



The Washington State Energy Code (WSEC) requires a Code Compliance Certificate be permanently posted in all new dwelling units, per Section R401.3, including individual apartment units. The Certificate shall be completed (typically prior to occupancy) by the “builder or other approved party and posted in the space where the furnace is located, a utility room, or an approved location inside the building.” The Certificate also provides important documentation related to the operations and maintenance instructions as required in Section R303.3 *Maintenance information*.

The Certificate helps the builder and other stakeholders to confirm compliance with many (but not all) of the key WSEC-R requirements. Authorities Having Jurisdictions (AHJ) can compare information on the Certificate with approved design documents and on-site information. It provides critical information for the building owner, such as insulation installation, duct air sealing and testing &/or envelope testing affidavits or other documentation, and forms available at [www.energycode.energy.wsu.edu](http://www.energycode.energy.wsu.edu). As well, a Certificate may provide helpful information for obtaining financing and insurance.

The WSEC 2018 Certificate has ten parts, discussed in the sections below:

- Property and builder/design professional information
- R-values of walls, ceilings/roof, and floor, etc.
- Tested or default U-values of windows, skylights and doors
- Fuel normalization and energy credits
- Heating, cooling and domestic hot water manufacturer and model
- Onsite renewable energy electric power systems and energy savings documentation
- Appliance manufacturer and model (refrigeration, dishwasher and clothes dryer)
- HVAC system duct leakage testing affidavit
- Building leakage testing test results form
- Whole house ventilation system commissioning information

Forms and affidavits to provide documentation of the information on the Certificate are available at [www.energycode.energy.wsu.edu](http://www.energycode.energy.wsu.edu) and through manufacturers of testing and insulation.

### Property and Builder/Design Professional Information

<b>Property address:</b> _____
<b>Builder/registered design professional name:</b> _____
<b>Builder/reg. design pro. signature:</b> _____
<b>Conditioned floor area:</b> _____ ft <sup>2</sup> (per building permit)

In this section, provide the following information:

- Property address or other information associated with the permit, as determined by the AHJ
- Builder’s or registered design professional’s name
- Conditioned floor area of the permitted project

The certificate shall be signed in the space provided by the builder or registered design professional completing it.



### R-Values (R303.1.1)

In this section on R-values and the following section on U-values, the primary components of the dwelling unit's exterior shell (or "building envelope") and their insulation values are summarized.

<b>R-Values (R303.1.1)</b>			
Ceiling/ attic	Vaulted R-_____	Floors:	Over unconditioned space R-_____
	Attic R-_____		Slab-on-grade floor R-_____
Walls:	Above grade R-_____	Fully insulated slab? Y/N (Circle one)	
	Below, int. R-_____	Doors:	R-_____, R-_____, R-_____
	Below, ext. R-_____		

Provide R-values of insulation installed in or on the ceiling or roof, walls (above-grade, below-grade interior, and below-grade exterior, as applicable), floors over unconditioned spaces and slab-on-grade foundations (as applicable), and doors. Where there is more than one value for a component, provide the R-value covering the largest area.

In answering the question "Fully insulated slab?" for slab-on-grade foundations, circle Y (yes) if it is fully insulated or N (no) if it is insulated only at the perimeter.

### U-Values of Windows, Skylights and Doors (Section R301.1.3)

Enter the area weighted U-value for windows, skylights and doors, as calculated using the Glazing Worksheet, available for download at: <http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode.aspx>.

<b>U-Value of Windows, Skylights and Doors (R303.1.1.3)</b>	
Average area weighted U-value from Glazing Worksheet	Average U-_____

U-values for individual windows, skylights and doors entered in the Glazing Worksheet may be default values obtained from Appendix A of the WSEC or the NFRC rating of the installed units. NFRC ratings may be obtained from manufacturer's product information or from the [NFRC's Certified Products Directory](#).





### Fuel Normalization (Table R406.2) and Energy Credits (Table R406.3)

Each dwelling unit shall include sufficient options from Table R406.3 to achieve a certain number of energy credits, which varies depending on the size and type of the dwelling unit. The fuel normalization credit, selected from Table R406.2, is an adjustment to account for the carbon emission differences between fuels.

***Fuel Normalization (Tables R406.2) and Energy Credits (Table R406.3)***

System Type Number (1 to 5) \_\_\_\_\_ (Select One)

Energy Credits selected (1 to 7) \_\_\_\_\_

Fuel Normalization Credit \_\_\_\_\_ + Total Energy Credits \_\_\_\_\_ = Total Credits \_\_\_\_\_

Enter the primary heating system type number (1-5) from Table R406.2. List all the Energy Credit Options implemented by number (1-7) per Table R406.3. Add the fuel normalization credit and the total energy credits to obtain the total credits.

