building or structure was prior to the alteration.

Alterations to an existing building, building system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portions of the existing building or building system to comply with this code. Alterations shall not create an unsafe or hazardous condition or overload existing building systems.

Alterations shall be such that the existing building or structure uses no more energy than the existing building or structure prior to the alteration. Alterations to existing buildings shall comply with Sections R503.1.1 through R503.2.

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The *code official* may approve designs of alterations which do not fully conform to all of the requirements of this code where in the opinion of the ((building)) *code* official full compliance is physically impossible and/or economically impractical and:

The alteration improves the energy efficiency of the building; or

The alteration is energy efficient and is necessary for the health, safety, and welfare of the general public.

R503.1.1 Building envelope. Building envelope assemblies that are part of the alteration shall comply with Section R402.1.1 or R402.1.4, Sections R402.2.1 through R402.2.11, R402.3.1, R402.3.2, R402.4.3, and R402.4.4.

EXCEPTION:

The following alterations need not comply with the requirements for new construction provided the energy use of the building is not increased:

- 1. Storm windows installed over existing fenestration.
- 2. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation. 2 x 4 framed walls shall be insulated to a minimum of R-15 and 2 x 6 framed walls shall be insulated to a minimum of R-21
- 3. Construction where the existing roof, wall or floor cavity is not exposed.
- 4. Roof recover.
- 5. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.
- 6. Surface-applied window film installed on existing single pane fenestration assemblies to reduce solar heat gain provided the code does not require the glazing fenestration to be replaced.

R503.1.1.1 Replacement fenestration. Where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for *U*-factor and SHGC in Table R402.1.1. Where more than one replacement fenestration unit is being installed, an areaweighted average of the *U*-factor and SHGC of all replacement fenestration shall be permitted to be used to demonstrate compliance.

R503.1.2 Heating and cooling systems. New heating, cooling and duct systems that are part of the alteration shall comply with Section R403.

EXCEPTIONS:

- 1. Where ducts from an existing heating and cooling system are extended, duct systems with less than 40 linear feet in unconditioned spaces shall not be required to be tested in accordance with Section R403.2.2.
- 2. Existing duct systems constructed, insulated or sealed with asbestos.

R503.1.3 Service hot water systems. New service hot water systems that are part of the alteration shall comply with Section R403.5.

R503.1.4 Lighting. New lighting systems that are part of the alteration shall comply with Section R404.1.

EXCEPTION:

Alterations that replace less than 50 percent of the luminaires in a space, provided that such alterations do not increase the installed interior lighting power.

R503.2 Change in space conditioning. Any nonconditioned or low-energy space that is altered to become conditioned space shall be required to be brought into full compliance with this code.

EXCEPTION:

Where the simulated performance option in Section R405 is used to comply with this section, the annual energy use of the proposed design is permitted to be 110 percent of the annual energy use otherwise allowed by Section R405.3.

AMENDATORY SECTION (Amending WSR 16-02-127, filed 1/6/16, effective 7/1/16)

WAC 51-11R-50400 Section R504—Repairs.

R504.1 General. Buildings, structures and parts thereof shall be repaired in compliance with Section R501.3 and this section. Work on nondamaged components that is necessary for the required repair of damaged components shall be considered part of the repair and shall not be subject to the requirements for alterations in this chapter. Routine maintenance required by Section R501.3, ordinary repairs exempt from permit, and abatement of wear due to normal service conditions shall not be subject to the requirements for repairs in this section.

The *code official* may approve designs of repairs which do not fully conform with all of the requirements of this code where in the opinion of the ((building)) <u>code</u> official full compliance is physically impossible and/or economically impractical and:

- 1. The repair improves the energy efficiency of the building; or
- 2. The repair is energy efficient and is necessary for the health, safety, and welfare of the general public.

R504.2 Application. For the purposes of this code, the following shall be considered repairs.

- 1. Glass only replacements in an existing sash and frame.
- 2. Roof repairs.
- 3. Repairs where only the bulb and/or ballast within the existing luminaires in a space are replaced provided that the replacement does not increase the installed interior lighting power.

AMENDATORY SECTION (Amending WSR 20-01-047, filed 12/9/19, effective 7/1/20)

WAC 51-11R-59000 Appendix RB—Optional energy efficiency measures—Two step. Building owners may choose to use this appendix to achieve an additional 12 percent savings in building energy use. The number of additional energy efficiency credits required by Section R406.3 would be increased by the following amounts:

- 2.0 credit for each new single-family, two-family and townhouse dwelling unit.
- 1.0 credit for each new dwelling unit within an R-2 occupancy building.
- 1.0 credit for each addition smaller than 500 square feet to a single-family, two-family or townhouse dwelling unit.
- 1.5 credit for each addition of 500 square feet or larger to a single-family, two-family or townhouse dwelling unit.

Expedited [48]

Where Section R405, Simulated performance alternative, is used, the maximum allowable energy consumption shall be ((92)) <u>84</u> percent of the value calculated according to Section R405.3.

WSR 20-12-103 EXPEDITED RULES BUILDING CODE COUNCIL

[Filed June 3, 2020, 8:52 a.m.]

Title of Rule and Other Identifying Information: Chapter 51-11C WAC, 2018 Washington State Energy Code, Commercial.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: This filing corrects various internal code references and typographical errors.

Reasons Supporting Proposal: Upon review of the filed copy for the adoption of the 2018 Energy Code under WSR 19-24-040, there were a number of section references that were not updated to correlate with the revisions to the code text. There are also areas where the grammar is corrected and terms are revised for consistency between figures and text.

Statutory Authority for Adoption: RCW 19.27A.025, 19.27A.045.

Statute Being Implemented: Chapter 19.27A RCW.

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

Name of Proponent: Governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Krista Braaksma, 1500 Jefferson Street S.E., Olympia, 360-407-9278; and Enforcement: Local jurisdictions.

This notice meets the following criteria to use the expedited adoption process for these rules:

Corrects typographical errors, make address or name changes, or clarify language of a rule without changing its effect.

NOTICE

THIS RULE IS BEING PROPOSED UNDER AN EXPEDITED RULE-MAKING PROCESS THAT WILL ELIMINATE THE NEED FOR THE AGENCY TO HOLD PUBLIC HEARINGS, PREPARE A SMALL BUSINESS ECONOMIC IMPACT STATEMENT, OR PROVIDE RESPONSES TO THE CRITERIA FOR A SIGNIFICANT LEGISLATIVE RULE. IF YOU OBJECT TO THIS USE OF THE EXPEDITED RULE-MAKING PROCESS, YOU MUST EXPRESS YOUR OBJECTIONS IN WRITING AND THEY MUST BE SENT TO Diane Glenn, Chair, Washington State Building Code Council, P.O. Box 41449, Olympia, WA 98504-1449, phone 360-407-9255, email sbcc@des.wa.gov, AND RECEIVED BY August 18, 2020.

June 2, 2020 Diane Glenn Council Chair AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40211 Section C402.1.1—Low energy buildings.

C402.1.1 Low energy buildings, semi-heated buildings and greenhouses. Low energy buildings shall comply with Section C402.1.1.1. Semi-heated buildings and spaces shall comply with Section C402.1.1.2. Greenhouses shall comply with Section C402.1.1.3.

C402.1.1.1 Low energy buildings. The following buildings, or portions thereof, separated from the remainder of the building by *building thermal envelope* assemblies complying with this code shall be exempt from all thermal envelope provision of this code:

- 1. Those that are heated and/or cooled with a peak design rate of energy usage less than 3.4 Btu/h \times ft² (10.7 W/m²) or 1.0 watt/ft² (10.7 W/m²) of floor area for space conditioning purposes.
 - 2. Those that do not contain *conditioned space*.
- 3. Unstaffed equipment shelters or cabinets used solely for personal wireless service facilities.

C402.1.1.2 Semi-heated buildings and spaces. The building envelope of semi-heated buildings, or portions thereof, shall comply with the same requirements as that for conditioned spaces in Section C402, except as modified by this section. The total installed output capacity of mechanical space conditioning systems serving a semi-heated building or space shall comply with Section C202. Building envelope assemblies separating conditioned space from semi-heated space shall comply with exterior envelope insulation requirements. Semi-heated spaces heated by mechanical systems that do not include electric resistance heating equipment are not required to comply with the opaque wall insulation provisions of Section C402.2.3 for walls that separate semi-heated spaces from the exterior or low energy spaces. Semi-heated spaces shall be calculated separately from other conditioned spaces for compliance purposes. Opaque walls in semiheated spaces shall be calculated as fully code compliant opaque walls for both the target and proposed for the Target UA calculations for Component Performance compliance per Section C402.1.5, and for the Standard Reference Design for Total Building Performance compliance per Section C407. The capacity of heat trace temperature maintenance systems complying with Section C404.7.2 that are provided for freeze protection of piping and equipment only shall not be included in the total installed output capacity of mechanical space conditioning systems.

EXCEPTION:

Building or space may comply as semi-heated when served by one or more of the following system alternatives:

- 1. Electric infrared heating equipment for localized heating applications.
- 2. Heat pumps with cooling capacity permanently disabled, as preapproved by the jurisdiction.

C402.1.1.3 Greenhouses. *Greenhouse* structures or areas that comply with all of the following shall be exempt from the building envelope requirements of this code:

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1. Exterior opaque envelope assemblies ((eomply)) complying with Sections C402.2 and C402.4.4.

EXCEPTION: Low energy greenhouses that comply with Section

C402.1.1.1.

- 2. Interior partition building thermal envelope assemblies that separate the *greenhouse* from conditioned space complying with Sections C402.2, C402.4.3 and C402.4.4.
- 3. Nonopaque envelope assemblies complying with the thermal envelope requirements in Table C402.1.1.3. The *U*-factor for the nonopaque roof shall be for the roof assembly or a roof that includes the assembly and an internal curtain system.

EXCEPTION: Unheated greenhouses.

- 4. No mechanical cooling is provided.
- 5. For heated greenhouses, heating is provided by a radiant heating system, a condensing natural gas-fired or condensing propane-fired heating system, or a heat pump with cooling capacity permanently disabled as preapproved by the jurisdiction.

Table C402.1.1.3

Non-Opaque Thermal Envelope Maximum
Requirements

Component <i>U</i> -Factor BTU/h-ft²-°F	Climate Zone 5 and Marine 4
Non-opaque roof	0.5
Non-opaque SEW wall	0.7
Non-opaque N wall	0.6

<u>AMENDATORY SECTION</u> (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40215 Section C402.1.5—Component performance alternative.

C402.1.5 Component performance alternative. Building envelope values and fenestration areas determined in accordance with Equation 4-2 shall be permitted in lieu of compliance with the U-factors and F-factors in Table C402.1.4 and C402.4 and the maximum allowable fenestration areas in Section C402.4.1.

For buildings with more than one *space conditioning category*, component performance compliance shall be demonstrated separately for each space conditioning category. Interior partition ceilings, walls, fenestration and floors that separate space conditioning areas shall be applied to the component performance calculations for the space conditioning category with the highest level of space conditioning.

Equation 4-2

Proposed Total UA ≤ Allowable Total UA

Where:

Proposed Total UA = UA-glaz-prop + UA sky-prop

+ UA-opaque-prop + FL-

slab-prop

Allowable Total UA

= UA-glaz-allow + UA-glazexcess + UA sky-allow + UAsky-excess + UA-opaqueallow + FL-slab-allow

UA-glaz-prop

Sum of (proposed *U*-value x proposed area) for each distinct vertical fenestration type, up to code maximum area

UA-sky-prop

Sum of (proposed *U*-value x proposed area) for each distinct skylight type, up to the code maximum area

UA-opaque-prop

Sum of (proposed *U*-value x proposed area) for each distinct opaque thermal envelope type

FL-slab-prop

Sum of (proposed *F*-value x proposed length) for each distinct slab on grade perimeter assembly

UA-glaz-allow

Sum of (code maximum vertical fenestration *U*-value from Table C402.4, or Section C402.4.1.1.2 if applicable, x proposed area) for each distinct vertical fenestration type, not to exceed the code maximum area¹

UA-glaz-excess

 U-value for the proposed wall type from Table C402.4² x vertical fenestration area in excess of the code maximum area

UA-sky-allow

Sum of (code maximum skylight *U*-value from Table C402.4 x proposed area) for each distinct skylight type proposed, not to exceed the code maximum area

UA-sky-excess

 U-value for the proposed roof type from Table C402.4³ x skylight area in excess of the code maximum area

UA-opaque-allow

Code maximum opaque envelope *U*-value from Table C402.1.4 for each opaque door, wall, roof, and floor assembly x proposed area

FL-slab-allow

 Code maximum F-value for each slab-on-grade perimeter assembly x proposed length

Expedited [50]

Notes:

¹ Where multiple vertical fenestration types are proposed and the code maximum area is exceeded, the U-value shall be the average Table C402.1.4 U-value weighted by the proposed vertical fenestration area of each type.

C402.1.5.1 Component *U*-factors. The *U*-factors for typical construction assemblies are included in Chapter 3 and Appendix A. These values shall be used for all calculations. Where proposed construction assemblies are not represented in Chapter 3 or Appendix A, values shall be calculated in accordance with the ASHRAE Handbook—Fundamentals, using the framing factors listed in Appendix A.

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. ASHRAE *Handbook—Fundamentals* where the metal framing is bonded on one or both sides to a metal skin or covering.
- 3. The zone method as provided in ASHRAE Handbook—Fundamentals.
- 4. Effective framing/cavity R-values as provided in Appendix A.

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;
- b. For gross area purposes, be based upon the interior face of the upper plenum surface.
 - 5. Tables in ASHRAE 90.1 Normative Appendix A.
- 6. Calculation method for steel-framed walls in accordance with Section C402.1.4.1 and Table C402.1.4.1.

C402.1.5.2 SHGC rate calculations. Fenestration SHGC values for individual components and/or fenestration are permitted to exceed the SHGC values in Table C402.4 and/or the maximum allowable fenestration areas in Section C402.4.1 where the proposed ((values result in SHGCA_n)) total SHG-CxA less than ((SHGCA_t)) the allowable total SHGCxA as determined by Equation((s)) 4-3 ((and 4-4)).

Equation 4-3—SHGC Rate Calculations

Proposed Total SHGCxA \leq Allowable Total SHGCxA

Where:

Proposed Total SHG-SHGCxA-glaz-prop + SHG-

CxA CxA-sky-prop

Allowable Total SHG-SHGCxA-glaz-allow + CxASHGCxA-sky-allow

SHGCxA-glaz-prop Sum of (proposed SHGCx proposed area) for each distinct vertical fenestration type

SHGCxA-sky-prop Sum of (proposed SHGCx proposed area) for each distinct skylight type

Sum of (code maximum ver-SHGCxA-glaz-allow

tical fenestration SHGC from Table C402.4, or Section C402.4.1.3 if applicable, x proposed area) for each distinct vertical fenestration type, not to exceed the code maximum area

SHGCxA-sky-allow Sum of (code maximum

skylight SHGC from Table C402.4x proposed area) for each distinct skylight type, not to exceed the code maxi-

mum area

If the proposed vertical fenestration area does not exceed the Vertical Fenestration Area allowed, the target area for each vertical fenestration type shall equal the proposed area. If the proposed vertical fenestration area exceeds the Vertical Fenestration Area allowed, the target area of each vertical fenestration element shall be reduced in the base envelope design by the same percentage and the net area of each above-grade wall type increased proportionately by the same percentage so that the total vertical fenestration area is exactly equal to the Vertical Fenestration Area allowed.

If the proposed skylight area does not exceed the Allowable Skylight Area from Section C402.4.1, the target area shall equal the proposed area. If the proposed skylight area exceeds the Allowable Skylight Area from Section C402.4.1, the area of each skylight element shall be reduced in the base envelope design by the same percentage and the net area of each roof type increased proportionately by the same percentage so that the total skylight area is exactly equal to the allowed percentage per Section C402.3.1 of the gross roof area.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40310 Section C403.1—General.

C403.1 General. Mechanical systems and equipment serving heating, cooling, ventilating, and other needs shall comply with this section.

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 $^{^2}$ Where multiple wall types are proposed the U-value shall be the average Table C402.1.4 U-value weighted by the proposed above grade wall area of each type.

³ Where multiple roof types are proposed the *U*-value shall be the average Table C402.1.4 U-value weighted by the proposed roof area of each type.

EXCEPTIONS:

1. Energy using equipment used by a manufacturing, industrial or commercial process other than for conditioning spaces or maintaining comfort and amenities for the occupants and not otherwise regulated by Section C403.3.2, Tables C403.3.2 (1) through (12) inclusive, Sections ((C403.7.8, C403.9.5)) C403.7.7, C403.9.2.1, C403.10.3, C403.11.2, C403.11.3, C404.2, Table C404.2, C405.8 and C410. Data center and computer room HVAC equipment is not covered by this exception. 2. Data center systems are exempt from Sections C403.4 and C403.5.

C403.1.1 HVAC total system performance ratio (HVAC

TSPR). For systems serving office, retail, library, and education occupancies and buildings, which are subject to the requirements of Section C403.3.5 without exceptions, the *HVAC total system performance ratio* (*HVAC TSPR*) of the *proposed design* HVAC system shall be more than or equal to the *HVAC TSPR* of the *standard reference design* as calculated according to Appendix D, Calculation of HVAC Total System Performance Ratio.

EXCEPTIONS:

- 1. Buildings with conditioned floor area less than 5,000 square feet.
- 2. HVAC systems using district heating water, chilled water or steam.
- 3. HVAC systems not included in Table D601.11.1.
- 4. HVAC systems with chilled water supplied by absorption chillers, heat recovery chillers, water to water heat pumps, air to water heat pumps, or a combination of air and water cooled chillers on the same chilled water loop.
- 5. HVAC systems served by heating water plants that include air to water or water to water heat pumps.
- 6. Underfloor air distribution HVAC systems.
- 7. Space conditioning systems that do not include *mechanical cooling*.

- 8. Alterations to existing buildings that do not substantially replace the entire HVAC system.
- HVAC systems meeting all the requirements of the standard reference design HVAC system in Table D602.11, Standard Reference Design HVAC Systems.

C403.1.2 Calculation of heating and cooling loads. Design loads associated with heating, ventilating and air conditioning of the building shall be determined in accordance with the procedures described in ANSI/ASHRAE/ACCA Standard 183 or by an *approved* equivalent computational procedure, using the design parameters specified in Chapter 3. Heating and cooling loads shall be adjusted to account for load reductions that are achieved where energy recovery systems are utilized in the HVAC system in accordance with the ASH RAE *HVAC Systems and Equipment Handbook* by an *approved* equivalent computational procedure.

C403.1.3 Data centers. *Data center systems* shall comply with Sections 6 and 8 of ASHRAE Standard 90.4 with the following changes:

1. Replace design MLC in ASHRAE Standard 90.4 Table 6.2.1.1 "Maximum Design Mechanical Load Component (Design MLC)" with the following per the applicable climate zone:

Zone 4C Design MLC = 0.22 Zone 5B Design MLC = 0.24

2. Replace annualized MLC values of Table 6.2.1.2 "Maximum Annualized Mechanical Load Component (Annualized MLC)" in ASHRAE Standard 90.4 with the following per applicable climate zone:

Zone 4C Annual MLC = 0.18 Zone 5B Annual MLC = 0.17

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-403237 Table C403.3.2(7)—Minimum efficiency requirements—Water chilling packages.

Table C403.3.2(7)
Minimum Efficiency Requirements—Water Chilling Packages^{a,b}

			Path A		Path A Path B		
Equipment Type	Size Category	Units	Full Load	IPLV	Full Load	IPLV	Test Procedure ^c
Air-cooled chillers	< 150 tons	EER	≥ 10.100	≥ 13.700	≥ 9.700	≥ 15.800	
Air-cooled chillers	≥ 150 tons	EER	≥ 10.100	≥ 14.000	≥ 9.700	≥ 16.100	
Air cooled without condenser, electri- cally operated	All capacities	EER	rated with r	natching con	out condense idensers and er efficiency	comply	

Expedited [52]

			Path A		Path B		
Equipment Type	Size Category	Units	Full Load	IPLV	Full Load	IPLV	Test Procedure ^c
	< 75 tons	kW/ton	≤ 0.750	≤ 0.600	≤ 0.780	≤ 0.500	
Water cooled, electri-	≥ 75 tons and < 150 tons	kW/ton	≤ 0.720	≤ 0.560	≤ 0.750	≤ 0.490	AHRI 550/590
cally operated, posi- tive displacement	\geq 150 tons and $<$ 300 tons	kW/ton	≤ 0.660	≤ 0.540	≤ 0.680	≤ 0.440	
	≥ 300 tons and < 600 tons	kW/ton	≤ 0.610	≤ 0.520	≤ 0.625	≤ 0.410	
	≥ 600 tons	kW/ton	≤ 0.560	\leq 0.500	≤ 0.585	\leq 0.380	
	< 150 tons	kW/ton	≤ 0.610	≤ 0.550	≤ 0.695	≤ 0.440	
Water cooled, electrically operated, cen-	≥ 150 tons and < 300 tons	kW/ton	≤ 0.610	≤ 0.550	≤ 0.695	≤ 0.400	
trifugal	≥ 300 tons and < 400 tons	kW/ton	≤ 0.560	≤ 0.520	≤ 0.595	≤ 0.390	
	≥ 400 tons	kW/ton	≤ 0.560	\leq 0.500	≤ 0.585	\leq 0.380	
Air cooled, absorption single effect	All capacities	COP	≥ 0.600	NR	NA	NA	
Water cooled, absorption single effect	All capacities	COP	≥ 0.700	NR	NA	NA	AHRI 560
Absorption double effect, indirect fired	All capacities	COP	≥ 1.000	≥ 1.050	NA	NA	AIRI 300
Absorption double effect, direct fired	All capacities	СОР	≥ 1.000	≥ 1.000	NA	NA	

For SI: 1 ton = 3517 W, 1 British thermal unit per hour = 0.2931 W, $^{\circ}$ C = [($^{\circ}$ F) - 32]/1.8.

NA = Not applicable, not to be used for compliance;

NR = No requirement.

- ^a The centrifugal chiller equipment requirements, after adjustment in accordance with Section C403.3.2.2 or Section C403.3.2.3, do not apply to chillers used in low-temperature applications where the design leaving fluid temperature is less than 36°F. The requirements do not apply to positive displacement chillers with leaving fluid temperatures less than or equal to 32°F. The requirements do not apply to absorption chillers with design leaving fluid temperatures less than 40°F.
- b Compliance with this standard can be obtained by meeting the minimum requirements of Path A or B. However, both the full load and IPLV shall be met to fulfill the requirements of Path A or B.
- c Chapter 12 of the referenced standard contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

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 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40333 Section C403.3.3—Hot gas bypass.

C403.3.3 Hot gas bypass limitation. Cooling systems shall not use hot gas bypass or other evaporator pressure control systems unless the system is designed with multiple steps of unloading or continuous capacity modulation. The capacity of the hot gas bypass shall be limited as indicated in Table C403.3.3, as limited by Section C403.5.1.

Table C403.3.3 Maximum Hot Gas Bypass Capacity

Rated Capacity	Maximum Hot Gas Bypass Capacity (% of total capacity)
≤ 240,000 Btu/h	50
((≥)) ≥ 240,000 Btu/h	25

For SI: 1 British thermal unit per hour = 0.2931 W.

[53] Expedited

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40335 Section C403.3.5—Dedicated outdoor air systems.

C403.3.5 Dedicated outdoor air systems (DOAS). For buildings with occupancies as shown in Table C403.3.5, outdoor air shall be provided to each occupied space by a dedicated outdoor air system (DOAS) which delivers 100 percent outdoor air without requiring operation of the heating and cooling system fans for ventilation air delivery.

EXCEPTIONS:

- 1. Occupied spaces that are not ventilated by a mechanical ventilation system and are only ventilated by a natural ventilation system ((per)) in accordance with Section 402 of the *International Mechanical Code*.
- 2. High efficiency variable air volume (VAV) systems complying with Section C403.6.10 for occupancy classifications other than Groups A-1, A-2 and A-3 as specified in Table C403.3.5, and high efficiency VAV systems ((eomply)) complying with Section C403.12 for occupancy classification Groups A-1, A-2 and A-3 as specified in Table C403.3.5. This exception shall not be used as a substitution for a DOAS per Section C406.6.

Table C403.3.5
Occupancy Classifications Requiring DOAS

Occupancy Classification ^a	Inclusions	Exempted
A-1	All occupancies not specifically exempted	Television and radio studios
A-2	Casinos (gaming area)	All other A-2 occupancies
A-3	Lecture halls, community halls, exhibition halls, gymnasiums, courtrooms, libraries, places of religious worship	All other A-3 occupancies
A-4, A-5		All occupancies excluded
В	All occupancies not specifically exempted	Food processing establishments including commercial kitchens, restaurants, cafeterias; laboratories for testing and research; data processing facilities and telephone exchanges; air traffic control towers; animal hospitals, kennels, pounds; ambulatory care facilities
F, H, I, R, S, U		All occupancies excluded
E, M	All occupancies included	

a. Occupancy classification from the *International Building Code* Chapter 3

C403.3.5.1 Energy recovery ventilation with DOAS. The DOAS shall include energy recovery ventilation. The energy recovery system shall have a 60 percent minimum sensible recovery effectiveness or have 50 percent enthalpy recovery effectiveness in accordance with Section ((C403.7.6.1)) C403.7.6. For DOAS having a total fan system motor nameplate hp less than 5 hp, total combined fan power shall not exceed 1 W/cfm of outdoor air. For DOAS having a total fan system motor hp greater than or equal to 5 hp, refer to fan power limitations of Section C403.8.1. This fan power restriction applies to each dedicated outdoor air unit in the permitted project, but does not include the fan power associated with the zonal heating/cooling equipment. The airflow rate thresholds for energy recovery requirements in Tables ((C403.7.6.1)) C403.7.6(1) and ((C403.7.6.1)) C403.7.6(2) do not apply.

EXCEPTIONS:

- 1. Occupied spaces with all of the following characteristics: Complying with Section ((C403.7.6.1)) C403.7.6, served by equipment less than 5000 cfm, with an average occupant load greater than 25 people per 1000 square feet (93 m²) of floor area (as established in Table 403.3.1.1 of the *International Mechanical Code*) that include demand control ventilation configured to reduce outdoor air by at least 50 percent below design minimum ventilation rates when the actual occupancy of the space served by the system is less than the design occupancy.
- 2. Systems installed for the sole purpose of providing makeup air for systems exhausting toxic, flammable, paint, or corrosive fumes or dust, dryer exhaust, or commercial kitchen hoods used for collecting and removing grease vapors and smoke.

C403.3.5.2 Heating/cooling system fan controls. Heating and cooling equipment fans, heating and cooling circulation pumps, and terminal unit fans shall cycle off and terminal unit primary cooling air shall be shut off when there is no call for heating or cooling in the zone.

EXCEPTION:

Fans used for heating and cooling using less than 0.12 watts per cfm may operate when space temperatures are within the setpoint deadband (Section C403.4.1.2) to provide destratification and air mixing in the space.

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C403.3.5.3 Decoupled DOAS supply air. The DOAS supply air shall be delivered directly to the occupied space or downstream of the terminal heating and/or cooling coils.

