



# Residential Energy Additional Measure Selection

Department of Consumer and Business Services

## Building Codes Division

1535 Edgewater NW, Salem, Oregon

Mailing address: P.O. Box 14470, Salem, OR 97309-0404

503-373-1210 • Fax: 503-378-3656

Web: bcd.oregon.gov

### RESIDENTIAL INFORMATION

Date: \_\_\_\_\_ Building permit number: \_\_\_\_\_

Owner's name: \_\_\_\_\_

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 two additional measures (one numbered and one lettered) 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 or more than 40 percent of the existing building heated floor area or 600 square feet (55 m<sup>2</sup>) in area, whichever is less, must comply with Table N1101.1(2) on page 2. (N1101.3.1) (*Note: You must select one numbered **and** one lettered measure.*)

**Small additions.** Additions that are less than 40 percent of the existing building heated floor area or less than 600 square feet in area, whichever is less, must select one measure from Table N1101.1(2) on page 2 or comply with Table N1101.3 below. (N1101.3.2)

**Exception:** Additions that are less than 15 percent of existing building heated floor area or 200 square feet (18.58 m<sup>2</sup>) in area, whichever is less, are not required to comply with Table N1101.1(2) or Table N1101.3.

**Selected item number:** \_\_\_\_\_ **Selected item letter:** \_\_\_\_\_

*Note: Depending on which Additional Measures you have selected, there may be sub-options that you will have to specify. Check the appropriate box if provided.*

Applicant's signature: \_\_\_\_\_ Print name: \_\_\_\_\_

### 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 floor system as specified in Table N1101.2 and install 50 percent of permanently installed lighting fixtures as CFL or linear fluorescent or min. 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 7.0 air changes per hour @ 50 Pascals.
<input type="checkbox"/>	5	Seal and performance test the duct system.
<input type="checkbox"/>	6	Replace existing 78 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 8.5.
<input type="checkbox"/>	8	Replace existing electric forced air furnace with an air source heat pump with a minimum HSPF of 8.5.
<input type="checkbox"/>	9	Replace existing water heater for a natural gas/propane water heater with a minimum EF of 0.67.
<input type="checkbox"/>	10	Install a solar water heating system with a minimum of 40 square feet of gross collector area.

