



2021 ORSC Residential Energy Form

RESIDENTIAL INFORMATION

Date: _____ Permit Number: _____
 Applicant's Name: _____ Signature: _____
 Job Address: _____ City: _____ State: _____ Zip: _____

INSTRUCTIONS

Please select type of construction below; sign, date, and complete the entire form. Submit this form with your permit application or your project will be placed on hold until the required information is provided.

- New construction.** All conditioned spaces within residential buildings must comply with Table N1101.1(1) and one additional measure from Table N1101.1(2) on page 2.
- Additions.** Additions to existing buildings or structures may be made without making the entire building or structure comply if the new additions comply with the requirements of this chapter. (N1101.3)
- Large additions.** Additions that are equal to 600 square feet (55 m²) in area must comply with Table N1101.1(2) on page 2. (N1101.3.1) *(Note: You must select one measure.)*
- Small additions.** Additions that are less than 600 square feet in area must select one measure from Table N1101.1(2) on page 2 or comply with Table N1101.3 on page 2. (N1101.3.2)
- Exception:** Additions that are less than 225 square feet in area are not required to comply with Table N1101.1(2) or Table N1101.3.

- Change of use or occupancy**
 See additional information on page 3 of this document for further clarification.

Alterations and Repairs

Note: N1101.2.3 change of occupancy or use. Definition of "Change of use" for purposes of Section N1101.2.3 is a change of use in an existing residential building and shall include any of the following: any unconditioned spaces such as an attached garage, basement, porch, or canopy that are to become conditioned spaces; any unconditioned, inhabitable space that is to become conditioned space, such as a large attic.

N1101.2.3.1 Change of use. See section N1101.2.3.2 Change of occupancy. See section.

**TABLE N1101.2
EXISTING BUILDING COMPONENT REQUIREMENTS**

BUILDING COMPONENT	REQUIRED PERFORMANCE	EQUIVALENT VALUE
Wall insulation	U-0.083	R-15
Flat ceiling	U-0.025	R-49
Vaulted ceiling > 10 inches nominal rafter depth	U-0.040	R-25
Vaulted ceiling > 8 inches nominal rafter depth	U-0.047	R-21
Underfloor > 10 inches nominal joist depth	U-0.028	R-30
Underfloor > 8 inches nominal joist depth	U-0.039	R-25
Slab-edge perimeter	F-0.52	R-15
Windows	U-0.30	U-0.30
Skylights	U-0.50	U-0.50
Exterior doors	U-0.20	R-5
Exterior doors with > 2.5ft ² glazing	U-0.40	R-2.5
Forced air ducts	n/a	R-8

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

TABLE N1101.3 – SMALL ADDITION ADDITIONAL MEASURES (SELECT ONE)

<input type="checkbox"/>	1	Increase the ceiling insulation of the existing portion of the home as specified in Table N1101.2.
<input type="checkbox"/>	2	Replace all existing single-pane wood or aluminum windows to be U-value as specified in Table N1101.2.
<input type="checkbox"/>	3	Insulate the existing floor, crawl space or basement wall systems as specified in Table N1101.2 and install 100 percent of permanently installed lighting fixtures as CFL, LED or linear fluorescent, or a minimum efficacy of 40 lumens per watt as specified in Section N1107.2.
<input type="checkbox"/>	4	Test the entire dwelling with blower door and exhibit no more than 4.5 air changes per hour @ 50 Pascals.
<input type="checkbox"/>	5	Seal and performance test the duct system.
<input type="checkbox"/>	6	Replace existing 80 percent AFUE or less gas furnace with a 92 percent AFUE or greater system.
<input type="checkbox"/>	7	Replace existing electric radiant space heaters with a ductless mini-split system with a minimum HSPF of 10.0.
<input type="checkbox"/>	8	Replace existing electric forced air furnace with an air source heat pump with a minimum HSPF of 9.5.
<input type="checkbox"/>	9	Replace existing water heater with a water heater meeting: <ul style="list-style-type: none"> • Natural gas/propane water heater with minimum UEF 0.90, or • Electric heat pump water heater with minimum 2.0 COP

TABLE N1101.1(2) ADDITIONAL MEASURES

1	HIGH EFFICIENCY HVAC SYSTEM 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
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 – 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 • Programmable thermostat for all heaters in bedrooms
6	HIGH EFFICIENCY THERMAL ENVELOPE UA 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

Choose one of the following methods to meet the Mechanical Whole-House Ventilation System requirements (see BCD technical bulletin)

<input type="checkbox"/>	Supply and exhaust fans providing continuously-operating, balanced, WHV without a furnace.
<input type="checkbox"/>	Supply and exhaust fans providing continuously-operating, balanced, WHV with a furnace.
<input type="checkbox"/>	Central Fan Integrated Supply (CFIs) continuously-operating, balanced WHV. Furnace serves as the intake fan. Shall be interlocked with exhaust system and an override switch.
<input type="checkbox"/>	Heat recovery/energy recovery ventilation providing continuously-operating, balanced, WHV. Supply may be connected to the central furnace return air.
<input type="checkbox"/>	Other approved method detailed on the construction documents. Reference page number _____.

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 / R-30 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-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
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 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.

N1101.2.3 Change of occupancy or use.

Definition of "change of use" for purposes of Section N1101.2.3 is a change of use in an existing residential building and shall include any of the following: any unconditioned spaces such as an attached garage, basement, porch, or canopy that are to become conditioned spaces; any unconditioned, inhabitable space that is to become *conditioned space*, such as a large attic.

N1101.2.3.1 Change of use.

A building that changes use, without any changes to the components regulated in this chapter, is required to comply with Table N1101.2 to the greatest extent practical. Changes of use that are greater than 30 percent of the existing building heated floor area or more than 400 square feet (37 m²) in area, whichever is less, shall be required to select one measure from Table N1101.3.

N1101.2.3.2 Change of occupancy.

Alteration and repair of conditioned nonresidential buildings, such as a small church or school, that are changing occupancy to residential *dwelling*s shall use Table N1101.2 to the greatest extent practical and select one measure from Table N1101.1(2) or N1101.3.

Exception: The minimum component requirements shall be disregarded when thermal performance calculations are completed for change of use to Group R-3 occupancy, when such calculations demonstrate similar performance to the requirements of Table N1101.2.

N1101.4 Information on plans and specifications.

Plans and specifications shall show in sufficient detail all pertinent data and features of the building and the equipment and systems as herein governed, including, but not limited to: exterior envelope component materials; R-values of insulating materials; *fenestration U-factors*; HVAC equipment efficiency performance and system controls; lighting; an additional measure from Table N1101.1(2); and the other pertinent data to indicate compliance with the requirements of the chapter.