EXCEPTIONS:

- 1. Active chilled beam systems.
- 2. Sensible only cooling terminal units with pressure independent variable airflow regulating devices limiting the DOAS supply air to the greater of latent load or minimum ventilation requirements.
- 3. Terminal heating and/or cooling units that comply with the low fan power allowance requirements in the exception of Section C403.3.5.2.

C403.3.5.4 Impracticality. Where the code official determines that full compliance with all the requirements of Sections C403.3.5.1 and C403.3.5.2 would be impractical, it is permissible to provide an approved alternate means of compliance that achieves a comparable level of energy efficiency. For the purposes of this section, impractical means that an HVAC system complying with Section C403.3.5 cannot effectively be utilized due to an unusual use or configuration of the building.

<u>AMENDATORY SECTION</u> (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40346 Section C403.4.6—Variable flow controls.

- **C403.4.6 Variable flow controls.** Individual pumps required by this code to have variable speed control 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:
 - 1.1. Required differential pressure; or
- 1.2. Reset directly based on zone hydronic demand, or other zone load indicators; or
- 1.3. Reset directly based on pump power and pump differential pressure((-)): or
- 1.4. Reset directly by an integral controller based on the relationship between variable speed controller frequency and power.
- 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:

- 2.1. The static pressure set point as reset based on the valve requiring the most pressure; or
- 2.2. Directly controlled based on zone hydronic demand((\cdot, \cdot)): or
- 2.3. Reset directly by an integral controller based on the relationship between variable speed controller frequency and power.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40353 Section C403.5.3—Air economizers.

C403.5.3 Air economizers. Air economizers shall comply with Sections C403.5.3.1 through C403.5.3.5.

C403.5.3.1 Design capacity. Air economizer systems shall be configured to modulate *outdoor air* and return air dampers to provide up to 100 percent of the design supply air quantity as *outdoor air* for cooling.

C403.5.3.2 Control signal. Economizer controls and dampers shall be configured to sequence the dampers with the mechanical cooling equipment and shall not be controlled by only mixed air temperature. Air economizers on systems with cooling capacity greater than 65,000 Btu/h shall be configured to provide partial cooling even when additional mechanical cooling is required to meet the remainder of the cooling load.

EXCEPTION:

The use of mixed air temperature limit control shall be permitted for systems that are both controlled from space temperature (such as single *zone* systems) and having cooling capacity less than 65,000 Btu/h.

C403.5.3.3 High-limit shutoff. Air economizers shall be configured to automatically reduce *outdoor air* intake to the design minimum *outdoor air* quantity when *outdoor air* intake will no longer reduce cooling energy usage. High-limit shutoff control types ((for specific climates)) shall be chosen from Table C403.5.3.3. High-limit shutoff control settings for these control types shall be those specified in Table C403.5.3.3.

Table C403.5.3.3
High-Limit Shutoff Control Setting for Air Economizers^b

	Required High Limit (Economizer off when):		Required High Limit For Cycling Fan (Economizer off when):	
Device Type	Equation Description		Equation	Description
Fixed dry-bulb	$T_{OA} > 75^{\circ}$ F	Outdoor air temperature exceeds 75°F	$T_{OA} > 70^{\circ} \text{F}$	Outdoor air temperature exceeds 70°F
Differential dry-bulb	$T_{OA} > T_{RA}$	Outdoor air temperature exceeds return air temperature	$T_{OA} > (T_{RA} - 5)$	Outdoor air temperature exceeds return air temperature - 5

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	Required High Limit (Economizer off when):		Required High Limit For Cycling Fans ^c (Economizer off when):	
Device Type	Equation Description		Equation	Description
Fixed enthalpy with fixed dry-bulb temperatures	h_{OA} > 28 Btu/lb ^a or T_{OA} > 75°F	Outdoor air enthalpy exceeds 28 Btu/lb of dry air ^a or outdoor air tem- perature exceeds 75°F	h_{OA} > 26 Btu/lb ^a or T_{OA} > 70°F	Outdoor air enthalpy exceeds 26 Btu/lb of dry aird or outdoor air tem- perature exceeds 70°F
Differential enthalpy with fixed dry-bulb temperature	$h_{OA} > h_{RA}$ or $T_{OA} > 75$ °F	Outdoor air enthalpy exceeds return air enthalpy or outdoor air temperature exceeds 75°F	$h_{OA} > (h_{RA} - 2)$ or $T_{OA} > 70^{\circ} F$	Outdoor air enthalpy exceeds return air enthalpy or outdoor air temperature exceeds 70°F

For SI: ${}^{\circ}C = ({}^{\circ}F - 32) \times 5/9$, 1 Btu/lb = 2.33 kJ/kg.

C403.5.3.4 Relief of excess outdoor air. Systems shall be capable of relieving excess *outdoor air* during air economizer operation to prevent over-pressurizing the building. The relief air outlet shall be located to avoid recirculation into the building.

C403.5.3.5 Economizer dampers. Return, exhaust/relief and outdoor air dampers used in economizers shall comply with Section ((C403.7.9)) C403.7.8.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40354 Section C403.5.4—Waterside economizers.

C403.5.4 Waterside economizers. Waterside economizers shall comply with Sections C403.5.4.1 and C403.5.4.2.

C403.5.4.1 Design capacity. Water economizer systems shall be ((eapable of cooling)) configured to cool supply air by indirect evaporation and providing up to 100 percent of the expected system cooling load at *outdoor air* temperatures of 50°F dry-bulb (10°C dry-bulb)/45°F wet-bulb (7.2°C wet-bulb) and below.

EXCEPTION:

Systems where dehumidification requirements cannot be met using outdoor air temperatures of 50°F dry-bulb (10°C dry-bulb)/45°F wet-bulb (7.2°C wet-bulb) and where 100 percent of the expected system cooling load at 45°F dry-bulb (7.2°C dry-bulb)/40°F wet-bulb (4.5°C wet-bulb) is met with evaporative water economizers.

C403.5.4.2 Maximum pressure drop. Precooling coils and water-to-water heat exchangers used as part of a water economizer system shall either have a waterside pressure drop of less than 15 feet (4572 mm) of water or a secondary loop shall be created so that the coil or heat exchanger pressure drop is not seen by the circulating pumps when the system is in the normal cooling (noneconomizer) mode.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40360 Section C403.6—Requirements for mechanical systems serving multiple zones.

C403.6 Requirements for mechanical systems serving multiple zones. Sections C403.6.1 through C403.6.10 shall apply to mechanical systems serving multiple zones.

C403.6.1 Variable air volume (VAV) and multiple zone systems. Supply air systems serving multiple zones shall be VAV systems that have zone controls configured to reduce the volume of air that is reheated, recooled or mixed in each zone to one of the following:

- 1. Twenty percent of the zone design peak supply for systems with DDC and 30 percent of the maximum supply air for other systems.
- 2. Systems with ((DDV)) <u>DDC</u> where items 2.1 through 2.3 apply.
- 2.1. The airflow rate in the deadband between heating and cooling does not exceed 20 percent of the zone design peak supply rate or higher allowed rates under Items 3, 4, or 5 of this section.
- 2.2. The first stage of heating modulates the zone supply air temperature setpoint up to a maximum setpoint while the airflow is maintained at the deadband flow rate.
- 2.3. The second stage of heating modulates the airflow rate from the deadband flow rate up to the heating maximum flow rate that is less than 50 percent of the zone design peak supply rate.
- 3. The outdoor airflow rate required to meet the minimum ventilation requirements of Chapter 4 of the *International Mechanical Code*.
- 4. Any higher rate that can be demonstrated to reduce overall system annual energy use by offsetting reheat/recool energy losses through a reduction in outdoor air intake for the system, as *approved* by the code official.

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^aAt altitudes substantially different than sea level, the fixed enthalpy limit shall be set to the enthalpy value at 75°F and 50 percent relative humidity. As an example, at approximately 6,000 feet elevation the fixed enthalpy limit is approximately 30.7 Btu/lb.

bDevices with selectable setpoints shall be capable of being set to within 2°F and 2 Btu/lb of the setpoint listed.

eWhere fans cycle on only to provide heating and cooling, limits are adjusted lower to compensate for fan energy use in economizer mode.

dFor cycling fans at altitudes substantially different than sea level, the fixed enthalpy limit shall be set to the enthalpy value at 70°F and 50 percent relative humidity.

5. The airflow rates to comply with applicable codes or accreditation standards such as pressure relationships or minimum air change rates.

EXCEPTION:

- The following individual *zones* or entire air distribution systems are exempted from the requirement for VAV control:
- 1. Zones or supply air systems where not less than 75 percent of the energy for reheating or for providing warm air in mixing systems is provided from a site-recovered source, including condenser heat.
- 2. Systems that prevent reheating, recooling, mixing or simultaneous supply of air that has been previously cooled, either mechanically or through the use of economizer systems, and air that has been previously mechanically heated.
- 3. Ventilation systems ((eomply)) complying with Section C403.3.5, DOAS, with ventilation rates comply with Section C403.2.2.
- **C403.6.2** Single duct variable air volume (VAV) systems, terminal devices. Single duct VAV systems shall use terminal devices capable of and configured to reduce the supply of primary supply air before reheating or recooling takes place.
- **C403.6.3 Dual duct and mixing VAV systems, terminal devices.** Systems that have one warm air duct and one cool air duct shall use terminal devices which are capable of and configured to reduce the flow from one duct to a minimum before mixing of air from the other duct takes place.
- C403.6.4 Supply-air temperature reset controls. Multiple zone HVAC systems shall include controls that automatically reset the supply-air temperature in response to representative building loads, or to outdoor air temperature. The controls shall be configured to reset the supply air temperature at least 25 percent of the difference between the design supply-air temperature and the design room air temperature.

EXCEPTIONS:

- 1. Systems that prevent reheating, recooling or mixing of heated and cooled supply air.
- 2. Seventy-five percent of the energy for reheating is from a site-recovered source.
- 3. Zones with peak supply air quantities of 300 cfm (142 L/s) or less.

C403.6.5 Multiple-zone VAV system ventilation optimization control. Multiple-zone VAV systems with direct digital control of individual zone boxes reporting to a central control panel shall have automatic controls configured to reduce outdoor air intake flow below design rates in response to changes in system ventilation efficiency (E_v) as defined by the *International Mechanical Code*.

EXCEPTIONS:

- 1. VAV systems with zonal transfer fans that recirculate air from other zones without directly mixing it with outdoor air, dual-duct dual-fan VAV systems, and VAV systems with fan-powered terminal units.
- 2. Systems where total design exhaust airflow is more than 70 percent of total design outdoor air intake flow requirements.

C403.6.6 Parallel-flow fan-powered VAV air terminal control. Parallel-flow fan-powered VAV air terminals shall have automatic controls configured to:

- 1. Turn off the terminal fan except when space heating is required or where required for ventilation.
- 2. Turn on the terminal fan as the first stage of heating before the heating coil is activated.
- 3. During heating for warmup or setback temperature control, either:
- 3.1. Operate the terminal fan and heating coil without primary air.
- 3.2. Reverse the terminal damper logic and provide heating from the central air handler by primary air.
- C403.6.7 Hydronic and multiple-zone HVAC system controls and equipment. Hydronic and multiple-zone HVAC system controls and equipment shall comply with this section.

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.
- **C403.6.8 Set points for direct digital control.** For systems with direct digital control of individual *zones* reporting to the central control panel, the static pressure setpoint shall be reset based on the *zone* requiring the most pressure. In such cases, the set point is reset lower until one zone damper is nearly wide open. The direct digital controls shall be capable of monitoring zone damper positions or shall have an alternative method of indicating the need for static pressure that is configured to provide all of the following:
- 1. Automatically detecting any zone that excessively drives the reset logic.
- 2. Generating an alarm to the system operational location.
- 3. Allowing an operator to readily remove one or more zones from the reset algorithm.
- C403.6.9 Static pressure sensor location. Static pressure sensors used to control VAV fans shall be located such that the controller setpoint is no greater than 1.2 inches w.c. (((2099)) 299 Pa). Where this results in one or more sensors being located downstream of major duct splits, not less than one sensor shall be located on each major branch to ensure that static pressure can be maintained in each branch.

EXCEPTION: Systems complying with Section C403.6.8.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-403610 Section C403.6.10—High efficiency VAV systems.

C403.6.10 High efficiency variable air volume (VAV) systems. For HVAC systems subject to the requirements of Section C403.3.5 but utilizing Exception 2 of that section, a high efficiency multiple-zone VAV system may be provided without a separate parallel DOAS when the system is designed, installed, and configured to comply with all of the following criteria (this exception shall not be used as a substitution for a DOAS per Section C406.6):

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- 1. Each VAV system must serve a minimum of 3,000 square feet (278.7 m²) and have a minimum of five VAV zones.
- 2. The VAV systems are provided with airside economizer per Section C403.5 without exceptions.
- 3. A direct-digital control (DDC) system is provided to control the VAV air handling units and associated terminal units per Section C403.4.11 regardless of sizing thresholds of Table C403.4.11.1.
- 4. Multiple-zone VAV systems with a minimum outdoor air requirement of 2,500 cfm (1180 L/s) or greater shall be equipped with a device capable of measuring outdoor airflow intake under all load conditions. The system shall be capable of increasing or reducing the outdoor airflow intake based on feedback from the VAV terminal units as required by Section C403.6.5, without exceptions, and Section C403.7.1 demand controlled ventilation.
- 5. Multiple-zone VAV systems with a minimum outdoor air requirement of 2,500 cfm (1180 L/s) or greater shall be equipped with a device capable of measuring supply airflow to the VAV terminal units under all load conditions.
- 6. In addition to meeting the zone isolation requirements of C403.2.1 a single VAV air handling unit shall not serve more than 50,000 square feet ((($\frac{2323}{2}$)) $\frac{4645}{2}$ m²) unless a single floor is greater than 50,000 square feet ((($\frac{2323}{2}$)) $\frac{4645}{2}$ m²) in which case the air handler is permitted to serve the entire floor.
- 7. The primary maximum cooling air for the VAV terminal units serving interior cooling load driven zones shall be sized for a supply air temperature that is a minimum of 5°F greater than the supply air temperature for the exterior zones in cooling.
- 8. Air terminal units with a minimum primary airflow setpoint of 50 percent or greater of the maximum primary airflow setpoint shall be sized with an inlet velocity of no greater than 900 feet per minute.
- 9. Allowable fan motor horsepower shall not exceed 90 percent of the allowable HVAC *fan system bhp* (Option 2) as defined by Section C403.8.1.1.
- 10. All fan powered VAV terminal units (series or parallel) shall be provided with electronically commutated motors. The DDC system shall be configured to vary the speed of the motor as a function of the heating and cooling load in the space. Minimum speed shall not be greater than 66 percent of design airflow required for the greater of heating or cooling operation. Minimum speed shall be used during periods of low heating and cooling operation and ventilation-only operation.

EXCEPTION:

For series fan powered terminal units where the volume of primary air required to deliver the ventilation requirements at minimum speed exceeds the air that would be delivered at the speed defined above, the minimum speed setpoint shall be configured to exceed the value required to provide the required ventilation air.

11. Fan-powered VAV terminal units shall only be permitted at perimeter zones with an envelope heating load requirement. All other VAV terminal units shall be single duct terminal units.

EXCEPTION:

Fan powered VAV terminal units are allowed at interior spaces with an occupant load greater than or equal to 25 people per 1000 square feet of floor area (as established in Table 403.3.1.1 of the *International Mechanical Code*) with demand control ventilation in accordance with Section C403.7.1.

- 12. When in occupied heating or in occupied deadband between heating and cooling all fan powered VAV terminal units shall be configured to reset the primary air supply setpoint, based on the VAV air handling unit outdoor air vent fraction, to the minimum ventilation airflow required per *International Mechanical Code*.
- 13. Spaces that are larger than 150 square feet (14 m²) and with an occupant load greater than or equal to 25 people per 1000 square feet (93 m²) of floor area (as established in Table 403.3.1.1 of the *International Mechanical Code*) shall be provided with all of the following features:
- 13.1. A dedicated VAV terminal unit capable of controlling the space temperature and minimum ventilation shall be provided.
- 13.2. Demand control ventilation (DCV) shall be provided that utilizes a carbon dioxide sensor to reset the ventilation setpoint of the VAV terminal unit from the design minimum to design maximum ventilation rate as required by Chapter 4 of the *International Mechanical Code*.
- 13.3. Occupancy sensors shall be provided that are configured to reduce the minimum ventilation rate to zero and setback room temperature setpoints by a minimum of 5°F, for both cooling and heating, when the space is unoccupied.
- 14. Dedicated data centers, computer rooms, electronic equipment rooms, telecom rooms, or other similar spaces with cooling loads greater than 5 watts/sf shall be provided with separate cooling systems to allow the VAV air handlers to turn off during unoccupied hours in the office space and to allow the supply air temperature reset to occur.

EXCEPTION:

The VAV air handling unit and VAV terminal units may be used for secondary backup cooling when there is a failure of the primary HVAC system.

Additionally, computer rooms, electronic equipment rooms, telecom rooms, or other similar spaces shall be provided with airside economizer in accordance with Section 403.5 without using the exceptions to Section C403.5.

EXCEPTION:

Heat recovery per Exception 9 of Section C403.5 may be in lieu of airside economizer for the separate, independent HVAC system.

- 15. HVAC system central heating or cooling plant will include a minimum of one of the following options:
- 15.1. VAV terminal units with hydronic heating coils connected to systems with hot water generation equipment limited to the following types of equipment: Gas-fired hydronic boilers with a thermal efficiency, E_t , of not less than ((90)) 92 percent, air-to-water heat pumps or heat recovery chillers. Hydronic heating coils shall be sized for a maximum entering hot water temperature of 120°F (48.9°C) for peak anticipated heating load conditions.
- 15.2. Chilled water VAV air handing units connected to systems with chilled water generation equipment with IPLV values more than 25 percent higher than the minimum part load efficiencies listed in Table C403.3.2(7), in the appropri-

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ate size category, using the same test procedures. Equipment shall be listed in the appropriate certification program to qualify. The smallest chiller or compressor in the central plant shall not exceed 20 percent of the total central plant cooling capacity or the chilled water system shall include thermal storage sized for a minimum of 20 percent of the total central cooling plant capacity.

- 16. The DDC system shall include a fault detection and diagnostics (FDD) system complying with the following:
- 16.1. The following temperature sensors shall be permanently installed to monitor system operation:
 - 16.1.1. Outside air.
 - 16.1.2. Supply air.
 - 16.1.3. Return air.
- 16.2. Temperature sensors shall have an accuracy of $\pm 2^{\circ}$ F (1.1°C) over the range of 40°F to 80°F (4°C to 26.7°C).
- 16.3. The VAV air handling unit controller shall be configured to provide system status by indicating the following:
 - 16.3.1. Free cooling available.
 - 16.3.2. Economizer enabled.
 - 16.3.3. Compressor enabled.
 - 16.3.4. Heating enabled.
 - 16.3.5. Mixed air low limit cycle active.
 - 16.3.6. The current value of each sensor.
- 16.4. The VAV air handling unit controller shall be capable of manually initiating each operating mode so that the operation of compressors, economizers, fans and the heating system can be independently tested and verified.
- 16.5. The VAV air handling unit shall be configured to report faults to a fault management application ((accessible)) able to be accessed by day-to-day operating or service personnel or annunciated locally on zone thermostats.
- 16.6. The VAV terminal unit shall be configured to report if the VAV inlet valve has failed by performing the following diagnostic check at a maximum interval of once a month:
- 16.6.1. Command VAV terminal unit primary air inlet valve closed and verify that primary airflow goes to zero.
- 16.6.2. Command VAV terminal unit primary air inlet valve to design airflow and verify that unit is controlling to within 10 percent of design airflow.
- 16.7. The VAV terminal unit shall be configured to report and trend when the zone is driving the following VAV air handling unit reset sequences. The building operator shall have the capability to exclude zones used in the reset sequences from the DDC control system graphical user interface:
- 16.7.1. Supply air temperature setpoint reset to lowest supply air temperature setpoint for cooling operation.
- 16.7.2. Supply air duct static pressure setpoint reset for the highest duct static pressure setpoint allowable.
- 16.8. The FDD system shall be configured to detect the following faults:
 - 16.8.1. Air temperature sensor failure/fault.
- 16.8.2. Not economizing when the unit should be economizing.
- 16.8.3. Economizing when the unit should not be economizing.
 - 16.8.4. Outdoor air or return air damper not modulating.
 - 16.8.5. Excess outdoor air.

16.8.6. VAV terminal unit primary air valve failure.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40374 Section C403.7.4—HVAC serving guestrooms.

C403.7.4 Automatic control of HVAC systems serving guestrooms. In Group R-1 buildings containing more than 50 guestrooms, each guestroom shall be provided with controls complying with the provisions of Sections C403.7.4.1 and C403.7.4.2. Card key controls comply with these requirements.

C403.7.4.1 Temperature setpoint controls. Controls shall be provided on each HVAC system that are capable of and configured to automatically raise the cooling setpoint and lower the heating setpoint by not less than 4°F (2°C) from the occupant setpoint within 30 minutes after the occupants have left the guestroom. The controls shall be capable of and configured to automatically raise the cooling setpoint to not lower than 80°F (27°C) and lower the heating setpoint to not higher than 60°F (16°C) when the guestroom is unrented or has been continuously unoccupied for over 16 hours or a ((networked guestroom control system)) networked guestroom control system indicates that the guestroom is unrented and the guestroom is unoccupied for more than 30 minutes. A ((networked guestroom control system)) networked guestroom control system that is capable of returning the thermostat setpoints to default occupied setpoints 60 minutes prior to the time a guestroom is scheduled to be occupied is not precluded by this section. Cooling that is capable of limiting relative humidity with a setpoint not lower than 65 percent relative humidity during unoccupied periods is not precluded by this section

C403.7.4.2 Ventilation controls. Controls shall be provided on each HVAC system that are capable of and configured to automatically turn off the ventilation and exhaust fans within 30 minutes of the occupants leaving the guestroom or isolation devices shall be provided to each guestroom that are capable of automatically shutting off the supply of outdoor air to and exhaust air from the guestroom.

EXCEPTION:

Guestroom ventilation systems are not precluded from having an automatic daily preoccupancy purge cycle that provides daily outdoor air ventilation during unrented periods at the design ventilation rate for 60 minutes, or at a rate and duration equivalent to one air change.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-4039 Section C403.9—Heat rejection and heat recovery equipment.

C403.9 Heat rejection and heat recovery equipment.

C403.9.1 Heat rejection equipment. Heat rejection equipment, including air-cooled condensers, dry coolers, open-circuit cooling towers, closed-circuit cooling towers and evaporative condensers, shall comply with this section.

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EXCEPTION: Heat rejection devices where energy usage is included in

the equipment efficiency ratings listed in Tables C403.3.2(1)A, C403.3.2(1)B, C403.3.2(1)C,

C403.3.2(2), C403.3.2(3), C403.3.2(7) and C403.3.2(9).

Heat rejection equipment shall have a minimum efficiency performance not less than values specified in Table C403.3.2(8).

C403.9.1.1 Fan speed control. Each fan powered by an individual motor or array of motors with a connected power, including the motor service factor, totaling 5 hp (3.7 kW) or more shall have controls and devices configured to automatically modulate the fan speed to control the leaving fluid temperature or condensing temperature and pressure of the heat rejection device. Fan motor power input shall be not more than 30 percent of design wattage at 50 percent of the design airflow.

EXCEPTIONS:

- 1. Fans serving multiple refrigerant or fluid cooling cir-
- 2. Condenser fans serving flooded condensers.

C403.9.1.2 Multiple-cell heat rejection equipment. Multiple-cell heat rejection equipment with variable speed fan drives shall be controlled to operate the maximum number of fans allowed that comply with the manufacturer's requirements for all system components and so that all fans can operate at the same fan speed required for the instantaneous cooling duty, as opposed to staged (on/off) operation. The minimum fan speed shall be the minimum allowable speed of the fan drive system in accordance with the manufacturer's recommendations.

C403.9.1.3 Limitation on centrifugal fan open-circuit cooling towers. Centrifugal fan open-circuit cooling towers with a combined rated capacity of 1,100 gpm (4164 L/m) or greater at 95°F (35°C) condenser water return, 85°F (29°C) condenser water supply, and 75°F (24°C) outdoor air wetbulb temperature shall meet the energy efficiency requirement for axial fan open-circuit cooling towers listed in Table C403.3.2(8).

C403.9.1.4 Tower flow turndown. Open-circuit cooling towers used on water-cooled chiller systems that are configured with multiple- or variable-speed condenser water pumps shall be designed so that all open circuit cooling tower cells can be run in parallel with the larger of the flow that is produced by the smallest pump at its minimum expected flow rate or at 50 percent of the design flow for the cell.

C403.9.2 Heat recovery.

C403.9.2.1 Heat recovery for service water heating. Condenser heat recovery shall be installed for heating or reheating of service hot water provided the facility operates 24 hours a day, the total installed heat capacity of water cooled systems exceeds 1,500,000 Btu/hr of heat rejection, and the design service water heating load exceeds 250,000 Btu/hr.

The required heat recovery system shall have the capacity to provide the smaller of:

1. Sixty percent of the peak heat rejection load at design conditions; or

2. The preheating required to raise the peak service hot water draw to 85°F (29°C).

EXCEPTIONS:

- 1. Facilities that employ condenser heat recovery for space heating or reheat purposes 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)).

C403.9.2.2 Steam condensate systems. On-site steam heating systems shall have condensate water heat 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.

C403.9.2.3 Refrigeration 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 heating or for dehumidification reheat. Facilities having a gross conditioned floor area of 40,000 ft² 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.

C403.9.2.4 Heat recovery for space heating. A water-source condenser heat recovery system meeting the requirements of Sections C403.9.2.4.1 through C403.9.2.4.4 shall be installed to serve space and ventilation heating systems in new buildings and additions meeting the following criteria:

- 1. The facility operates greater than 70 hours per week.
- 2. The sum of all heat rejection equipment capacity serving the new building or addition exceeds 1,500,000 Btu/hr.
- 3. The sum of zone minimum airflows in all zones with zone reheat coils divided by the conditioned floor area served by those systems is at least 0.45 cfm per square foot.

EXCEPTION: Systems complying with Section C403.3.5, Dedicated outdoor air systems.

C403.9.2.4.1 Water-to-water heat recovery. Ninety percent (90%) of the total building space and ventilation heating system design load shall be served by systems that include heat recovery chiller or water-to-water heat pump equipment capable of rejecting heat from the cooling loop to the space and ventilation heating loop as the first stage of heating.

C403.9.2.4.2 Exhaust heat recovery. Heat shall be recovered by the heat recovery system from 90 percent of the total building exhaust airflow. The maximum leaving air temperature of exhaust air after heat recovery shall be 55°F dry-bulb when operating at full capacity in heat recovery mode.

EXCEPTIONS:

1. Where energy recovery systems are restricted by Section 514 of the International Mechanical Code to sensible energy, those systems shall not be included in the calculation of total building exhaust airflow.

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2. Exhaust air systems handling contaminated airstreams that are regulated by applicable codes or accreditation standards and pose a health risk to maintenance personnel to maintain heat recovery devices, those systems shall not be included in the calculation of total building exhaust airflow.

