

City of Edmonds Developing Green



2009 Energy Code Update

Effective January 1, 2011

WASHINGTON STATE ENERGY CODE (WSEC): The following are changes to the energy code that are the most likely to impact proposed residential HVAC and construction work:

Furnace Replacement:

- Duct testing of existing ducts is required when a furnace air handler is replaced (there are exceptions).

The contractor is required to test the system and provide the test results to the building official and the homeowner. It is up to the homeowner to decide if they want to seal their duct system. For additional information go to the SBCC website at:

<https://fortress.wa.gov/ga/apps/sbcc/default.aspx>

A sample duct test result form (**duct leakage affidavit**) can be found at:

<http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode.aspx>

New Construction:

- A **certificate of energy features** of the residence is required to be posted.
- For new construction, a **blower door** building air leakage test is required. Testing standards and sample testing affidavits can be found through the link above.
- **Duct testing** is required for all new HVAC systems with ducts located in unconditioned spaces. Testing standards and sample testing affidavits can be found through the link above.
- **Programmable thermostats** are required on all *primary* heating systems, with exceptions for occupancy sensors and maximum 2 hour timer controls.
- Ducts located in ceiling and floor space cannot displace required insulation levels.
- **Building cavities** cannot be used as ducts (i.e. no return air unlined joist bays).
- **Spray foam insulation** with a minimum R-value of 3.6 per inch is deemed to comply with the required R-21 prescriptive requirement when installed in a 5.5 inch cavity.
- Chapter 9 “Additional Residential Energy Efficiency Requirements” has been added to the WSEC. This is a list of 15 options with various **credits** for each measure. New homes will need to achieve one credit in addition to the base code requirements.
- Fifty percent of luminaires must be **compact fluorescent light bulbs**.

- For **mechanical ventilation** requirements see WAC 51-51 (IRC with state amendments) section 1507, and for **whole house ventilation** requirements see section 1508 at the following website: <http://apps.leg.wa.gov/WAC/default.aspx?cite=51-51>
- The “Builder’s Field Guide” and various forms for the 2009 Residential energy code can be downloaded or filled out at the website: <http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode.aspx>

Prescriptive Method (2009 WSEC Chapter 6)

For the Washington State Energy Code, the prescriptive approach is the simplest method of code compliance. First meet all the minimum insulation levels required by one of the options in Table 6.1, then choose an additional credit from Chapter 9, and the project complies with the building envelope requirements.

**TABLE 6-1
PRESCRIPTIVE REQUIREMENTS^{0,1} FOR SINGLE-FAMILY RESIDENTIAL
CLIMATE ZONE 1**

Option	Glazing Area ¹⁰ , % of Floor	Glazing U-Factor		Door ⁹ U-Factor	Ceiling ²	Vaulted Ceiling ³	Wall ¹² Above Grade	Wall• int ⁴ Below Grade	Wall• ext ⁴ Below Grade	Floor ⁵	Slab ⁶ on Grade
		Vertical	Overhead ¹¹								
I.	13%	0.34	0.50	0.20	R-49 or R-38 adv	R-38	R-21 int ⁷	R-21 TB	R-10	R-30	R-10 2'
II.*	25%	0.32	0.50	0.20	R-49 or R-38 adv	R-38	R-21 int ⁷	R-21 TB	R-10	R-30	R-10 2'
III.	Unlimited	0.30	0.50	0.20	R-49 or R-38 adv	R-38	R-21 int ⁷	R-21 TB	R-10	R-30 / U=0.029	R-10 2'

* Reference Case

There are 12 additional footnotes to this table which can be found on the energy code website.

“Adv” in Table 6-1 means “advanced ceiling framing” where the full depth of the ceiling insulation is maintained clear to the outside of the exterior wall. This usually involves the use of high heel roof trusses and taller bird blocking.

An alternate to the Prescriptive Method is the **Component Performance Approach** found in WSEC chapter 5, which allows tradeoffs in order to achieve average energy code compliance. Excel spreadsheets are available online to help perform the necessary calculations: <http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode.aspx>. Select CP Worksheet , Climate Zone 1.

The third option for complying with the current energy code is building design by **Systems Analysis**. This method, from Chapter 4, requires an energy analysis comparison report and is based on a simulated software program, see Chapter 8. The building will comply if projected energy consumption is 16% less than a similar building conforming to the criteria in chapter 5.