



RULE-MAKING ORDER
(RCW 34.05.360)

CR-103 (10/1/89)

Agency: State Building Code Council

- Permanent Rule
 Emergency Rule

(1) Date of adoption: November 18, 1994

(2) Purpose: To adopt an exemption for log and solid timber walls from the residential building envelope requirements, revised references to the Uniform Codes and delete expired deemed to satisfy exceptions.

(3) Citation of existing rules affected by this order:

Repealed:

Amended: WAC 51-11-105, 108, 502, 530, 625-630, 900 and 1143

Suspended:

(4) Authority for adoption:

Statute: RCW 19.27 and 19.27A

Other Authority: Chapter 226, Session Laws of 1994

(5.1) **PERMANENT RULE ONLY**

Pursuant to notice filed as WSR 94-16-116 on 8/2/94 (date).

Describe any changes other than editing from proposed to adopted version: None

(5.2) **EMERGENCY RULE ONLY**

Pursuant to RCW 34.05.350 the agency for good cause finds:

- (a) That immediate adoption, amendment, or repeal of a rule is necessary for the preservation of the public health, safety, or general welfare, and that observing the time requirements of notice and opportunity to comment upon adoption of a permanent rule would be contrary to the public interest.
- (b) That state or federal law or federal rule or a federal deadline for state receipt of federal funds requires immediate adoption of a rule.

Reasons for this finding:

(5.3) Any other findings required by other provisions of law as precondition to adoption or effectiveness of rule?

Yes No If yes, explain:

(6) Effective date of rule:

Permanent Rules

Emergency Rules

- 31 days after filing
 Other (specify) 6/30/95 *
 Immediately
 Later (specify) _____

* (if less than 31 days after filing, specific finding in 5.3 under RCW 34.05.380(3) is required)

NAME (TYPE OR PRINT)

Gene Colin

SIGNATURE

TITLE

Chair

DATE

12/21/94

CODE REVISER USE ONLY

CODE REVISER'S OFFICE
STATE OF WASHINGTON
FILED

DEC 21 1994

TIME: 11:36

WSR: 95-01-126

AMENDATORY SECTION (Amending WSR 91-01-112, filed 12/19/90, effective 7/1/91)

WAC 51-11-0105 Inspections and enforcement.

105.1 General: All construction or work for which a permit is required shall be subject to inspection by the building official and all such construction or work shall remain accessible and exposed for inspection purposes until approved by the building official.

105.2 Approvals Required: No work shall be done on any part of the building or structure beyond the point indicated in each successive inspection without first obtaining the approval of the building official.

105.2.1 Required Inspections: The building official, upon notification, shall make the following inspection in addition to those inspections required in section (~~(305(e))~~) 108.5 of the Washington State Uniform Building Code:

1. Wall insulation inspection: To be made after all wall insulation and air vapor retarder sheet or film materials are in place, but before any wall covering is placed.

105.3 Reinspection: The building official may require a structure to be reinspected.

AMENDATORY SECTION (Amending WSR 91-01-112, filed 12/19/90, effective 7/1/91)

WAC 51-11-0108 Conflicts with other codes. In addition to the requirements of this Code, all occupancies shall conform to the provisions included in the State Building Code (chapter 19.27 RCW) and Uniform Building Code and Standards Adoption and Amendment rules (~~(and)~~) (chapter (~~(51-16)~~) 51-30 WAC). In case of conflicts among codes enumerated in RCW 19.27.031 (1), (2), (3), and (4) and this Code, the first named code shall govern over the following. Provided, in the case of conflict between the duct insulation requirements of this Code and the duct insulation requirements of (~~(section 1005)~~) Table 6-D of the Uniform Mechanical Code (chapter 51-32 WAC), the duct insulation requirements of this Code, or where applicable, a local jurisdiction's energy code shall govern.

Where, in any specific case, different sections of this Code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Wherever in this Code reference is made to the appendix, the provisions in the appendix shall not apply unless specifically adopted.

WAC 51-11-0502 Building envelope requirements.

502.1 General:

502.1.1: The stated U- or F-value of any component assembly, listed in Table 5-1 or 5-2, such as roof/ceiling, opaque wall or opaque floor may be increased and the U-value for other components decreased, provided that the total heat gain or loss for the entire building envelope does not exceed the total resulting from compliance to the U-values specified in this Section.

The U-values for typical construction assemblies are included in Chapter 10. These values shall be used for all calculations. Where proposed construction assemblies are not represented in Chapter 10, values shall be calculated in accordance with Chapters 19-27 in Standard RS-1 listed in Chapter 7, using the framing factors listed in Chapter 10 where applicable.

For envelope assemblies containing metal framing, the U-value shall be determined by one of the following methods:

1. Results of laboratory or field measurements.
2. Standard RS-25, listed in Chapter 7, where the metal framing is bonded on one or both sides to a metal skin or covering.
3. The zone method as provided in Chapter 22 of Standard RS-1, listed in Chapter 7.
4. Effective framing/cavity R-values as provided from the following table for metal stud walls:

WALL FRAMING	CAVITY INSULATION	
	R-11	R-19
2 x 4 @ 16" o.c.	5.50	-
2 x 4 @ 24" o.c.	6.60	-
2 x 6 @ 16" o.c.	-	7.60
2 x 6 @ 24" o.c.	-	8.55

502.1.2: For consideration of thermal mass effects, see section 402.4.

502.1.3: When return air ceiling plenums are employed, the roof/ceiling assembly shall:

- a. For thermal transmittance purposes, not include the ceiling proper nor the plenum space as part of the assembly; and
- b. For gross area purposes, be based upon the interior face of the upper plenum surface.

502.1.4 Insulation:

502.1.4.1 General: All insulating materials shall comply with sections ((1712 and/or 1713)) 2602 and/or 707 of the Uniform Building Code. Substantial contact of the insulation with the surface being insulated is required. All insulation materials shall be installed according to the manufacturer's instructions to achieve proper densities(τ) and maintain uniform R-values. To the maximum extent possible, insulation shall extend over the full component area to the intended R-value.

502.1.4.2 Insulation Materials: All insulation materials including facings such as vapor barriers or breather papers installed within floor/ceiling assemblies, roof/ceiling assemblies, walls, crawl spaces, or attics shall have a flame spread rating of less than (~~twenty-five~~) 25 and a smoke density not to exceed (~~four hundred fifty~~) 450 when tested in accordance with UBC Standard (~~42-1~~) 8-1.

EXCEPTIONS:

1. Foam plastic insulation shall comply with section (~~4742~~) 2602 of the Uniform Building Code.
2. When such materials are installed in concealed spaces of Types III, IV(~~(c)~~) and V construction, the flame spread and smoke developed limitations do not apply to facing, provided that the facing is installed in substantial contact with the unexposed surface of the ceiling, floor(~~(s)~~) or wall finish.
3. Cellulose insulation shall comply with section (~~4743~~) 707 of the Uniform Building Code.

502.1.4.3 Clearances: Where required, insulation shall be installed with clearances according to manufacturer's specifications. Insulation shall be installed so that required ventilation is unobstructed. For blown or poured loose fill insulation, clearances shall be maintained through installation of a permanent retainer.

