State of Oregon
Building Codes Division
Better Buildings for Oregon

Additional Measures Required Options

TABLE N1101.1(2)
ADDITIONAL MEASURES

Envelope Enhancement Measure (Select One)	1	**High efficiency walls & windows:** Exterior walls – U-0.047 / R-19+5 (insulation sheathing) / SIPS, and Windows – Max 15% of conditioned area; or Windows-U-0.30
	2	**High efficiency envelope:**
		Exterior walls – U-0.058 / R-21 Intermediate framing, and Vaulted ceilings – U-0.033 / R-30A [d, e], and Flat ceilings – U-0.025 / R-49, and Framed floors – U-0.025 / R-38, and Windows – U-0.30; and Doors- All doors U-0.20, or Additional 15 percent of permanently installed lighting fixtures as high-efficacy lamps or Conservation Measure D and E
	3	**High efficiency ceiling, windows & duct sealing:** (Cannot be used with Conservation Measure E)
		Vaulted ceilings – U-0.033 / R-30A [d, e], and Flat ceilings – U-0.025 / R-49, and Windows-U-0.30 Windows- U-0.30, and Performance tested duct systems [b]
	4	**High efficiency thermal envelope UA:**
		Proposed UA is 15% lower than the Code UA when calculated in Table N1104.1(1)
	5	**Building tightness testing, ventilation & duct sealing:** (Cannot be used with Conservation Measure E)
		A mechanical exhaust, supply, or combination system providing whole-building ventilation rates specified in Table 1101.1(3), or ASHRAE 62.2, and The dwelling shall be tested with a blower door and found to exhibit no more than: 1. 6.0 air changes per hour [f], and Performance tested duct systems [b]
	6	**Ducted HVAC systems within conditioned space:** (Cannot be used with Conservation Measure B or C)
		All ducts and air handler are contained within building envelope [i]

Conservation Measure (Select One)		
	A	**High efficiency HVAC system:**
		Gas-fired furnace or boiler with minimum AFUE of 90% [a], or Air-source heat pump with minimum HSPF of 8.5 or Closed-loop ground source heat pump with minimum COP of 3.0
	B	**Ducted HVAC systems within conditioned space:**
		All ducts and air handler are contained within building envelope [i]
	C	**Ductless heat pump:**
		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 shall not have integrated backup resistance heat, and the unit (or units, if more than one is installed in the dwelling) shall 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 resistant heat is allowed in a PTHP.
	D	**High efficiency water heating & lighting:**
		Natural gas/propane, on-demand water heating with min EF of 0.80, and A minimum 75 percent of permanently installed lighting fixtures as CFL or linear fluorescent or a min efficacy of 40 lumens per watt as specified in Section N1107.2 [c]
	E	**Energy management device & duct sealing:**
		Whole building energy management device that is capable of monitoring or controlling energy consumption, and Performance tested duct systems [b], and A minimum 75 percent of permanently installed lighting fixtures as high-efficacy lamps.
	F	**Solar photovoltaic:**
		Minimum 1 watt / sq ft conditioned floor space [g]
	G	**Solar water heating:**
		Minimum of 40 ft^2 of gross collector area [h]

For SI: 1 square foot = 0.093 m_2, 1 watt per square foot = 10.8 W/m_2.

a. Furnaces located within the building envelope shall have sealed combustion air installed. Combustion air shall 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 contractor certified by the Oregon Department of Energy's (ODOE) Residential Energy Tax Credit program and documentation shall be provided that work demonstrates conformance to ODOE 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 shall provide full required ceiling insulation value to the outside of exterior walls.
e. 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.
f. Building tightness test shall be conducted with a blower door depressurizing the dwelling 50 Pascal's from ambient conditions. Documentation of blower door test shall be submitted to the Building Official upon completion of work.
g. Solar electric system size shall include documentation indicating that Total Solar Resource Fraction is not less than 75 percent.
h. Solar water heating panels shall 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 shall be permitted to be located outside of the conditioned space. Ducts located outside the conditioned space shall have insulation installed as required in this code.

One measure should be selected from the Envelope Enhancements table (1 through 6) and one measure from the Conservation Measure table (A through G)

The following text is excerpted from Chapter 11 of the 2011 Oregon Residential Specialty Code

N1101.1 General. The provisions of this chapter regulate the exterior envelope; 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 two additional measure from Table N1101.1(2).

Exceptions:

1. Application to existing buildings shall comply with Section N1101.2.
2. Application to additions shall comply with Section N1101.3.

N1107.2 High-efficiency interior lighting systems. A minimum of 50 percent of the permanently installed lighting fixtures shall contain high-efficacy lamps. Screw-in compact fluorescent lamps comply with this requirement.

The building official shall be notified in writing at the final inspection that a minimum of 50 percent of the permanently installed lighting fixtures have met this requirement.

Information presented in this publication supports the Oregon Residential Specialty Code http://ecodes.biz/ecodes_support/free_resources/Oregon/11_Residential/11_ORResidential_main.html. This publication does not include all code requirements. Refer to the code and check with your code official for additional requirements.

This publication was originally prepared by Alan Seymour, Energy Code Analyst, Oregon Department of Energy and updated by the Building Codes Division.

This pamphlet is one in a series that describes residential energy conservation requirements of the Oregon Residential Specialty Code and Energy Efficiency Specialty Code. Other pamphlets in this series may be downloaded from Oregon Building Codes Division website at http://www.bcd.oregon.gov/programs/energy.html or local building departments.

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