



# Table 1104.1(2): Residential Thermal Performance Calculations

**TABLE N1104.1(2)  
RESIDENTIAL THERMAL PERFORMANCE CALCULATIONS**

BUILDING COMPONENTS <sup>b</sup>	Base Path 1 <sup>a</sup>			Proposed alternative			
	Areas <sup>c</sup>	U-factor	Areas x U	R-value <sup>d</sup>	Areas <sup>c</sup>	U-factor <sup>e</sup>	Areas x U
Flat ceilings		0.031					
Vaulted ceilings <sup>f</sup>		0.033					
Conventional wood-framed walls		0.060					
Windows <sup>g</sup>							
A. If glazing area is greater than 13 percent of heated space floor area	Take-off area	0.40					
B. If glazing is less than 13 percent of heated space floor area and trade-off is desired	13% of floor area	0.40					
Skylights		0.50					
Exterior doors		0.20					
Underfloor		0.032					
Slab edge		(perimeter ft. =) F=0.52 <sup>h</sup>					
	<b>CODE UA =</b>			<b>Proposed UA<sup>i</sup> =</b>			

- <sup>a</sup> Base path 1 represents Prescriptive Compliance Path 1 from Table N1104.1(1).
- <sup>b</sup> Performance trade-offs are limited to those listed in column 1. Heat plant efficiency, duct insulation levels, passive and active solar heating, and similar measures may not be considered in this method of calculation.
- <sup>c</sup> Areas from plan take-offs. All areas must be the same for both Path 1 and Proposed Alternate, except for window areas allowed in footnote g below. The vaulted ceiling area for Base Path 1 must be the actual area from the plan take-off not to exceed 50 percent of the heated space floor area. Any areas in excess of 50 percent for Base Path 1 must be entered at U-0.031 (R-38) with "Flat Ceilings" area. The skylight area for Base Path 1 must be the actual area from the plan take-off, not to exceed 2 percent of the heated space floor area. Any areas in excess of 2 percent for Base Path 1 must be entered at 0.40, with "Windows" area. A maximum of 28 square feet (2.6 m<sup>2</sup>) of exterior door area per dwelling unit can have a U-factor of 0.54 or less and shall not be included in calculations. Default U-factor for an unglazed wood door is 0.54.
- <sup>d</sup> Minimum Component Requirements: Walls R-15; Floors R-21; Flat Ceilings R-38; Vaults R-21; Below-Grade Wood, Concrete or Masonry Walls R-15; Slab Edge R-10; Duct Insulation R-8. R-values used in this table are nominal, for the insulation only and not for the entire assembly. Window and skylight U-values shall not exceed 0.65 (CL65). Door U-factors shall not exceed 0.54 (Nominal R-2). The wall component for Path 9 shall be a minimum solid log or timber wall thickness of 3.5 inches (88.9 mm).
- <sup>e</sup> U-factors for wood frame ceilings, walls and floor assemblies shall be as specified in Table N1104.1(3). U-factors for other assemblies, which include brick or other masonry, stucco, etc., shall be calculated using standard ASHRAE procedures.
- <sup>f</sup> Vaulted area, unless insulated to R-38, may not exceed 50 percent of the total heated space floor area.
- <sup>g</sup> Component U-factors trade-offs may be made against window area in detached single family dwellings or rowhouses when window area is less than 13 percent of heated space floor area. The base window area in this case shall be set at 13 percent of the heated space floor area.
- <sup>h</sup> F=The heat loss coefficient, BTU/hr./ft.<sup>2</sup>/°F. per foot (w/m<sup>3</sup>-k) of perimeter.
- <sup>i</sup> Proposed UA must be less than or equal to Code UA.

Information presented in this publication supports the Oregon Residential Specialty Code, or Chapter 13 of the Oregon Structural Specialty Code. This publication does not include all code requirements. Refer to the code and check with your code official for additional requirements. If information in this publication conflicts with code or your local officials, follow requirements of code and your local officials.

For more information about the residential energy code, call the Building Codes Division at (503)378-4133 or the Oregon Dept of Energy (503)378-4040 in Salem or toll-free, 1-800-221-8035.

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