502.1.4.4 Access Hatches and Doors: Access doors from conditioned spaces to unconditioned spaces (e.g., attics and crawl spaces) shall be weatherstripped and insulated to a level equivalent to the insulation on the surrounding surfaces. Access shall be provided to all equipment which prevents damaging or compressing the insulation. A wood framed or equivalent baffle or retainer must be provided when loose fill insulation is installed, the purpose of which is to prevent the loose fill insulation from spilling into the living space when the attic access is opened, and to provide a permanent means of maintaining the installed R-value of the loose fill insulation.

502.1.4.5 Roof/Ceiling Insulation: Open-blown or poured (~~loose fill~~) loose fill insulation may be used in attic spaces where the slope of the ceiling is not more than (~~three~~) 3 feet in (~~twelve~~) 12 and there is at least (~~thirty~~) 30 inches of clear distance from the top of the bottom chord of the truss or ceiling joist to the underside of the sheathing at the roof ridge. When eave vents are installed, baffling of the vent openings shall be provided so as to deflect the incoming air above the surface of the insulation. Baffles shall be, rigid material, resistant to wind driven moisture. Requirements for baffles for ceiling insulation shall meet the Uniform Building Code section (~~3205(c)~~) 1505.3 for minimum ventilation requirements. When feasible, the baffles shall be installed from the top of the outside of the exterior wall, extending inward, to a point (~~six~~) 6 inches vertically above the height of noncompressed insulation, and (~~twelve~~) 12 inches vertically above loose fill insulation.

502.1.4.6 Wall Insulation: Insulation installed in exterior walls shall comply with the provisions of this section. All wall insulation shall fill the entire cavity. Exterior wall cavities isolated during framing shall be fully insulated to the levels of the surrounding walls. All faced insulation shall be face stapled to avoid compression.

502.1.4.7 Floor Insulation: Floor insulation shall be installed in a permanent manner in substantial contact with the

surface being insulated. Insulation supports shall be installed so spacing is no more than ~~((twenty-four))~~ 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.

EXCEPTION: Insulation may be omitted from floor areas over heated basements, heated garages~~((s))~~ or underfloor areas used as HVAC supply plenums. See Uniform Mechanical Code section ~~((4008))~~ 607 for underfloor supply plenum requirements. When foundation walls are insulated, the insulation shall be attached in a permanent manner. The insulation shall not block the airflow through foundation vents when installed. When foundation vents are not placed so that the top of the vent is below the lower surface of the floor insulation, a permanently attached baffle shall be installed at an angle of ~~((thirty-degrees))~~ 30° from horizontal, to divert air flow below the lower surface of the floor insulation.

502.1.4.8 Slab-On-Grade: Slab-on-grade insulation, installed inside the foundation wall, shall extend downward from the top of the slab for a minimum distance of ~~((twenty-four))~~ 24 inches or downward and then horizontally beneath the slab for a minimum combined distance of ~~((twenty-four))~~ 24 inches. Insulation installed outside the foundation shall extend downward to a minimum of ~~((twenty-four))~~ 24 inches or to the frostline. Above grade insulation shall be protected.

EXCEPTION: For monolithic slabs, the insulation shall extend downward from the top of the slab to the bottom of the footing.

502.1.4.9 Radiant Slabs: The entire area of a radiant slab shall be thermally isolated from the soil, with a minimum of R-10 insulation. The insulation shall be an approved product for its intended use. If a ~~((soil-gas))~~ soil gas control system is present below the radiant slab, which results in increased convective flow below the radiant slab, the radiant slab shall be thermally isolated from the sub-slab gravel layer.

502.1.4.10 ~~((Below-Grade))~~ Below Grade Walls: ~~((a-))~~ Below grade exterior wall insulation used on the exterior (cold) side of the wall shall extend from the top of the ~~((below-grade))~~ below grade wall to the top of the footing and shall be approved for ~~((below-grade))~~ below grade use. Above grade insulation shall be protected.

~~((b-))~~ Insulation used on the interior (warm) side of the wall shall extend from the top of the ~~((below-grade))~~ below grade wall to the ~~((below-grade))~~ below grade floor level.

502.1.5 Glazing and Door U-Values: Glazing and door U-values shall be determined in accordance with sections 502.1.5.1 and 502.1.5.2. All products shall be labeled with the NFRC certified or default U-value. The labeled U-value shall be used in all calculations to determine compliance with this Code. Sealed insulating glass shall conform to, or be in test for, ASTM E-774-81 class A.

~~((EXCEPTIONS:))~~

1. ~~Until December 31, 1994, the following products may be assigned a U value of 0.40 for the purposes of determining compliance with the electric resistance component performance path as determined by Equation 3 in WAC 51-11-0527:~~

~~A vinyl or wood double-pane window, excluding sliding glass doors, constructed with a minimum 1/2-inch air space between glazings and either a low-e glazing or an argon fill of no less than 90%.~~

~~The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy the electric resistance path in the Washington State Energy Code."~~

2. ~~Until December 31, 1994, the following products may be assigned a U value of 0.65 for the purposes of determining compliance with the other fuels component performance path as determined by Equation 3 in WAC 51-11-0527:~~

~~An aluminum, double-pane window, excluding sliding glass doors, constructed with a minimum 7/16 inch air space between glazings.~~

The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy the other fuels path in the Washington State Energy Code."

3. Log homes, in addition to the exceptions above, may utilize the following: Until December 31, 1994, the following products may be assigned a U-value of 0.31 for the purposes of determining compliance with the electric resistance or other fuels component performance path as determined by Equation 3 in WAC 51-11-0527:

A vinyl or wood double-pane window, excluding sliding glass doors, constructed with a minimum 1/2-inch air space between glazings and both a low-e glazing and an argon fill of no less than 90%.

The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy either the electric resistance path or the other fuels path for log homes in the Washington State Energy Code.")

502.1.5.1 Standard Procedure for Determination of Glazing U-Values: U-values for glazing shall be determined, certified and labeled in accordance with the National Fenestration Rating Council (NFRC) Product Certification Program (PCP), as authorized by an independent certification and inspection agency licensed by the NFRC. Compliance shall be based on Model Size AA. Product samples used for U-value determinations shall be production line units or representative of units as purchased by the consumer or contractor. Products that are listed in the NFRC Certified Products Directory or certified to the NFRC standard shall not use default values.

EXCEPTIONS:

1. Untested glazing products may be assigned default U-values from Table 10-6A.
2. Overhead glazing and units produced by a small business may be assigned default U-values from Table 10-6B.
3. Passive air inlets are not required to be part of the tested assembly.
4. Compliance for tested overhead glazing shall be based on NFRC Model Size BB.

502.1.5.2 Standard Procedure for Determination of Door U-Values: Half-lite and full-lite doors, including fire doors, shall be assigned default U-values from Table 10-6D. All other doors, including fire doors, shall be assigned default U-values from Table (s) 10-6C.

EXCEPTIONS:

1. U-values determined, certified and labeled in accordance with the National Fenestration Rating Council (NFRC) Product Certification Program (PCP), as authorized by an independent certification and inspection agency licensed by the NFRC.
2. The default values for the opaque portions of doors shall be those listed in Table 10-6C, provided that the U-value listed for a door with a thermal break shall only be allowed if both the door and the frame have a thermal break.
3. One unlabeled or untested exterior swinging door with the maximum area of 24 square feet may be installed for ornamental, security or architectural purposes. Products using this exception shall not be included in either the U-value or glazing area calculation requirements.

502.1.6 Moisture Control:

502.1.6.1 Vapor Retarders: Vapor retarders shall be installed on the warm side (in winter) of insulation as specified in the following cases.

