



**2021 Oregon Residential Specialty Code**

**Table N1101.1(2) Additional Measures**

**PART I—ENERGY CONSERVATION**

**N1101.1 General.** The provisions of this chapter regulate the exterior envelope, as well as the design, construction and selection of heating, ventilating and air-conditioning systems, lighting and piping insulation required for the purpose of effective conservation of energy within a building or structure governed by this code. All conditioned spaces within residential buildings shall comply with Table N1101.1(1) and one additional measure from Table N1101.1(2).

**TABLE N1101.1(1)  
PRESCRIPTIVE ENVELOPE REQUIREMENTS<sup>a</sup>**

BUILDING COMPONENT	STANDARD BASE CASE		LOG HOMES ONLY	
	Required Performance	Equiv. Value <sup>b</sup>	Required Performance	Equiv. Value <sup>b</sup>
Wall insulation—above grade	U-0.059 <sup>c</sup>	R-21 Intermediate <sup>c</sup>	Note d	Note d
Wall insulation—below grade <sup>e</sup>	C-0.063	R-15 c.i. / R-21	C-0.063	R-15/R-21
Flat ceilings <sup>f</sup>	U-0.021	R-49	U-0.020	R-49 A <sup>h</sup>
Vaulted ceilings <sup>g</sup>	U-0.033	R-30 Rafter or R-30A <sup>g,h</sup> Scissor Truss	U-0.027	R-38A <sup>h</sup>
Underfloors	U-0.033	R-30	U-0.033	R-30
Slab-edge perimeter <sup>m</sup>	F-0.520	R-15	F-0.520	R-15
Heated slab interior <sup>i</sup>	n/a	R-10	n/a	R-10
Windows <sup>j</sup>	U-0.27	U-0.27	U-0.27	U-0.27
Skylights	U-0.50	U-0.50	U-0.50	U-0.50
Exterior doors <sup>k</sup>	U-0.20	U-0.20	U-0.54	U-0.54
Exterior doors with > 2.5 ft <sup>2</sup> glazing <sup>l</sup>	U-0.40	U-0.40	U-0.40	U-0.40

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m<sup>2</sup>, 1 degree = 0.0175 rad, n/a = not applicable.

- a. As allowed in Section N1104.1, thermal performance of a component may be adjusted provided that overall heat loss does not exceed the total resulting from conformance to the required U-factor standards. Calculations to document equivalent heat loss shall be performed using the procedure and approved U-factors contained in Table N1104.1(1).
- b. R-values used in this table are nominal for the insulation only in standard wood-framed construction and not for the entire assembly.
- c. Wall insulation requirements apply to all exterior wood-framed, concrete or masonry walls that are above grade. This includes cripple walls and rim joist areas. Nominal compliance with R-21 insulation and Intermediate Framing (N1104.5.2) with insulated headers.
- d. The wall component shall be a minimum solid log or timber wall thickness of 3.5 inches.
- e. Below-grade wood, concrete or masonry walls include all walls that are below grade and do not include those portions of such wall that extend more than 24 inches above grade. R-21 for insulation in framed cavity; R-15 continuous insulation.
- f. Insulation levels for ceilings that have limited attic/rafter depth such as dormers, bay windows or similar architectural features totaling not more than 150 square feet in area may be reduced to not less than R-21. When reduced, the cavity shall be filled (except for required ventilation spaces). R-49 insulation installed to minimum 6-inches depth at top plate at exterior of structure to achieve U-factor.
- g. Vaulted ceiling surface area exceeding 50 percent of the total heated space floor area shall have a U-factor no greater than U-0.026 (equivalent to R-38 rafter or scissor truss with R-38 advanced framing).
- h. A = Advanced frame construction. See Section N1104.6.
- i. Heated slab interior applies to concrete slab floors (both on and below grade) that incorporate a radiant heating system within the slab. Insulation shall be installed underneath the entire slab.
- j. Sliding glass doors shall comply with window performance requirements. Windows exempt from testing in accordance with Section NF1111.2, Item 3 shall comply with window performance requirements if constructed with thermal break aluminum or wood, or vinyl, or fiberglass frames and double-pane glazing with low-emissivity coatings of 0.10 or less. Buildings designed to incorporate passive solar elements may include glazing with a U-factor greater than 0.35 by using Table N1104.1(1) to demonstrate equivalence to building envelope requirements.
- k. A maximum of 28 square feet of exterior door area per dwelling unit can have a U-factor of 0.54 or less.
- l. Glazing that is either double pane with low-e coating on one surface, or triple pane shall be deemed to comply with this requirement.
- m. Minimum 24-inch horizontal or vertical below grade.



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Table N1101.1(2) Additional Measures**

ENERGY EFFICIENCY

TABLE N1101.1(2)  
ADDITIONAL MEASURES

1	<p><b>HIGH EFFICIENCY HVAC SYSTEM<sup>a</sup></b></p> <p>a. Gas-fired furnace or boiler AFUE 94%, or  b. Air source heat pump HSPF 10.0/14.0 SEER cooling, or  c. Ground source heat pump COP 3.5 or Energy Star rated</p>
2	<p><b>HIGH EFFICIENCY WATER HEATING SYSTEM</b></p> <p>a. Natural gas/propane water heater with minimum UEF 0.90, or  b. Electric heat pump water heater with minimum 2.0 COP, or  c. Natural gas/propane tankless/instantaneous heater with minimum 0.80 UEF and Drain Water Heat Recovery Unit installed on minimum of one shower/tub-shower</p>
3	<p><b>WALL INSULATION UPGRADE</b></p> <p>Exterior walls—U-0.045/R-21 conventional framing with R-5.0 continuous insulation</p>
4	<p><b>ADVANCED ENVELOPE</b></p> <p>Windows—U-0.21 (Area weighted average), and  Flat ceiling<sup>b</sup>—U-0.017/R-60, and  Framed floors—U-0.026/R-38 or slab edge insulation to F-0.48 or less (R-10 for 48"; R-15 for 36" or R-5 fully insulated slab)</p>
5	<p><b>DUCTLESS HEAT PUMP</b></p> <p>For dwelling units with all-electric heat provide:  Ductless heat pump of minimum HSPF 10 in primary zone replaces zonal electric heat sources, and  Programmable thermostat for all heaters in bedrooms</p>
6	<p><b>HIGH EFFICIENCY THERMAL ENVELOPE UA<sup>c</sup></b></p> <p>Proposed UA is 8 percent lower than the code UA</p>
7	<p><b>GLAZING AREA</b></p> <p>Glazing area, measured as the total of framed openings is less than 12 percent of conditioned floor area</p>
8	<p><b>3 ACH AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION</b></p> <p>Achieve a maximum of 3.0 ACH50 whole-house air leakage when third-party tested and provide a whole-house ventilation system including heat recovery with a minimum sensible heat recovery efficiency of not less than 66 percent</p>

For SI: 1 square foot = 0.093 m<sup>2</sup>, 1 watt per square foot = 10.8 W/m<sup>2</sup>.

- a. Appliances located within the building thermal envelope shall have sealed combustion air installed. Combustion air shall be ducted directly from the outdoors.
- b. The maximum vaulted ceiling surface area shall not be greater than 50 percent of the total heated space floor area unless vaulted area has a U-factor no greater than U-0.026.
- c. In accordance with Table N1104.1(1), the Proposed UA total of the Proposed Alternative Design shall be a minimum of 8 percent less than the Code UA total of the Standard Base Case.