**TABLE N1101.1(2) ADDITIONAL MEASURES**

<input type="checkbox"/>	<b>1</b>	<p><b>High-efficiency walls and windows:</b>                  Exterior walls-U-0.047/R-19+5 (insulation sheathing)/SIPS, and one of the following options:  <input type="checkbox"/> Windows – Max 15 percent of conditioned area, or  <input type="checkbox"/> Windows – U-0.30</p>
<input type="checkbox"/>	<b>2</b>	<p><b>High-efficiency envelope:</b>                  Exterior walls – U-0.058/R-21 Intermediate framing, and                  Vaulted ceilings – U-0.033/R-30A<sup>d, e</sup>, and                  Flat ceilings – U-0.025/R-49, and                  Framed floors – U-0.025/R-38, and                  Windows – U-0.30; and  <input type="checkbox"/> Doors – All doors U-0.20, or  <input type="checkbox"/> Additional 15 percent of permanently installed lighting fixtures as high-efficacy lamps or  <input type="checkbox"/> Conservation Measure D and E</p>
<input type="checkbox"/>	<b>3</b>	<p><b>High-efficiency ceiling, window and duct sealing (Cannot be used with Conservation Measure E)</b>                  Vaulted ceilings – U-0.033/R-30A<sup>d, e</sup>, and                  Flat ceiling – U-0.025/R-49, and                  Windows – U-0.30, and Performance tested duct systems<sup>b</sup></p>
<input type="checkbox"/>	<b>4</b>	<p><b>High-efficiency thermal envelope UA:</b>                  Proposed UA is 15 percent lower than the Code UA when calculated in Table N1104.1(1)</p>
<input type="checkbox"/>	<b>5</b>	<p><b>Building tightness testing, ventilation and duct sealing:</b>                  A mechanical exhaust, supply, or combination system providing whole-building ventilation rates specified in Table N1101.1(3), or ASHRAE 62.2, and                  The dwelling must be tested with a blower door and found to exhibit no more than  <input type="checkbox"/> 1. 6.0 air changes per hour<sup>f</sup> and  <input type="checkbox"/> 2. Performance tested duct systems<sup>b</sup></p>
<input type="checkbox"/>	<b>6</b>	<p><b>Duct tested HVAC systems within conditioned space:</b> (Cannot be used with Conservation Measure B or C)                  All ducts and air handler are contained within building envelope<sup>i</sup></p>
<input type="checkbox"/>	<b>A</b>	<p><b>High-efficiency HVAC system:</b>  <input type="checkbox"/> Gas-fired furnace or boiler with minimum AFUE of 90 percent a, or <input type="checkbox"/> Air-source heat pump with minimum HSPF of 8.5 or  <input type="checkbox"/> Closed-loop ground source heat pump with minimum COP of 3.0</p>
<input type="checkbox"/>	<b>B</b>	<p><b>Ducted HVAC systems within conditioned space:</b>                  All ducts and air handler are contained within building envelope<sup>j</sup></p>
<input type="checkbox"/>	<b>C</b>	<p><b>Ductless heat pump:</b>                  Replace electric resistance heating in at least the primary zone of dwelling with at least one ductless mini-split heat pump having a minimum HSPF of 8.5. Unit must not have integrated backup resistance heat, and the unit (or units, if more than one is installed in the dwelling) must be sized to have capacity to meet the entire dwelling design heat loss rate at outdoor design temperature condition. Conventional electric resistance heating may be provided for any secondary zones in the dwelling. A packaged terminal heat pump (PTHP) with comparable efficiency ratings may be used when no supplemental zonal heaters are installed in the building and integrated backup resistance heat is allowed in a PTHP</p>
<input type="checkbox"/>	<b>D</b>	<p><b>High-efficiency water heating and lighting:</b>                  Natural gas/propane, on-demand water heating with minimum EF of 0.80, or heat pump water heater with minimum EF of 1.8 (northern climate) and a minimum 75 percent of permanently installed lighting fixtures as CFL or linear fluorescent or a minimum efficacy of 40 lumens per watt as specified in Section N1107. 2<sup>c</sup></p>
<input type="checkbox"/>	<b>E</b>	<p><b>Energy management device and duct sealing</b>                  Whole building energy management device that is capable of monitoring or controlling energy consumption, and                  Performance tested duct systems<sup>b</sup>, and                  A minimum 75 percent of permanently installed fixtures as high efficacy lamps</p>
<input type="checkbox"/>	<b>F</b>	<p><b>Solar photovoltaic:</b>                  Minimum 1 watt/sq. ft. conditioned floor space<sup>g</sup></p>
<input type="checkbox"/>	<b>G</b>	<p><b>Solar water heating:</b>                  Minimum of 40 ft<sup>2</sup> of gross collector area<sup>h</sup></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. Furnaces located within the building envelope must have sealed combustion air installed. Combustion air must be ducted directly from the outdoors.
- b. Documentation of Performance Tested Ductwork shall be submitted to the building official upon completion of work. This work shall be performed by a technician certified by the Performance Tested Comfort Systems (PTCS) program administered by the Bonneville Power Administration (BPA), documentation shall be proved that work demonstrates conformance to PTCS duct performance standards.
- c. Section N1107.2 requires 50 percent of permanently installed lighting fixtures to contain high efficacy lamps. Each of these additional measures adds an additional percent to the Section N1107.2 requirement.
- d. A = advanced frame construction, which must provide full required ceiling insulation value to the outside of exterior walls.
- e. The maximum vaulted ceiling surface area must 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.
- f. Building tightness test must be conducted with a blower door depressurizing the dwelling 50 Pascal's from ambient conditions. Documentation of blower door test must be submitted to the Building Official upon completion of work.
- g. Solar electric system size must include documentation indicating that Total Solar Resource Fraction is not less than 75 percent.
- h. Solar water heating panels must be Solar Rating and Certification Corporation (SRCC) Standard OG-300 certified and labeled, with documentation indicating that Total Solar Resource Fraction is not less than 75 percent.
- i. A total of 5 percent of an HVAC systems ductwork must be permitted to be located outside of the conditioned space. Ducts located outside the conditioned space must have insulation installed as required in this code.