EXCEPTION: Vapor retarder installed with not more than ((one-third)) 1/3 of the nominal R-value between it and the conditioned space.

502.1.6.2 Floors: Floors separating conditioned space from unconditioned space shall have a vapor retarder installed. The vapor retarder shall have a one perm dry cup rating or less (i.e., four mil((-)) [0.004 inch thick] polyethylene or kraft faced material).

502.1.6.3 Roof/Ceilings: Roof/ceiling assemblies where the ventilation space above the insulation is less than an average of ((twelve)) 12 inches shall be provided with a vapor retarder. Faced batt insulation where used as a vapor retarder shall be face stapled. Single rafter joist vaulted ceiling cavities shall be of

sufficient depth to allow a minimum one inch vented air space above the insulation.

502.1.6.4: Vapor retarders shall not be required in roof/ceiling assemblies where the ventilation space above the insulation averages (~~twelve~~) 12 inches or greater.

502.1.6.5: Vapor retarders shall not be required where all of the insulation is installed between the roof membrane and the structural roof deck.

502.1.6.6 Walls (~~Insulation~~): Walls separating conditioned space from unconditioned space shall have a vapor retarder installed. Faced batt insulation shall be face stapled.

502.1.6.7 Ground Cover: A ground cover of six mil (0.006 inch thick) black polyethylene or approved equal shall be laid over the ground within crawl spaces. The ground cover shall be overlapped (~~twelve~~) 12 inches minimum at the joints and shall extend to the foundation wall.

EXCEPTION: The ground cover may be omitted in crawl spaces if the crawl space has a concrete slab floor with a minimum thickness of (~~three-and-one-half~~) 3-1/2 inches.

502.2 Thermal Criteria for Group R Occupancy:

502.2.1 UA Calculations: The proposed UA as calculated using Equations 2 and 3 shall not exceed the target UA as calculated using Equation 1. For the purpose of determining equivalent thermal performance, the glazing area for the target UA shall be calculated using figures in Table 5-1, and all the glazing shall be located in the wall area. The opaque door area shall be the same in the target UA and the proposed UA.

Exception: Log and solid timber walls that have a minimum average thickness of 3.5" and with space heat type other than electric resistance, are exempt from wall target UA and proposed UA calculations.

502.2.2 Space Heat Type: The following two categories comprise all space heating types:

1. Electric Resistance: Space heating systems which include baseboard units, radiant units(τ) and forced air units as either the primary or secondary heating system.

EXCEPTION: Electric resistance systems for which the total electric heat capacity in each individual dwelling unit does not exceed the greater of: 1) One thousand watts (1000 w) per dwelling unit, or; 2) One watt per square foot (1 w/ft²) of the gross floor area.

2. Other: All gas, wood, oil(τ) and propane space heating systems, unless electric resistance is used as a secondary heating system, and all heat pump space heating systems. (See EXCEPTIONS, Electric Resistance, section 502.2.2 above.)

502.3 Reserved.

502.4 Air Leakage:

502.4.1 General: The requirements of this section shall apply to all buildings and structures, or portions thereof, and only to those locations separating outdoor ambient conditions from interior spaces that are heated or mechanically cooled.

502.4.2 Doors and Windows, General: Exterior doors and windows shall be designed to limit air leakage into or from the building envelope. Site-constructed doors and windows shall be sealed in accordance with Section 502.4.3.

502.4.3 Seals and Weatherstripping:

a. Exterior joints around windows and door frames, openings between walls and foundation, between walls and roof and wall panels; openings at penetrations of utility services through walls, floors((~~τ~~)) and roofs; and all other openings in the building envelope for all occupancies and all other openings in between units in R-1 occupancy shall be sealed, caulked, gasketed((~~τ~~)) or weatherstripped to limit air leakage.

b. All exterior doors or doors serving as access to an enclosed unheated area shall be weatherstripped to limit leakage around their perimeter when in a closed position.

c. Site built windows are exempt from testing but shall be made tight fitting. Fixed lights shall have glass retained by stops with sealant or caulking all around. Operating sash shall have weatherstripping working against overlapping trim((~~τ~~)) and a closer/latch which will hold the sash closed. The window frame to framing crack shall be made tight with caulking, overlapping membrane((~~τ~~)) or other approved technique.

d. Openings that are required to be fire resistive are exempt from this section.

502.4.4 Recessed Lighting Fixtures: When installed in the building envelope, recessed lighting fixtures shall meet one of the following requirements:

1. Type IC rated, manufactured with no penetrations between the inside of the recessed fixture and ceiling cavity and sealed or gasketed to prevent air leakage into the unconditioned space.

2. Type IC rated, installed inside a sealed box constructed from a minimum ((~~one-half~~)) 1/2 inch thick gypsum wall board, or constructed from a preformed polymeric vapor barrier, or other air tight assembly manufactured for this purpose.

3. Type IC rated, certified under ASTM E283 to have no more than 2.0 cfm air movement from the conditioned space to the ceiling cavity. The lighting fixture shall be tested at ((~~seventy-five~~)) 75 Pascals or 1.57 lbs/ft² pressure difference and have a label attached, showing compliance.

AMENDATORY SECTION (Amending WSR 92-01-140, filed 12/19/91, effective 7/1/92)

**TABLE 5-1
TARGET COMPONENT VALUES FOR GROUP R OCCUPANCY**

Component	Electric Resistance		Other Fuels	
	Climate Zone		Climate Zone	
	1	2	1	2
Glazing % Floor Area	15%	15%	15%	15%
Glazing U Factor	U = 0.400	U = 0.400	U = 0.650	U = 0.600
Doors	U = 0.200 (R-5)	U = 0.200 (R-5)	U = 0.400 (R-2.5)	U = 0.400 (R-2.5)
Coilings				
Attic	U = 0.031 (R-38)	U = 0.031 (R-38)	U = 0.036 (R-30)	U = 0.031 (R-38)
Single Rafter/ Joist Vaulted	U = 0.034 (R-30)	U = 0.034 (R-30)	U = 0.034 (R-30)	U = 0.034 (R-30)
Walls	U = 0.058 (R-19A)	U = 0.044 (R-19+5A)	U = 0.062 (R-19)	U = 0.062 (R-19+5)
Floors	U = 0.029 (R-30)	U = 0.029 (R-30)	U = 0.041 (R-19)	U = 0.029 (R-30)
Slab on Grade Slab R Value	F = 0.54 (R-10)	F = 0.54 (R-10)	F = 0.54 (R-10)	F = 0.54 (R-10)
Below Grade Interior				
Wall R Value	R-19	R-19	R-19	R-19
2' Depth: Walls	U = 0.043	U = 0.043	U = 0.043	U = 0.043
Slab	F = 0.69	F = 0.69	F = 0.69	F = 0.69
3.5' Depth: Walls	U = 0.041	U = 0.041	U = 0.041	U = 0.041
Slab	F = 0.64	F = 0.64	F = 0.64	F = 0.64
7' Depth: Walls	U = 0.037	U = 0.037	U = 0.037	U = 0.037
Slab	F = 0.57	F = 0.57	F = 0.57	F = 0.57
Below Grade Exterior				
Wall R Value	R-10	R-12	R-10	R-12
2' Depth: Walls	U = 0.070	U = 0.061	U = 0.070	U = 0.061
Slab	F = 0.60	F = 0.60	F = 0.60	F = 0.60
3.5' Depth: Walls	U = 0.064	U = 0.057	U = 0.064	U = 0.057
Slab	F = 0.57	F = 0.57	F = 0.57	F = 0.57
7' Depth: Walls	U = 0.056	U = 0.050	U = 0.056	U = 0.050
Slab	F = 0.42	F = 0.42	F = 0.42	F = 0.42