### Heating, Cooling and Domestic Hot Water

Summarize the types and efficiencies of the heating, cooling and hot water systems in this section.

<i>Heating, Cooling and Domestic Hot Water</i>		
<i>System</i>	<i>Type (Make and Manufacturer Model Number)</i>	<i>Efficiency</i>
Heating		
Cooling		
DHW		
Drain water heat recovery		

Specify the make and manufacturer's model numbers or system types and their efficiencies for the primary space heating, cooling and water heating equipment installed. If there is more than one unit, specify the system serving the largest area.

To verify the equipment efficiency with the make and model number of the field-installed furnaces, heat pumps and water heaters, go to the [AHRI website](#), select the Product Type (e.g. Residential Furnace), and search on the manufacturer and model number. Then click the link under "AHRI Certified Reference Number" to download the AHRI Certificate.

If a drain water heat recovery unit is installed, refer to Option 5.1 in Table R406.3 for efficiency and other installation requirements. The Passive House Institute maintains a [list of drain water heat recovery systems](#), including their efficiencies.



ahridirectory.org/NewSearch?programId=24&searchTypeId=3

AHRI Directory of Certified Product Performance [we make life better®](#)

Search By:    AHRI Reference #  Model Number  [Additional Resources ▾](#)

AHRI Certified Ratings													
AHRI Certified Reference Number	Old AHRI Reference Number	Model Status	Brand Name	Series Name	Model Number	Energy Source	Heater Type	Usage Bin	First Hour Rating (GPH)	Max GPM	Uniform Energy Factor	Nominal Capacity (gal)	DOE Rated Storage Volume (gal)
████████████████	████████████████	Active	████████████████	████████████████	████████████████	Heat Pump with Tank	Storage	Medium Usage	67	████████████████	3.55	50	45
████████████████	████████████████	Active	████████████████	████████████████	████████████████	Heat Pump with Tank	Storage	Medium Usage	67	████████████████	3.55	50	45

Quick Search Criteria

AHRI Certified Reference Number:

Brand Name:  Model Number:

Energy Source:  Heater Type:

First Hour Rating (GPH):  Min:  Max:

Max GPM:  Min:  Max:

Uniform Energy Factor:  Min:  Max:

[Conduct Advanced Search](#)



## Onsite Renewable Energy Electric Power System

Enter information about renewable energy electric power systems installed (option 6).

<b>Onsite Renewable Energy Electric Power System</b>	
System type: _____	System design capacity _____ kW
Rated annual generation _____	kWh/yr

Specify the system type (e.g., wind or solar PV) and provide the system design capacity in kW. Also, enter the rated annual generation in kWh per year. For solar electric systems, confirm the rated annual generation and system capacity with the calculation submitted as part of the plan review using NREL's [PV Watts solar calculator](#) or an approved alternate. For guidance on determining the rated annual generation of wind systems, refer to Option 6.1 in Table R406.3.

## Appliances

WSEC 2018 includes an Appliance Package Option (option 7) to earn energy credits.

<i>Appliances Manufacturer and Model</i>	<i>Energy Star? (Circle one)</i>
Dish washer	Y or N
Refrigerator	Y or N
Washer	Y or N
Dryer	Y or N
Vented or unvented?      If vented, CEF rating _____	
Gas fireplace / heating stove (Section R402.4.2) Heating or Decorative? (Circle one)	Fireplace efficiency (FE) _____

Provide the manufacturer and model number of new appliances installed in the dwelling unit, and indicate whether each appliance is Energy Star rated by circling Y or N. If the Appliance Package Option 7 is selected, all appliances shall be Energy Star rated. To determine if the appliance is Energy Star, go to <https://www.energystar.gov/>, click the appliance type and enter the model number in the search tool.

For dryers, also indicate if the unit is vented or ventless by circling one. For ventless dryers, indicate the combined energy factor (CEF) rating in lbs/kWh, which you can look up by model number on the [Energy Star website](#).

Enter the fireplace efficiency (FE) of gas fireplaces used as heating appliances. Refer to Section R402.4.2.1 for minimum FE required. Gas fireplaces are not permitted to have continuously burning pilot lights. Note: Fireplaces with on-demand, intermittent or interrupted ignition are not considered continuous. Circle Y (yes) or N (no) to indicate that this requirement is met. FE should be provided with the manufacturer's product listing. The Energy Trust of Oregon maintains a [list of fireplaces with FE of 70% and above](#).



