Yakima County Public Services

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2021 IRC Chapter 11 Energy Efficiency - Prescriptive Compliance Form

Yakima County Climate Zone - 5B

TABLE N1102.1.3 (R402.1.3)

INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

Please provide the manufacturers' specifications for the exterior doors, windows and skylights based on the below energy requirement:

CLIMATE ZONE	FENESTRATION U-FACTOR[b, i]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION	CEILING R-VALUE	WOOD FRAME WALL R-	MASS WALL R-VALUE[h]	FLOOR R-VALUE	BASEMENT[c,g] WALL R-	SLAB[d] R-VALUE & DEPTH	CRAWL SPACE[c,g] WALL R-
5 and Marine 4	0.30	0.55	0.40	60	30 or 20&5ci[h] or 13&10ci[h] or	13/17	30	15ci or 19 or 13&5ci	10ci, 4 ft	15ci or 19 or 13&5ci

For SI: 1 foot = 304.8 mm.
NR = Not Required.
ci = continuous insulation.

a. R-values are minimums. U-factors and SHGC are maximums. Where insulation is installed in a cavity that is less than the label or design thickness of the insulation, the installed R-value of the insulation shall be not less than the R-value specified in the table.
b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
   Exception: In Climate Zones 0 through 3, skylights shall be permitted to be excluded from glazed fenestration SHGC requirements provided that the SHGC for such skylights does not exceed 0.30.
c. "5ci or 13" means R-5 continuous insulation (ci) on the interior or exterior surface of the wall or R-13 cavity insulation on the interior side of the wall. "10ci or 13" means R-10 continuous insulation (ci) on the interior or exterior surface of the wall or R-13 cavity insulation on the interior side of the wall. "15ci or 19 or 13&5ci" means R-15 continuous insulation (ci) on the interior or exterior surface of the wall; or R-19 cavity insulation on the interior side of the wall; or R-13 cavity insulation on the interior of the wall in addition to R-5 continuous insulation on the interior or exterior surface of the wall.
d. R-5 insulation shall be provided under the full slab area of a heated slab in addition to the required slab edge insulation R-value for slabs. as indicated in the table. The slab-edge insulation for heated slabs shall not be required to extend below the slab.
e. There are no SHGC requirements in the Marine Zone.
f. Basement wall insulation shall not be required in Warm Humid locations as defined by Figure N1101.7 and Table N1101.7.
g. The first value is cavity insulation; the second value is continuous insulation. Therefore, as an example, "13&5" means R-13 cavity insulation plus R-5 continuous insulation.
h. Mass walls shall be in accordance with Section N1102.2.5. The second R-value applies where more than half of the insulation is on the interior of the mass wall.
i. A maximum U-factor of 0.32 shall apply in Climate Zones 3 through 8 to vertical fenestration products installed in buildings located either:
   1. Above 4,000 feet in elevation, or
   2. In windborne debris regions where protection of openings is required by Section R301.2.1.2.

SECTION N1108 (R408)

ADDITIONAL EFFICIENCY PACKAGE OPTIONS

The following page outlines five efficiency package options designed to meet energy compliance requirements. Please review these options and select one that best suits your needs. Upon selection, please provide the manufacturers' specifications for the chosen option.

N1108.1 (R408.1) Scope.

This section establishes additional efficiency package options to achieve additional energy efficiency in accordance with Section N1101.13.5.

N1108.2 (R408.2) Additional efficiency package options.

Additional efficiency package options for compliance with Section N1101.13.5 are set forth in Sections N1108.2.1 through N1108.2.5.

☐ **Option #1**

N1108.2.1 (R408.2.1) Enhanced envelope performance option.

The total building thermal envelope UA, the sum of U-factor times assembly area, shall be less than or equal to 95 percent of the total UA resulting from multiplying the U-factors in Table N1102.1.2 by the same assembly area as in the proposed building. The UA calculation shall be performed in accordance with Section N1102.1.5. The area-weighted average SHGC of all glazed fenestration shall be less than or equal to 95 percent of the maximum glazed fenestration SHGC in Table N1102.1.2.

☐ **Option #2**

N1108.2.2 (R408.2.2) More efficient HVAC equipment performance option.

Heating and cooling equipment shall meet one of the following efficiencies:

☐ 1. Greater than or equal to 95 AFUE natural gas furnace and 16 SEER air conditioner.

☐ 2. Greater than or equal to 10 HSPF/16 SEER air source heat pump.

☐ 3. Greater than or equal to 3.5 COP ground source heat pump. For multiple cooling systems, all systems shall meet or exceed the minimum efficiency requirements in this section and shall be sized to serve 100 percent of the cooling design load. For multiple heating systems, all systems shall meet or exceed the minimum efficiency requirements in this section and shall be sized to serve 100 percent of the heating design load.

☐ **Option #3**

N1108.2.3 (R408.2.3) Reduced energy use in service water-heating option.

The hot water system shall meet one of the following efficiencies:

☐ 1. Greater than or equal to 0.82 EF fossil fuel service water-heating system.

☐ 2. Greater than or equal to 2.0 EF electric service water-heating system.

☐ 3. Greater than or equal to 0.4 solar fraction solar water-heating system.

☐ **Option #4**

N1108.2.4 (R408.2.4) More efficient duct thermal distribution system option.

The thermal distribution system shall meet one of the following efficiencies:

☐ 1. 100 percent of ducts and air handlers located entirely within the building thermal envelope.

☐ 2. 100 percent of ductless thermal distribution system or hydronic thermal distribution system located completely inside the building thermal envelope.

☐ 3. 100 percent of duct thermal distribution system located in conditioned space as defined by Section N1103.3.2.

☐ **Option #5**

N1108.2.5 (R408.2.5) Improved air sealing and efficient ventilation system option.

The measured air leakage rate shall be less than or equal to 3.0 ACH50, with either an Energy Recovery Ventilator (ERV) or Heat Recovery Ventilator (HRV) installed. Minimum HRV and ERV requirements, measured at the lowest tested net supply airflow, shall be greater than or equal to 75 percent Sensible Recovery Efficiency (SRE), less than or equal to 1.1 cubic feet per minute per watt (0.03 m^3/min/watt) and shall not use recirculation as a defrost strategy. In addition, the ERV shall be greater than or equal to 50 percent Latent Recovery/Moisture Transfer (LRMT).