C403.9.2.4.3 Process heat recovery. Spaces with year-round cooling loads from lights and equipment of 5 watts and greater per square foot shall be served by water-cooled equipment. Cooling loops serving the water-cooled equipment shall be served by water source heat recovery systems meeting the requirements of Section C403.9.2.4.1. If such spaces are provided with an air or water economizer, the economizer controls shall be configured with an override signal from the building automation system to disable economizer operation during heat recovery mode.

C403.9.2.4.4 Water-to-water heat recovery sizing. The minimum total combined capacity of heat recovery chillers or water-to-water heat pumps shall match the total combined capacity of installed equipment sized to meet the requirements of Sections C403.9.2.4.2 and C403.9.2.4.3.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40391 Section C403.10—Construction of HVAC system elements.

C403.10 Construction of HVAC system elements. Ducts, plenums, piping and other elements that are part of an HVAC system shall be constructed and insulated in accordance with Sections C403.10.1 through C403.10.3.1.

C403.10.1 Duct and plenum insulation and sealing.

C403.10.1.1 Ducts conveying outdoor air. Ducts, shafts and plenums conveying outdoor air from the exterior of the building to the mechanical system shall meet all air leakage and building envelope insulation requirements of Section C402, plus building envelope vapor control requirements from the *International Building Code*, extending continuously from the building exterior to an automatic shutoff damper or heating or cooling equipment. For the purposes of building envelope insulation requirements, duct surfaces shall be insulated with the minimum insulation values in Table C403.10.1.1. Duct surfaces included as part of the building envelope shall not be used in the calculation of maximum glazing area as described in Section C402.4.1.

EXCEPTIONS:

- 1. Outdoor air ducts serving individual supply air units with less than 2,800 cfm of total supply air capacity, provided these are insulated to the minimum insulation values in Table C403.10.1.1.
- 2. Unheated equipment rooms with combustion air louvers, provided they are isolated from conditioned space at sides, top and bottom of the room with R-11 nominal insulation.

Table C403.10.1.1
Outdoor Air Ductwork Insulation

Duct system	Duct Location and Use	Climate Zone	Airflow	Minimum Installed Duct Insulation R-value ^{a,b}	Notes
Outdoor Air	Inside conditioned space and upstream of automatic shutoff damper	4C and 5B	≥ 2800 CFM	R-16	See Section C403.10.1.1 for additional require- ments
Outdoor Air	Inside conditioned space and down- stream of automatic shutoff damper to HVAC unit or room	4C	≥ 2800 CFM	R-8	
Outdoor Air	Inside conditioned space and down- stream of automatic shutoff damper to HVAC unit or room	5B	≥ 2800 CFM	R-12	
Outdoor Air	Inside conditioned space	4C and 5B	≤ 2800 CFM	R-7	See Exception 1 to Section C403.10.1.1 for additional details

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- a Insulation R-values, measured in h·ft².ºF/Btu, are for the insulation as installed and do not include film resistance. The required minimum thicknesses do not consider water vapor transmission and possible surface condensation. Insulation resistance measured on a horizontal plane in accordance with ASTM C518 at a mean temperature of 75°F at the installed thickness.
- b See International Mechanical Code Sections 603.12 and 604 for further details on duct insulation requirements.

C403.10.1.2 Other supply and return ducts. All other supply and return air ducts and plenums shall be insulated with a minimum of R-6 insulation where located in unconditioned spaces, and where located outside the building with a minimum of R-8 insulation in Climate Zone 4 and R-12 insulation in Climate Zone 5. Where located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by minimum insulation value as required for exterior walls by Section C402.1.3.

EXCEPTIONS: 1. Where located within equipment.

2. Supply and return ductwork located in unconditioned spaces where the design temperature difference between the interior and exterior of the duct or plenum does not exceed 15°F (8°C) and are insulated in accordance with Table C403.10.1.2.

Where located within conditioned space, supply ducts which convey supply air at temperatures less than 55°F or greater than 105°F shall be insulated with a minimum insulation *R*-value in accordance with Table C403.10.1.2.

EXCEPTION: Ductwork exposed to view within a zone that serves that zone is not required to be insulated.

Where located within conditioned space, return or exhaust air ducts that convey return or exhaust air downstream of an energy recovery media shall be insulated with a minimum insulation *R*-value in accordance with Table C403. 10.1.2.

All ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comply with Section 603.9 of the *International Mechanical Code*.

Table C403.10.1.2
Supply, Return, Exhaust and Relief Air Ductwork Insulation

Supply, Return, Exhaust and Renei All Ductwork Insulation					
Duct System	Duct Location and Use	Climate Zone	Minimum Installed Duct Insulation <i>R</i> -value ^{a,b}	Notes	
Supply air or return air	Outside the building (outdoors and exposed to weather) ^c	4C	R-8	See Section C403.10.1.2 for details	
Supply air or return air	Outside the building (outdoors and exposed to weather) ^c	5B	R-12	See Section C403.10.1.2 for details	
Supply air or return air	Unconditioned space (enclosed but not in the building conditioned enve- lope)	4C and 5B	R-6	See Section C403.10.1.2 for details	
Supply air or return air	Unconditioned space where the duct conveys air that is within 15°F of the air temperature of the surrounding unconditioned space	4C and 5B	R-3.3	See IMC Section 603.12 for additional requirements for condensation control at ductwork	
Supply air or return air	Where located in a building envelope assembly	4C and 5B	R-16	Duct or plenum is separated from building envelope assembly with the minimum insulation value	
Supply air	Within conditioned space where the supply duct conveys air that is less than 55°F or greater than 105°F	4C and 5B	R-3.3	See Section C403.10.1.2 for details	

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Duct System	Duct Location and Use	Climate Zone	Minimum Installed Duct Insulation <i>R</i> -value ^{a,b}	Notes
Supply air	Within conditioned space that the duct directly serves where the supply duct conveys air that is less than 55°F or greater than 105°F	4C and 5B	None	See Section C403.10.1.2 for details
Supply air	Within conditioned space where the supply duct conveys air that is 55°F or greater and 105°F or less	4C and 5B	None	
Return or exhaust air	Within conditioned space, downstream of an energy recovery media, upstream of an automatic shutoff damper	4C	R-8	
Return or exhaust air	Within conditioned space, downstream of an energy recovery media, upstream of an automatic shutoff damper	5B	R-12	
Relief or exhaust air	Conditioned space and downstream of an automatic shutoff damper	4C and 5B	R-16	

^a Insulation R-values, measured in h·ft².°F/Btu, are for the insulation as installed and do not include film resistance. The required minimum thicknesses do not consider water vapor transmission and possible surface condensation. Insulation resistance measured on a horizontal plane in accordance with ASTM C518 at a mean temperature of 75°F at the installed thickness.

C403.10.2 Duct construction. Ductwork shall be constructed and erected in accordance with the *International Mechanical Code*.

C403.10.2.1 Low-pressure duct systems. Longitudinal and transverse joints, seams and connections of supply and return ducts operating at a static pressure less than or equal to 2 inches water gauge (w.g.) (500 Pa) shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), masticplus embedded-fabric systems or tapes installed in accordance with the manufacturer's installation instructions. Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with the *International Mechanical Code*.

EXCEPTION:

Continuously welded and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches water gauge (w.g.) (500 Pa) pressure classification.

C403.10.2.2 Medium-pressure duct systems. Ducts and plenums designed to operate at a static pressure greater than 2 inches water gauge (w.g.) (500 Pa) but less than 3 inches w.g. (750 Pa) shall be insulated and sealed in accordance with Section C403.10.1. Pressure classifications specific to the

duct system shall be clearly indicated on the construction documents in accordance with the *International Mechanical Code*.

C403.10.2.3 High-pressure duct systems. Ducts designed to operate at static pressures equal to or greater than 3 inches water gauge (w.g.) (750 Pa) shall be insulated and sealed in accordance with Section C403.10.1. In addition, ducts and plenums shall be leak-tested in accordance with the SMACNA HVAC Air Duct Leakage Test Manual and shown to have a rate of air leakage (CL) less than or equal to 4.0 as determined in accordance with Equation 4-9.

(Equation 4-9)

CL $F/P((0.65))^{0.65}$

Where:

F The measured leakage rate in cfm per 100 square feet of duct surface.

P The static pressure of the test.

Documentation shall be furnished by the designer demonstrating that representative sections totaling at least 25 percent of the duct area have been tested and that all tested sections meet the requirements of this section.

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b See International Mechanical Code Sections 603.12 and 604 for further details on duct insulation requirements.

c Includes attics above insulated ceilings, parking garages and crawl spaces.

C403.10.3 Piping insulation. All piping serving as part of a heating or cooling system shall be thermally insulated in accordance with Table C403.10.3.

EXCEPTIONS:

- 1. Factory-installed piping within HVAC equipment tested and rated in accordance with a test procedure referenced by this code.
- 2. Factory-installed piping within room fan-coils and unit ventilators tested and rated according to AHRI 440 (except that the sampling and variation provisions of Section 6.5 shall not apply) and 840, respectively.

- 3. Piping that conveys fluids that have a design operating temperature range between 60°F (15°C) and 105°F (41°C).
- 4. Piping that conveys fluids that have not been heated or cooled through the use of fossil fuels or electric power.
- 5. Strainers, control valves, and balancing valves associated with piping 1 inch (25 mm) or less in diameter.
- 6. Direct buried piping that conveys fluids at or below 60°F (15°C).

Table C403.10.3 Minimum Pipe Insulation Thickness (thickness in inches)^a

	Insulation Conductivity Nominal Pipe or Tube Size (inches)						
Fluid Operating Tem- perature Range and Usage (°F)	Conductivity Btu • in. /(h • ft² • °F)b	Mean Rating Temperature, °F	< 1	1 to < 1-1/2	1-1/2 to < 4	4 to < 8	≥8
> 350	0.32 - 0.34	250	4.5	5.0	5.0	5.0	5.0
251 - 350	0.29 - 0.32	200	3.0	4.0	4.5	4.5	4.5
201 - 250	0.27 - 0.30	150	2.5	2.5	2.5	3.0	3.0
141 - 200	0.25 - 0.29	125	1.5	1.5	2.0	2.0	2.0
105 - 140	0.21 - 0.28	100	1.0	1.0	1.5	1.5	1.5
40 - 60	0.21 - 0.27	75	0.5	0.5	1.0	1.0	1.0
< 40	0.20 - 0.26	75	0.5	1.0	1.0	1.0	1.5

^a For piping smaller than 1-1/2 inch (38 mm) and located in partitions within *conditioned spaces*, reduction of these thicknesses by 1 inch (25 mm) shall be permitted (before thickness adjustment required in footnote b) but not to a thickness less than 1 inch (25 mm).

 $T = r\{(1+t/r)^{K/k} - 1\}$

Where:

T = Minimum insulation thickness.

r =Actual outside radius of pipe.

t =Insulation thickness listed in the table for applicable fluid temperature and pipe size.

K = Conductivity of alternate material at mean rating temperature indicated for the applicable fluid temperature (Btu × in/h × ft² × °F).

k = The upper value of the conductivity range listed in the table for the applicable fluid temperature.

C403.10.3.1 Protection of piping insulation. Piping insulation exposed to weather shall be protected from damage, including that due to sunlight, moisture, equipment maintenance and wind, and shall provide shielding from solar radiation that can cause degradation of the material. Adhesives tape shall not be permitted.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40392 Section C403.11—Mechanical systems outside the building envelope.

C403.11 Mechanical systems located outside of the building thermal envelope. Mechanical systems providing heat outside of the thermal envelope of a building shall comply with Sections C403.11.1 through C403.11.3.

C403.11.1 Heating outside a building. Systems installed to provide heat outside a building shall be radiant systems.

Such heating systems shall be controlled by an occupancy sensing device or a timer switch, so that the system is automatically deenergized when no occupants are present.

C403.11.2 Snow- and ice-melt system controls. Snow- and ice-melting systems, supplied through energy service to the building, shall include automatic controls configured to shut off the system when the pavement temperature is above 50°F (10°C) and no precipitation is falling and an automatic control that is configured to ((shutoff)) shut off when the outdoor temperature is above 40°F (4°C) so that the potential for snow or ice accumulation is negligible.

C403.11.3 Freeze protection system controls. Freeze protection systems, such as heat tracing of outdoor piping and heat exchangers, including self-regulating heat tracing, shall

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b For insulation outside the stated conductivity range, the minimum thickness (T) shall be determined as follows:

c For direct-buried heating and hot water system piping, reduction of these thicknesses by 1-1/2 inches (38 mm) shall be permitted (before thickness adjustment required in footnote b but not to thicknesses less than 1 inch (25 mm).

include automatic controls configured to shut off the systems when outdoor air temperatures are above 40°F (4°C) or when the conditions of the protected fluid will prevent freezing.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40393 Section C403.12—High efficiency single zone VAV systems.

- C403.12 High efficiency single-zone variable air volume (VAV) systems. For HVAC systems subject to the requirements of Section C403.3.5 but utilizing Exception 2 of that section, a high efficiency single-zone VAV system may be provided without a separate parallel DOAS when the system is designed, installed, and configured to comply with all of the following criteria (this exception shall not be used as a substitution for a DOAS per Section C406.6 or as a modification to the requirements for the *Standard Reference Design* in accordance with Section C407):
- 1. The single-zone VAV system is provided with airside economizer in accordance with Section C403.3 without exceptions.
- 2. A direct-digital control (DDC) system is provided to control the system as a single zone in accordance with Section C403.4.11 regardless of sizing thresholds of Table C403.4.11.1.
- 3. Single-zone VAV systems with a minimum outdoor air requirement of 1,000 cfm (472 L/s) or greater shall be equipped with a device capable of measuring outdoor airflow intake under all load conditions. The system shall be capable of increasing or reducing the outdoor airflow intake based on Section C403.7.1, Demand controlled ventilation.
- 4. Allowable fan motor horsepower shall not exceed 90 percent of the allowable HVAC fan system bhp (Option 2) as defined by Section C403.8.1.1.
- 5. Each single-zone VAV system shall be designed to vary the supply fan airflow as a function of heating and cooling load and minimum fan speed shall not be more than the greater of:
 - 5.1. 30 percent of peak design airflow; or
- 5.2. The required ventilation flow assuming no occupants.
- 6. Spaces that are larger than 150 square feet (14 m²) and with an occupant load greater than or equal to 25 people per 1000 square feet (93 m²) of floor area (as established in Table 403.3.1.1 of the *International Mechanical Code*) shall be provided with all of the following features:
- 6.1. Demand control ventilation (DCV) shall be provided that utilizes a carbon dioxide sensor to reset the ventilation setpoint of the single-zone VAV system from the design minimum to design maximum ventilation rate as required by Chapter 4 of the *International Mechanical Code*.
- 6.2. Occupancy sensors shall be provided that are configured to reduce the minimum ventilation rate to zero and setback room temperature setpoints by a minimum of 5°F, for both cooling and heating, when the space is unoccupied.
- 7. Single-zone VAV systems shall comply with one of the following options:
- 7.1. Single-zone VAV air handling units with a hydronic heating coil connected to systems with hot water generation

- equipment limited to the following types of equipment: Gasfired hydronic boilers with a thermal efficiency, E_t, of not less than 92 percent, air-to-water heat pumps or heat recovery chillers. Hydronic heating coils shall be sized for a maximum entering hot water temperature of 120°F for peak anticipated heating load conditions.
- 7.2. Single-zone VAV air handing units with a chilled water coil connected to systems with chilled water generation equipment with IPLV values more than 25 percent higher than the minimum part load efficiencies listed in Table C403. 3.2(7), in the appropriate size category, using the same test procedures. Equipment shall be listed in the appropriate certification program to qualify. The smallest chiller or compressor in the central plant shall not exceed 20 percent of the total central plant cooling capacity or the chilled water system shall include thermal storage sized for a minimum of 20 percent of the total central cooling plant capacity.
- 7.3. Single-zone VAV air handling units with DX cooling, heat pump heating or gas-fired furnace shall comply with the following requirements as applicable:
- 7.3.1. Have a DX cooling coil with cooling part load efficiency that is a minimum of 15 percent higher than the minimum SEER or IEER listed in Tables C403.3.2(1) and C403. 3.2(2).
- 7.3.2. Have a gas-fired furnace with a thermal efficiency, E_t, of not less than 90 percent or heat pump with a minimum heating HSPF or COP efficiency that are a minimum of 10 percent higher than the minimum heating efficiency in Tables C403.3.2(1) and C403.3.2(2).
- 7.3.3. Heating coils or burner output shall be modulating or have a minimum of 2 stages with the first stage being less than 50 percent of total heating capacity. Cooling coils shall be modulating or have a minimum of 2 stages with the first stage being less than 50 percent of the total cooling capacity.
- 8. The DDC system shall include a fault detection and diagnostics (FDD) system complying with the following:
- 8.1. The following temperature sensors shall be permanently installed to monitor system operation:
 - 8.1.1. Outside air.
 - 8.1.2. Supply air.
 - 8.1.3. Return air.
- 8.2. Temperature sensors shall have an accuracy of $\pm 2^{\circ}$ F (1.1°C) over the range of 40°F to 80°F (4°C to 26.7°C).
- 8.3. The single-zone VAV air handling unit controller shall be configured to provide system status by indicating the following:
 - 8.3.1. Free cooling available.
 - 8.3.2. Economizer enabled.
 - 8.3.3. Compressor enabled.
 - 8.3.4. Heating enabled.
 - 8.3.5. Mixed air low limit cycle active.
 - 8.3.6. The current value of each sensor.
- 8.4. The single-zone VAV air handling unit controller shall be capable of manually initiating each operating mode so that the operation of compressors, economizers, fans and the heating system can be independently tested and verified.
- 8.5. The single-zone VAV air handling unit shall be configured to report faults to a fault management application ((accessible)) able to be accessed by day-to-day operating or service personnel or annunciated locally on zone thermostats.

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- 8.6. The FDD system shall be configured to detect the following faults:
 - 8.6.1. Air temperature sensor failure/fault.
- 8.6.2. Not economizing when the unit should be economizing.
- 8.6.3. Economizing when the unit should not be economizing.
 - 8.6.4. Outdoor air or return air damper not modulating.
 - 8.6.5. Excess outdoor air.

C403.13 Commissioning. Mechanical systems shall be commissioned in accordance with Section C408.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40402 Section C404.2—Service water-heating equipment performance efficiency.

C404.2 Service water-heating equipment performance efficiency. Water-heating equipment and hot water storage tanks shall meet the requirements of Table C404.2. The efficiency shall be verified through certification and *listed* under an *approved* certification program, or if no certification program exists, the equipment efficiency ratings shall be supported by data furnished by the manufacturer. Water-heating equipment intended to be used to provide space heating shall meet the applicable provisions of Table C404.2.

C404.2.1 High input-rated service water heating systems for other than Group R-1 and R-2 occupancies. In new buildings where the combined input rating of the water-heating equipment installed in a building is equal to or greater than 1,000,000 Btu/h (293 kW), the combined input-capacity-weighted-average efficiency of water-heating equipment shall be no less than the following for each water heating fuel source:

- 1. Electric: A rated COP of not less than 2.0. For air-source heat pump equipment, the COP rating will be reported at the design leaving heat pump water temperature with an ((enter)) entering air temperature of 60°F (15.6°C) or less.
- 2. Fossil Fuel: A rated E_t of not less than 90 percent as determined by the applicable test procedure in Table C404.2.

EXCEPTIONS

- 1. Where not less than 25 percent of the annual service water-heating requirement is provided from any of the following sources:
- 1.1. Renewable energy generated on-site that is not being used to satisfy another requirement of this code; or
- 1.2. Site-recovered energy that is not being used to satisfy other requirements of this code.
- 2. Redundant equipment intended to only operate during equipment failure or periods of extended maintenance.
- 3. Electric resistance heated systems installed as part of an alteration where the water heating equipment is installed at the grade level in a building with a height of four stories or greater.
- Hot water heat exchangers used to provide service water heating from a district utility (steam, heating hot water).
- 5. Water heaters provided as an integral part of equipment intended to only heat or boost the heat of water used by that equipment.

6. For electric heat systems, supplemental water heaters not meeting this criteria that function as auxiliary heating only when the outdoor temperature is below 32°F (0°C) or when a defrost cycle is required are not required to have a rated COP of 2.0. Such systems shall be sized and configured to lock out electric resistance or fossil fuel heating from operation when the outdoor temperature is above 32°F (0°C) unless the system is in defrost operation.

C404.2.2 High input-rated service water heating system for Group R-1 and R-2 occupancies. In new buildings with over 1,000,000 Btu/h installed service water heating capacity serving Group R-1 and R-2 occupancies, at least 25 percent of annual water heating energy shall be provided from any combination of the following water heating sources:

- 1. Renewable energy generated on-site that is not being used to satisfy other requirements of this code; or
- 2. Site-recovered energy that is not being used to satisfy other requirements of this code.

EXCEPTION:

Compliance with this section is not required if the combined input-capacity-weighted average equipment rating for each service water heating fuel source type is not less than the following:

- 1. Electric Resistance: An electric resistance water heater with a rating of 105 percent of the rated efficiency of Table C404.2.
- 2. Electric Heat Pump (10 C.F.R. Part 430): A heat pump water heater rated in accordance with 10 C.F.R. Part 430 with a rating of 105 percent of the rated efficiency of Table C404.2.
- 3. Electric Heat Pump (not listed in accordance with 10 C.F.R. Part 430): A heat pump water heater not rated in accordance with 10 C.F.R. Part 430 shall have a COP of not less than 2.0. For air-source heat pump equipment the COP rating will be reported at the design leaving heat pump water temperature with an entering air temperature of 60°F (15.6°C) or less. Supplemental water heaters not meeting the above criteria that function as auxiliary heating only when the outdoor temperature is below 32°F (0°C) or when a defrost cycle is required are not required to have a rated COP of 2.0. Such systems shall be sized and configured to lock out electric resistance or fossil fuel heating from operation when the outdoor temperature is above 32°F (0°C) unless the system is in defrost operation.
- 4. Fossil Fuels: A rated E_t of not less than 90 percent as determined by the applicable test procedures in Table C404.2.
- 5. Hot water heat exchangers used to provide service water heating from a district utility (steam, heating hot water).

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-404021 Table C404.2—Minimum performance of water-heating equipment.

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Table C404.2

Minimum Performance of Water-Heating Equipment

Equipment Type	Size Category (input)	Subcategory or Rating Condition	Performance Required ^{a, b}	Test Procedure	
	$\leq 12 \text{ kW}^d$	Tabletop ^e \geq 20 gal and \geq 120 gal	0.93 - 0.00132 <i>V</i> , EF	DOE 10 C.F.R. Part 430	
		Resistance ≥ 20 gal and ≤ 55 gal	0.960 - 0.0003 <i>V</i> , EF		
Storage water heaters, electric		Grid-enabled ^f > 75 gal and \le 120 gal	1.06 - 0.00168 <i>V</i> , EF		
	> 12 kW ^d	Resistance	(0.3 + 27)/V _m ,%/o/hg	Section G.2 of ANSI Z21.10.3	
	\leq 24 amps and \leq 250 volts	Heat pump	2.057 - 0.00113 <i>V</i> , EF	DOE 10 C.F.R. Part 430	
Instantaneous water heaters, electric	All	Resistance	0.93 - 0.00132 <i>V</i> , EF	DOE 10 C.F.R. Part 430	
	≤ 75,000 Btu/h	\geq 20 gal and \leq 55 gal	0.675 - 0.0015 <i>V</i> , EF	DOE 10 C.F.R. Part 430	
G 1		> 55 gal and ≤ 100 gal	0.8012 - 0.00078 <i>V</i> , EF	DOE 10 C.F.K. Part 430	
Storage water heaters, gas	> 75,000 Btu/h	< 4,000 Btu/h/gal	80% $E_{\rm t}$ (Q/800 + 110 $\sqrt{\nu}$) SL, Btu/h	Section G.1 and G.2 of ANSI Z21.10.3	
	> 50,000 Btu/h and < 200,000 Btu/h	≥ 4,000 (Btu/h)/gal and < 2 gal	0.82 - 0.0019 <i>V</i> , EF	DOE 10 C.F.R. Part 430	
Instantaneous water heaters, gas	≥ 200,000 Btu/h ^c	≥4,000 Btu/h/gal and < 10 gal	80% E _t	Section G.1 and G.2 of	
	≥ 200,000 Btu/h	\geq 4,000 Btu/h/gal and \geq 10 gal	80% $E_{\rm t}$ (Q/800 + 110 $\sqrt{\nu}$) SL, Btu/h	ANSI Z21.10.3	
	≤ 105,000 Btu/h	≥ 20 gal	0.68 - 0.0019 <i>V</i> , EF	DOE 10 C.F.R. Part 430	
Storage water heaters, oil	> 105,000 Btu/h	< 4,000 Btu/h/gal	$((78)) 80\% E_t (Q/800 + 110 \sqrt{V}) \text{ SL, Btu/h}$	Section G.1 and G.2 of ANSI Z21.10.3	
	≤ 210,000 Btu/h	≥ 4,000 Btu/h/gal and < 2 gal	0.59 - 0.0019 <i>V</i> , EF	DOE 10 C.F.R. Part 430	
Instantaneous water heaters, oil	> 210,000 Btu/h	\geq 4,000 Btu/h/gal and \leq 10 gal	80% E _t	Section G.1 and G.2 of	
	> 210,000 Btu/h	≥ 4,000 Btu/h/gal and ≥ 10 gal	78% $E_{\rm t}$ (Q/800 + 110 \sqrt{V}) SL, Btu/h	ANSI Z21.10.3	
Hot water supply boilers, gas and oil	≥ 300,000 Btu/h and < 12,500,000 Btu/h	\geq 4,000 Btu/h/gal and \leq 10 gal	$80\%~E_t$		
Hot water supply boilers, gas	≥ 300,000 Btu/h and < 12,500,000 Btu/h	\geq 4,000 Btu/h/gal and \geq 10 gal	80% $E_{\rm t}$ (Q/800 + 110 \sqrt{V}) SL, Btu/h	Section G.1 and G.2 of ANSI Z21.10.3	
Hot water supply boilers, oil	≥ 300,000 Btu/h and < 12,500,000 Btu/h	≥ 4,000 Btu/h/gal and > 10 gal	78% $E_{\rm t}$ (Q/800 + 110 \sqrt{V}) SL, Btu/h		
Pool heaters, gas and oil	All	_	82% E _t	ASHRAE 146	
Heat pump pool heaters	All	_	4.0 COP	AHRI 146	
Unfired storage tanks	All	_	Minimum insulation requirement R-12.5 (h • ft² • °F)/Btu	(none)	

For SI: $^{\circ}C = [(^{\circ}F) - 32]/1.8$, 1 British thermal unit per hour = 0.2931 W, 1 gallon = 3.785 L, 1 British thermal unit per hour per gallon = 0.078 W/L.

a Energy factor (EF) and thermal efficiency (E_t) are minimum requirements. In the EF equation, V is the rated volume in gallons.

bStandby loss (SL) is the maximum Btu/h based on a nominal 70°F temperature difference between stored water and ambient requirements. In the SL equation, Q is the nameplate input rate in Btu/h. In the SL equation for electric water heaters, V is the rated volume in gallons and V_m is the measured volume in gallons. In the SL equation for oil and gas water heaters and boilers, V is the rated volume in gallons.

cInstantaneous water heaters with input rates below 200,000 Btu/h shall comply with these requirements if the water heater is designed to heat water to temperatures 180°F or higher.

dElectric water heaters with an input rating of 12 kW (40,950 Btu/h) or less that are designed to heat water to temperatures of 180°F or greater shall comply with the requirements for electric water heaters that have an input rating greater than 12 kW (40,950 Btu/h).

eA tabletop water heater is a water heater that is enclosed in a rectangular cabinet with a flat top surface not more than three feet (0.91 m) in height.

fA grid-enabled water heater is an electric resistance water heater that meets all of the following:

- 1. Has a rated storage tank volume of more than 75 gallons.
- 2. Is manufactured on or after April 16, 2015.
- 3. Is equipped at the point of manufacture with an activation lock.
- 4. Bears a permanent label applied by the manufacturer that complies with all of the following:
- 4.1. Is made of material not adversely affected by water.
- 4.2. Is attached by means of nonwater soluble adhesive.
- 4.3. Advises purchasers and end-users of the intended and appropriate use of the product with the following notice printed in 16.5 point Arial narrow bold font: "IMPORTANT INFORMATION: This water heater is intended only for use as a part of an electric thermal storage or demand response program. It will not provide adequate hot water unless enrolled in such a program and activated by your utility company or another program operator. Confirm the availability of a program in your local area before purchasing or installing this product."

g%/h is the energy consumed to replace the heat loss from the tank while on standby, expressed as a percentage of the total energy in the stored water per hour.