## HVAC System Duct Leakage Testing

Thermal losses from ductwork are strongly dependent on where the ductwork and the air handler are located. If located within the conditioned spaces, air leaks and transmission losses from the air distribution system still serve to heat the dwelling unit. Leaky ducts located in unconditioned spaces can be one of the largest energy losses.

HVAC System Duct Leakage Testing (R403.3)		Circle One
All ductwork and air handler in conditioned space? (See Option 4.2)	Y or N	
All ductwork in unconditioned spaces buried and tested at 3% total leakage, and air handler in conditioned space? (See Option 4.1.)	Y or N	
All ductwork & air handler outside conditioned space insulated to minimum R-8?	Y or N	
Air handler present at duct leakage test? (Total leakage 4% if yes, 3% if no)	Y or N	
HVAC leakage to outside test conducted at final?	Y or N	
Do HVAC duct leakage tests include GPS and time stamp verification?	Y or N	
HVAC system leakage test calculated design target:	CFM @ 25 Pa	
HVAC system leakage test measured results:	CFM @ 25 Pa	

Identify the locations of ductwork by circling Y (yes) or N (no) in response to the following questions:

- Is all ductwork and air handler located in a conditioned space?
- For all ductwork located in unconditioned spaces, is the ductwork buried in insulation and tested, and the air handler is located in a conditioned space?
- Is all ductwork and the air handler located outside conditioned space insulated to R8?
- Was the air handler present at duct leakage test?
- Was a HVAC leakage-to-outside test conducted at final?
- Do duct leakage tests include a GPS and time stamp verification? A date-stamped smart phone photo or air leakage testing software may be used to satisfy this requirement.

Duct leakage testing determines how leaky the air distribution system is by pressurizing or depressurizing the ducts and air handler. In this section:

- Enter the calculated design target leakage rate in CFM at 25 Pa. The design target HVAC system leakage test is 4 CFM per 100 square feet of conditioned floor area tested at 25 Pa, per Section R403.3.4.
- Enter the measured HVAC leakage results from the blower door test in CFM @ 25 Pa. This value should be less than or equal to the target value.

## Building Leakage Testing

In this section, results of building leakage testing are entered. Building leakage testing determines how leaky the dwelling unit is by depressurizing or pressurizing it with a device called a blower door.

For R2 low-rise apartments, individual blower door tests are required only for garden-style apartments without corridors, per WSEC R402.4.1.2. For corridor buildings where results are performed for the whole building, enter the results of the whole building and add the note "whole building."



<i>Building Leakage Testing (R402.4.1.2)</i>	
Dwelling unit leakage test calculated design target:	_____ ACH @ 50 Pa
Dwelling unit leakage test, measured results:	_____ ACH @ 50 Pa
Whole Building Leakage test (R2 corridor only) design target	_____ CFM/sf @ 50 Pa
Whole Building Leakage test (R2 corridor only) measured	_____ CFM/sf @ 50 Pa
Do building leakage tests include GPS and time stamp verification?	Y or N

- Enter the design target envelope leakage test in CFM at 50 Pa. The target leakage rate is 5 ACH@50 Pa per Section R402.4.1.2, unless one of the options from 2.1 to 2.4 is implemented to achieve energy credits by reducing building air leakage.
- Enter the measured envelope leakage results from the blower door test in CFM @ 50 Pa. This value should be less than or equal to the target value.
- Circle Y to indicate the envelope leakage tests have GPS and time stamp verification or, if not, circle N. A date-stamped smart phone photo of the form or air leakage testing software may be used to satisfy this requirement.

### Whole House Ventilation System

Enter data on ventilation fans and whole house ventilation, including results of flow testing of the whole house ventilation system.

For R2 low-rise apartments, individual whole house ventilation system flow testing **is required for each dwelling unit**. No sampling of representative apartments is allowed. Please note on the certificate if a single heat recovery unit is serving more than one dwelling unit.

### WHV Labeling and O&M Instructions

<i>Whole House Ventilation System Measured Flow Rates (M105.4 IRC-WA)</i>		<i>Circle One</i>
Are the system controls correctly labeled?	_____	Y or N
The Whole House Ventilation (WHV) system operation and maintenance (O&M) instructions were provided to the building owner?	_____	Y or N
Provided to: _____	on _____	(date) _____

Indicate that the system controls are correctly labeled by circling Y or N. To be correctly labeled, each switch, timer or other control shall have a permanently attached label identifying the fan it controls.

Document that O&M instructions were provided to the building owner by circling Y or N. Provide the name of the person the instructions were provided to and the date of delivery. This is critical to ensure the current building owners and occupants understand how to maintain and operate the ventilation system as designed and installed.