**TABLE 5-1
TARGET COMPONENT VALUES FOR GROUP R OCCUPANCY**

Component	Electric Resistance		Other Fuels	
	Climate Zone		Climate Zone	
	1	2	1	2
Glazing % Floor Area	15%	15%	15%	15%
Glazing U-Factor	U = 0.400	U = 0.400	U = 0.650	U = 0.600
Doors	U = 0.200 (R-5)	U = 0.200 (R-5)	U = 0.400 (R-2.5)	U = 0.400 (R-2.5)
Ceilings				
Attic	U = 0.031 (R-38)	U = 0.031 (R-38)	U = 0.036 (R-30)	U = 0.031 (R-38)
Single Rafter/ Joist Vaulted	U = 0.034 (R-30)	U = 0.034 (R-30)	U = 0.034 (R-30)	U = 0.034 (R-30)
Walls	U = 0.058 (R-19A)	U = 0.044 (R-19+5A)	U = 0.062 ¹ (R-19)	U = 0.062 ¹ (R-19)
Floors	U = 0.029 (R-30)	U = 0.029 (R-30)	U = 0.041 (R-19)	U = 0.029 (R-30)
Slab on Grade Slab R-Value	F = 0.54 (R-10)	F = 0.54 (R-10)	F = 0.54 (R-10)	F = 0.54 (R-10)
Below Grade Interior				
Wall R-Value	R-19	R-19	R-19	R-19
2' Depth: Walls	U = 0.043	U = 0.043	U = 0.043	U = 0.043
Slab	F = 0.69	F = 0.69	F = 0.69	F = 0.69
3.5' Depth: Walls	U = 0.041	U = 0.041	U = 0.041	U = 0.041
Slab	F = 0.64	F = 0.64	F = 0.64	F = 0.64
7' Depth: Walls	U = 0.037	U = 0.037	U = 0.037	U = 0.037
Slab	F = 0.57	F = 0.57	F = 0.57	F = 0.57
Below Grade Exterior				
Wall R-Value	R-10	R-12	R-10	R-12
2' Depth: Walls	U = 0.070	U = 0.061	U = 0.070	U = 0.061
Slab	F = 0.60	F = 0.60	F = 0.60	F = 0.60
3.5' Depth: Walls	U = 0.064	U = 0.057	U = 0.064	U = 0.057
Slab	F = 0.57	F = 0.57	F = 0.57	F = 0.57
7' Depth: Walls	U = 0.056	U = 0.050	U = 0.056	U = 0.050
Slab	F = 0.42	F = 0.42	F = 0.42	F = 0.42

1. Log and Solid Timber walls that have a minimum average thickness of 3.5" are exempt from wall Target UA and Proposed UA calculations.

WAC 51-11-0625 Table 6-1.

**TABLE 6-1
PRESCRIPTIVE REQUIREMENTS¹ FOR GROUP R OCCUPANCY
CLIMATE ZONE 1 • HEATING BY ELECTRIC RESISTANCE**

Option	Glazing % Floor Area	Glazing U Value	Doors ¹⁰ U Value	Ceiling ²	Vaulted Ceiling ³	Wall Above Grade	Wall* int ⁴ Below Grade	Wall* ext ⁴ Below Grade	Floor ⁵	Slab ^{4,6} Grade
I.	10%	0.46	0.40	R-38	R-30	R-21	R-21	R-10	R-30	R-10
II.	12%	0.43	0.20	R-38	R-30	R-19	R-19	R-10	R-30	R-10
III.	12%	0.40 ⁹	0.40	R-38	R-30	R-21	R-21	R-10	R-30	R-10
IV.*	15%	0.40 ⁹	0.20	R-38	R-30	R-19	R-19	R-10	R-30	R-10
V.	18%	0.39	0.20	R-38	R-30	R-21	R-21	R-10	R-30	R-10
VI.	21%	0.36	0.20	R-38	R-30	R-21	R-21	R-10	R-30	R-10
VII. ⁷	25%	0.32 ⁷	0.20	R-38	R-30	R-19+R-5 ⁸	R-21	R-10	R-30	R-10
VIII. ⁷	30%	0.29 ⁷	0.20	R-38	R-30	R-19+R-5 ⁸	R-21	R-10	R-30	R-10

* Reference Case

- 1 Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 19%, it shall comply with all of the requirements of the 21% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Requirement applies to all ceilings except single rafter or joist vaulted ceilings. 'Adv' denotes Advanced Framed Ceiling.
- 3 Requirement applicable only to single rafter or joist vaulted ceilings.
- 4 Below grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
- 7 The following options shall be applicable to buildings less than three stories: 0.35 maximum for glazing areas of 25% or less; 0.32 maximum for glazing areas of 30% or less.
- 8 This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing.
- 9 Until December 31, 1994, a vinyl or wood double pane window, excluding sliding glass doors, constructed with a minimum 1/2 inch air space between glazings, and either a low-e glazing or an argon fill of no less than 90%, shall be deemed to satisfy the glazing U value. The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy the electric resistance path in the Washington State Energy Code."
- 10 Doors, including all fire doors, shall be assigned default U values from Table 10-6C or 10-6D.

TABLE 6-1
PRESCRIPTIVE REQUIREMENTS¹ FOR GROUP R OCCUPANCY
CLIMATE ZONE 1 • HEATING BY ELECTRIC RESISTANCE

Option	Glazing % Floor Area	Glazing U-Value	Doors ⁹ U-Value	Ceiling ²	Vaulted Ceiling ³	Wall Above Grade	Wall• int ⁴ Below Grade	Wall• ext ⁴ Below Grade	Floor ⁵	Slab ⁴ on Grade
I.	10%	0.46	0.40	R-38	R-30	R-21	R-21	R-10	R-30	R-10
II.	12%	0.43	0.20	R-38	R-30	R-19	R-19	R-10	R-30	R-10
III.	12%	0.40	0.40	R-38	R-30	R-21	R-21	R-10	R-30	R-10
IV.*	15%	0.40	0.20	R-38	R-30	R-19	R-19	R-10	R-30	R-10
V.	18%	0.39	0.20	R-38	R-30	R-21	R-21	R-10	R-30	R-10
VI.	21%	0.36	0.20	R-38	R-30	R-21	R-21	R-10	R-30	R-10
VII. ⁷	25%	0.32 ⁷	0.20	R-38	R-30	R-19+R-5 ⁸	R-21	R-10	R-30	R-10
VIII. ⁷	30%	0.29 ⁷	0.20	R-38	R-30	R-19+R-5 ⁸	R-21	R-10	R-30	R-10

* Reference Case

- 1 Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 19%, it shall comply with all of the requirements of the 21% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Requirement applies to all ceilings except single rafter or joist vaulted ceilings. 'Adv' denotes Advanced Framed Ceiling.
- 3 Requirement applicable only to single rafter or joist vaulted ceilings.
- 4 Below grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
- 7 The following options shall be applicable to buildings less than three stories: 0.35 maximum for glazing areas of 25% or less; 0.32 maximum for glazing areas of 30% or less.
- 8 This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing.
- 9 Doors, including all fire doors, shall be assigned default U-values from Table 10-6C or 10-6D.