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 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40406 Section C404.6—Pipe insulation.

C404.6 Insulation of piping. Piping from a water heater to the termination of the heated water fixture supply pipe shall be insulated in accordance with Table C403.10.3. On both the inlet and outlet piping of a storage water heater or heated water storage tank, the piping to a heat trap or the first 8 feet (2438 mm) of piping, whichever is less, shall be insulated. Piping that is heat traced shall be insulated in accordance with Table C403.10.3 or the heat trace manufacturer's instructions. Tubular pipe insulation shall be installed in accordance with the insulation manufacturer's instructions. Pipe insulation shall be continuous, including through hangers and supports, such that thermal bridging is prevented, except where the piping passes through a framing member. The minimum insulation thickness requirements of this section shall not supersede any greater insulation thickness requirements necessary for the protection of piping from freezing temperatures or the protection of personnel against external surface temperatures on the insulation.

EXCEPTION:

Tubular pipe insulation shall not be required on the following:

- 1. The tubing from the connection at the termination of the fixture supply piping to a plumbing fixture or plumbing appliance.
- 2. Valves, pumps, strainers and threaded unions in piping that is 1 inch (25 mm) or less in nominal diameter.
- 3. Piping from user-controlled shower and bath mixing valves to the water outlets.
- 4. Cold-water piping of a demand recirculation water
- 5. Tubing from a hot drinking-water heating unit to the water outlet.
- 6. Piping at locations where a vertical support of the piping is installed.
- 7. Piping surrounded by building insulation with a thermal resistance (*R*-value) of not less than R-3.
- 8. Hot water piping that is part of the final pipe run to the plumbing fixture and is not part of the heated-water circulation system circulation path is not required to meet the minimum insulation requirements of <u>Section</u> C404.6.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40502 Section C405.2—Electrical power and lighting systems.

C405.2 Lighting controls. Lighting systems shall be provided with controls that comply with one of the following:

- 1. Lighting controls as specified in Sections C405.2.1 through ((C405.2.8)) C405.2.7.
- 2. Luminaire level lighting controls (((LLC)) LLLC) and lighting controls as specified in Sections C405.2.1, C405.2.3 and C405.2.5. The ((LLC)) LLLC luminaire shall be independently configured to:
- 2.1. Monitor occupant activity to brighten or dim lighting when occupied or unoccupied, respectively.
- 2.2. Monitor ambient light, both electric and daylight, and brighten or dim artificial light to maintain desired light level.
- 2.3. For each control strategy, configuration and reconfiguration of performance parameters including: Bright and dim setpoints, timeouts, dimming fade rates, sensor sensitivity adjustments, and wireless zoning configuration.

EXCEPTION:

Except for specific application controls required by Section C405.2.5, lighting controls are not required for the following:

- 1. Areas designated as security or emergency areas that are required to be continuously lighted.
- 2. Means of egress illumination serving the exit access that does not exceed 0.02 watts per square foot of building area.
- 3. Emergency egress lighting that is normally off.
- 4. Industrial or manufacturing process areas, as may be required for production and safety.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-405021 Section C405.2.1—Occupant sensor controls.

C405.2.1 Occupant sensor controls. Occupant sensor controls shall be installed to control lights in the following space types:

- 1. Classrooms/lecture/training rooms.
- 2. Conference/meeting/multipurpose rooms.

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- 3. Copy/print rooms.
- 4. Lounges/breakrooms.
- 5. Enclosed offices.
- 6. Open plan office areas.
- 7. Restrooms.
- 8. Storage rooms.
- 9. Locker rooms.
- 10. Other spaces 300 square feet (28 m²) or less that are enclosed by floor-to-ceiling height partitions.
 - 11. Warehouse storage areas.
 - 12. Enclosed fire rated stairways.
 - 13. Service corridors.
 - 14. Covered parking areas.

Occupant sensor controls in warehouse storage areas, corridors, and library stacks, shall comply with Section C405.2.1.2. Occupant sensor controls in fire rated stairways shall comply with Section C405.2.1.5. Occupant sensor controls in open plan office areas shall comply with Section C405.2.1.3. Occupant sensor controls in covered parking areas shall comply with Section C405.2.1.4. Occupant sensor controls for all other spaces shall comply with Section C405.2.1.1.

EXCEPTIONS:

- 1. Corridors in manufacturing facilities.
- 2. General lighting and task lighting in shop and laboratory classrooms.
- 3. Digital timer switch controls may be provided in lieu of occupant sensor controls in the following space types ((in)) if under 300 square feet: Copy/print rooms, storage rooms, and janitorial closets. Digital timer switches shall comply with the following:
- 3.1. Turn lights on or off with operation of a button, switch or other manual means.
- 3.2. Automatically turn lights off within 15 minutes of the lights being turned on. The means for setting the time delay shall not be visible on the front of the switch.
- 3.3. The switch shall provide both audible and visual indication of impending time-out of the switch. Audible and visual indication shall be given at least once within 5 minutes of time-out of the switch. Visual indication shall consist of turning the lights momentarily off, and then back on.

C405.2.1.1 Occupant sensor control function. Occupant sensor controls shall comply with all of the following:

- 1. They shall be configured to automatically turn off lights within 20 minutes of all occupants leaving the space.
- 2. They shall be manual on or configured to automatically turn the lighting on to not more than 50 percent power.

EXCEPTION:

Full automatic-on controls shall be permitted to control lighting in public corridors, stairways, restrooms, primary building entrances areas and lobbies, and areas where manual-on operation would endanger the safety or security of the room or building occupants.

3. They shall incorporate a manual control to allow occupants to turn lights off.

C405.2.1.2 Occupant sensor control function in warehouses, storage areas and service corridors. Occupant sensor controls shall be configured to comply with all of the following:

- 1. Automatically reduce lighting power by not less than 50 percent within 20 minutes of all occupants leaving the area.
- 2. Control lighting in each aisleway and corridor independently, and shall not control lighting beyond the aisleway or corridor being controlled by the sensor.
- 3. Automatically turn lighting off within 20 minutes of all occupants leaving the space, or comply with Section C405.2.2 to turn lighting off when the building is vacant.
- 4. Restore lighting to full power when occupants enter the space.
- C405.2.1.3 Occupant sensor control function in open plan office areas. Occupant sensor controls in open plan office spaces less than 300 square feet (28 m²) in area shall comply with Section C405.2.1.1. Occupant sensor controls in all other open plan office spaces shall be configured to comply with all of the following:
- 1. General lighting is controlled separately in control zones with floor areas not greater than 600 square feet (55 m²) within the open plan office space.
- 2. Automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the open plan office space.
- 3. General lighting power in each control zone is reduced by not less than 80 percent of the full zone general lighting power within 20 minutes of all occupants leaving that control zone. Control functions that switch control zone lights completely off when the zone is unoccupied meet this requirement.
- 4. Daylight responsive controls activate open plan office space general lighting or control zone general lighting only when occupancy for the same area is detected.

C405.2.1.4 Occupant sensor control function in parking garages. Occupant sensor controls shall be configured to comply with all of the following:

1. Lighting power of each *luminaire* shall be automatically reduced by a minimum of 30 percent when there is no vehicle or pedestrian activity detected within a lighting zone for 20 minutes. Lighting zones for this requirement shall be no larger than 3,600 square feet.

Exceptions:

- 1.1. Lighting in daylight transition zones and ramps without parking.
- 1.2. Covered parking garages with a total lighting power less than 0.07 watts per square foot.
- 2. Where time switch controls in accordance with Section C405.2.2 are not installed, the occupant sensor shall automatically turn all the lighting off within 20 minutes of all occupants leaving the space and restore lighting to full power when occupants enter the space.

C405.2.1.5 Occupant sensor control function in enclosed fire rated stairways. Occupant sensor controls shall be configured to automatically reduce lighting power by not less than 50 percent when no occupants have been detected in the stairway for a period not exceeding 20 minutes and restore lighting to full power when occupants enter the stairway. All portions of stairways shall remain illuminated to meet the requirements of Section 1009 of the *International Building Code* when the lighting power is reduced.

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AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-405025 Section C405.2.5—Additional lighting controls.

C405.2.5 Additional lighting controls. Specific application lighting shall be provided with controls, in addition to controls required by other sections, for the following:

- 1. The following lighting shall be controlled by an occupant sensor complying with Section C405.2.1.1 or a time switch control complying with Section C405.2.2.1. In addition, a manual control shall be provided to control such lighting separately from the general lighting in the space:
 - 1.1. Display and accent.
 - 1.2. Lighting in display cases.
- 1.3. Supplemental task lighting, including permanently installed under-shelf or under-cabinet lighting.
- 1.4. Lighting equipment that is for sale or demonstration in lighting education.
- 2. Sleeping units shall have control device(s) or systems configured to automatically switch off all permanently installed luminaires and switched receptacles within 20 minutes after all occupants have left the unit.

EXCEPTIONS:

- 1. Lighting and switched receptacles controlled by card key controls.
- 2. Spaces where patient care is directly provided.
- 3. Permanently installed luminaires within dwelling units shall be provided with controls complying with either Section C405.2.1.1 or ((C405.2.2.2)) C405.2.3.1.
- 4. Lighting for nonvisual applications, such as plant growth and food warming, shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space. Each control zone shall be no greater than the area served by a single luminaire or 4,000 square feet, whichever is larger.
- 5. Luminaires serving the exit access and providing means of egress illumination required by Section ((1006.1)) 1008.2 of the *International Building Code*, including luminaires that function as both normal and emergency means of egress illumination shall be controlled by a combination of listed emergency relay and occupancy sensors, or signal from another building control system, that automatically shuts off the lighting when the areas served by that illumination are unoccupied.

EXCEPTION:

Means of egress illumination serving the exit access that does not exceed 0.02 watts per square foot of building area is exempt from this requirement.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-405028 Section ((C405.2.8)) C405.2.7—Area controls.

((C405.2.8)) C405.2.7 Area controls. The maximum lighting power that may be controlled from a single switch or automatic control device shall not exceed that which is provided by a 20 ampere circuit loaded to not more than 80 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.

EXCEPTION:

Areas less than 5 percent of the building footprint for footprints over 100,000 ft².

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-405051 Section C405.4.1—Total connected interior lighting power.

C405.4.1 Total connected interior lighting power. The total connected interior lighting power shall be determined in accordance with Equation 4-10.

$$TCLP = [LVL + BLL + TRK + POE + Other]$$
(Equation 4-10)

Where:

TCLP = Total connected lighting power (watts).

LVL = For luminaires with lamps connected directly to building power, such as line voltage lamps, the rated wattage of the lamp, which must be minimum 60 lumens/watt.

BLL = For luminaires incorporating a ballast or transformer, the rated input wattage of the ballast or transformer when operating the lamp.

TRK = For lighting track, cable conductor, rail conductor and plug-in busway systems that allow the addition and relocation of luminaires without rewiring((-)), the wattage shall be one of the following:

- 1. The specified wattage of the luminaires, but not less than 16 W/lin. ft. (52 W/lin. m).
- 2. The wattage limit of the permanent current limiting devices protecting the system.
- 3. The wattage limit of the transformer supplying the system.

POE = For other modular lighting systems served with power supplied by a driver, power supply for transformer including, but not limited to, low-voltage lighting systems, the wattage of the system shall be the maximum rated input wattage of the driver, power supply or transformed published in the manufacturer's catalogs, as specified by UL 2108 or 8750. For power-over-Ethernet lighting systems, power provided to installed nonlighting devices may be subtracted from the total power rating of the power-over-Ethernet systems.

Other = The wattage of all other luminaires and lighting, sources not covered above and associated with interior lighting verified by data supplied by the manufacturer or other *approved* sources.

The connected power associated with the following lighting equipment is not included in calculating total connected lighting power.

- 1. Television broadcast lighting for playing areas in sports arenas.
- 2. Emergency lighting automatically off during normal building operation.
- 3. Lighting in spaces specifically designed for use by occupants with special lighting needs including those with visual impairment and other medical and age-related issues.
 - 4. Casino gaming areas.

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- 5. General area lighting power in industrial and manufacturing occupancies dedicated to the inspection or quality control of goods and products.
 - 6. Mirror lighting in dressing rooms.
- 7. Task lighting for medical and dental purposes that is in addition to general lighting and controlled by an independent control device.
- 8. Display lighting for exhibits in galleries, museums and monuments that is in addition to general lighting and controlled by an independent control device.
- 9. Lighting for theatrical purposes, including performance, stage, film production and video production.
 - 10. Lighting for photographic processes.
- 11. Lighting integral to equipment or instrumentation and installed by the manufacturer.
- 12. Task lighting for plant growth or maintenance where the lamp efficacy is not less than 90 lumens per watt.
 - 13. Advertising signage or directional signage.
 - 14. Lighting for food warming.
 - 15. Lighting equipment that is for sale.
- 16. Lighting demonstration equipment in lighting education facilities.
 - 17. Lighting *approved* because of safety considerations.
- 18. Lighting in retail display windows, provided the display area is enclosed by ceiling-height partitions.
- 19. Furniture mounted supplemental task lighting that is controlled by automatic shutoff.
 - 20. Exit signs.
 - 21. Lighting used for aircraft painting.

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.

<u>AMENDATORY SECTION</u> (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-405054 Table C405.4.2(2)—Interior lighting power allowances—Space-by-space method.

Table C405.4.2(2)
Interior Lighting Power Allowances—Space-by-Space
Method

Common Space-by-Space Types ^a	LPD (w/ft²)
Atrium - Less than 20 feet in height	0.39
Atrium - 20 to 40 feet in height	0.48
Atrium - Above 40 feet in height	0.60
Audience/seating area - Permanent	
In an auditorium	0.61
In a gymnasium	0.23
In a motion picture theater	0.27
In a penitentiary	0.67
In a performing arts theater	1.16
In a religious building	0.72
In a sports arena	0.33
Otherwise	0.23

Common Space-by-Space Types ^a	LPD (w/ft²)
Banking activity area ⁿ	0.61
Breakroom (see lounge/breakroom)	
Classroom/lecture hall/training room	
In a penitentiary	0.89
Otherwise	0.71 ^m
Computer room, data center	0.94
Conference/meeting/multipurpose	0.97
Confinement cell	0.70
Copy/print room	0.31
Corridor	0.51
In a facility for the visually	
impaired (and not used pri-	
marily by the staff) ^b	0.71
In a hospital	0.71
In a manufacturing facility	0.41
Otherwise ^c	0.41
Courtroom ^c	1.20
Dining area	
In a penitentiary	0.42
In a facility for the visually	
impaired (and not used pri-	
marily by the staff) ^b	1.27
In a bar/lounge or leisure din-	0.86
ing ⁿ	
In cafeteria or fast food dining	0.40
In a family dining arean	0.60
Otherwise	0.43
Electrical/mechanical	0.43
Emergency vehicle garage	0.52
Food preparation	1.09
Guest room ^{a,b}	0.41
Laboratory	
In or as a classroom	1.11
Otherwise	1.33
Laundry/washing area	0.53
Loading dock, interior	0.88
Lobby ^c	
In a facility for the visually	
impaired (and not used pri- marily by the staff) ^b	1.69
For an elevator	0.65
In a hotel	0.63
In a motion picture theater	0.23
In a performing arts theater	1.25

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Common Space-by-Space Types ^a	LPD (w/ft²)
Otherwise	0.84
Locker room	0.52
Lounge/breakroom ⁿ	
In a health care facility ⁿ	0.42
Otherwise ⁿ	0.59
Office	
Enclosed ≤ 250	0.74
Enclosed > 250	0.66
Open plan	0.61
Parking area, interior	0.15
Pharmacy area	1.66
Restroom	
In a facility for the visually impaired (and not used pri-	
marily by the staff) ^b	1.26
Otherwise ⁿ	0.63
Sales area	1.05
Seating area, general	0.23
Stairway (see space containing stairway)	
Stairwell ⁿ	0.49
Storage room	
< 50 ft ²	0.51
50-100 ft ²	0.38
All other storage	0.38
Vehicular maintenance	0.60
Workshop	1.26

Building Specific Space-by-Space Types ^a	LPD (w/ft²)
Automotive (see vehicular maintenance)	
Convention center - Exhibit space	0.61
Dormitory living quarters ^{a,b}	0.50
Facility for the visually impaired ^b	
In a chapel (and not used pri- marily by the staff) ^b	0.70
In a recreation room (and not used primarily by the staff) ^b	1.77
Fire stations ^g	
Sleeping quarters	0.23
Gymnasium/fitness center	
In an exercise area	0.90
In a playing area	0.85
Health care facility	

Building Specific Space-by-Space Types ^a	LPD (w/ft²)
In an exam/treatment room	1.40
In an imaging room	0.94
In a medical supply room	0.62
In a nursery	0.92
In a nurse's station	1.17
In an operating room	2.26
In a patient room ^g	0.68
In a physical therapy room	0.91
In a recovery room	1.25
Library	
In a reading area ⁿ	0.31
In the stacks	1.10
Manufacturing facility	
In a detailed manufacturing	
area	0.80
In an equipment room	0.76
In an extra high bay area (greater than 50-foot floor-to-	1.40
ceiling height)	1.42
In a high bay area (25 - 50-foot floor-to-ceiling height)	1.24
In a low bay (< 25-foot floor- to-ceiling height)	0.86
Museum	
In a general exhibition area	0.31
In a restoration room	1.10
Performing arts theater dressing/fit- ting room	0.41
Post office - Sorting area	0.76
Religious buildings	
In a fellowship hall ⁿ	0.54
In a worship/pulpit/choir arean	0.85
Retail facilities	
In a dressing/fitting room	0.51
In a mall concourse	0.82
Sports arena - Playing area	
For a Class 1 facility ⁱ	2.94
For a Class 2 facility	2.01
For a Class 3 facility ^k	1.30
For a Class 4 facility ¹	0.86
Transportation	
In a baggage/carousel area	0.39
In an airport concourse	0.25

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Building Specific Space-by-Space Types ^a	LPD (w/ft²)
At a terminal ticket counter ⁿ	0.51
Warehouse - Storage area	
For medium to bulky pallet- ized items	0.33
For smaller, hand-carried items	0.69

For SI: 1 foot = 304.8 mm, 1 watt per square foot = 11 W/m^2 .

- a In cases where both a common space type and a building area specific space type are listed, the building area specific space type shall apply.
- b A facility for the visually impaired is a facility that is licensed or will be licensed by local or state authorities for senior long-term care, adult daycare, senior support or people with special visual needs.
- c For spaces in which lighting is specified to be installed in addition to, and controlled separately from, the general lighting for the purpose of highlighting art or exhibits, provided that the additional lighting power shall not exceed 0.5 W/ft² of such spaces.
- d Reserved.
- e Reserved.
- f Reserved.
- g Where sleeping units are excluded from lighting power calculations by application of Section R404.1, neither the area of the sleeping units nor the wattage of lighting in the sleeping units is counted.
- h Where dwelling units are excluded from lighting power calculations by application of Section R404.1, neither the area of the dwelling units nor the wattage of lighting in the dwelling units is counted.
- i Class I facilities consist of professional facilities; and semiprofessional, collegiate or club facilities with seating for 5,000 or more spectators.

- j Class II facilities consist of collegiate and semiprofessional facilities with seating for fewer than 5,000 spectators; club facilities with seating between 2,000 and 5,000 spectators; and amateur league and high school facilities with seating for more than 2,000 spectators.
- k Class III facilities consist of club, amateur league and high school facilities with seating for 2,000 or fewer spectators.
- Class IV facilities consist of elementary school and recreational facilities; and amateur league and high school facilities without provisions for spectators.
- ^m For classrooms, additional lighting power allowance of 4.50 W/lineal foot of white or chalk boards for directional lighting dedicated to white or chalk boards.
- Additional lighting power allowance of 0.30 W/ft² for ornamental lighting. Qualifying ornamental lighting includes luminaires such as chandeliers, sconces, lanterns, neon and cold cathode, light emitting diodes, theatrical projectors, moving lights and light color panels when any of those lights are used in a decorative manner that does not serve as display lighting or general lighting.
- ((* For scientific laboratories, additional lighting power allowance of 0.35 W/ft²-for specialized task work lighting that provides for small-scale, cognitive or fast performance visual tasks, lighting required for operating specialized equipment associated with pharmaceutical/laboratorial activities.
- Por offices, additional lighting power allowance of 0.20 W/ft²-for-portable lighting, which includes under shelf or furniture-mounted-supplemental task lighting qualifies when controlled by a time clock or an occupancy sensor.))

<u>AMENDATORY SECTION</u> (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-405064 Table C405.5.3(2)—Individual lighting power allowances for building exteriors.

Table C405.5.3(2)
Lighting Power Allowances for Building Exteriors

	Lighting Zones							
	Zone 1	Zone 2	Zone 3	Zone 4				
Base Site	350 W	400 W	500 W	900 W				
Allowance								
	Uncover	ed Parking A	reas					
Parking areas and drives	0.03 W/ft ²	0.04 W/ft ²	0.06 W/ft ²	0.08 W/ft ²				
	Building Grounds							
Walkways and ramps less than 10 feet wide	0.5 W/linear foot	0.5 W/lin- ear foot	0.6 W/lin- ear foot	0.7 W/lin- ear foot				
Walkways and ramps 10 feet wide or greater, plaza areas, spe- cial feature areas	0.10 W/ft ²	0.10 W/ft ²	0.11 W/ft ²	0.14 W/ft ²				
Dining areas	0.65 W/ft ²	0.65 W/ft ²	0.75 W/ft ²	0.95 W/ft ²				
Stairways	0.6 W/ft ²	0.7 W/ft ²	0.7 W/ft ²	0.7 W/ft ²				

	Lighting Zones						
	Zone 1	Zone 2	Zone 3	Zone 4			
Pedestrian tun- nels	0.12 W/ft ²	0.12 W/ft ²	0.14 W/ft ²	0.21 W/ft ²			
Landscaping	0.03 W/ft ²	0.04 W/ft ²	0.04 W/ft ²	0.04 W/ft ²			
	Building E	ntrances and	Exits				
Pedestrian and vehicular entrances and exits	14 W/linear foot of opening	14 W/lin- ear foot of opening	21 W/lin- ear foot of opening	21 W/lin- ear foot of opening			
Entry canopies	0.2 W/ft ²	0.25 W/ft ²	0.4 W/ft ²	0.4 W/ft ²			
Loading docks	0.35 W/ft ²	0.35 W/ft ²	0.35 W/ft ²	0.35 W/ft ²			
	Sal	es Canopies					
Free standing and attached	0.4 W/ft ²	0.4 W/ft ²	0.6 W/ft ²	0.7 W/ft ²			
	Ou	tdoor Sales					

	Lighting Zones						
	Zone 1	Zone 2	Zone 3	Zone 4			
Open areas (including vehi- cle sales lots)	0.2 W/ft ²	0.2 W/ft ²	0.35 W/ft ²	0.5 W/ft ²			
Street frontage for vehicle sales lots in addition to "open area" allowance	No Allow- ance	7 W/linear foot	7 W/linear foot	21 W/lin- ear foot			

For SI: 1 foot = 304.8 mm, 1 watt per square foot = $W/0.0929 \text{ m}^2$

Table C405.5.3(3) Individual Lighting Power Allowances for Building Exteriors

	Lighting Zones					
	Zone 1	Zone 2	Zone 3	Zone 4		
Building facades	No allow- ance	0.075 W/ft ² of gross above- grade wall area	0.113 W/ft ² of gross above- grade wall area	0.150 W/ft ² of gross above- grade wall area		
Automated teller machines and night deposito- ries	135W per location plus 45W per additional ATM per location					
Uncovered entrances and gatehouse inspection sta- tions at guarded facilities	0.5 W/ft ²					
Uncovered load- ing areas for law enforcement, fire, ambulance and other emer- gency service vehicles	0.35 W/ft²					
Drive-up win- dows/doors	200 W per drive-through					
Parking near 24- hour retail entrances	400 W per main entry					

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40508 Section C405.8—Electric motors.

C405.8 Electric motor efficiency. All electric motors, fractional or otherwise, shall meet the minimum efficiency requirements of Tables C405.8(1) through C405.8(4) when tested and rated in accordance with DOE 10 C.F.R. 431. The efficiency shall be verified through certification under an approved certification program or, where no certification program exists, the equipment efficiency ratings shall be supported by data furnished by the motor manufacturer.

EXCEPTION:

The standards in this section shall not apply to the following exempt electric motors.

- 1. Air-over electric motors.
- 2. Components sets of an electric motor.
- 3. Liquid-cooled electric motors.
- 4. Submersible electric motors.
- 5. Inverter-only electric motors.

Fractional hp fan motors that are 1/12 hp or greater and less than 1 hp (based on output power) which are not covered by Tables C405.8(3) and C405.8(4) shall be electronically commutated motors or shall have a minimum motor efficiency of 70 percent when rated in accordance with DOE 10 C.F.R. 431. These motors shall also have the means to adjust motor speed for either balancing or remote control. Belt-driven fans may use sheave adjustments for airflow balancing in lieu of a varying motor speed.

EXCEPTIONS:

- Motors that are an integral part of specialized process equipment.
- 2. Where the motor is integral to a listed piece of equipment for which no complying motor has been approved.
- 3. Motors used as a component of the equipment meeting the minimum efficiency requirements of Section ((C403.2.3)) C403.3.2 and Tables ((C403.2.3)) C403.3.2(1) through ((C403.2.3(10))) C403.3.2(12) provided that the motor input is included when determining the equipment efficiency.
- 4. Motors in the airstream within fan-coils and terminal units that operate only when providing heating to the space served.
- 5. Fan motors that are not covered by Tables C405.8(1) through C405.8(4) and are used to power heat recovery ventilators, energy recovery ventilators, or local exhaust fans in Group R subject to the efficacy requirements of Section C403.8.4.
- 6. Domestic clothes dryer booster fans, range hood exhaust fans, and domestic range booster fans that operate intermittently.
- 7. Radon and contaminated soil exhaust fans.
- 8. Group R heat recovery ventilator and energy recovery ventilator fans that are less than 400 cfm.

