

Chapter 9: WSEC Chapter 9 Credits

[901]

Additional Residential Energy Efficiency Requirements

The 2009 *Washington State Energy Code* (WSEC) now requires that all *International Residential Code* (IRC) defined occupancies develop one credit from Chapter 9, Table 9-1, if complying prescriptively or when using the component performance approach. If complying with IRC Chapter 4, *Systems Analysis*, compliance is accomplished by demonstrating that the proposed building's annual energy use is 8 percent less than the target building.

Table 9-1 includes 14 options, with various measures ranging from .5 credits to 3 credits. Options must be chosen to total one credit for the project.

HVAC Equipment

There are four options for credits related to HVAC equipment efficiency and location:

- **High Efficiency HVAC Equipment: 1 credit**
You can obtain 1 credit if you install a 92 percent or higher Annual Fuel Utilization Efficiency (AFUE) gas, propane or oil-fired furnace or boiler or an air-source heat pump with a minimum Heating Season Performance Factor (HSPF) of 8.5. There is no minimum Seasonal Energy Efficiency Ratio (SEER) requirement for heat pumps to claim this credit.
- **High Efficiency HVAC Equipment: 2 credits**
2 credits are obtained for installing a closed loop ground source heat pump with a minimum Coefficient of Performance (COP) of 3.3 or better. Even though the WSEC calls out a ground source

heat pump for this credit, a water source heat pump with the same efficiency or higher should also be granted 2 credits.

- **High Efficiency HVAC Equipment: 1 credit**

1 credit can be taken for installing a ductless split system heat pump with zonal control. To satisfy the requirements for this credit, it has to be installed in a house with zonal electric heat and the heat pump must supply heat to at least one zone. For example, the ductless heat pump could be installed in the main living area of the house with electric resistance heat (baseboard or wall units) in the bedrooms.

- **High Efficiency HVAC Distribution System: 1 credit**

1 credit is obtained when all HVAC components, including both the furnace and ductwork, are installed inside the conditioned space. Combustion equipment must be direct vent or sealed combustion. This credit is not allowed if ductwork or the air handler is located in a conditioned crawl space. Also, this credit cannot be taken for a structure heated with an electric resistance system such as baseboards or electric wall heaters. Direct combustion equipment cannot be less than 80 percent AFUE to claim this credit.

Building Envelope

Three options are available for making the building envelope more efficient. Prescriptive packages can be used in Climate Zone 1 only.

- **Efficient Building Envelope 1: .5 credit**

.5 credits are allowed if the building envelope is improved in Climate Zone 1 to:

- Windows U-.28 (area weighted average)
- Floor R-38
- Slab-on-grade R-10 fully insulated
- Below grade slab R-10 fully insulated

Or you may use the component performance approach. If the structure has at least a 5 percent reduction in UA from the target house, .5 credits are obtained.

- **Efficient Building Envelope 2: 1 credit**

1 credit is gained by improving the building envelope in Climate Zone 1 to:

- Windows U-.25 (area weighted average)
- Floor R-38
- Slab-on-grade R-10 fully insulated
- Below grade slab R-10 fully insulated
- R-21+R-5 below grade basement walls. This measure requires R-21 cavity insulation with R-5 foam sheathing on the exterior of the below grade wall.

Or you may use the component performance approach. If the structure has at least a 15 percent reduction in UA from the target house, 1 credit is obtained.

- **Super-Efficient Building Envelope 3: 2 credits**

2 credits are allowed for improving the building envelope in Climate Zone 1 to:

- Windows U-.22.
- Walls R-21+R-12. This measure requires R-21 cavity insulation and R-12 exterior foam sheathing.
- Floor R-38.
- Slab-on-grade R-10 fully insulated.
- Below grade slab R-10 fully insulated.
- R-21+R-12 below grade basement walls. This measure requires R-21 cavity insulation with R-12 foam sheathing on the exterior of the below grade wall.

Or you may use the component performance approach. If the structure has at least a 30 percent reduction in UA from the target house, 2 credits are obtained.

Air Leakage Control

There are two options for tightening the building envelope and reducing air leakage. Because the leakage rate of the house is being reduced, the whole house ventilation system must be provided by a heat recovery ventilator (HRV) to take either of these credits.

- **Air Leakage Control and Efficient Ventilation: .5 credit**

If the specific leakage area (SLA) of the house is reduced to .00020 from the standard code maximum SLA of .00030, .5 credits are obtained.

Documentation of the test results are recorded on the certificate posted at the house (See Figure 5-7 in Chapter 5). An HRV must also be installed to claim this credit.

- **Additional Air Leakage Control and Efficient Ventilation: 1 credit**

1 credit is allowed if the SLA of the house is further reduced to .00015. As with the previous credit, documentation of the test results are recorded on the certificate posted at the house. An HRV must also be installed to claim this credit.

Water Heating Equipment

Two options are available for water heating equipment and/or components.

- **Efficient Water Heating: .5 credit**

.5 credits are given when installing a minimum .62 Energy Factor (EF) gas, propane or oil water heating equipment. If installing an electric water heater, a minimum EF of .93 or higher is required for this credit. In addition, all showerheads and kitchen sink faucets need to be rated for 1.75 gallons per minute (GPM) or less. All other lavatory faucets need to be rated at 1.0 GPM or less.

- **High Efficiency Water Heating: 1.5 credits**

1.5 credits are given if **one** of the following is met:

- The water heating system includes a minimum of .82 EF gas, propane or oil water heater. This is likely going to be an on-demand or 'tankless' type of system.

- Solar water heating can be installed to supplement a standard water heater. It must provide a rated minimum savings of at least 85 therms or 2,000 kWh. Savings are based on the Solar Rating Certification Corporation (SRCC) Annual Performance of OG-300 Certified Solar Water Heating Systems. Their website is:
www.solarrating.org/ratings/ratings.htm
Credits for an electric heat pump water heater are allowed if the unit has a minimum EF of 2.0.

House Size

House size credits and debits are given based on the size of the house.

- **Small Dwelling Unit: 1 credit**

1 credit is given to houses less than 1,500 square feet. and with a maximum window and door area of 300 square feet. This credit also applies to additions less than 750 square feet.

- **Large Dwelling Unit: -1 credit**

Minus (-) 1 credit is assessed as a deficit for houses exceeding 5,000 square feet. This means that houses over 5,000 square feet need to get two credits from Chapter 9 to satisfy Chapter 9 requirements.

Renewable Electric Energy Production

Up to 3 credits are available for renewable electric energy production.

- **Renewable Electric Energy: .5 credit**

.5 to 3 credits are allowed for every 1,200 kWh of annual electrical generation for on-site solar or wind. A documentation method is outlined in Chapter 9 of the WSEC, see Option 8 in Table 9-1.