WAC 51-11-0626 Table 6-2.

**TABLE 6-2
PRESCRIPTIVE REQUIREMENTS¹ FOR GROUP R OCCUPANCY
CLIMATE ZONE 1 • HEATING BY OTHER FUELS**

Option	HVAC ⁹ Equip. Effie.	Glazing % Floor Area	Glazing U-Value	Doors ¹¹ U-Value	Ceiling ²	Vaulted Ceiling ³	Wall Above Grade	Wall• int ⁴ Below Grade	Wall• ext ⁴ Below Grade	Floor ⁵	Slab ⁶ on Grade
I.	Med.	10%	0.70	0.40	R-30	R-30	R-15	R-15	R-10	R-19	R-10
II.	Med.	12%	0.65 ¹⁰	0.40	R-30	R-30	R-15	R-15	R-10	R-19	R-10
III.	High	21%	0.75	0.40	R-30	R-30	R-19	R-19	R-10	R-19	R-10
IV.*	Med.	21%	0.65 ¹⁰	0.40	R-30	R-30	R-19	R-19	R-10	R-19	R-10
V.	Low	21%	0.60	0.40	R-30	R-30	R-19	R-19	R-10	R-19	R-10
VI. ⁷	Med.	25%	0.45 ⁷	0.40	R-38	R-30	R-19	R-19	R-10	R-25	R-10
VII. ⁷	Med.	30%	0.40 ⁷	0.40	R-30	R-30	R-19	R-19	R-10	R-25	R-10

* - Reference Case

- 1 Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 10%, it shall comply with all of the requirements of the 21% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Requirement applies to all ceilings except single rafter or joist vaulted ceilings. 'Adv' denotes Advanced Framed Ceiling.
- 3 Requirement applicable only to single rafter or joist vaulted ceilings.
- 4 Below-grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below-grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
- 7 The following options shall be applicable to buildings less than three stories: 0.50 maximum for glazing areas of 25% or less; 0.45 maximum for glazing areas of 30% or less.
- 8 This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing.
- 9 Minimum HVAC Equipment efficiency requirement. 'Low' denotes an AFUE of 0.74. 'Med.' denotes an AFUE of 0.78. 'High' denotes an AFUE of 0.88. Minimum HVAC Equipment efficiency requirement for heat pumps. 'Low' denotes an HSPF of 6.35. 'Med' denotes an HSPF of 6.8. 'High' an HSPF of 7.7. Water and ground source heat pumps shall be considered as medium efficiency and have a minimum COP as required in Table 5-7.
- 10 Until December 31, 1994, an aluminum, double-pane window, excluding sliding glass doors, constructed with a minimum 7/16 inch air space between glazings shall be deemed to satisfy the glazing U value. The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy the other fuels path in the Washington State Energy Code."
- 11 Doors, including all fire doors, shall be assigned default U-values from Table 10-6C or 10-6D.

TABLE 6-2
PRESCRIPTIVE REQUIREMENTS¹ FOR GROUP R OCCUPANCY
CLIMATE ZONE 1 • HEATING BY OTHER FUELS

Option	HVAC ⁹ Equip. Effic.	Glazing % Floor Area	Glazing U-Value	Doors ¹⁰ U-Value	Ceiling ²	Vaulted Ceiling ³	Wall Above Grade	Wall• int ⁴ Below Grade	Wall• ext ⁴ Below Grade	Floor ⁵	Slab ⁶ on Grade
I.	Med.	10%	0.70	0.40	R-30	R-30	R-15	R-15	R-10	R-19	R-10
II.	Med.	12%	0.65	0.40	R-30	R-30	R-15	R-15	R-10	R-19	R-10
III.	High	21%	0.75	0.40	R-30	R-30	R-19	R-19	R-10	R-19	R-10
IV.*	Med.	21%	0.65	0.40	R-30	R-30	R-19	R-19	R-10	R-19	R-10
V.	Low	21%	0.60	0.40	R-30	R-30	R-19	R-19	R-10	R-19	R-10
VI. ⁷	Med.	25%	0.45 ⁷	0.40	R-38	R-30	R-19	R-19	R-10	R-25	R-10
VII. ⁷	Med.	30%	0.40 ⁷	0.40	R-30	R-30	R-19	R-19	R-10	R-25	R-10

* Reference Case

- 1 Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 19%, it shall comply with all of the requirements of the 21% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Requirement applies to all ceilings except single rafter or joist vaulted ceilings. 'Adv' denotes Advanced Framed Ceiling.
- 3 Requirement applicable only to single rafter or joist vaulted ceilings.
- 4 Below grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
- 7 The following options shall be applicable to buildings less than three stories: 0.50 maximum for glazing areas of 25% or less; 0.45 maximum for glazing areas of 30% or less.
- 8 This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing.
- 9 Minimum HVAC Equipment efficiency requirement. 'Low' denotes an AFUE of 0.74. 'Med.' denotes an AFUE of 0.78. 'High' denotes an AFUE of 0.88. Minimum HVAC Equipment efficiency requirement for heat pumps. 'Low' denotes an HSPF of 6.35. 'Med' denotes an HSPF of 6.8. 'High' an HSPF of 7.7. Water and ground source heat pumps shall be considered as medium efficiency and have a minimum COP as required in Table 5-7.
- 10 Doors, including all fire doors, shall be assigned default U-values from Table 10-6C or 10-6D.

WAC 51-11-0627 Table 6-3.

**TABLE 6-3
PRESCRIPTIVE REQUIREMENTS¹ FOR GROUP R OCCUPANCY
CLIMATE ZONE 2 • HEATING BY ELECTRIC RESISTANCE**

Option	Glazing % Floor Area	Glazing U-Value	Doors ¹¹ U-value	Ceiling ²	Vaulted Ceiling ³	Wall Above Grade	Wall ⁴ int ⁴ Below Grade	Wall ⁴ ext ⁴ Below Grade	Floor ⁵	Slab ⁶ on Grade
I.	10%	0.38	0.20	R-38	R-30	R-21	R-21	R-12	R-30	R-10
II.	12%	0.40 ¹⁰	0.20	R-38	R-30	R-19+R-5 ⁸	R-21	R-12	R-25	R-10
III.*	15%	0.40 ¹⁰	0.20	R-38	R-30	R-19+R-5 ⁸	R-21	R-12	R-30	R-10
IV.	18%	0.38	0.20	R-38	R-30	R-19+R-5 ⁸	R-21	R-12	R-30	R-10
V. ⁷	21%	0.35	0.20	R-38 ^{Adv}	R-38	R-19+R-5 ⁸	R-21	R-12	R-30	R-10
VI. ⁷	25%	0.30 ⁷	0.20	R-49 ^{Adv}	R-38	R-19+R-5 ⁸	R-21	R-12	R-30	R-10
VII. ⁷	30%	0.28 ⁷	0.20	R-60 ^{Adv}	R-38	R-21+R-7.5 ⁹	R-21	R-12	R-30	R-10

* Reference Case

- 1 Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 19%, it shall comply with all of the requirements of the 21% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Requirement applies to all ceilings except single rafter or joist vaulted ceilings. 'Adv' denotes Advanced Framed Ceiling.
- 3 Requirement applicable only to single rafter or joist vaulted ceilings.
- 4 Below-grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below-grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
- 7 The following options shall be applicable to buildings less than three stories: 0.33 maximum for glazing areas of 25% or less; 0.31 maximum for glazing areas of 30% or less.
- 8 This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing.
- 9 This wall insulation requirement denotes R-21 wall cavity insulation plus R-7.5 foam sheathing.
- 10 Until December 31, 1994, a vinyl or wood double-pane window, excluding sliding glass doors, constructed with a minimum 1/2 inch air space between glazings, and either a low-e glazing or an argon fill of no less than 90%, shall be deemed to satisfy the glazing U-value. The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy the electric resistance path in the Washington State Energy Code."
- 11 Doors, including all fire doors, shall be assigned default U-values from Table 10-6C or 10-6D.