Table C405.8(1)

Minimum Nominal Full-load Efficiency for NEMA Design A, NEMA Design B and IEC Design N Motors (Excluding Fire Pump) Electric Motors at 60 Hz^{a,b}

Motor horsepower			Nominal full-	as of June 1, 2016				
(Standard kilowatt	2 p	ole	4 p	ole	6 p	ole	8 p	ole
equivalent)	Enclosed	Open	Enclosed	Open	Enclosed	Open	Enclosed	Open
1 (0.75)	77.0	77.0	85.5	85.5	82.5	82.5	75.5	75.5
1.5 (1.1)	84.0	84.0	86.5	86.5	87.5	86.5	78.5	77.5

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Motor horsepower	Nominal full-load efficiency (%) as of June 1, 2016								
(Standard kilowatt	2 pc	ole	4 pc	ole	6 pc	ole	8 p	8 pole	
equivalent)	Enclosed	Open	Enclosed	Open	Enclosed	Open	Enclosed	Open	
2 (1.5)	85.5	85.5	86.5	86.5	88.5	87.5	84.0	86.5	
3 (2.2)	86.5	85.5	89.5	89.5	89.5	88.5	85.5	87.5	
5 (3.7)	88.5	86.5	89.5	89.5	89.5	89.5	86.5	88.5	
7.5 (5.5)	89.5	88.5	91.7	91.0	91.0	90.2	86.5	89.5	
10 (7.5)	90.2	89.5	91.7	91.7	91.0	91.7	89.5	90.2	
15 (11)	91.0	90.2	92.4	93.0	91.7	91.7	89.5	90.2	
20 (15)	91.0	91.0	93.0	93.0	91.7	92.4	90.2	91.0	
25 (18.5)	91.7	91.7	93.6	93.6	93.0	93.0	90.2	91.0	
30 (22)	91.7	91.7	93.6	94.1	93.0	93.6	91.7	91.7	
40 (30)	92.4	92.4	94.1	94.1	94.1	94.1	91.7	91.7	
50 (37)	93.0	93.0	94.5	94.5	94.1	94.1	92.4	92.4	
60 (45)	93.6	93.6	95.0	95.0	94.5	94.5	92.4	93.0	
75 (55)	93.6	93.6	95.4	95.0	94.5	94.5	93.6	94.1	
100 (75)	94.1	93.6	95.4	95.4	95.0	95.0	93.6	94.1	
125 (90)	95.0	94.1	95.4	95.4	95.0	95.0	94.1	94.1	
150 (110)	95.0	94.1	95.8	95.8	95.8	95.4	94.1	94.1	
200 (150)	95.4	95.0	96.2	95.8	95.8	95.4	94.5	94.1	
250 (186)	95.8	95.0	96.2	95.8	95.8	95.8	95.0	95.0	
300 (224)	95.8	95.4	96.2	95.8	95.8	95.8			
350 (261)	95.8	95.4	96.2	95.8	95.8	95.8			
400 (298)	95.8	95.8	96.2	95.8			•		
450 (336)	95.8	96.2	96.2	96.2	1				
500 (373)	95.8	96.2	96.2	96.2					

a Nominal efficiencies shall be established in accordance with DOE 10 C.F.R. 431.

Table C405.8(2)
Minimum Nominal Full-load Efficiency for NEMA Design C and IEC Design H Motors at 60 Hz^{a,b}

	Nominal full-load efficiency (%) as of June 1, 2016							
Motor horsepower (Standard kilowatt equivalent)	4 p	ole	6 p	ole	8 pole			
(Standard Knowatt equivalent)	Enclosed	Open	Enclosed	Open	Enclosed	Open		
1 (0.75)	85.5	85.5	82.5	82.5	75.5	75.5		
1.5 (1.1)	86.5	86.5	87.5	86.5	78.5	77.5		
2 (1.5)	86.5	86.5	88.5	87.5	84.0	86.5		
3 (2.2)	89.5	89.5	89.5	88.5	85.5	87.5		
5 (3.7)	89.5	89.5	89.5	89.5	86.5	88.5		
7.5 (5.5)	91.7	91.0	91.0	90.2	86.5	89.5		
10 (7.5)	91.7	91.7	91.0	91.7	89.5	90.2		

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b For purposes of determining the required minimum nominal full-load efficiency of an electric motor that has a horsepower or kilowatt rating between two horsepower or two kilowatt ratings listed in this table, each such motor shall be deemed to have a listed horsepower or kilowatt rating, determined as follows:

^{1.} A horsepower at or above the midpoint between the two consecutive horsepowers shall be rounded up to the higher of the two horsepowers.

^{2.} A horsepower below the midpoint between the two consecutive horsepowers shall be rounded down to the lower of the two horsepowers.

^{3.} A kilowatt rating shall be directly converted from kilowatts to horsepower using the formula 1 kW = (1/0.746) horsepower. The conversion should be calculated to three significant decimal places, and the resulting horsepower shall be rounded in accordance with 1 or 2, whichever applies.

	Nominal full-load efficiency (%) as of June 1, 2016						
Motor horsepower (Standard kilowatt equivalent)	4 p	ole	6 p	ole	8 p	ole	
(Standard Knowatt equivalent)	Enclosed	Open	Enclosed	Open	Enclosed	Open	
15 (11)	92.4	93.0	91.7	91.7	89.5	90.2	
20 (15)	93.0	93.0	91.7	92.4	90.2	91.0	
25 (18.5)	93.6	93.6	93.0	93.0	90.2	91.0	
30 (22)	93.6	94.1	93.0	93.6	91.7	91.7	
40 (30)	94.1	94.1	94.1	94.1	91.7	91.7	
50 (37)	94.5	94.5	94.1	94.1	92.4	92.4	
60 (45)	95.0	95.0	94.5	94.5	92.4	93.0	
75 (55)	95.4	95.0	94.5	94.5	93.6	94.1	
100 (75)	95.4	95.4	95.0	95.0	93.6	94.1	
125 (90)	95.4	95.4	95.0	95.0	94.1	94.1	
150 (110)	95.8	95.8	95.8	95.4	94.1	94.1	
200 (150)	96.2	95.8	95.8	95.4	94.5	94.1	

NR - No requirement.

- a Nominal efficiencies shall be established in accordance with DOE 10 C.F.R. 431.
- b For purposes of determining the required minimum nominal full-load efficiency of an electric motor that has a horsepower or kilowatt rating between two horsepower or two kilowatt ratings listed in this table, each such motor shall be deemed to have a listed horsepower or kilowatt rating, determined as follows:
 - 1. A horsepower at or above the midpoint between the two consecutive horsepowers shall be rounded up to the higher of the two horsepowers.
- 2. A horsepower below the midpoint between the two consecutive horsepowers shall be rounded down to the lower of the two horsepowers.
- 3. A kilowatt rating shall be directly converted from kilowatts to horse-power using the formula 1 kW = (1/0.746) horse-power. The conversion should be calculated to three significant decimal places, and the resulting horse-power shall be rounded in accordance with 1 or 2, whichever applies.

Table C405.8(3)
Minimum Average Full Load Efficiency for Polyphase
Small Electric Motors^a

OPEN MOTORS						
NUMBER OF POLES ==>	2	4	6			
SYNCHRONOUS SPEED (RPM) ==>	3600	1800	1200			
MOTO	OR HORSEPO	WER ▼				
0.25	65.6	69.5	67.5			
0.33	69.5	73.4	71.4			
0.50	73.4	78.2	75.3			
0.75	76.8	81.1	81.7			
1	77.0	83.5	82.5			
1.5	84.0	86.5	83.8			
2	85.5	86.5	N/A			
3	85.5	86.9	N/A			

OPEN MOTORS					
NUMBER OF POLES ==>	2	4	6		
SYNCHRONOUS SPEED (RPM) ==>	3600	1800	1200		
MOTOR HORSEPOWER ▼					

^a Average full load efficiencies shall be established in accordance with 10 C.F.R. 431.

Table C405.8(4)

Minimum Average Full Load Efficiency For Capacitorstart Capacitor-run and Capacitor-start Induction-run Small Electric Motors^a

	OPEN MOTORS						
NUMBER OF POLES ==>	2	4	6				
SYNCHRONOUS SPEED (RPM) ==>	3600	1800	1200				
MOTO	OR HORSEPO	WER ▼					
0.25	66.6	68.5	62.2				
0.33	70.5	72.4	66.6				
0.50	72.4	76.2	76.2				
0.75	76.2	81.8	80.2				
1	80.4	82.6	81.1				
1.5	81.5	83.8	N/A				
2	82.9	84.5	N/A				
3	84.1	N/A	N/A				

^a Average full load efficiencies shall be established in accordance with 10 C.F.R. 431.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40511 Section C405.11—Voltage drop in feeders and branch circuits.

Expedited [76]

<u>C405.11</u> Voltage drop in feeders and branch circuits. The total voltage drop across the combination of feeders and branch circuits shall not exceed five percent.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40600 Section C406—Efficiency packages.

C406.1 Additional energy efficiency credit requirements.

New buildings and changes in space conditioning, change of occupancy and building additions in accordance with Chapter 5 shall comply with sufficient packages from Table C406.1 so as to achieve a minimum number of 6 credits. Each area

shall be permitted to apply for different packages provided all areas in the building comply with the requirements for 6 credits. Areas included in the same permit within mixed use buildings shall be permitted to demonstrate compliance by an area weighted average number of credits by building occupancy achieving a minimum number of 6 credits.

EXCEPTIONS:

- 1. Low energy spaces in accordance with Section C402.1.1.1 and equipment buildings in accordance with Section C402.1.2 shall comply with sufficient packages from Table C406.1 to achieve a minimum number of 3 credits.
- 2. Building additions that have less than 1,000 square feet of conditioned floor area shall comply with sufficient packages from Table C406.1 to achieve a minimum number of 3 credits.

Table C406.1
Efficiency Package Credits

	Commercial Building Occupancy					
Code Section	Group R-1	Group R-2	Group B	Group E	Group M	All Other
		1	Additional Eff	iciency Credit	s	
1. More efficient HVAC performance in accordance with Section C406.2	2.0	3.0	3.0	2.0	1.0	2.0
2. Reduced lighting power: Option 1 in accordance with Section C406.3.1	1.0	1.0	2.0	2.0	3.0	2.0
3. Reduced lighting power: Option 2 in accordance with Section C406.3.2a	2.0	3.0	4.0	4.0	6.0	4.0
4. Enhanced lighting controls in accordance with Section C406.4	NA	NA	1.0	1.0	1.0	1.0
5. On-site supply of renewable energy in accordance with C406.5	3.0	3.0	3.0	3.0	3.0	3.0
6. Dedicated outdoor air system in accordance with Section C406.6 ^b	4.0	4.0	4.0	NA	NA	4.0
7. High performance dedicated outdoor air system in accordance with Section C406.7	4.0	4.0	4.0	4.0	4.0	4.0
8. High-efficiency service water heating in accordance with Sections C406.8.1 and C406.8.2	4.0	5.0	NA	NA	NA	8.0
9. High performance service water heating in multi-family buildings in accordance with Section C406.9	7.0	8.0	NA	NA	NA	NA
10. Enhanced envelope performance in accordance with Section C406.10°	3.0	6.0	3.0	3.0	3.0	4.0
11. Reduced air infiltration in accordance with Section C406.11°	1.0	2.0	1.0	1.0	1.0	1.0
12. Enhanced commercial kitchen equipment in accordance with Section C406.12	5.0	NA	NA	NA	5.0	5.0 (Group A-2 only)

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- a Projects using this option may not use Item 2.
- b This option is not available to buildings subject to the prescriptive requirements of Section C403.3.5.
- c Buildings or building areas that are exempt from the thermal envelope requirements in accordance with Sections C402.1.1 and C402.1.2, do not qualify for this package.
- **C406.1.1 Tenant spaces.** Initial tenant improvement shall comply with sufficient packages from Table C406.1 ((so as)) to achieve a minimum number of six credits. In buildings with multiple tenant spaces, each tenant space is permitted to apply for different packages provided all areas in the building comply with the requirement for six credits.
- C406.1.1.1 Applicable envelope and on-site renewable energy credits. Where an entire building or building addition complies with Section C406.5, C406.10 or C406.11, under an initial tenant improvement permit, tenant spaces within the building qualify for the number of credits assigned to the occupancy type of the tenant space in accordance with Table C406.1.
- C406.1.1.2 Applicable HVAC and service water heating credits. Where HVAC and service water heating systems and services are installed and comply with Section C406.2 or C406.8 under an initial tenant improvement permit, those systems and services shall be considered a part of the tenant space. Tenant spaces qualify for the credits assigned to the occupancy type of the tenant space in accordance with Table C406.1 if the tenant space includes the distribution system and equipment that the central HVAC systems or service water heating systems were designed to support.

EXCEPTION:

Previously occupied tenant spaces in existing buildings that comply with this code in accordance with Section C501.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40602 Section C406.2—HVAC option.

C406.2 More efficient HVAC equipment and fan performance. No less than 90 percent of the total HVAC capacity serving the total conditioned floor area of the entire building, building addition or tenant space in accordance with Section C406.1.1 shall comply with Sections C406.2.1 through C406.2.3. For systems required to comply with Section C403.1.1, HVAC total system performance ratio, exceed the minimum requirement by 10 percent.

EXCEPTION:

In low energy spaces complying with Section C402.1.1 and semi-heated spaces complying with Section C402.1.1.2, no less than 90 percent of the installed heating capacity is provided by electric infrared or gas-fired radiant heating equipment for localized heating applications. Stand-alone supply, return and exhaust fans shall comply with Section C406.2.3.

C406.2.1 HVAC system selection. Equipment installed shall be types that are listed in Tables ((C403.2.3)) C403.3.2(1) through ((C403.2.3)) C403.3.2(12) or a combination thereof. Electric resistance heating does not meet this requirement.

EXCEPTION: Allowed equipment not listed in Tables ((C403.2.3)) C403.3.2(1) through ((C403.2.3)) C403.3.2(12):

1. Air-to-water heat pumps.

2. Heat recovery chillers.

C406.2.2 Minimum equipment efficiency. Equipment shall exceed the minimum efficiency requirements listed in Tables ((C403.2.3)) C403.3.2(1) through ((C403.2.3)) C403.3.2(12) by 15 percent, in addition to the requirements of Section C403. Where multiple performance requirements are provided, the equipment shall exceed all requirements by 15 percent.

EXCEPTIONS:

- 1. Equipment that is larger than the maximum capacity range indicated in Tables ((C403.2.3)) C403.3.2(1) through ((C403.2.3)) C403.3.2(12) shall utilize the values listed for the largest capacity equipment for the associated equipment type shown in the table.
- Equipment that complies with the exception to Section C406.2.1 is not required to comply with the minimum equipment efficiency requirement.
- 3. Compliance may be demonstrated by calculating a total weighted average percentage for all heating and cooling equipment combined. All equipment shall have efficiency that is no less than 5 percent better than the minimum required efficiency in Table ((C403.2.3)) C403.3.2(1) through ((C403.2.3)) C403.3.2(12), and the resulting weighted average percentage for all equipment performance requirements shall exceed 15 percent. Calculation shall include heating and cooling capacities for all equipment, percentage better or worse than minimum required efficiency per Tables ((C403.2.3)) C403.3.2(1) through ((C403.2.3)) C403.3.2(12) for each performance requirement (SEER, EER/IEER, COP, HSPF, E_t, E_c, and AFUE), and the total weighted average efficiency percentage.
- 4. Hot water boilers with input capacity greater than 2,500,000 Btu/h shall be considered to comply with this section with a minimum thermal efficiency of 95 percent E_t in accordance with the test procedure in 10 C.F.R. Part 431.

C406.2.3 Minimum fan efficiency. Stand-alone supply, return and exhaust fans designed for operating with motors over 750 watts (1 hp) shall have a fan efficiency grade of not less than FEG 71 as defined in AMCA 205. The total efficiency of the fan at the design point of operation shall be within 10 percentage points of either the maximum total efficiency of the fan or the static efficiency of the fan.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40603 Section C406.3—LPA option.

C406.3 Reduced lighting power. Interior lighting within the whole building, building addition or tenant space shall comply with Section C406.3.1 or Section C406.3.2. Dwelling units and sleeping units within the building shall comply with Section C406.3.3.

C406.3.1 Reduced lighting power Option 1. The total connected interior lighting power calculated in accordance with Section C405.4.1 shall be 90 percent or less of the lighting power values specified in Table C405.4.2(1) times the floor area for the building types, or 90 percent or less of the total

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interior lighting power allowance calculated in accordance with Section C405.4.2.

C406.3.2 Reduced lighting power Option 2. The total connected interior lighting power calculated in accordance with Section C405.4.1 shall be 80 percent or less of the lighting power values specified in Table C405.4.2(1) times the floor area of the building types, or 80 percent or less of the total interior lighting power allowance calculated in accordance with Section C405.4.2.

C406.3.3 Lamp fraction. No less than 95 percent of the permanently installed light fixtures in dwelling units and sleeping units shall be provided by lamps with a minimum efficacy of 65 lumens per watt.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40606 Section C406.6—DOAS option.

C406.6 Dedicated outdoor air system (DOAS). ((Not)) No less than 90 percent of the total conditioned floor area of the whole building, building addition or tenant space, excluding floor area of unoccupied spaces that do not require ventilation per the *International Mechanical Code*, shall be served by DOAS installed in accordance with Section C403.3.5. This option is not available to buildings subject to the prescriptive requirements of Section C403.3.5.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40702 Section C407.2—Mandatory requirements.

C407.2 Mandatory requirements. Compliance with this section requires compliance with those sections shown in Table C407.2.

The building permit application for projects utilizing this method 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 permit application shall also be submitted and approved prior to the issuance of the building permit. 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 standard reference design and shall comply with the requirements of this code.

Table C407.2

Mandatory Compliance Measures for Total Building Performance Method

Section	Title	Comments
	Envelope	

Section	Title	Comments			
C402.5	Air leakage				
Mechanical					
C403.1.2	Calculation of heating and cooling loads				
C403.1.3	Data centers				
C403.2	System design				
C403.3.1	Equipment and system sizing				
C403.3.2	HVAC equipment performance requirements				
C403.3.6	Ventilation for Group R occupancy				
C403.4	HVAC system controls				
C403.4.1	Thermostatic controls	Except for C403.4.1.4			
C403.4.2	Off-hour controls	Except for Group R			
C403.4.7	Combustion heating equipment controls				
C403.4.8	Group R-1 hotel/motel guestrooms	See Section ((C403.7.6)) <u>C403.7.4</u>			
C403.4.9	Group R-2 and R-3 dwelling units				
C403.4.10	Group R-2 sleeping units				
C403.4.11	Direct digital control systems				
C403.5.5	Economizer fault detection and diagnos- tics (FDD)				
C403.7	Ventilation and exhaust systems	Except for C403.7.6			
C403.8	Fan and fan controls				
C403.9.1.1	Variable flow controls	For cooling tower fans ≥ 7.5 hp			
C403.9.1.2	Limitation on centrifugal fan cooling towers	For open cooling towers			
C403.10	Construction of HVAC elements				
C403.11	Mechanical systems located outside of the building thermal envelope				
	Service Water Heatin	ng			
C404	Service water heating				
	Lighting and Electric	cal			

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Section	Title	Comments
C405.1	General	
C405.2	Lighting controls	
C405.3	Exit signs	
C405.4	Interior lighting power	
C405.5	Exterior building lighting power	
C405.6	Electrical transformers	
C405.7	Dwelling unit energy consumption	
C405.8	Electric motor effi- ciency	
C405.9	Vertical and horizontal transportation	
C405.10	Controlled receptacles	
C405.11	Voltage drop in feeders	
	Other Requirement	s
C407	Total building performance	
C408	System commissioning	
C409	Energy metering	
C410	Refrigeration requirements	
C411	Solar readiness	

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40801 Section C408.1—General.

C408.1 General. A building commissioning process led by a *certified commissioning professional* and functional testing requirements shall be completed for mechanical systems in Section C403; service water heating systems in Section C404; controlled receptacle and lighting control systems in Section C405; equipment, appliances and systems installed to comply with Sections C406 or C407; energy metering in Section C409; and refrigeration systems in Section C410.

EXCEPTION:

Buildings, or portions thereof, which are exempt from Sections C408.2 through C408.7 may be excluded from the commissioning process.

- 1. Mechanical systems are exempt from the commissioning process where the ((building's)) installed total mechanical equipment capacity is less than 240,000 Btu/h cooling capacity and less than 300,000 Btu/h heating capacity.
- Service water heating systems are exempt from the commissioning process in buildings where the largest service water heating system capacity is less than 200,000 Btu/h and where there are no pools or permanent spas.

- 3. Lighting control systems are exempt from the commissioning process in buildings where both the total installed lighting load is less than 20 kW and the lighting load controlled by occupancy sensors or automatic daylighting controls is less than 10 kW.
- Refrigeration systems are exempt from the commissioning process in buildings if they are limited to selfcontained units.

C408.1.1 Commissioning in construction documents. Construction documents shall clearly indicate provisions for

commissioning process. The construction documents shall minimally include the following:

- 1. A narrative description of the activities that will be accomplished during the commissioning process. At a minimum, the commissioning process is required to include:
- 1.1. Development and execution of the commissioning plan, including all subsections of Section C408.1.2;
- 1.2. The *certified commissioning professional's* review of the building documentation and close out submittals in accordance with Section C103.6; and
- 1.3. The commissioning report in accordance with Section C408.1.3.
- 2. Roles, responsibilities, and required qualifications of the *certified commissioning professional*.
- 3. A listing of the specific equipment, appliances, or systems to be tested.
- **C408.1.2 Commissioning plan.** A commissioning plan shall be developed by the project's *certified commissioning professional* and shall outline the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
- 1. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities, systems testing and balancing, functional performance testing, and verification of the building documentation requirements in Section C103.6.
- 2. Roles and responsibilities of the commissioning team, including the name and statement of qualifications of the *certified commissioning professional*.
- 3. A listing of the specific equipment, appliances or systems to be tested and a description of the tests to be performed.

C408.1.2.1 In-house commissioning disclosure and conflict management plan. Where the certified commissioning professional's contract or employment is other than directly with the building owner, an in-house commissioning disclosure and conflict management plan shall be a part of the commissioning process. A copy shall be included in the commissioning plan. This plan shall disclose the certified commissioning professional's contractual relationship with other team members and provide a conflict management plan demonstrating that the certified commissioning professional is free to identify any issues discovered and report directly to the owner.

C408.1.2.2 Functional performance testing. Functional performance testing shall be conducted for mechanical systems in Sections C403; service water heating systems in Section C404; controlled receptacles and lighting control systems.

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tems in Section C405; equipment, appliances, systems installed to comply with Section C406 or C407; energy metering in Section C409; and refrigeration systems in Section C410. Written procedures which clearly describe the individual systematic test procedures, the expected system response or acceptance criteria for each procedure, the actual response or findings, and any pertinent discussion shall be followed. This testing shall include control systems which will be tested to document that control devices, components, equipment, and systems are calibrated and adjusted to operate in accordance with approved construction documents. Testing shall affirm the conditions required within Sections C408.2 through C408.7 under system testing.

C408.1.2.3 Functional performance testing - Sampling. For projects with 7 or fewer similar systems, each system shall be tested. For projects with more than 7 systems, testing shall be done for each unique combination of control types. Where multiples of each unique combination of control types exist, no fewer than 20 percent of each combination shall be tested unless the code official or design professional requires a higher percentage to be tested. Where 30 percent or more of the tested system fail, all remaining identical combinations shall be tested.

C408.1.2.4 Deficiencies. Deficiencies found during testing shall be resolved including corrections and retesting.

C408.1.3 Commissioning report. A commissioning report shall be completed and certified by the *certified commissioning professional* and delivered to the building owner or owner's authorized agent. The report shall be organized with mechanical, service water heating, controlled receptacle and lighting control systems, energy metering, and refrigeration findings in separate sections to allow independent review. The report shall record the activities and results of the commissioning process and be developed from the final commissioning plan with all of its attached appendices. The report shall include:

- 1. Results of functional performance tests.
- 2. Disposition of deficiencies found during testing, including details of corrective measures used or proposed.
- 3. Functional performance test procedures used during the commissioning process including measurable criteria for test acceptance, provided herein for repeatability.
 - 4. Commissioning plan.
 - 5. Testing, adjusting and balancing report.

EXCEPTION: Deferred tests which cannot be performed at the time of report preparation due to climatic conditions.

C408.1.4. Commissioning process completion requirements. Prior to the final mechanical, plumbing and electrical inspections or obtaining a certificate of occupancy, the *certified commissioning professional* shall provide evidence of *building commissioning* in accordance with the provisions of this section.

C408.1.4.1 Commissioning compliance. Buildings, or portions thereof, shall not be considered acceptable for a final inspection pursuant to Section C104.2.6 until the *code official* has received a letter of transmittal from the building owner acknowledging that the building owner or owner's

authorized agent has received the Commissioning Report. Completion of Commissioning Compliance Checklist (Figure C408.1.4.1) is deemed to satisfy this requirement. Phased acceptance of ((the)) Commissioning Compliance Checklist for portions of the work specific to the trade that is being inspected is permissible where accepted by the *code official* and where the *certified commissioning professional* remains responsible for completion of the commissioning process. If there are unresolved deficiencies when the final inspection is scheduled, the Commissioning Report shall be submitted and shall describe the unresolved deficiencies.

C408.1.4.2 Copy of report. The *code official* shall be permitted to require that a copy of the ((Preliminary)) Commissioning Report be made available for review by the *code official*.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40802 Section C408.2—Mechanical systems commissioning.

C408.2 Mechanical ((and refrigeration)) systems commissioning. Mechanical ((and refrigeration)) equipment and controls subject to Section((s)) C403 ((and C410)) shall be included in the commissioning process required by Section C408.1. The commissioning process shall minimally include all energy code requirements for which the code states that equipment or controls shall "be capable of" or "configured to" perform specific functions.

EXCEPTION:

Mechanical systems are exempt from the commissioning process where the installed total mechanical equipment capacity is less than 240,000 Btu/h cooling capacity and less than 300,000 Btu/h heating capacity.

C408.2.1 Reserved.

C408.2.2 Systems adjusting and balancing. HVAC systems shall 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 the tolerances provided in the project specifications. Test and balance activities shall include air system and hydronic system balancing.

C408.2.2.1 Air systems balancing. Each supply air outlet and zone terminal device shall be equipped with means for air balancing in accordance with the requirements of Chapter 6 of the *International Mechanical Code*. Discharge dampers used for air system balancing are prohibited on constant volume fans and variable volume fans with motors 10 hp (18.6 kW) and larger. Air systems shall be balanced in a manner to first minimize throttling losses then, for fans with system power of greater than 1 hp (0.74 kW), fan speed shall be adjusted to meet design flow conditions.

EXCEPTION: Fans with fan motors of 1 hp (0.74 kW) or less.