WHV System Type and Location

Whole House Ventilation System Measured Flow Rates (M1505.4 IRC-WA)		Circle One
Are the system controls correctly labeled?	Y or N	
The Whole House Ventilation (WHV) system operation and maintenance (O&M) instructions were provided to the building owner?	Y or N	
Provided to: _____ on _____ (date)		
Whole House Ventilation System Type: (circle one)		
(1) Whole house exhaust fan, location _____		
(2) Balanced HRV/ ERV, location _____ For R2 low-rise, serves more than one unit?	Y or N	
(3) Supply or HRV WHV integral to the air handler. Describe system control sequence of operations or reference to design submittal: _____		

Identify the type of WHV system by circling one of the 3 types listed. For the selected type, enter its location per Table R403.6.1 (i.e., HRV, ERV, or WHV ventilation exhaust system. (A WHV ventilation exhaust may also provide bathroom, kitchen or utility ventilation requirements.) Balanced HRV and ERV systems will have both supply and exhaust fans and require that both airflows be documented. Please note any commissioning issues in the Commissioning Notes area.

If the system is integral to the air handler, describe the system's control sequence of operation (SOO), or refer to design documents that provide the sequence of operation. The builder and/or the AHJ agent may want to verify SOO system performance as installed.

WHV Run Time and Airflow

Specify run-time: _____ hours per day	_____ CFM
WHV calculated design minimum flow rate per plan submittal:	
WHV measured min flow rate at commissioning: Exhaust _____ CFM, Supply _____ CFM	
Do WHV flow tests include GPS & time stamp verification? Y or N	

Specify the run time in hours per day. If the system runs continuously, enter a run-time of 24 hours per day. Continuous operating systems require lower target design flow rates.

Enter the calculated design minimum flow rate. To determine the target value, refer to Section M1505.4 *Whole-house mechanical ventilation system* of the Washington State Amendments of the 2018 International Residential Code for single family residences and dwelling units. For R2 low-rise apartments, refer to Section 403.4 *Group R whole house mechanical ventilation system* of the Washington State Amendments of the 2018 International Mechanical Code.

Enter the measured minimum flow rate at commissioning of supply and exhaust fans, as applicable. This value should be equal to or greater than the design minimum flow rate. For balanced ERV and HRV systems, the supply and exhaust flow rates should be within 10% of each other or 5cfm whichever is larger. While this is required in the code, it is often hard to get a repeatable test at 5cfm.

Circle Y or N to indicate whether the WHV system tests include GPS and time stamp verification. A date-stamped smart phone photo or air leakage testing software may be used to satisfy this requirement.



WHV Sensible Heat Recover Efficiency

HRV/ERV sensible heat recovery efficiency \_\_\_\_\_

For HRV and ERV systems, enter the maximum rated sensible heat recovery efficiency, which is available in the [Heating Ventilation Institute's certified products directory](#).

From the HVI directory, use the Adjusted Sensible Recovery Efficiency (ASRE) at a flow rate that is no less than the design flow rate. When the design flow rate is between two listed flow rates in the HVI directory, interpolation of the ASRE shall be permitted.

As an example, suppose a specifier selects an Alpha Model X13 HRV with a design flow rate of 70 cfm, listed as following in the HVI Section 3 Directory:

Product Category	Brand Name	Model	Temp Mod	°C	°F	Net Airflow (L/s)	Net Airflow (cfm)	WATTS	SRE	ASRE
HRVs	Alpha	X13	HEATING	0	32	30	64	40	71	76
HRVs	Alpha	X13	HEATING	0	32	45	95	51	69	72
HRVs	Alpha	X13	HEATING	0	32	55	117	60	67	70
HRVs	Alpha	X13	HEATING	-25	-13	32	68	52	63	65

For this case, the specifier may claim an ASRE of 72 (the highest ASRE associated with the rated flow that is no less than the design flow rate of 70 cfm) when complying with the “sensible heat recovery efficiency” requirement of Washington State’s IECC-R Table R406.3; or, the specifier may interpolate to determine the ASRE between the rated flows that are greater than and less than the design flow (i.e., 64 cfm and 95 cfm are less than and greater than 70 cfm, respectively). Interpolating results in an ASRE of 75 for this case.

All Other Mandatory Requirements

Other Mandatory Requirements	Circle One
All other mandatory requirements of WSEC-R have been met?	Y or N

Other mandatory requirements not specifically addressed on the Certificate include:

- R403.1 Controls
- R403.4 Mechanical Piping
- R403.5 Service Hot Water Systems
- R403.6 Mechanical Ventilation
- R403.9 Snow Melt Systems
- R403.1.0 Pool and Permanent Spa
- R404 Lighting Equipment
- R407 Certified Passive House (Need to provide PHIUS Project Certification 2018 or later)