TABLE 6-3
PRESCRIPTIVE REQUIREMENTS¹ FOR GROUP R OCCUPANCY
CLIMATE ZONE 2 • HEATING BY ELECTRIC RESISTANCE

Option	Glazing % Floor Area	Glazing U-Value	Doors ¹⁰ U-value	Ceiling ²	Vaulted Ceiling ³	Wall Above Grade	Wall• int ⁴ Below Grade	Wall• ext ⁴ Below Grade	Floor ⁵	Slab ⁶ on Grade
I.	10%	0.38	0.20	R-38	R-30	R-21	R-21	R-12	R-30	R-10
II.	12%	0.40	0.20	R-38	R-30	R-19+R-5 ⁸	R-21	R-12	R-25	R-10
III.*	15%	0.40	0.20	R-38	R-30	R-19+R-5 ⁸	R-21	R-12	R-30	R-10
IV.	18%	0.38	0.20	R-38	R-30	R-19+R-5 ⁸	R-21	R-12	R-30	R-10
V. ⁷	21%	0.35	0.20	R-38 _{Adv}	R-38	R-19+R-5 ⁸	R-21	R-12	R-30	R-10
VI. ⁷	25%	0.30 ⁷	0.20	R-49 _{Adv}	R-38	R-19+R-5 ⁸	R-21	R-12	R-30	R-10
VII. ⁷	30%	0.28 ⁷	0.20	R-60 _{Adv}	R-38	R-21+R-7.5 ⁹	R-21	R-12	R-30	R-10

* Reference Case

- 1 Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 19%, it shall comply with all of the requirements of the 21% glazing ratio (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Requirement applies to all ceilings except single rafter or joist vaulted ceilings. 'Adv' denotes Advanced Framed Ceiling.
- 3 Requirement applicable only to single rafter or joist vaulted ceilings.
- 4 Below grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
- 7 The following options shall be applicable to buildings less than three stories: 0.33 maximum for glazing areas of 25% or less; 0.31 maximum for glazing areas of 30% or less.
- 8 This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing.
- 9 This wall insulation requirement denotes R-21 wall cavity insulation plus R-7.5 foam sheathing.
- 10 Doors, including all fire doors, shall be assigned default U-values from Table 10-6C or 10-6D.

WAC 51-11-0628 Table 6-4.

**TABLE 6-4
PRESCRIPTIVE REQUIREMENTS¹ FOR GROUP R OCCUPANCY
CLIMATE ZONE 2 • HEATING BY OTHER FUELS**

Option	HVAC ⁹ Equip. Effie.	Glazing % Floor Area	Glazing U-Value	Doors ¹¹ U-Value	Ceiling ³	Vaulted Ceiling ³	Wall Above Grade	Wall ⁴ int ⁴ Below Grade	Wall ⁴ ext ⁴ Below Grade	Floor ⁵	Slab ⁶ on Grade
I.	Med.	10%	0.70	0.40	R-38	R-30	R-19	R-19	R-12	R-25	R-10
II.	Med.	12%	0.65 ¹⁰	0.40	R-38	R-30	R-19	R-19	R-12	R-25	R-10
III.	High	17%	0.65 ¹⁰	0.40	R-38	R-30	R-19	R-19	R-12	R-25	R-10
IV.*	Med.	17%	0.60	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
V.	Low	17%	0.50	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
VI.	Med.	21%	0.50	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
VII.	Med.	25%	0.40 ⁷	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
VIII.	Med.	30%	0.40 ⁷	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10

* Reference Case

- 1 Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 19%, it shall comply with all of the requirements of the 21% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Requirement applies to all ceilings except single rafter or joist vaulted ceilings. 'Adv' denotes Advanced Framed Ceiling.
- 3 Requirement applicable only to single rafter or joist vaulted ceilings.
- 4 Below grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
- 7 The following options shall be applicable to buildings less than three stories: 0.45 maximum for glazing areas of 25% or less; 0.40 maximum for glazing areas of 30% or less.
- 8 This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing.
- 9 Minimum HVAC Equipment efficiency requirement. 'Low' denotes an AFUE of 0.74. 'Med.' denotes an AFUE of 0.78. 'High' denotes an AFUE of 0.88.
- 10 Until December 31, 1994, an aluminum, double pane window, excluding sliding glass doors, constructed with a minimum 7/16 inch air space between glazings shall be deemed to satisfy the glazing U value. The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy the other fuels path in the Washington State Energy Code."
- 11 Doors, including all fire doors, shall be assigned default U values from Table 10-6C or 10-6D.

TABLE 6-4
PRESCRIPTIVE REQUIREMENTS¹ FOR GROUP R OCCUPANCY
CLIMATE ZONE 2 • HEATING BY OTHER FUELS

Option	HVAC ⁹ Equip. Effic.	Glazing % Floor Area	Glazing U-Value	Doors ¹⁰ U-Value	Ceiling ²	Vaulted Ceiling ³	Wall Above Grade	Wall• int ⁴ Below Grade	Wall• ext ⁴ Below Grade	Floor ⁵	Slab ⁶ on Grade
I.	Med.	10%	0.70	0.40	R-38	R-30	R-19	R-19	R-12	R-25	R-10
II.	Med.	12%	0.65	0.40	R-38	R-30	R-19	R-19	R-12	R-25	R-10
III.	High	17%	0.65	0.40	R-38	R-30	R-19	R-19	R-12	R-25	R-10
IV.*	Med.	17%	0.60	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
V.	Low	17%	0.50	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
VI.	Med.	21%	0.50	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
VII.	Med.	25%	0.40 ⁷	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
VIII.	Med.	30%	0.40 ⁷	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10

* Reference Case

- 1 Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 19%, it shall comply with all of the requirements of the 21% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Requirement applies to all ceilings except single rafter or joist vaulted ceilings. 'Adv' denotes Advanced Framed Ceiling.
- 3 Requirement applicable only to single rafter or joist vaulted ceilings.
- 4 Below grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
- 7 The following options shall be applicable to buildings less than three stories: 0.45 maximum for glazing areas of 25% or less; 0.40 maximum for glazing areas of 30% or less.
- 8 This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing.
- 9 Minimum HVAC Equipment efficiency requirement. 'Low' denotes an AFUE of 0.74. 'Med.' denotes an AFUE of 0.78. 'High' denotes an AFUE of 0.88. Minimum HVAC Equipment efficiency requirement for heat pumps. 'Low' denotes an HSPF of 6.35. 'Med' denotes an HSPF of 6.8. 'High' an HSPF of 7.7. Water and ground source heat pumps shall be considered as medium efficiency and have a minimum COP as required in Table 5-7.
- 10 Doors, including all fire doors, shall be assigned default U-values from Table 10-6C or 10-6D.