C408.2.2.2 Hydronic systems balancing. Individual hydronic heating and cooling coils shall be equipped with means for balancing and measuring flow. Hydronic systems shall be proportionately balanced in a manner to first minimize throttling losses, then the pump impeller shall be

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trimmed or pump speed shall be adjusted to meet design flow conditions. Each hydronic system shall have either the capability to measure pressure across the pump, or test ports at each side of each pump.

EXCEPTION:

The following equipment is not required to be equipped with means for balancing or measuring flow:

- 1. Pumps with pump motors of 5 hp (3.7 kW) or less.
- 2. Where throttling results in no greater than five percent of the nameplate horsepower draw above that required if the impeller were trimmed.

C408.2.3 System testing. Functional performance testing shall demonstrate the components, systems, and system-to-system interfacing relationships are installed and operate in accordance with approved construction documents. Testing shall include the *sequence of operation*, and be conducted under full-load, part-load and the following conditions:

- 1. All modes as described in the sequence of operation;
- 2. Redundant or automatic back-up mode;
- 3. Performance of alarms; and
- 4. Mode of operation upon a loss of power and restoration of power.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-40904 Section C409.4—Measurement devices, data acquisition system and energy display.

C409.4 Measurement devices, data acquisition system and energy display.

C409.4.1 Meters. Meters and other measurement devices required by this section shall have local displays or be configured to automatically communicate energy data to a data acquisition system. Source meters may be any digital-type meters. Current sensors or flow meters are allowed for end use metering, provided that they have an accuracy of +/- 5%. All required metering systems and equipment shall provide at least hourly data that is fully integrated into the data acquisition and display system per the requirements of Section C409.

C409.4.2 Data acquisition system. The data acquisition system shall store the data from the required meters and other

sensing devices in a single database for a minimum of 36 months. For each energy supply and end use category required by C409.2 and C409.3, it shall provide real-time energy consumption data and logged data for any hour, day, month or year.

C409.4.3 Energy display. For each building subject to Section C409.2 and C409.3, either a visible display in a location with *ready access*, or a single web page or other electronic document available for access to building management or to a third-party energy data analysis service shall be provided in the building ((accessible)) available for access by building operation and management personnel. The display shall graphically provide the current energy consumption rate for each whole building energy source, plus each end use category, as well as the total and peak values for any day, week, month, and year.

C409.4.4 Commissioning. Energy metering and energy consumption management systems shall be commissioned in accordance with Section C408.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-41000 Section C410—Refrigeration system requirements.

C410.1 General. Walk-in coolers, walk-in freezers, refrigerated warehouse coolers, refrigerated warehouse freezers, and refrigerated display cases shall comply with this Section.

Refrigerated warehouse coolers and refrigerated warehouse freezers shall comply with Section C402. Section C402.1.5 Component performance alternative, may be used if granted prior approval by the jurisdiction.

C410.1.1 Refrigeration equipment performance. Refrigeration equipment shall have an energy use in kWh/day not greater than the values of Tables C410.1(1) and C410.1(2) when tested and rated in accordance with AHRI Standard 1200. The energy use shall be verified through certification under an approved certification program or, where a certification program does not exist, the energy use shall be supported by data furnished by the equipment manufacturer.

Table C410.1.1(1)
Minimum Efficiency Requirements: Commercial Refrigeration

EQUIPMENT TYPE	APPLICATION	ENERGY USE LIMITS (kWh per day) ^a	TEST PROCEDURE
Refrigerator with solid doors		0.10 x V + 2.04	AHRI 1200
Refrigerator with transparent doors		0.12 x V + 3.34	
Freezers with solid doors	Holding Temperature	0.40 x V + 1.38	
Freezers with transparent doors		0.75 x V + 4.10	
Refrigerator/freezers with solid doors		The greater of $0.12 \times V + 3.34 \text{ or } 0.70$	
Commercial refrigerators	Pulldown	$0.126 \times V + 3.51$	

^a V = Volume of the chiller for frozen compartment as defined in AHAM-HRF-1.

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Table C410.1.1(2)
Minimum Efficiency Requirements: Commercial Refrigerators and Freezers

EQUIPMENT TYPE				-8	
Equipment Class ^c	Family Code	Operating Mode	Rating Tem- perature	ENERGY USE LIMITS (kWh per day) ^{a,b}	TEST PROCEDURE
VOP.RC.M	Vertical open	Remote con- densing	Medium	0.82 x TDA + 4.07	AHRI 1200
SVO.RC.M	Semivertical open	Remote con- densing	Medium	0.83 x TDA + 3.18	
HZO.RC.M	Horizontal open	Remote con- densing	Medium	0.35 x TDA + 2.88	
VOP.RC.L	Vertical open	Remote con- densing	Low	2.27 x TDA + 6.85	
HZO.RC.L	Horizontal open	Remote con- densing	Low	0.57 x TDA + 6.88	
VCT.RC.M	Vertical trans- parent door	Remote con- densing	Medium	0.22 x TDA + 1.95	
VCT.RC.L	Vertical trans- parent door	Remote con- densing	Low	0.56 x TDA + 2.61	
SOC.RC.M	Service over counter	Remote con- densing	Medium	0.51 x TDA + 0.11	
VOP.SC.M	Vertical open	Self-contained	Medium	1.74 x TDA + 4.71	
SVO.SC.M	Semivertical open	Self-contained	Medium	1.73 x TDA + 4.59	
HZO.SC.M	Horizontal open	Self-contained	Medium	0.77 x TDA + 5.55	
HZO.SC.L	Horizontal open	Self-contained	Low	1.92 x TDA + 7.08	
VCT.SC.I	Vertical trans- parent door	Self-contained	Ice cream	0.67 x TDA + 3.29	
VCS.SC.I	Vertical solid door	Self-contained	Ice cream	0.38 x V + 0.88	
HCT.SC.I	Horizontal transparent door	Self-contained	Ice cream	0.56 x TDA + 0.43	
SVO.RC.L	Semivertical open	Remote con- densing	Low	2.27 x TDA + 6.85	
VOP.RC.I	Vertical open	Remote con- densing	Ice cream	2.89 x TDA + 8.7	
SVO.RC.I	Semivertical open	Remote con- densing	Ice cream	2.89 x TDA + 8.7	
HZO.RC.I	Horizontal open	Remote con- densing	Ice cream	0.72 x TDA + 8.74	
VCT.RC.I	Vertical trans- parent door	Remote con- densing	Ice cream	0.66 x TDA + 3.05	
HCT.RC.M	Horizontal transparent door	Remote con- densing	Medium	0.16 x TDA + 0.13	
HCT.RC.L	Horizontal transparent door	Remote con- densing	Low	0.34 x TDA + 0.26	
HCT.RC.I	Horizontal transparent door	Remote con- densing	Ice cream	0.4 x TDA + 0.31	

	EQUIPMENT TYPE				
Equipment Class ^c	Family Code	Operating Mode	Rating Tem- perature	ENERGY USE LIMITS (kWh per day) ^{a,b}	TEST PROCEDURE
VCS.RC.M	Vertical solid door	Remote con- densing	Medium	0.11 x V + 0.26	
VCS.RC.L	Vertical solid door	Remote con- densing	Low	0.23 x V + 0.54	
VCS.RC.I	Vertical solid door	Remote con- densing	Ice cream	0.27 x V + 0.63	
HCS.RC.M	Horizontal solid door	Remote con- densing	Medium	0.11 x V + 0.26	
HCS.RC.L	Horizontal solid door	Remote con- densing	Low	0.23 x V + 0.54	
HCS.RC.I	Horizontal solid door	Remote con- densing	Ice cream	0.27 x V + 0.63	
SOC.RC.L	Service over counter	Remote con- densing	Low	1.08 x TDA + 0.22	
SOC.RC.I	Service over counter	Remote con- densing	Ice cream	1.26 x TDA + 0.26	
VOP.SC.L	Vertical open	Self-contained	Low	4.37 x TDA + 11.82	
VOP.SC.I	Vertical open	Self-contained	Ice cream	5.55 x TDA + 15.02	
SVO.SC.L	Semivertical open	Self-contained	Low	4.34 x TDA + 11.51	
SVO.SC.I	Semivertical open	Self-contained	Ice cream	5.52 x TDA + 14.63	
HZO.SC.I	Horizontal open	Self-contained	Ice cream	2.44 x TDA + 9.0	
SOC.SC.I	Service over counter	Self-contained	Ice cream	1.76 x TDA + 0.36	
HCS.SC.I	Horizontal solid door	Self-contained	Ice cream	0.38 x V + 0.88	

- a V = Volume of the case, as measured in accordance with Appendix C of AHRI 1200.
- b TDA = Total display area of the case, as measured in accordance with Appendix D of AHRI 1200.
- c Equipment class designations consist of a combination [(in sequential order separated by periods (AAA).(BB).(C))] of:

(AAA) An equipment family code where:

VOP = Vertical open

SVO = Semi-vertical open

HZO = Horizontal open

VCT = Vertical transparent doors

VCS = Vertical solid doors

HCT = Horizontal transparent doors

HCS = Horizontal solid doors

SOC = Service over counter

(BB) An operating mode code:

RC = Remote condensing

SC = Self-contained

(C) A rating temperature code:

M = Medium temperature (38°F)

L = Low temperature (0°F)

I = Ice cream temperature $(15^{\circ}F)$

 $For example, "VOP.RC.M" \ refers \ to \ the "vertical-open, remote-condensing, medium-temperature" \ equipment \ class.$

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- C410.2 Walk-in coolers, walk-in freezers, refrigerated warehouse coolers and refrigerated warehouse freezers. Refrigerated warehouse coolers, refrigerated warehouse freezers, and all walk-in coolers and walk-in freezers including site assembled, site constructed and prefabricated units shall comply with the following:
- 1. Automatic door-closers shall be provided that fully close walk-in doors that have been closed to within 1 inch (25 mm) of full closure.

EXCEPTION:

Automatic closers are not required for doors more than 45 inches (1143 mm) in width or more than 7 feet (2134 mm) in height.

- 2. Doorways shall be provided with strip doors, curtains, spring-hinged doors or other method of minimizing infiltration when doors are open.
- 3. Walk-in coolers and refrigerated warehouse coolers shall be provided with wall, ceiling, and door insulation of not less than R-25 or have wall, ceiling and door assembly *U*-factors no greater than *U*-0.039. Walk-in freezers and refrigerated warehouse freezers shall be provided with wall, ceiling and door insulation of not less than R-32 or have wall, ceiling and door assembly *U*-factors no greater than *U*-0.030.

EXCEPTION:

Insulation is not required for glazed portions of doors or at structural members associated with the walls, ceiling or door frame.

4. The floor of *walk-in coolers* shall be provided with floor insulation of not less than R-25 or have a floor assembly *U*-factor no greater than *U*-0.40. The floor of *walk-in freezers* shall be provided with floor insulation of not less than R-28 or have a floor assembly *U*-factor no greater than *U*-0.035.

EXCEPTION: Insulation is not required in the floor of a *walk-in cooler* that is mounted directly on a slab on grade.

- 5. Transparent fixed window and reach-in doors for walk-in freezers and windows in walk-in freezer doors shall be provided with triple-pane glass, with the interstitial spaces filled with inert gas or be provided with heat-reflective treated glass.
- 6. Transparent fixed window and reach-in doors for *walk-in coolers* and windows for *walk-in coolers* doors shall be provided with double-pane or triple-pane glass, with interstitial space filled with inert gas, or be provided with heat-reflective treated glass.
- 7. Evaporator fan motors that are less than 1 hp (0.746 kW) and less than 460 volts shall be provided with electronically commutated motors, brushless direct-current motors, or 3-phase motors.
- 8. Condenser fan motors that are less than 1 hp (0.746 kW) shall use electronically commutated motors, permanent split capacitor-type motors or 3-phase motors.
- 9. Antisweat heaters that are not provided with antisweat heater controls shall have a total door rail, glass and frame heater power draw of not greater than 7.1 W/ft² (76 W/m²) of door opening for *walk-in freezers* and not greater than 3.0 W/ft² (32 W/m²) of door opening for *walk-in coolers*.
- 10. Where antisweat heater controls are provided, they shall be capable of reducing the energy use of the antisweat heater as a function of the relative humidity in the air outside the door or to the condensation on the inner glass pane.

11. Lights in walk-in coolers, walk-in freezers, refrigerated warehouse coolers and refrigerated warehouse freezers shall either be provided with light sources with an efficacy of not less than 40 lumens per watt, including ballast losses, or shall be provided with a device that automatically turns off the lights within 15 minutes of when the walk-in cooler or walk-in freezer space is not occupied.

C410.2.1 Performance standards. Site-assembled and site-constructed *walk-in coolers* and *walk-in freezers* shall meet the requirements of Tables C410.2.1.1(1), C410.2.1.1(2), and C410.2.1.1(3).

Table C410.2.1.1(1)
Walk-in Cooler and Freezer Display Doors Efficiency
Requirements

Class Description	Class	Maximum Energy Consumption (kWh/day) ^a
Display door, medium temperature	DD, M	$0.04 \times A_{dd} + 0.41$
Display door, low temperature	DD, L	$0.15 \times A_{dd} + 0.29$

^a A_{dd} is the surface area of the display door.

Table C410.2.1.1(2)
Walk-in Cooler and Freezer Nondisplay Doors Efficiency
Requirements

Class Description	Class	Maximum Energy Consumption (kWh/day) ^a
Passage door, medium temperature	PD, M	$0.05 \text{ x A}_{\text{nd}} + 1.7$
Passage door, low temperature	PD, L	$0.14 \times A_{nd} + 4.8$
Freight door, medium temperature	FD, M	$0.04 \times A_{nd} + 1.9$
Freight door, low temperature	FD, L	$0.12 \times A_{nd} + 5.6$

^a A_{nd} is the surface area of the display door.

Table C410.2.1.1(3) Walk-in Cooler and Freezer Refrigeration Systems Efficiency Requirements

Class Description	Class	Minimum Annual Walk-in Energy Factor AWEF (Btu/hW-h)
Dedicated condensing, medium temperature, indoor system	DC.M.I	5.61

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Class Description	Class	Minimum Annual Walk-in Energy Factor AWEF (Btu/hW-h)
Dedicated condensing, medium temperature, indoor system, >9,000 Btu/h capacity	DC.M.I, >9,000	5.61
Dedicated condensing, medium temperature, outdoor system	DC.MI	7.60
Dedicated condensing, medium temperature, outdoor system, >9,000 Btu/h capacity	DC.M.I, >9,000	7.60

C410.2.2 Refrigerated display cases. Site-assembled or site-constructed refrigerated display cases shall comply with the following:

- 1. Lighting and glass doors in refrigerated display cases shall be controlled by one of the following:
- 1.1. Time switch controls to turn off lights during nonbusiness hours. Timed overrides for display cases shall turn the lights on for up to 1 hour and shall automatically time out to turn the lights off.
- 1.2. Motion sensor controls on each display case section that reduce lighting power by at least 50 percent within 3 minutes after the area within the sensor range is vacated.
- 2. Low-temperature display cases shall incorporate temperature-based defrost termination control with a time-limit default. The defrost cycle shall terminate first on an upper temperature limit breach and second upon a time limit breach.
- 3. Antisweat heater controls shall reduce the energy use of the antisweat heater as a function of the relative humidity in the air outside the door or to the condensation on the inner glass pane.
- **C410.3 Refrigeration systems.** Refrigerated display cases, walk-in coolers or walk-in freezers that are served by remote compressor and remote condensers not located in a condensing unit, shall comply with Sections C410.4.1, C410.4.2, and ((C403.9.7)) C403.9.2.3.

EXCEPTION:

Systems where the working fluid in the refrigeration cycle goes through both subcritical and supercritical states (transcritical) or that use ammonia refrigerant are exempt.

C410.3.1 Condensers serving refrigeration systems. Fan-powered condensers shall comply with the following:

1. The design saturated condensing temperatures for air-cooled condensers shall not exceed the design dry-bulb temperature plus 10°F (5.6°C) for low-temperature refrigeration systems, and the design dry-bulb temperature plus 15°F (8°C) for medium temperature refrigeration systems where the saturated condensing temperature for blend refrigerants shall be determined using the average of liquid and vapor temperatures as converted from the condenser drain pressure.

- 2. Condenser fan motors that are less than 1 hp (0.75 kW) shall use electronically commutated motors, permanent split-capacitor-type motors or 3-phase motors.
- 3. Condenser fans for air-cooled condensers, evaporatively cooled condensers, air- or water-cooled fluid coolers or cooling towers shall reduce fan motor demand to not more than 30 percent of design wattage at 50 percent of design air volume, and incorporate one of the following continuous variable speed fan control approaches:
- 3.1. Refrigeration system condenser control for air-cooled condensers shall use variable setpoint control logic to reset the condensing temperature setpoint in response to ambient dry-bulb temperature.
- 3.2. Refrigeration system condenser control for evaporatively cooled condensers shall use variable setpoint control logic to reset the condensing temperature setpoint in response to ambient wet-bulb temperature.
 - 4. Multiple fan condensers shall be controlled in unison.
- 5. The minimum condensing temperature setpoint shall be not greater than 70°F (21°C).

C410.3.2 Compressor systems. Refrigeration compressor systems shall comply with the following:

1. Compressors and multiple-compressor system suction groups shall include control systems that use floating suction pressure control logic to reset the target suction pressure temperature based on the temperature requirements of the attached refrigeration display cases or walk-ins.

EXCEPTION:

Controls are not required for the following:

- 1. Single-compressor systems that do not have variable capacity capability.
- 2. Suction groups that have a design saturated suction temperature of 30°F (-1.1°C) or higher, suction groups that comprise the high stage of a two-stage or cascade system, or suction groups that primarily serve chillers for secondary cooling fluids.
- 2. Liquid subcooling shall be provided for all low-temperature compressor systems with a design cooling capacity equal to or greater than 100,000 Btu/hr (29.3 kW) with a design-saturated suction temperature of -10°F (-23°C) or lower. The subcooled liquid temperature shall be controlled at a maximum temperature setpoint of 50°F (10°C) at the exit of the subcooler using either compressor economizer (interstage) ports or a separate compressor suction group operating at a saturated suction temperature of 18°F (-7.8°C) or higher.
- 2.1. Insulation for liquid lines with a fluid operating temperature less than $60^{\circ}F$ (15.6°C) shall comply with Table C403.2.10.
- 3. Compressors that incorporate internal or external crankcase heaters shall provide a means to cycle the heaters off during compressor operation.

C410.4 Commissioning. Refrigeration systems shall be commissioned in accordance with Section C408.

EXCEPTION: Self-contained units.

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.

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AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-50000 Chapter 5 [CE]—Existing buildings.

C501 General.

C501.1 Scope. The provisions of this chapter shall control the *alteration*, *repair*, *addition* and change of occupancy of existing buildings and structures.

C501.2 Existing buildings. Except as specified in this chapter, this code shall not be used to require the removal, *alteration* or abandonment of, nor prevent the continued use and maintenance of, an existing building or building system lawfully in existence at the time of adoption of this code.

C501.3 Maintenance. Buildings and structures, and parts thereof, shall be maintained in a safe and sanitary condition. Devices and systems which are required by this code shall be maintained in conformance with the code edition under which installed. The owner or the owner's authorized agent shall be responsible for the maintenance of buildings and structures. The requirements of this chapter shall not provide the basis for removal or abrogation of energy conservation, fire protection and safety systems and devices in existing structures.

C501.4 Compliance. Alterations, repairs, additions and changes of occupancy to, or relocation of, existing buildings and structures shall comply with the provisions for alterations, repairs, additions and changes of occupancy or relocation, respectively, in this code and in the International Building Code, International Existing Building Code, International Fire Code, International Fuel Gas Code, International Mechanical Code, Uniform Plumbing Code, and NFPA 70.

C501.4.1 *U*-factor requirements for additions and alterations. For existing building projects where an *addition* or *building envelope alteration* area is combined with existing-to-remain building areas to demonstrate compliance with this code as a whole building, the *U*-factors applied to existing-to-remain envelope assemblies shall be in accordance with record documents.

EXCEPTION:

If accurate record documents are not available, *U*-factors for the existing envelope assemblies may be in accordance with the edition of the Washington State Energy Code that was in effect at the time the building was permitted, or as approved by the *code official*.

C501.4.2 Calculations of mechanical heating and cooling loads for alterations. For the installation of new or replacement mechanical equipment that serves existing building areas, design loads associated with heating, cooling and ventilation of the existing building areas served shall be determined in accordance with Section C403.1.2.

R-values and U-factors used to determine existing thermal envelope performance for the purpose of calculating design loads shall be in accordance with record documents or existing conditions.

EXCEPTION((S)): ((±)) If accurate record documents are not available, R-values and U-factors used to determine existing building thermal envelope performance may be in accordance with the edition of the Washington State Energy Code that was in effect at the time the building was permitted, or as approved by the code official.

((2. *R*-values and *U*-factors for the existing envelope assemblies as approved by the *code official*.))

C501.5 New and replacement materials. Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for repairs, provided no hazard to life, health or property is created. Hazardous materials shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

C501.6 Historic buildings. The building official may modify the specific requirements of this code for historic buildings and require alternate provisions which will result in a reasonable degree of energy efficiency. This modification may be allowed for those buildings or structures that are listed in the state or national register of historic places; designated as a historic property under local or state designation law or survey; certified as a contributing resource with a national register listed or locally designated historic district; or with an opinion or certification that the property is eligible to be listed on the national or state registers of historic places either individually or as a contributing building to a historic district by the state historic preservation officer or the keeper of the national register of historic places.

C501.7 Commissioning. Existing building systems shall be commissioned in accordance with Section C408. For the purposes of meeting the commissioning thresholds in Section C408.1, only the new and altered system capacities are considered when determining whether the project is exempt from some portion of the commissioning process.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-50300 Section C503—Alterations.

C503.1 General. Alterations to any building or structure shall comply with the requirements of Section C503 and the code for new construction. Alterations to an existing building, building system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portions of the existing building or building system to comply with this code. 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.

EXCEPTION:

The following alterations need not comply with the requirements for new construction provided the energy use of the building is not increased:

- 1. Storm windows installed over existing fenestration.
- 2. Surface applied window film installed on existing single pane fenestration assemblies to reduce solar heat gain provided the code does not require the glazing fenestration to be replaced.

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- 3. Existing 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 Section C402.
- 4. Construction where the existing roof, wall or floor cavity is not exposed.
- 5. Roof recover.
- 6. Air barriers shall not be required for roof recover and roof replacement where the alterations or renovations to the building do not include alterations, renovations or repairs to the remainder of the building envelope.
- 7. Replacement of existing doors that separate conditioned space from the exterior shall not require the installation of a vestibule or revolving door, provided however that an existing vestibule that separates a conditioned space from the exterior shall not be removed.

C503.2 Change in space conditioning. Any low energy space in accordance with Section C402.1.1.1 that is altered to become *conditioned space* or *semi-heated* space shall be brought into full compliance with this code. Any semi-heated space in accordance with Section C402.1.1.2 that is altered to become conditioned space shall be ((required to be)) brought into full compliance with this code.

For buildings with more than one space conditioning category, the interior partition walls, ceilings, floors and fenestration that separate space conditioning areas shall comply with the thermal envelope requirements per the area with the highest level of space conditioning.

A change in space conditioning project shall be deemed to comply with this code if the project area alone complies or if the existing building and the project area combined comply with this code as a whole building.

EXCEPTION:

Buildings or spaces that were permitted prior to the 2009 Washington state energy code, or were originally permitted as unconditioned, may comply with this section as follows:

- 1. Where the component performance alternative in Section C402.1.5 is used to demonstrate compliance with this Section, the Proposed Total UA is allowed to be up to 110 percent of the Allowable Total UA. This exception may be applied to the project area alone, or to the existing building and project area combined as a whole building
- 2. Where total building performance in accordance with Section C407 is used to demonstrate compliance with this Section, the total annual carbon emissions from energy consumption of the proposed design is allowed to be up to 110 percent of the annual carbon emissions from energy consumption allowed by Section C407.3. This exception may be applied to the project area alone, or to the existing building and project area combined as a whole building.

C503.3 Building envelope. New building envelope assemblies that are part of the alteration shall comply with Sections C402.1 through C402.5 as applicable.

EXCEPTION:

Air leakage testing is not required for alterations and repairs, unless the project includes a change in space conditioning according to Section C503.2 or a change of occupancy or use according to Section C505.1.

C503.3.1 Roof replacement. Roof replacements shall comply with Table C402.1.3 or C402.1.4 where the existing roof

assembly is part of the *building thermal envelope* and contains insulation entirely above the roof deck.

C503.3.2 Vertical fenestration. The addition of *vertical fenestration* that results in a total building vertical fenestration area less than or equal to that specified in Section C402.4.1 shall comply with Section C402.4. The addition of *vertical fenestration* that result in a total building vertical fenestration area greater than specified in Section C402.4.1 shall comply with one of the following:

- 1. Vertical fenestration alternate in accordance with Section C402.1.3 for the new vertical fenestration added.
- 2. Vertical fenestration alternate in accordance with Section C402.4.1.1 for the area adjacent to the new vertical fenestration added.
- 3. Existing building and alteration area are combined to demonstrate compliance with the component performance alternate in accordance with Section C402.1.5 for the whole building. The Proposed Total UA is allowed to be up to 110 percent of the Allowed Total UA.
- 4. Total building performance in accordance with Section C407 for the whole building. The <u>total</u> annual carbon emissions from energy consumption of the proposed design is allowed to be up to 110 percent of the annual carbon emissions from energy consumption allowed in accordance with Section C407.3.

EXCEPTION:

Additional envelope upgrades are included in the project so the addition of vertical fenestration does not cause a reduction in overall building energy efficiency, as approved by the *code official*.

C503.3.2.1 Application to replacement fenestration products. Where some or all of an existing *fenestration* unit is replaced with a new *fenestration* product, including sash and glazing, the replacement *fenestration* unit shall meet the applicable requirements for *U*-factor and *SHGC* in Table C402.4.

EXCEPTION:

An area-weighted average of the U-factor of replacement fenestration products being installed in the building for each fenestration product category listed in Table C402.4 shall be permitted to satisfy the U-factor requirements for each fenestration product category listed in Table C402.4. Individual fenestration products from different product categories listed in Table C402.4 shall not be combined in calculating the area-weighted average U-factor

C503.3.3 Skylight area. The addition of *skylights* that results in a total building skylight area less than or equal to that specified in Section C402.4.1 shall comply with Section C402.4. The addition of *skylights* that results in a total building skylight area greater than that specified in Section C402.4.1 shall comply with one of the following:

- 1. Existing building and alteration area are combined to demonstrate compliance with the component performance alternative with target area adjustment in accordance with Section C402.1.5 for the whole building. The Proposed Total UA is allowed to be up to 110 percent of the Allowed Total UA.
- 2. Total building performance in accordance with Section C407 for the whole building. The annual carbon emissions from energy consumption of the proposed design is

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allowed to be up to 110 percent of the annual carbon emissions from energy consumption allowed in accordance with Section C407.3.

EXCEPTION:

Additional envelope upgrades are included in the project so the addition of skylights does not cause a reduction in overall building energy efficiency, as approved by the code official.

C503.4 Mechanical systems. Those parts of systems which are altered or replaced shall comply with Section C403. Additions or alterations shall not be made to an existing mechanical system that will cause the existing mechanical system to become out of compliance.

