

2021 ORSC Prescriptive Energy Requirements

TABLE N1101.1(1)
PRESCRIPTIVE ENVELOPE REQUIREMENTS*

| 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 ^e | R-21 Intermediate ^c | Note d | Note d |
| Wall insulation—below grade ^e | C-0.063 | R-15 <u>c.i.</u> /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 ^m | 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>U-0.27</u> | <u>U-0.27</u> | <u>U-0.27</u> | <u>U-0.27</u> |
| 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 |
| Exterior doors with > 2.5 ft ² glazing ^l | U-0.40 | U-0.40 | U-0.40 | U-0.40 |

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m², 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 thermal 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.

2021 ORSC Additional Energy Measures

TABLE N1101.1(2)
ADDITIONAL MEASURES

| | |
|----------|--|
| 1 | HIGH EFFICIENCY HVAC SYSTEM^a a. Gas-fired furnace or boiler AFUE 94 percent, 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 |
| 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 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 |
| 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 in primary zone replaces zonal electric heat sources, and Programmable thermostat for all heaters in bedrooms |
| 6 | HIGH EFFICIENCY THERMAL ENVELOPE UA^c Proposed UA is 8 percent lower than the code UA |
| 7 | GLAZING AREA Glazing area, measured as the total of framed openings is less than 12 percent of conditioned floor area |
| 8 | 3 ACH AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION 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. |

For SI: 1 square foot = 0.093 m², 1 watt per square foot = 10.8 W/m².

- 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.