WAC 51-11-0629 Table 6-5.

**TABLE 6-5
LOG HOMES PRESCRIPTIVE REQUIREMENTS¹
HEATING BY ELECTRIC RESISTANCE**

Option	Average ² Log Thickness	Glazing % Floor Area	Glazing U-Value	Doors ¹⁰ U-Value	Ceiling ³	Vaulted ⁴ Ceiling	Floor ⁵	Slab ⁶ on Grade
Climate Zone 1								
I. ⁷	5.5"	15%	0.31 ⁹	0.14	R-60 Adv	R-38	R-38	R-10
II. ⁷	7.5"	15%	0.40 ⁸	0.20	R-60 Adv	R-38	R-30	R-10
III.*	9.6"	15%	0.40 ⁸	0.20	R-38	R-30	R-30	R-10
Climate Zone 2								
IV. ⁷	6.7"	15%	0.31 ⁹	0.14	R-60 Adv	R-38	R-38	R-10
V. ⁷	8.7"	15%	0.40 ⁸	0.14	R-60 Adv	R-38	R-38	R-10
VI. ⁷	9.8"	15%	0.40 ⁸	0.20	R-60 Adv	R-38	R-30	R-10
VII. ⁷	10.5"	15%	0.40 ⁸	0.20	R-40 Adv	R-38	R-30	R-10
VIII.*	13.5"	15%	0.40 ⁸	0.20	R-38	R-30	R-30	R-10

* Reference Case

- 1 For Group R Occupancy use Table 6-5 for only the portion of floor area using log/solid timber walls. Use Tables 6-1 to 6-4 for all other portions of the floor area. Minimum requirements are for each option listed. Interpolations between options is not permitted. Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Required minimum average log thickness.
- 3 'Adv' denotes Advanced Framing. Requirement applies to all ceilings except single rafter joist vaulted ceilings.
- 4 Requirement applicable only to single rafter joist vaulted ceilings.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications.
- 7 These options shall be applicable to buildings less than three stories.
- 8 Until December 31, 1994, a vinyl or wood double pane window, excluding sliding glass doors, constructed with a minimum 1/2 inch air space between glazings, and either a low e glazing or an argon fill of no less than 90%, shall be deemed to satisfy the glazing U value. The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy the electric resistance path in the Washington State Energy Code."
- 9 Until December 31, 1994, a vinyl or wood double pane window, excluding sliding glass doors, constructed with a minimum 1/2 inch air space between glazings and both a low e glazing and an argon fill of no less than 90%, shall be deemed to satisfy the glazing U value. The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy either the electric resistance path or the other fuels path for log homes in the Washington State Energy Code."
- 10 Doors, including all fire doors, shall be assigned default U values from Table 10-6C or 10-6D.

TABLE 6-5
LOG HOMES PRESCRIPTIVE REQUIREMENTS¹
HEATING BY ELECTRIC RESISTANCE

Option	Average ² Log Thickness	Glazing % Floor Area	Glazing U-Value	Doors ⁸ U-Value	Ceiling ³	Vaulted ⁴ Ceiling	Floor ⁵	Slab ⁶ on Grade
Climate Zone 1								
I. ⁷	5.5"	15%	0.31	0.14	R-60 Adv	R-38	R-38	R-10
II. ⁷	7.5"	15%	0.40	0.20	R-60 Adv	R-38	R-30	R-10
III.*	9.6"	15%	0.40	0.20	R-38	R-30	R-30	R-10
Climate Zone 2								
IV. ⁷	6.7"	15%	0.31	0.14	R-60 Adv	R-38	R-38	R-10
V. ⁷	8.7"	15%	0.40	0.14	R-60 Adv	R-38	R-38	R-10
VI. ⁷	9.8"	15%	0.40	0.20	R-60 Adv	R-38	R-30	R-10
VII. ⁷	10.5"	15%	0.40	0.20	R-49 Adv	R-38	R-30	R-10
VIII.*	13.5"	15%	0.40	0.20	R-38	R-30	R-30	R-10

* Reference Case

- 1 For Group R Occupancy use Table 6-5 for only the portion of floor area using log/solid timber walls. Use Tables 6-1 to 6-4 for all other portions of the floor area. Minimum requirements are for each option listed. Interpolations between options is not permitted. Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Required minimum average log thickness.
- 3 'Adv' denotes Advanced Framing. Requirement applies to all ceilings except single rafter joist vaulted ceilings.
- 4 Requirement applicable only to single rafter joist vaulted ceilings.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications.
- 7 These options shall be applicable to buildings less than three stories.
- 8 Doors, including all fire doors, shall be assigned default U-values from Table 10-6C or 10-6D.

WAC 51-11-0630 Table 6-6.

**TABLE 6-6
LOG HOMES PRESCRIPTIVE REQUIREMENTS¹
HEATING BY OTHER FUELS**

Option	Average ² Log Thickness	Glazing % Floor Area	Glazing U-Value	Doors ¹¹ U-Value	Ceiling ³	Vaulted ⁴ Ceiling	Floor ⁵	Slab ⁶ on Grade
Climate Zone 1								
I. ⁷	3.5"	21%	0.40	0.39	R-49 Adv	R-38	R-30	R-10
II.	4.4"	21%	0.40	0.40	R-38	R-30	R-19	R-10
III.	5.2"	21%	0.50	0.40	R-38	R-30	R-19	R-10
IV.	6.5"	21%	0.60	0.40	R-38	R-30	R-19	R-10
V.	7.0"	21%	0.60	0.40	R-38	R-30	R-19	R-10
VI.*	8.2"	21%	0.65 ⁹	0.40	R-38	R-30	R-19	R-10
Climate Zone 2								
VII. ⁷	3.5"	17%	0.31 ¹⁰	0.14	R-60 Adv	R-38	R-38	R-10
VIII. ^{7,8}	3.5"	17%	0.40	0.40	R-60 Adv	R-38	R-30	R-10
IX. ⁷	4.6"	17%	0.40	0.40	R-60 Adv	R-38	R-30	R-10
X.	5.4"	17%	0.40	0.40	R-38	R-30	R-30	R-10
XI.	6.8"	17%	0.50	0.40	R-38	R-30	R-30	R-10
XII.*	9.0"	17%	0.60	0.40	R-38	R-30	R-30	R-10

* Reference Case

- 1 For Group R Occupancy use Table 6-6 for only the portion of floor area using log/solid timber walls. Use Tables 6-1 to 6-4 for all other portions of the floor area. Minimum requirements are for each option listed. Interpolations between options is not permitted. Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Required minimum average log thickness.
- 3 'Adv' denotes Advanced Framing. Requirement applies to all ceilings except single rafter joist vaulted ceilings.
- 4 Requirement applicable only to single rafter joist vaulted ceilings.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications.
- 7 These options shall be applicable to buildings less than three stories.
- 8 For this option, minimum HVAC system efficiency is an AFUE of 0.88.
- 9 Until December 31, 1994, an aluminum, double pane window, excluding sliding glass doors, constructed with a minimum 7/16 inch air space between glazings shall be deemed to satisfy the glazing U value. The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy the other fuels path in the Washington State Energy Code."
- 10 Until December 31, 1994, a vinyl or wood double pane window, excluding sliding glass doors, constructed with a minimum 1/2 inch air space between glazings and both a low e glazing and an argon fill of no less than 90%, shall be deemed to satisfy the glazing U value. The only labeling requirement for products using this exception shall be a description of the product, and a label stating: "This product is deemed to satisfy either the electric resistance path or the other fuels path for log homes in the Washington State Energy Code."
- 11 Doors, including all fire doors, shall be assigned default U values from Table 10-6C or 10-6D.