EXCEPTIONS:

- 1. Existing mechanical systems which are altered or where parts of the systems are replaced are not required to be modified to comply with Section C403.3.5 as long as mechanical cooling capacity is not added to a system that did not have cooling capacity prior to the alteration.
- 2. Alternate mechanical system designs that are not in full compliance with this code may be approved when the code official determines that existing building constraints including, but not limited to, available mechanical space, limitations of the existing structure, or proximity to adjacent air intakes or exhausts makes full compliance impractical. Alternate designs shall include additional energy saving strategies not prescriptively required by this code for the scope of the project including, but not limited to, demand control ventilation, energy recovery, or increased mechanical cooling or heating equipment efficiency above that required by Tables C403.3.2(1) through C403.3.2(12).
- 3. Only those components of existing HVAC systems that are altered or replaced shall be required to meet the requirements of Section C403.8.1, Allowable fan motor horsepower. Components replaced or altered shall not exceed the fan power limitation pressure drop adjustment values in Table C403.8.1(2) at design conditions. Section C403.8.1 does not require the removal and replacement of existing system ductwork.
- C503.4.1 New mechanical systems. All new mechanical systems in existing buildings, including packaged unitary equipment and packaged split systems, shall comply with Section C403.

C503.4.2 Addition of cooling capacity. Where mechanical cooling is added to a space that was not previously cooled, the mechanical system shall comply with either Section C403.3.5 or C403.5.

EXCEPTIONS:

1. Qualifying small equipment: Economizers are not required for cooling units and split systems serving one zone with a total cooling capacity rated in accordance with Section C403.3.2 of less than 33,000 Btu/h (hereafter referred to as qualifying small systems) provided that these are high-efficiency cooling equipment with SEER and EER values more than 15 percent higher than minimum efficiencies listed in Tables C403.3.2 (1) through (3), 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 qualifying small equipment without economizers shall not exceed 72,000 Btu/h per building, or 5 percent of the building total air economizer capacity, whichever is greater.

Notes and exclusions for Exception 1:

- 1.1. The portion of the equipment serving Group R occupancies is not included in determining the total capacity of all units without economizers in a building.
- 1.2. Redundant units are not counted in the capacity limitations
- 1.3. This exception shall not be used for the initial tenant improvement of a shell-and-core building or space, or for Total Building Performance in accordance with Section C407
- 1.4. This exception shall not be used for unitary cooling equipment installed outdoors or in a mechanical room adjacent to the outdoors.
- 2. Chilled water terminal units connected to systems with chilled water generation equipment with IPLV values more than 25 percent higher than minimum part load equipment efficiencies listed in Table C403.3.2(7), 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 percent of the building total air economizer capacity, whichever is greater.

Notes and exclusions for Exception 2:

- 2.1. The portion of the equipment serving Group R occupancy is not included in determining the total capacity of all units without economizers in a building.
- 2.2. This exception shall not be used for the initial tenant improvement of a shell-and-core building or space, or for total building performance in accordance with Section C407.

C503.4.3 Alterations or replacement of existing cooling systems. Alterations to, or replacement of, existing mechanical cooling systems shall not decrease the building total economizer capacity unless the system complies with either Section C403.3.5 or C403.5. System alterations or replacement shall comply with Table C503.4 when the individual cooling unit capacity and the building total capacity of all cooling equipment without economizer do not comply with Section C403.3.5 or C403.5.

C503.4.4 Controls for cooling equipment replacement. When space cooling equipment is replaced, controls shall comply with all requirements under Section C403.3.5 and related subsections, and Section C403.5.1 for integrated economizer control.

C503.4.5 Cooling equipment relocation. Existing equipment currently in use may be relocated within the same floor or same tenant space if removed and reinstalled within the same permit.

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Table C503.4 Economizer Compliance Options for Mechanical Alterations

	Option A	Option B (alternate to A)	Option C (alternate to A)	Option D (alternate to A)
Unit Type	Any alteration with new or replacement equipment	Replacement unit of the same type with the same or smaller output capacity	Replacement unit of the same type with a larger output capacity	New equipment added to existing system or replacement unit of a different type
1. Packaged Units	Efficiency: min. ^a Economizer: C403.5 ^b	Efficiency: min. ^a Economizer: C403.5 ^b	Efficiency: min. ^a Economizer: C403.5 ^b	Efficiency: min. ^a Economizer: C403.5 ^b
2. Split Systems	Efficiency: min. ^a Economizer: C403.5 ^b	For units ≤ 60,000 Btuh, comply with two of two measures: 1. Efficiency: +10%e 2. Economizer: shall not decrease existing economizer capability	For units ≤ 60,000 Btuh replacing unit installed prior to 1991 comply with at least one of two measures: 1. Efficiency: + 10%e 2. Economizer: 50% f	Efficiency: min. ^a Economizer: C403.5 ^b
		For all other capacities: Efficiency: min. ^a Economizer: C403.5 ^b	For all other capacities: Efficiency: min. ^a Economizer: C403.5 ^b	
3. Water Source Heat Pump	Efficiency: min. ^a Economizer: C403.5 ^b	For units ≤ 72,000 Btuh, comply with at least two of three measures: 1. Efficiency: +10% ^e 2. Flow control valve ^g 3. Economizer: 50% ^f	For units ≤ 72,000 Btuh, comply with at least three of three measures: 1. Efficiency: +10% ^e 2. Flow control valve ^g 3. Economizer: 50% ^f (except for certain pre-1991 systems ^q)	Efficiency: min. ^a Economizer: C403.5 ^b (except for certain pre-1991 systems ^q)
		For all other capacities: Efficiency: min. ^a Economizer: C403.5 ^b	For all other capacities: Efficiency: min. ^a Economizer: C403.5 ^b	
4. Water Economizer using Air-Cooled Heat Rejection Equipment (Dry Cooler)	Efficiency: min. ^a Economizer: C403.5 ^b	Efficiency: +5% ^d Economizer: shall not decrease existing economizer capacity	Efficiency: min. ^a Economizer: C403.5 ^b	Efficiency: min. ^a Economizer: C403.5 ^b
5. Air-Handling Unit (including fan coil units) where the system has an air-cooled chiller	Efficiency: min. ^a Economizer: C403.5 ^b	Economizer: shall not decrease existing economizer capacity	Efficiency: min. ^a Economizer: C403.5 ^b (except for certain pre-1991 systems ^q)	Efficiency: min. ^a Economizer: C403.5 ^b (except for certain pre-1991 systems ^q)
6. Air-Handling Unit (including fan coil units) and Water-cooled Pro- cess Equipment, where the system has a water- cooled chiller ¹⁰	Efficiency: min. ^a Economizer: C403.5 ^b	Economizer: shall not decrease existing economizer capacity	Efficiency: min. ^a Economizer: C403.5 ^b (except for certain pre-1991 systems ^q and certain 1991-2016 systems ⁱ)	Efficiency: min. ^a Economizer: C403.5 ^b (except for certain pre-1991 systems ^q and certain 1991-2016 systems ⁱ)
7. Cooling Tower	Efficiency: min. ^a Economizer: C403.5 ^b	No requirements	Efficiency: min. ^a Economizer: C403.5 ^b	Efficiency: min. ^a Economizer: C403.5 ^b
8. Air-Cooled Chiller	Efficiency: min. ^a Economizer: C403.5 ^b	Efficiency: + 10%k Economizer: shall not decrease existing economizer capacity	Efficiency: Comply with two of two measures: 1. + 10% kl and 2. Multistage compressor(s) Economizer: shall not decrease existing economizer capacity	Efficiency: min. ^a Economizer: C403.5 ^b
9. Water-Cooled Chiller	Efficiency: min. ^a Economizer: C403.5 ^b	Efficiency: Comply with at least one of two measures: 1. Part load IPLV + 15% ⁿ or 2. Plate frame heat exchanger conomizer: shall not decrease existing economizer	Efficiency: Comply with two of two measures: 1. Part load IPLV + 15% n 2. Plate-frame heat exchanger o Economizer: shall not decrease existing economizer	Efficiency: min. ^a Economizer: C403.5 ^b

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- ^a Minimum equipment efficiency shall comply with Section C403.3.2 and Tables C403.3.2(1) through C403.3.3.2(12).
- All separate new equipment and replacement equipment shall have air economizer complying with Section C403.5 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 C403.5.
- c Reserved.
- d Equipment shall have a capacity-weighted average cooling system efficiency that is 5% better than the requirements in Tables C403.3.2(1) and C403.3.2(2) (1.05 x values in Tables C403.3.2(1) and C403.3.2(2)).
- e Equipment shall have a capacity-weighted average cooling system efficiency that is 10% better than the requirements in Tables C403.3.2(1)A and C403.3.2(2) (1.10 x values in Tables C403.3.2(1)A and C403.3.2(2)).
- 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 configured to provide this additional outside air and be equipped with economizer control.
- g Water-source heat pump systems shall have a flow control valve to eliminate flow through the heat pumps that are not in operation and variable speed pumping control complying with Section C403.4.3 for that heat pump.
 - When the total capacity of all units with flow control valves exceeds 15% of the total system capacity, a variable frequency drive shall be installed on the main loop pump.
 - As an alternate to this requirement, the capacity-weighted average cooling system efficiency shall be 5% better than the requirements in footnote e for water-source heat pumps (i.e., a minimum of 15% greater than the requirements in Table C403.3.2(2)).
- h Water economizer equipment shall have a capacity-weighted average cooling system efficiency that is 10% better than the requirements in Tables C403.3.2(8) and C403.3.2(9) (1.10 x values in Tables C403.3.2(8) and C403.3.2(9)).
- Air economizer is not required for systems installed with water economizer plate and frame heat exchanger complying with previous codes between 1991 and June 2016, provided that the total fan coil load does not exceed the existing or added capacity of the heat exchangers.
- For water-cooled process equipment where the manufacturers specifications require colder temperatures than available with waterside economizer, that portion of the load is exempt from the economizer requirements.
- The air-cooled chiller shall have an IPLV efficiency that is a minimum of 10% greater than the IPLV requirements in EER in Table C403.3.2(7)(1.10 x IPLV values in EER in Table C403.3.2(7)).
- The air-cooled chiller shall be multistage with a minimum of two compressors.
- m The water-cooled chiller shall have full load and part load IPLV efficiency that is a minimum of 5% greater than the IPLV requirements in Table C403.2.3(7).
- The water-cooled chiller shall have an IPLV value that is a minimum of 15% lower than the IPLV requirements in Table C403.2.3(7) (1.15 x IPLV values in Table C403.3.2(7)). Water-cooled centrifugal chillers designed for nonstandard conditions shall have an NPLV value that is at least 15% lower than the adjusted maximum NPLV rating in kW per ton defined in Section C403.3.2.1 (1.15 x NPLV).
- 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 AHRI rating conditions.
- P Reserved.
- 9 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 Btuh.

C503.5 Service hot water systems. New service hot water systems that are part of the alteration shall comply with Section C404.

C503.6 Lighting, controlled receptacles and motors. Alterations or the addition of lighting, electric receptacles and motors shall comply with Sections C503.6.1 through C503.6.6.

C503.6.1 Luminaire additions and alterations. Alterations that add or replace 50 percent or more of the luminaires in a space enclosed by walls or ceiling-height partitions, replace 50 percent or more of parking garage luminaires, or replace 50 percent or more of the total installed wattage of exterior luminaires shall comply with Sections C405.4 and C405.5. Where less than 50 percent of the fixtures in an interior space enclosed by walls or ceiling-height partitions or in a parking garage are added or replaced, or less than 50 percent of the installed exterior wattage is replaced, the installed lighting wattage shall be maintained or reduced.

C503.6.2 Rewiring and recircuiting. 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 C405.2.1, C405.2.3, C405.2.4, C405.2.5, ((C405.2.7)) C405.2.6, and as applicable C408.3. New lighting control devices shall comply with the requirements of Section C405.2.

C503.6.3 New or moved lighting panel. 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, in addition to the requirements of Section C503.6.2, all remaining requirements in Sections C405.2 and C408.3.

C503.6.4 Newly-created rooms. 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 C405.2.1, C405.2.2, C405.2.3, C405.2.4, C405.2.5 and C408.3.

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C503.6.5 Motors. Those motors which are altered or replaced shall comply with Section C405.8.

C503.6.6 Controlled receptacles. Where electric receptacles are added or replaced, controlled receptacles shall be provided in accordance with Section C405.10.

EXCEPTIONS:

- 1. Where an alteration project impacts an area smaller than 5,000 square feet, controlled receptacles are not required.
- 2. Where existing systems furniture or partial-height relocatable office cubical partitions are reconfigured or relocated within the same area, controlled receptacles are not required in the existing systems furniture or office cubicle partitions.

3. Where new or altered receptacles meet the exception to Section C405.10, they are not required to be controlled receptacles or be located within 12 inches of noncontrolled receptacles.

C503.7 Refrigeration systems. Those parts of systems which are altered or replaced shall comply with Section C410. Additions or alterations shall not be made to an existing refrigerated space or system that will cause the existing mechanical system to become out of compliance. All new refrigerated spaces or systems in existing buildings, including refrigerated display cases, shall comply with Section C410.

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-600000 Chapter 6 [CE]—Referenced standards. This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section C106.

AAMA	American Architectural Manufacturers Associati	on	
	1827 Walden Office Square		
	Suite 550		
	Schaumburg, IL 60173-4268		
Standard reference number	Title		Referenced in code section number
AAMA/WDMA/CSA 101/I.S.2/A C440—17	North American Fenestration Standard/Specifications for Windows, Doors and Unit Skylights		Table ((C402.4.2)) <u>C402.4.1.1.2</u>
AHAM	Association of Home Appliance Manufacturers		<u>C+02.+.1.1.2</u>
	1111 19th Street, N.W., Suite 402		
	Washington, D.C. 20036		
Standard reference number	Title		Referenced in code section number
ANSI/AHAM RAC-1—2008	Room Air Conditioners		Table C403.3.2(3)
AHAM HRF-1—2017	Energy, Performance and Capacity of Household Refrigerators, Refrigerator-Freezers and Freezers		Table C410.1(1)
AHRI	Air Conditioning, Heating, and Refrigeration Institute		Table C+10.1(1)
	4100 North Fairfax Drive, Suite 200		
	Arlington, VA 22203		
Standard reference number	Title		Referenced in code section number
ISO/AHRI/ASHRAE			
13256-1 (2017)	Water-source Heat Pumps - Testing and Rating for Performance - Part 1: Water-to-air and		T.11 (402.2.2(2))
	Brine-to-air Heat Pumps		Table C403.3.2(2)

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ISO/AHRI/ASHRAE		
13256-2 (2017)	Water-source Heat Pumps - Testing and Rating for Performance - Part 2: Water-to-water and Brine-to-water Heat Pumps	 Table C403.3.2(2)
210/240—2016	Unitary Air Conditioning and Air-source Heat Pump Equipment	 Table C403.3.2(1), Table C403.3.2(2)
310/380—2014	Standard for Packaged Terminal Air Conditioners and Heat Pumps	 Table C403.3.2(3)
340/360—2015	Commercial and Industrial Unitary Air-conditioning and Heat Pump Equipment	 Table C403.3.2(1), Table C403.3.2(2)
365—2009	Commercial and Industrial Unitary Air-conditioning Condensing Units	 Table C403.3.2(1), Table C403.3.2(6)
390—2015	Performance Rating of Single Package Vertical Air Conditioners and Heat Pumps	 Table C403.3.2(3)
400—2015	Liquid to Liquid Heat Exchangers with Addendum 2	 Table C403.3.2(9)
440—08	Room Fan Coil	 ((C403.2.8)) <u>C403.10.3</u>
460—05	Performance Rating Remote Mechanical Draft Air-cooled Refrigerant Condensers	 Table C403.3.2(8)
550/590—2015	Water Chilling Packages Using the Vapor Compression Cycle—with Addenda	((C403.2.3.1, Table C403.2.3(7), Table C406.2(6))) <u>C403.3.2.1,</u>
560—00	Absorption Water Chilling and Water-heating	 <u>Table C403.3.2(7)</u> Table ((C403.2.3))
	Packages	 <u>C403.3.2(7)</u>
920—2015	Performance Rating of DX-Dedicated Outdoor Air System Units	 C202, Table C403.3.2(11), Table C403.3.2(12)
1160—2014	Performance Rating of Heat Pump Pool Heaters	 Table C404.2
1200—2013	Performance Rating of Commercial Refriger- ated Display Merchandisers and Storage Cabi- nets	 C410.1,Table C410.1(1), Table C410.1(2)
AMCA	Air Movement and Control Association International	
	30 West University Drive	
	Arlington Heights, IL 60004-1806	
Standard reference number	Title	Referenced in code section number
205—12	Energy Efficiency Classification for Fans	 C403.8.3
220—8 (2012)	Laboratory Methods for Testing Air Curtain Units for Aerodynamic Performance Rating	 C402.5.7
500D—12	Laboratory Methods for Testing Dampers for Rating	 C402.4.5.1, C402.4.5.2
ANSI	American National Standards Institute 25 West 43rd Street	
	Fourth Floor New York, NY 10036	

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Standard reference number	Title		Referenced in code section number
ANSI/ASME A17.1—2010	Safety code for elevators and escalators		C405.12.1
Z21.10.3/CSA 4.3—11	Gas Water Heaters, Volume III—Storage Water Heaters with Input Ratings Above 75,000 Btu per Hour, Circulating Tank and Instantaneous		Table C404.2
Z21.47/CSA 2.3—12	Gas-fired Central Furnaces		Table C403.3.2(4)
Z83.8/CSA 2.6—09	Gas Unit Heaters, Gas Packaged Heaters, Gas Utility Heaters and Gas-fired Duct Furnaces		Table C403.3.2(4)
APSP	The Association of Pool and Spa Professionals		
	2111 Eisenhower Avenue		
	Alexandria, VA 22314		
Standard reference number	Title		Referenced in code section number
14—2014	American National Standards for Portable Electric Spa Efficiency		C404.12
ASHRAE	American Society of Heating, Refrigerating and Aing Engineers, Inc. 1791 Tullie Circle, N.E.	Air-Condition-	
	Atlanta, GA 30329-2305		
Standard reference number	Title		Referenced in code section number
ANSI/ASHRAE/ACCA			number
Standard 127-2007	Method of Testing for Rating Computer and Data Processing Room Unitary Air Condition-		Table
	ers		C403.3.2(9)
Standard 183—2007	Peak Cooling and Heating Load Calculations in Buildings, Except Low-rise Residential Buildings		C403.1.2
ASHRAE—2016	ASHRAE HVAC Systems and Equipment Handbook—2016		C403.1.2
ISO/AHRI/ASHRAE			
13256-1 (2011)	Water-source Heat Pumps—Testing and Rating for Performance—Part 1: Water-to-air and Brine-to-air Heat Pumps		Table C403.3.2(2)
ISO/AHRI/ASHRAE			
13256-2 (2011)	Water-source Heat Pumps—Testing and Rating for Performance—Part 2: Water-to-water and Brine-to-water Heat Pumps		Table C403.3.2(2)
90.1—2016	Energy Standard for Buildings Except Low- rise Residential Buildings (ANSI/ASHRAE/IESNA 90.1—2010)		Table C402.1.3, Table C402.1.4, C406.2
90.4—2016	Energy Standard for Data Centers		C403.1.3
146—2011	Testing and Rating Pool Heaters		Table C404.2
ASME	American Society of Mechanical Engineers		
	Two Park Avenue		
	New York, NY 10016-5990		

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Standard reference number	Title	Referenced in code section number
ASME A17.1/CSA B44— 2016	Safety Code for Elevators and Escalators	 C405.9.2
ASTM	ASTM International	
	100 Barr Harbor Drive	
	West Conshohocken, PA	
	19428-2859	
Standard reference number	Title	Referenced in code section number
C 90—14	Specification for Load-bearing Concrete Masonry Units	 Table C402.1.3
C1363—11	Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus	 C303.1.4.1, Table C402.1.4
C 1371—15	Standard Test Method for Determination of Emittance of Materials Near Room Tempera- ture Using Portable Emissometers	 Table C402.4
C 1549—09	Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using A Portable Solar Reflectometer	 Table C402.4
D 1003—13	Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics	 C402.4.2.2
E 283—04 (2012)	Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Dif- ferences Across the Specimen	 ((C402.5.1.2.2)) <u>C402.5.8</u>
E 408—13	Test Methods for Total Normal Emittance of Surfaces Using Inspection-meter Techniques	 Table C402.4
E 779—10	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization	 C402.5.1.2.3
E 903—12	Standard Test Method Solar Absorptance, Reflectance and Transmittance of Materials Using Integrating Spheres (Withdrawn 2005)	 Table C402.4
E 1677—11	Standard Specification for an Air-retarder (AR) Material or System for Low-rise Framed Build- ing Walls	 C402.5.1.2.2
E 1918—06 (2015)	Standard Test Method for Measuring Solar Reflectance of Horizontal or Low-sloped Sur- faces in the Field	 Table C402.4
E 1980—11	Standard Practice for Calculating Solar Reflec- tance Index of Horizontal and Low-sloped Opaque Surfaces	 Table C402.2.1.1
E 2178—13	Standard Test Method for Air Permanence of Building Materials	 C402.4
E 2357—11	Standard Test Method for Determining Air Leakage of Air Barrier Assemblies	 C402.5.1.2.2
CSA	Canadian Standards Association	
	5060 Spectrum Way	

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	Mississauga, Ontario, Canada L4W 5N6	
Standard reference number	Title	Referenced in code section number
AAMA/WDMA/CSA 101/I.S.2/A440—11	North American Fenestration Standard/Specification for Windows, Doors and Unit Skylights	 Table C402.4.2
CTI	Cooling Technology Institute	
	2611 FM 1960 West, Suite A-101	
	Houston, TX 77068	
Standard reference number	Title	Referenced in code section number
ATC 105 (00)	Acceptance Test Code for Water Cooling Tower	 Table C403.3.2(8)
ATC 105S—11	Acceptance Test Code for Closed Circuit Cooling Towers	 Table C403.3.2(8)
ATC 106—11	Acceptance Test Code for Mechanical Draft Evaporative Vapor Condensers	 Table C403.3.2(8)
STD 201—11	Standard for Certification of Water Cooling Towers Thermal Performances	 Table C403.3.2(8)
DASMA	Door and Access Systems Manufacturers Association 1300 Sumner Avenue	
Standard reference number	Cleveland, OH 44115-2851 Title	Referenced in code section number
105—92 (R2004)—13	Test Method for Thermal Transmittance and Air Infiltration of Garage Doors	 Table C402.4.2
DOE	U.S. Department of Energy	
	c/o Superintendent of Documents	
	U.S. Government Printing Office	
	Washington, D.C. 20402-9325	
Standard reference number	Title	Referenced in code section number
10 C.F.R., Part 430—2015	Energy Conservation Program for Consumer Products:	
	Test Procedures and Certification and Enforcement Requirement for Plumbing Products; and Certification and Enforcement Requirements for Residential Appliances; Final Rule	 Table C403.3.2(4), Table C403.3.2(5), Table C404.2
10 C.F.R., Part 430, Subpart B, Appendix N—2015	Uniform Test Method for Measuring the Energy Consumption of Furnaces and Boilers	 C202
10 C.F.R., Part 431—2015	Energy Efficiency Program for Certain Commercial and Industrial Equipment: Test Procedures and Efficiency Standards; Final Rules	 Table C403.3.2(5), Table C406.2(5)
NAECA 87—(88)	National Appliance Energy Conservation Act 1987 [(Public Law 100-12 (with Amendments of 1988-P.L. 100-357)]	 Tables C403.3.2 (1), (2), (4

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IAPMO	International Association of Plumbing and Mechanical Officials	
	4755 E. Philadelphia Street	
	Ontario, CA 91761	
Standard reference number	Title	Referenced in code section number
UPC—2015	Uniform Plumbing Code	 C201.3, C501.4
ICC	International Code Council, Inc.	
	500 New Jersey Avenue, N.W.,	
	6th Floor	
	Washington, D.C. 20001	
Standard reference number	Title	Referenced in code section number
IBC—15	International Building Code	 C201.3, C303.2, C402.4.3
IFC—15	International Fire Code	 C201.3, C501.4
IFGC—15	International Fuel Gas Code	 C201.3, C501.4
IMC—15	International Mechanical Code	 C106.3, C201.3, C402.5.3,
IEEE	The Institute of Electrical and Electronic Engineers, Inc. 3 Park Avenue New York, NY 10016	C403.2.2.1, C403.2.2.2, C403.3.5, C403.3.5.1, C403.6.1, C403.6.5, C403.6.10, C403.7.1, C403.7.2, C403.7.5, C403.7.5.1, C403.7.6, C403.7.3, C403.7.8.1, C403.7.8.4, C403.8.4, C403.8.5.1, Table C403.10.1, C403.10.1.2, Table C403.10.1.2, C403.10.2.2, C403.12, C406.6, C408.2.2.1, C501.4
Standard reference number	Title	Referenced in code section
IEEE 515.1—2012	IEEE Standard for the Testing, Design, Installation and Maintenance of Electrical Resistance Trace Heating for Commercial Applications	 number C404.6.2
IESNA	Illuminating Engineering Society of North America 120 Wall Street, 17th Floor New York, NY 10005-4001	 2.0.10.2
Standard reference number	Title	Referenced in code section number
ANSI/ASHRAE/IESNA 90.1—((2013)) <u>2016</u>	Energy Standard for Buildings Except Low- rise Residential Buildings	 Table C402.1.3, Table C402.1.4, Table C407.5.1
ISO	International Organization for Standardization	

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	1, rue de Varembe, Case postale 56, CH-1211	
	Geneva, Switzerland	
Standard reference number	Title	Referenced in code section number
ISO/AHRI/ASHRAE 13256- 1 (((2011)) <u>2017</u>)	Water-source Heat Pumps—Testing and Rating for Performance—Part 1: Water-to-air and Brine-to-air Heat Pumps	 C403.3.2(2)
ISO/AHRI/ASHRAE 13256- 2 (((2011)) <u>2017</u>)	Water-Source Heat Pumps—Testing and Rating for Performance—Part 2: Water-to-water and Brine-to-water Heat Pumps	 C403.3.2(2)
NEMA	National Electric Manufacturers Association	
	1300 North 17th Street	
	Suite 1752	
	Rosslyn, VA 22209	
Standard reference number	Title	Referenced in code section number
TP-1-2002	Guide for Determining Energy Efficiency for Distribution Transformers	 C405.9
MGI— 2014	Motors and Generators	 C202
NFRC	National Fenestration Rating Council, Inc.	
	6305 Ivy Lane, Suite 140	
	Greenbelt, MD 20770	
Standard reference number	Title	Referenced in code section number
100—2017	Procedure for Determining Fenestration Product U-factors	 C303.1.2, C402.2.2
200—2017	Procedure for Determining Fenestration Prod- uct Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence	 C303.1.3, C402.4.1.1
202—2017	Procedure for Determining Fenestration Product Visible Transmittance at Normal Incidence	 C202
NFRC 203—2017	Procedure for Determining Visible Transmittance of Tubular Daylighting Devices	 C202, C402.4.2
400—2017	Procedure for Determining Fenestration Product Air Leakage	 Table C402.4.2
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.	
	4021 Lafayette Center Drive	
	Chantilly, VA 20151-1209	
Standard reference number	Title	Referenced in code section number
SMACNA—2012	HVAC Air Duct Leakage Test Manual	 C403.10.2.3
UL	Underwriters Laboratories	
	333 Pfingsten Road	
	Northbrook, IL 60062-2096	
Standard reference number	Title	Referenced in code section number

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710—12	Exhaust Hoods for Commercial Cooking Equipment	 ((C403.2.8)) <u>C403.7.5</u>
727—06	Oil-fired Central Furnaces—with Revisions through April 2010	 Table C403.3.2(4)
731—95	Oil-fired Unit Heaters—with Revisions through April 2010	 Table C403.3.2(4)
US-FTC	United States-Federal Trade Commission	
	600 Pennsylvania Avenue N.W.	
	Washington, D.C. 20580	
Standard reference number	Title	Referenced in code section number
C.F.R. Title 16 (2015)	R-value Rule	 C303.1.4
WDMA	Window and Door Manufacturers Association	
	1400 East Touhy Avenue, Suite 470	
	Des Plaines, IL 60018	
Standard reference number	Title	Referenced in code section number
AAMA/WDMA/CSA	North American Fenestration Standard/Speci-	
101/I.S.2/A440—17	fication for Windows, Doors and Unit Sky-	
	lights	 Table C402.4.2

AMENDATORY SECTION (Amending WSR 19-24-040, filed 11/26/19, effective 7/1/20)

WAC 51-11C-80500 Appendix D—Calculation of HVAC total system performance ratio.

