2023 ORSC Residential Energy Efficiency

LAND MANAGEMENT DIVISION *3050 N DELTA HWY, EUGENE OR 97408*

The Oregon Residential Specialty Code, Section N1101.1, includes a requirement to provide one "additional measure" beyond the prescriptive envelope requirements for all conditioned spaces within residential buildings.

Applicability: The additional measure must be selected for all new construction. Certain alterations, additions and changes of occupancy must also comply with this requirement. Reference ORSC N1101.2-3 for additional details on the applicability of these tables.

References: Table N1101.1(1), included at the bottom of the page, outlines prescriptive envelope requirements. Table N1101.1(2), included on the back of this sheet, lists eight additional measures to choose from. Refer to Chapter 11 of the Oregon Residential Specialty Code for additional information.

Alternate System Proposals: Permit applicants will be asked to indicate which additional measures they intend to use and show all pertinent details and data as required by N1101.4. Alternate designs may be approved as long as the proposed design will not result in an increase in energy consumption. These alternate proposals must be accompanied by an energy analysis and are only allowed trade-offs between building envelope components in accordance with N1103.

TABLE N1101.1(1)
PRESCRIPTIVE ENVELOPE REQUIREMENTS[a]

BUILDING COMPONENT	STANDARD BASE CASE		LOG HOMES ONLY	
	Required Performance	Equiv.Value[b]	Required Performance	Equiv. Value[b]
Wall insulation-above grade	U-0.059 [c]	R-21 Intermediate[c]	Note d	Note d
Wall insulation-below grade[e]	C-0.063	R-15 c.i. / R-21	C-0.063	R-15/R-21
Flat ceilings[f]	U-0.021	R-49	U-0.020	R-49 A[h]
Vaulted ceilings[g]	U-0.033	R-30 Rafter or R-30A[g,h] Scissor Truss	U-0.027	R-38A[h]
Underfloors	U-0.033	R-30	U-0.033	R-30
Slab edge perimeter[l]	F-0.520	R-15	F-0.520	R-15
Heated slab interior[i]	n/a	R-10	n/a	R-10
Windows[j]	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[k]	U-0.20	U-0.20	U-0.54	U-0.54

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2, 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 be 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 .54 or less.
l. Minimum 24-inch horizontal or vertical below grade. The minimum total distance of 24 inches may be a combination of the horizontal and vertical planes. If a horizontal plane is used on the exterior of the slab, it must be a minimum of 12 inches below finished grade.

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TABLE N1101.1(2)
ADDITIONAL MEASURES

1	**HIGH EFFICIENCY HVAC SYSTEM[a]** a. Gas-fired furnace or boiler AFUE 94%, or b. Air source heat pump HSPF 10.0/14.0 SEER cooling, or 8.5 HSPF2 / 15.0 SEER2, or c. Ground source heat pump COP 3.5 or Energy Star rated
2	**HIGH EFFICIENCY WATER HEATING SYSTEM** a. Natural gas/propane water heater with minimum UEF 0.90, or b. Electric heat pump water heater with minimum 3.45 UEF, 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
3	**WALL INSULATION UPGRADE** Exterior walls – U-0.045/R-21 conventional framing with R-5.0 continuous insulation
4	**ADVANCED ENVELOPE** Windows – U-0.21 (Area weighted average), and Flat ceiling[b] – 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)
5	**DUCTLESS HEAT PUMP** For dwelling units with all-electric heat provide: Ductless heat pump of minimum HSPF 10 or HSPF2 9.0 in primary zone replaces zonal electric heat sources, and Programmable thermostat for all heaters in bedrooms
6	**HIGH EFFICIENCY THERMAL ENVELOP UA[c]** Proposed UA is 8 percent lower than the code UA
7	**2.75 ACH AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION** Achieve a maximum of 2.75 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 and total fan efficiency of 1.6 CFM/Watt (combined input for supply and exhaust).

For SI: 1 square foot = 0.093m^2, 1 watt per square foot = 10.8 W/m^2

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.

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