TABLE 6-6
LOG HOMES PRESCRIPTIVE REQUIREMENTS¹
HEATING BY OTHER FUELS

Climate Zone 1

Option	HVAC ⁹ Equip. Effic.	Glazing % Floor Area	Glazing U-Value	Doors ¹⁰ U-Value	Ceiling ²	Vaulted Ceiling ³	Wall Above Grade ¹¹	Wall• int ⁴ Below Grade	Wall• ext ⁴ Below Grade	Floor ⁵	Slab ⁶ on Grade
I.	Med.	10%	0.70	0.40	R-30	R-30	R-15	R-15	R-10	R-19	R-10
II.	Med.	12%	0.65	0.40	R-30	R-30	R-15	R-15	R-10	R-19	R-10
III.	High	21%	0.75	0.40	R-30	R-30	R-19	R-19	R-10	R-19	R-10
IV.*	Med.	21%	0.65	0.40	R-30	R-30	R-19	R-19	R-10	R-19	R-10
V.	Low	21%	0.60	0.40	R-30	R-30	R-19	R-19	R-10	R-19	R-10
VI. ⁷	Med.	25%	0.45 ⁷	0.40	R-38	R-30	R-19	R-19	R-10	R-25	R-10
VII. ⁷	Med.	30%	0.40 ⁷	0.40	R-30	R-30	R-19	R-19	R-10	R-25	R-10

Climate Zone 2

Option	HVAC ⁹ Equip. Effic.	Glazing % Floor Area	Glazing U-Value	Doors ¹⁰ U-Value	Ceiling ²	Vaulted Ceiling ³	Wall Above Grade ¹¹	Wall• int ⁴ Below Grade	Wall• ext ⁴ Below Grade	Floor ⁵	Slab ⁶ on Grade
I.	Med.	10%	0.70	0.40	R-38	R-30	R-19	R-19	R-12	R-25	R-10
II.	Med.	12%	0.65	0.40	R-38	R-30	R-19	R-19	R-12	R-25	R-10
III.	High	17%	0.65	0.40	R-38	R-30	R-19	R-19	R-12	R-25	R-10
IV.*	Med.	17%	0.60	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
V.	Low	17%	0.50	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
VI.	Med.	21%	0.50	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
VII.	Med.	25%	0.40 ⁸	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10
VIII.	Med.	30%	0.40 ⁸	0.40	R-38	R-30	R-19	R-19	R-12	R-30	R-10

* Reference Case

- 1 Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 19%, it shall comply with all of the requirements of the 21% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
- 2 Requirement applies to all ceilings except single rafter or joist vaulted ceilings. 'Adv' denotes Advanced Framed Ceiling.
- 3 Requirement applicable only to single rafter or joist vaulted ceilings.
- 4 Below grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
- 5 Floors over crawl spaces or exposed to ambient air conditions.
- 6 Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
- 7 The following options shall be applicable to buildings less than three stories: 0.50 maximum for glazing areas of 25% or less; 0.45 maximum for glazing areas of 30% or less.
- 8 The following options shall be applicable to buildings less than three stories: 0.45 maximum for glazing areas of 25% or less; 0.40 maximum for glazing areas of 30% or less.
- 9 Minimum HVAC Equipment efficiency requirement. 'Low' denotes an AFUE of 0.74. 'Med.' denotes an AFUE of 0.78. 'High' denotes an AFUE of 0.88. Minimum HVAC Equipment efficiency requirement for heat pumps. 'Low' denotes an HSPF of 6.35. 'Med' denotes an HSPF of 6.8. 'High' an HSPF of 7.7. Water and ground source heat pumps shall be considered as medium efficiency and have a minimum COP as required in Table 5-7.
- 10 Doors, including all fire doors, shall be assigned default U-values from Table 10-6C or 10-6D.
- 11 Log and solid timber walls with a minimum average thickness of 3.5" are exempt from this insulation requirement.

WAC 51-11-0900 Section 0900--Prescriptive heating system sizing. When using the prescriptive approach in Chapter 6, if approved by the building official, design heat load calculations are not required to show compliance to this Code if the heating system installed is equal to or less than the following:

Climate Zone ((F)) <u>1</u>	
Electric Resistance	21 ((btu/hr•ft ²)) <u>Btu/h•ft²</u>
Electric Resistance (Forced Air)	24 ((btu/hr•ft ²)) <u>Btu/h•ft²</u>
Other Fuels (Forced Air)	27 ((btu/hr•ft ²)) <u>Btu/h•ft²</u>
Climate Zone ((H)) <u>2</u>	
Electric Resistance	29 ((btu/hr•ft ²)) <u>Btu/h•ft²</u>
Electric Resistance (Forced Air)	32 ((btu/hr•ft ²)) <u>Btu/h•ft²</u>
Other Fuels (Forced Air)	39 ((btu/hr•ft ²)) <u>Btu/h•ft²</u>

Example: A 1500 ft² house in Zone ((F)) 1, heated with gas, would not have to submit a design heat load if the proposed furnace is 40,500 ((BTU)) Btu or less.

$$1500 \times 27 = 40,500$$

Disclaimer: All heating systems shall be designed and installed in accordance with Uniform Building Code Section ((1211)) 310.11.

WAC 51-11-1143 Inspections.

1143.1 General: All construction or work for which a permit is required shall be subject to inspection by the building official and all such construction or work shall remain accessible and exposed for inspection purposes until approved by the building official. No work shall be done on any part of the building or structure beyond the point indicated in each inspection without first obtaining the approval of the building official.

1143.2 Required Inspections: The building official, upon notification, shall make the inspection required in this Section, in addition to or as part of those inspections required in Section ((305(e))) 108.5 of the Uniform Building Code. Inspections may be conducted by special inspection pursuant to Section ((306(b) and 306(e))) 1701 of the Uniform Building Code. Where applicable, inspections shall include at least:

1143.2.1 Envelope

a. Wall Insulation Inspection: To be made after all wall insulation and air vapor retarder sheet or film materials are in place, but before any wall covering is placed.

b. Glazing Inspection: To be made after glazing materials are installed in the building.

c. Exterior Roofing Insulation: To be made after the installation of the roof insulation, but before concealment.

d. Slab/Floor Insulation: To be made after the installation of the slab/floor insulation, but before concealment.

1143.2.2 Mechanical

a. Mechanical Equipment Efficiency and Economizer: To be made after all equipment and controls required by this Code are installed and prior to the concealment of such equipment or controls.

b. Mechanical Pipe and Duct Insulation: To be made after all pipe and duct insulation is in place, but before concealment.

1143.2.3 Lighting and Motors

a. Lighting Equipment and Controls: To be made after the installation of all lighting equipment and controls required by this Code, but before concealment of the lighting equipment.

b. Motor Inspections: To be made after installation of all equipment covered by this Code, but (~~prior to~~) before concealment.

1143.3 Re-inspection: The building official may require a structure to be re-inspected. A re-inspection fee may be assessed for each inspection or re-inspection when such portion of work for which inspection is called is not complete or when corrections called for are not made.