D101 Scope. This appendix establishes criteria for demonstrating compliance using the *HVAC total system performance ratio (HVAC TSPR)* for systems serving office, retail, library and education occupancies and buildings, which are subject to the requirements of Section C403.3.5 without exceptions. Those HVAC systems shall comply with Section C403 and this appendix as required by Section C403.1.1.

D201 Compliance. Compliance based on *HVAC total system* performance ratio requires that the provisions of Section C403.3 are met and the *HVAC total system performance ratio* of the proposed design is more than or equal to the *HVAC total system performance ratio* of the standard reference design. The *HVAC TSPR* is calculated according to the following formula:

HVAC TSPR = annual heating and cooling load/annual carbon emissions from energy consumption of the building HVAC systems

Where:

Annual carbon emissions from energy consumption of the building HVAC systems sum of the annual carbon emissions in pounds for heating, cooling, fans, energy recovery, pumps, and heat rejection calculated by multiplying site energy consumption by the carbon emission factors from Table C407.1

Annual heating and cooling load

sum of the annual heating and cooling loads met by the building HVAC system in thousands of Btus.

Table C407.1 (Reprinted from Chapter 4) Carbon Emissions Factors

Type	CO2e (lb/unit)	Unit
Electricity	0.70	kWh
Natural gas	11.70	Therm
Oil	19.2	Gallon
Propane	10.5	Gallon
Other ^a	195.00	mmBtu
On-site renewable	0.00	
energy		

^a District energy systems may use alternative emissions factors supported by calculations approved by the *code official*.

D300 Simulation program.

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D301 General.

D302 Calculation of the HVAC TSPR for the *Standard Reference Design*. The simulation program shall calculate the HVAC TSPR based only on the input for the *proposed design* and the requirements of this appendix. The calculation procedure shall not allow the user to directly modify the building component characteristics of the *standard reference design*.

D303 Specific approval. Performance analysis tools meeting the applicable subsections of Appendix D and tested according to ASHRAE Standard 140 shall be permitted to be *approved*. Tools are permitted to be *approved* based on meeting a specified threshold for a jurisdiction. The *code official* shall be permitted to approve tools for a specified application or limited scope.

D400 Climatic data. The simulation program shall perform the simulation using hourly values of climatic data, such as temperature and humidity, using TMY3 data for the site as specified here: https://buildingenergyscore.energy.gov/resources

D500 Documentation. Documentation conforming to the provisions of this section shall be provided to the *code official*.

D501 Compliance report. Building permit submittals shall include:

- 1. A report produced by the simulation software that includes the following:
 - 1.1 Address of the building.
- 1.2 Name of individual completing the compliance report.
 - 1.3 Name and version of the compliance software tool.
- 1.4 The dimensions, floor heights and number of floors for each *block*.
- 1.5 By block, the U-factor, C-factor, or F-factor for each simulated opaque envelope component and the U-factor and SHGC for each fenestration component.
- 1.6 By *block* or by surface for each block, the fenestration area.
- 1.7 By *block*, a list of the HVAC equipment simulated in the proposed design including the equipment type, fuel type, equipment efficiencies and system controls.
- 1.8 The HVAC total system performance ratio for both the standard reference design and the proposed design.
- 2. A mapping of the actual building HVAC component characteristics and those simulated in the *proposed design* showing how individual pieces of HVAC equipment identified above have been combined into average inputs ((ad)) as required by Section D601.11 including:
 - 2.1 Fans.
 - 2.2 Hydronic pumps.
 - 2.3 Air handlers.
 - 2.4 Packaged cooling equipment.
 - 2.5 Furnaces.
 - 2.6 Heat pumps.
 - 2.7 Boilers.
 - 2.8 Chillers.
 - 2.9 Cooling towers.

- 2.10 Electric resistance coils.
- 2.11 Condensing units.
- 2.12 Motors for fans and pumps.
- 2.13 Energy recovery devices.

For each piece of equipment identified above, include the following as applicable:

- 2.14 Equipment name or tag consistent with that found on the design documents.
 - 2.15 Efficiency level.
 - 2.16 Capacity.
 - 2.17 Input power for fans and pumps.
- 3. Floor plan of the building identifying how portions of the building are assigned to the simulated *blocks* and areas of the building that are not covered under the requirements of Section C403.1.1.

D600 Calculation procedure. Except as specified by this appendix, the *standard reference design* and *proposed design* shall be configured and analyzed using identical methods and techniques.

D601 Simulation of the proposed building design. The *proposed design* shall be configured and analyzed as specified in this section.

D601.1 Utility rates. For the purpose of calculating the *HVAC TSPR* the following simple utility rate determined by the Washington state department of commerce shall be used:

\$0.112/kWh of electricity.

\$1.158/therm of fossil fuel.

D601.2 Block geometry. The geometry of buildings shall be configured using one or more *blocks*. Each *block* shall define attributes including *block* dimensions, number of floors, floor to floor height and floor to ceiling height. Simulation software may allow the use of simplified shapes (such as rectangle, L shape, H shape, U shape or T shape) to represent *blocks*. Where actual building shape does not match these predefined shapes, simplifications are permitted providing the following requirements are met:

- 1. The conditioned floor area and volume of each block shall match the *proposed design* within 10 percent.
- 2. The area of each exterior envelope component from Table C402.1.4 is accounted for within 10 percent of the actual design.
- 3. The area of vertical fenestration and skylights is accounted for within 10 percent of the actual design.
- 4. The orientation of each component in 2 and 3 above is accounted for within 45 degrees of the actual design.

The creation of additional *blocks* may be necessary to meet these requirements.

EXCEPTION:

Portions of the building that are unconditioned or served by systems not covered by the requirements of Section C403.1.1 shall be omitted.

- **D601.2.1 Number of blocks.** One or more *blocks* may be required per building based on the following restrictions:
- 1. Each *block* can have only one occupancy type (office, library, education or retail). Therefore, at least one single *block* shall be created for each unique use type.
- 2. Each *block* can be served by only one type of HVAC system. Therefore, a single *block* shall be created for each unique HVAC system and use type combination. Multiple

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- HVAC units of the same type may be represented in one *block*. Table D601.10.2 provides directions for combining multiple HVAC units or components of the same type into a single *block*.
- 3. Each *block* can have a single definition of floor to floor or floor to ceiling heights. Where floor heights differ by more than 2 feet, unique *blocks* should be created for the floors with varying heights.
- 4. Each *block* can include either above grade or below grade floors. For buildings with both above grade and below grade floors, separate *blocks* should be created for each. For buildings with floors partially above grade and partially below grade, if the total wall area of the floor(s) in consideration is greater than or equal to 50 percent above grade, then it should be simulated as a completely above grade *block*, otherwise it should be simulated as a below grade *block*.
- 5. Each wall on a façade of a *block* shall have similar vertical fenestration. The product of the *proposed design U*-factor times the area of windows (UA) on each façade of a given floor cannot differ by more than 15 percent of the average UA for that façade in each *block*. The product of the *proposed design SHGC* times the area of windows (USHGC) on each façade of a given floor cannot differ by more than 15 percent of the average USHGC for that façade in each *block*. If either of these conditions are not met, additional *blocks* shall be created consisting of floors with similar fenestration.
- 6. For a building model with multiple *blocks*, the *blocks* should be configured together to have the same adjacencies as the actual building design.
- **D601.3 Thermal zoning.** Each floor in a *block* shall be modeled as a single thermal zone or as five thermal zones consisting of four perimeter zones and a core zone. Below grade floors shall be modeled as a single thermal *block*. If any façade in the *block* is less than 45 feet in length, there shall only be a single thermal zone per floor. Otherwise each floor shall be modeled with 5 thermal zones. A perimeter zone shall be created extending from each façade to a depth of 15 feet. Where facades intersect, the zone boundary shall be formed by a 45 degree angle with the 2 facades. The remaining area or each floor shall be modeled as a core zone with no exterior walls.

D601.4 Occupancy.

- **D601.4.1 Occupancy type.** The occupancy type for each *block* shall be consistent with the building area type as determined in accordance with Section C405.4.2.1. Portions of the building that are building area types other than office, school (education), library, or retail shall not be included in the simulation.
- **D601.4.2 Occupancy schedule, density, and heat gain.** The occupant density, heat gain, and schedule shall be for office, retail, library, or school as specified by ASHRAE Standard 90.1 Normative Appendix C.

D601.5 Envelope components.

D601.5.1 Roofs. Roofs will be modeled with insulation above a steel roof deck. The roof *U*-factor and area shall be modeled as in the proposed design. If different roof thermal properties are present in a single block, an area weighted *U*-

- factor shall be used. Roof solar absorbtance shall be modeled at 0.70 and emittance at 0.90.
- **D601.5.2 Above grade walls.** Walls will be modeled as steel frame construction. The *U*-factor and area of above grade walls shall be modeled as in the *proposed design*. If different wall constructions exist on the façade of a *block* an areaweighted *U*-factor shall be used.
- **D601.5.3 Below grade walls.** The *C*-factor and area of below grade walls shall be modeled as in the *proposed design*. If different slab on grade floor constructions exist in a *block*, an area-weighted *C*-factor shall be used.
- **D601.5.4 Above grade exterior floors.** Exterior floors shall be modeled as steel frame. The *U*-factor and area of floors shall be modeled as in the *proposed design*. If different wall constructions exist in the block an area-weighted *U*-factor shall be used.
- **D601.5.5 Slab on grade floors.** The *F*-factor and area of slab on grade floors shall be modeled as in the *proposed design*. If different below grade wall constructions exist in a *block*, an area-weighted *F*-factor shall be used.
- **D601.5.6 Vertical fenestration.** The window area and area weighted *U*-factor and SHGC shall be modeled for each façade based on the *proposed design*. Each exterior surface in a *block* must comply with Section D601.2.1 item 5. Windows will be combined in to a single window centered on each façade based on the area and sill height input by the user.
- **D601.5.7 Skylights.** The skylight area and area weighted *U*-factor and SHGC shall be modeled for each floor based the *proposed design*. Skylights will be combined in to a single skylight centered on the roof of each zone based on the area and sill height input by the user.
- **D601.6 Lighting.** Interior lighting power density shall be equal to the allowance in Table C405.4.2(1) for office, retail, library, or school. The lighting schedule shall be for office, retail, library, or school as specified by ASHRAE Standard 90.1 Normative Appendix C. The impact of lighting controls is assumed to be captured by the lighting schedule and no explicit controls shall be modeled. Exterior lighting shall not be modeled.
- **D601.7 Miscellaneous equipment.** The miscellaneous equipment schedule and power shall be for office, retail, library, or school as specified by ASHRAE Standard 90.1 Normative Appendix C. The impact of miscellaneous equipment controls is assumed to be captured by the equipment schedule and no explicit controls shall be modeled.
- **D601.8 Elevators.** Elevators shall not be modeled.
- **D601.9 Service water heating equipment.** Service water heating shall not be modeled.
- **D601.10 On-site renewable energy systems.** On-site renewable energy systems shall not be modeled.
- **D601.11 HVAC equipment.** HVAC systems shall meet the requirements of Section C403.

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D601.11.1 Supported HVAC systems. At a minimum, the HVAC systems shown in Table D601.11.1 shall be supported by the simulation program.

Table D601.11.1
Proposed Building HVAC Systems Supported by HVAC
TSPR Simulation Software

System No.	System Name	System Abbreviation
1	Packaged Terminal Air Conditioner	PTAC
2	Packaged Terminal Air Heat Pump	PTHP
3	Packaged Single Zone Gas Furnace	PSZGF
4	Packaged Single Zone Heat Pump (air to air only)	PSZHP
5	Variable Refrigerant Flow (air cooled only)	VRF
6	Four Pipe Fan Coil	FPFC
7	Water Source Heat Pump	WSHP
8	Ground Source Heat Pump	GSHP
9	Packaged Variable Air Volume (dx cooling)	PVAV

System No.	System Name	System Abbreviation
10	Variable Air Volume (hydronic cooling)	VAV
11	Variable Air Volume with Fan Powered Terminal Units	VAVFPTU
12	Dedicated Outdoor Air System (in conjunction with systems 1-8)	DOAS

D601.11.2 Proposed building HVAC system simulation. The HVAC systems shall be modeled as in the *proposed design* with clarifications and simplifications as described in Table D601.11.2. System parameters not described in the following sections shall be simulated to meet the minimum requirements of Section C403. All zones within a *block* shall be served by the same HVAC system type as described in Section D601.2.1 item 2. Where multiple system components serve a block, average values weighed by the appropriate metric as described in this section shall be used. Heat loss from ducts and pipes shall not be modeled.

EXCEPTION:

Where the building permit applies to only a portion of an HVAC system and remaining components will be designed under a future building permit, the future components shall be modeled to meet, but not exceed, the requirements of Section C403.

Table D601.11.2 Proposed Building System Parameters

Category	Parameter	Fixed or User Defined	Required	Applicable Systems
HVAC System Type	System Type	User Defined	Selected from Table D601.11.1	All
System Sizing	Design Day Information	Fixed	99.6 percent heating design and 1 percent dry- bulb and 1 percent wet-bulb cooling design	All
	Zone Coil Capacity	Fixed	Sizing factors used are 1.25 for heating equipment and 1.15 for cooling equipment	All
	Supply Airflow	Fixed	Based on a supply-air-to-room-air temperature <i>set-point</i> difference of 20°F	1-11
		Fixed	Equal to required outdoor air ventilation	12
Outdoor Ventilation Air	Outdoor Ventila- tion Air Flow Rate	Fixed	As specified in ASHRAE Standard 90.1 Normative Appendix C, adjusted for proposed DCV control	All
System Operation	Space Temperature Setpoints	Fixed	As specified in ASHRAE Standard 90.1 Normative Appendix C	1-11
	Fan Operation - Occupied	User Defined	Runs continuously during occupied hours or cycled to meet load	1-11
	Fan Operation - Occupied	Fixed	Fan runs continuously during occupied hours	12
	Fan Operation - Night Cycle	Fixed	Fan cycles on to meet setback temperatures	1-11

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Category	Parameter	Fixed or User Defined	Required	Applicable Systems
Packaged Equipment Efficiency	DX Cooling Effi- ciency	User Defined	Cooling COP without fan energy calculated in accordance with ASHRAE Standard 90.1 Section 11.5.2c. ^b	1, 2, 3, 4, 5, 7, 8, 9, 11, 12
	Heat Pump Efficiency	User Defined	Heating COP without fan energy calculated in accordance with ASHRAE Standard 90.1 Section 11.5.2c.°	2, 4, 5, 7, 8
	Furnace Efficiency	User Defined	Furnace thermal efficiency ^c	3, 11
Heat Pump Supplemental Heat	Control	Fixed	Supplemental electric heat locked out above 40°F. Runs in conjunction with compressor between 40°F and 0°F.	2, 4
System Fan Power	Design Fan Power (W/cfm)	User Defined	Input electric power for all fans is required to operate at <i>fan system design conditions</i> divided by the supply airflow rate	All
	Single Zone System Fan Power During Deadband (W/cfm)	User Defined	W/cfm during deadband for VAV or multispeed single zone fans	3, 4, 5, 6, 7,
Variable Air Volume Systems	Part Load Fan Controls	User Defined	VFD included. User specifies presence of static pressure reset	9, 10, 11
	Supply Air Temperature Controls	User Defined	If not SAT reset constant at 55°F. SAT reset results in 60°F SAT during low load conditions	9, 10, 11
	Minimum Termi- nal Unit Airflow Percentage	User Defined	Average minimum terminal unit airflow percentage for <i>block</i> weighted by cfm	9, 10, 11
	Terminal Unit Heating Source	User Defined	Electric or hydronic	9, 10, 11
	Fan Powered Terminal Unit (FPTU) Type	User Defined	Series or parallel FPTU	11
	Parallel FPTU Fan	Fixed	Sized for 50 percent peak primary air at 0.35 W/cfm	11
	Series FPTU Fan	Fixed	Sized for 50 percent peak primary air at 0.35 W/cfm	11
Economizer	Economizer Presence	User Defined	Yes or No	3, 4, 9, 10, 11
	Economizer High Limit	Fixed	75°F fixed dry-bulb	3, 4, 9, 10,

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Category	Parameter	Fixed or User Defined	Required	Applicable Systems
Energy Recovery	Sensible Effectiveness	User Defined Heat exchanger sensible effectiveness at design heating and cooling conditions		3, 4, 9, 10, 11, 12
	Latent Effective- ness	User Defined	Heat exchanger latent effectiveness at design heating and cooling conditions	3, 4, 9, 10, 11, 12
	Economizer Bypass	User Defined	If ERV is bypassed during economizer conditions	3, 4, 9, 10, 11, 12
	Energy Recovery Temp Control	User Defined	If bypass, target supply air temperature	3, 4, 9, 10, 11, 12
	Fan Power Reduction during Bypass (W/cfm)	User Defined	If ERV system include bypass, static pressure setpoint and variable speed fan, fan power can be reduced during economizer conditions	3, 4, 9, 10, 11, 12
Demand Controlled Ventilation	DCV Application	User Defined	Percent of block floor area under DCV control	3, 4, 9, 10, 11, 12
DOAS	DOAS Fan Power W/cfm	User Defined	Fan input power in W/cfm of supply airflow ^a	12
	DOAS Supplemental Heating and Cooling	User Defined	Heating source, cooling source	12
	DOAS Supply Air Temperature Con- trol	User Defined	SAT setpoint if DOAS includes supplemental heating or cooling and active temperature controls	12
Heating Plant	Boiler Efficiency ^d	User Defined	Boiler thermal efficiency	1, 6, 7, 9, 10, 11, 12
	Heating Water Pump Power (W/gpm)	User Defined	Pump input W/gpm heating water flow	1, 6, 7, 9, 10, 11, 12
	Heating Water Loop Temperature	Fixed	180°F supply, 130°F return	1, 6, 9, 10,11

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Category	Parameter	Fixed or User Defined	Required	Applicable Systems
Chilled Water Plant	Chiller Compressor Type	User Defined	Screw/scroll, centrifugal or reciprocating	6,10, 11, 12
	Chiller Condenser Type	User Defined	Air cooled or water cooled	6, 10, 11, 12
	Chiller Full Load Efficiency ^d	User Defined	Chiller COP	6, 10, 11, 12
	Chilled Water Loop Configura- tion	User Defined	Variable flow primary only, constant flow primary - variable flow secondary	6, 10, 11, 12
	Chilled Water Pump Power (W/gpm)	User Defined	Pump input W/gpm chilled water flow	6, 10, 11, 12
	Chilled Water Temperature Reset Included	User Defined	Yes/No	6, 10, 11, 12
	Chilled Water Temperature Reset Schedule (if included)	Fixed	Outdoor air reset: CHW supply temperature of 44°F at 80°F outdoor air dry-bulb and above, CHW supply temperature of 54°F at 60°F outdoor air dry-bulb temperature and below, ramped linearly between	6, 10, 11, 12
	Condenser Water Pump Power (W/gpm)	User Defined	Pump input W/gpm condenser water flow	6, 7, 8, 9, 10, 11, 12
	Condenser Water Pump Control	User Defined	Constant speed or variable speed	6, 7, 10, 11, 12
	Cooling Tower Efficiency	User Defined	gpm/hp tower fan	6, 10, 11, 12
Cooling Tower	Cooling Tower Fan Control	User Defined	Constant or variable speed	6, 10, 11, 12
	Cooling Tower Approach and Range	User Defined	Design cooling tower approach and range temperature	6, 10, 11, 12
Heat Pump Loop Flow Control	Loop Flow and Heat Pump Con- trol Valve	Fixed	Two position valve with VFD on pump. Loop flow at 3 gpm/ton	7, 8
Heat Pump Loop Temperature Control		Fixed	Set to maintain temperature between 50°F and 70°F	7
GLHP Well Field		Fixed	Bore depth = 250 feet Bore length 200 feet/ton for greater of cooling or heating load Bore spacing = 15 feet Bore diameter = 5 inches 3/4 inch Polyethylene pipe Ground and grout conductivity = 4.8 Btu-in/h-ft²-°F	8

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^a Where multiple fan systems serve a single *block*, fan power is based on weighted average using on supply air cfm.

^b Where multiple cooling systems serve a single *block*, COP is based on a weighted average using cooling capacity.

^c Where multiple heating systems serve a single *block*, thermal efficiency or heating COP is based on a weighted average using heating capacity.

^d Where multiple boilers or chillers serve a heating water or chilled water loop, efficiency is based on a weighted average for using heating or cooling capacity.

D602 Simulation of the standard reference design. The *standard reference design* shall be configured and analyzed as specified in this section.

- D602.1 Utility rates. Same as proposed.
- D602.2 Blocks. Same as proposed.
- **D602.3 Thermal zoning.** Same as proposed.
- D602.4 Occupancy type, schedule, density, and heat gain. Same as proposed.
- **D602.5** Envelope components. Same as proposed.
- **D602.6 Lighting.** Same as proposed.
- D602.7 Miscellaneous equipment. Same as proposed.
- **D602.8 Elevators.** Not modeled. Same as proposed.
- **D602.9 Service water heating equipment.** Not modeled. Same as proposed.
- D602.10 On-site renewable energy systems. Not modeled. Same as proposed.

D602.11 HVAC equipment. The *standard reference design* HVAC equipment consists of separate space conditioning systems and dedicated outside air systems as described in Table D602.11 for the appropriate building occupancies.

Table D602.11 Standard Reference Design HVAC Systems

	Building Type					
Parameter	Large Office ^a	Small Office and Libraries ^a	Retail	School		
System Type	Water-source Heat Pump	Packaged air-source Heat Pump	Packaged air-source Heat Pump	Packaged air-source Heat Pump		
Fan Control ^b	Cycle on Load	Cycle on Load	Cycle on Load	Cycle on Load		
Space Condition Fan Power (W/cfm)	0.528	0.528	0.522	0.528		
Heating/Cooling Sizing Factor ^c	1.25/1.15	1.25/1.15	1.25/1.15	1.25/1.15		
Supplemental Heating Availability	NA	<40°F	<40°F	<40°F		
Modeled cooling COP (Net of Fan) ^d	4.46	3.83	4.25	3.83		
Modeled heating COP (Net of Fan) ^d	4.61	3.81	3.57	3.81		
Cooling Source	DX (Heat Pump)	DX (Heat Pump)	DX (Heat Pump)	DX (Heat Pump)		
Heat Source	Heat Pump	Heat Pump	Heat Pump	Heat Pump		
OSA Economizer ^e	No	No	Yes	Yes		
Occupied Ventilation Source ^f	DOAS	DOAS	DOAS	DOAS		
DOAS Fan Power (W/cfm of Outside Air)	0.819	0.819	0.730	0.742		
DOAS Temperature Control g, h	Bypass	Wild	Bypass	Bypass		
ERV Efficiency (Sensible Only)	70 percent	70 percent	70 percent	70 percent		
WSHP Loop Heat Rejection	Cooling Tower ⁱ	NA	NA	NA		
WSHP Loop Heat Source	Gas Boiler j	NA	NA	NA		

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	Building Type				
Parameter	Large Office ^a	Small Office and Libraries ^a	Retail	School	
System Type	Water-source Heat Pump	Packaged air-source Heat Pump	Packaged air-source Heat Pump	Packaged air-source Heat Pump	
WSHP Loop Temperature Control ^k	50°F to 70°F	NA	NA	NA	
WSHP Circulation Pump W/gpm ¹	16	NA	NA	NA	
WSHP Loop Pumping Control ^m	HP Valves & Pump VSD	NA	NA	NA	

^a Offices less than 50,000 square feet use "Small Office" parameters; otherwise use "Large Office" parameters.

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^b Space conditioning system shall cycle on to meet heating and cooling setpoint schedules as specified in ASHRAE Standard 90.1 Normative Appendix C. One space conditioning system is modeled in each zone. Conditioning system fan operation is not necessary for ventilation delivery.

^c The equipment capacities (i.e., system coil capacities) for the *standard reference design* building design shall be based on design day sizing runs and shall be oversized by 15 percent for cooling and 25 percent for heating.

^d COPs shown are direct heating or cooling performance and do not include fan energy use. See ASHRAE 90.1 Appendix G (G3.1.2.1) for separation of fan from COP in packaged equipment for units where the efficiency rating includes fan energy (e.g., SEER, EER, HSPF, COP).

^e Economizer on space conditioning systems shall be simulated when outdoor air conditions allow free cooling. Economizer high limit shall be based on differential dry-bulb control. DOAS system continues to operate during economizer mode.

^f Airflow equal to the outside air ventilation requirements is supplied and exhausted through a separate DOAS system including a supply fan, exhaust fan and sensible only heat exchanger. No additional heating or cooling shall be provided by the DOAS. A single DOAS system will be provided for each *block*. The DOAS supply and return fans shall run whenever the HVAC system is scheduled to operate in accordance with ASHRAE 90.1 Normative Appendix C.

g "Wild" DOAS control indicates no active control of the supply air temperature leaving the DOAS system. Temperature will fluctuate based only on entering and leaving conditions and the effectiveness of ERV.

^h "Bypass" DOAS control includes modulating dampers to bypass ERV with the intent to maintain supply air temperature at a maximum of 60°F when outside air is below 75°F. Once outside air is above 75°F, bypass dampers will be fully closed.

¹ Includes a single axial fan cooling tower with variable speed fans at 40.2 gpm/hp, sized for an approach of 10°F and a range of 10°F.

^j Includes a single natural draft boiler with 80 percent E_t.

^k Loop boiler and heat rejection shall be controlled to maintain loop temperature entering heat pumps between 50°F and 70°F.

¹ Pump motor input power shall be 16 W/gpm.

^m Loop flow shall be variable with variable speed drive pump and unit fluid flow shutoff at each heat pump when its compressor cycles off.