

CHANGES
MUST Be Approved Prior
To Performing Work

*Reviewed for code compliance
with IRC 2015
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Residential Energy Code Worksheet



KITSAP COUNTY

Department of Community Development

The Residential Energy Code Worksheet is a tool to help you plan your energy code needs for new or remodeled homes to ensure compliance with code requirements. More resources and a copy of the energy code, optional worksheets and glazing forms can be found [here](#).

This document will cover the following features:

- **Heating, Ventilation and Air Conditioning (HVAC):** Requirements for efficiency of heating and cooling equipment for your house.
- **Building Envelope:** Requirements and options for roofs, walls, windows - these control heat loss and leakage.
- **Water Heating:** Equipment efficiency and controls

NOTE: All of the details of your energy efficiency plan selected in this document must be clearly shown on your construction plans in order for application to be approved.

Email

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Is this an addition to an existing structure?

No

Heating Ventilation and Air Conditioning Requirements

All options for whole house ventilation shall provide outdoor air at a continuous rate of not less than the Airflow Rate shown below. This is automatically calculated in accordance with [Tables M1507.3.3\(1\) & 1507.3.3\(2\)](#) based on square footage of structure and number of bedrooms.

Select Proposed Heating Sytem, be sure to show on plans.

Forced Air System: Use air as the heat transfer medium, relying on ductwork and vents to distribute.

Select Prescriptive Whole House Ventilation

Intermittent Exhaust Fan (See Exception Below)

Select Square Footage of Structure

1,501 - 3,000

Number of Bedrooms

2-3

Run-Time Percentage in Each 4 Hour Segment (Applicable to Intermittent Exhaust Fan Only)

66%

Required Airflow CFM (Label on Plans):

60

Fan Size (Applicable to Intermittent Exhaust Fan Only):

90

Exception: The whole house mechanical ventilation system is permitted to operate intermittently where the system has control that enables operation for not less than 25% of each 4 hour segment. The ventilation rate below is multiplied by the run time factor in accordance with Table 1507.3.3(2) to determine required fan size.

Table M1507.4

Please note:

Exhaust fans are required in any room where water vapor, or cooking odor is produced, i.e. kitchen, bathroom, powder room, laundry room, indoor swimming pool, spa, etc. See Table M1507.4 for the minimum exhaust fan sizes. Minimum source specific ventilation - your proposed system shall not be less.

CFM=Cubic Feet per min.	Laundry rooms or Bathrooms	Kitchens
Intermittently Operating	50 cfm	100 cfm
Continuous Operation	20 cfm	25 cfm

Required Energy Credits

Conditioned Floor Area
1,500 - 5,000 Square Feet

Minimum Required Energy Credits
3.5

Total Energy Credits Selected Below
3.5

Select Options to Meet Minimum Required Energy Credits

There are five categories below, select credits to meet the calculated minimum required energy credits. **As the number of credits increase, your home becomes more energy efficient! You may elect to exceed the required number of credits.**

All selected options must be shown on the construction plans.

Key Terms:

R-Value = Thermal Resistance, time rate of heat flow through a body.

U-Factor = Thermal Transmittance, heat transmission (air to air) through a building component, equal to the time rate of heat flow per unit area and unit temperature.

Fenestration = Fenestration windows and other products with glass and non-glass glazing materials.

Glazing = Glass part of windows

Water Heating Options

1. Use the dropdown to review credits available and read description to see if you qualify.
2. **Click Select Credit -Yes** next to the option you would like to add credits to your total credits selected. A list of your selected credits selected will automatically populate a summary on the next page.

To See Details and Select Credit Choose from Options Below

Efficient Water Heating 5c -- Gas, propane, solar, heat pump

Select Credit? **Credits**
Yes

1.5

EFFICIENT WATER HEATING 5c:

Verify you can meet all requirements below and then click Select Credit - Yes to update total Energy Credits Selected.

Select one of the following qualified water heating systems:

Electric heat pump water heater with a minimum EF of 2.0 and meeting the standards of NEES's Northern Climate Specifications for Heat Pump Water Heaters.

To qualify to claim this credit, the building permit drawings shall:

- Show water heating system in the applicable location
- Label water heater equipment type
- Label with the minimum equipment efficiency #, (example EF 0.91)

To qualify to claim this credit, the building permit drawings shall:

- Show a plumbing diagram in the applicable location
- Specify the drain water heat recovery units and the plumbing layout needed to install
- Labels or other documentation shall be provided demonstrating that the unit complies with the standard.

HVAC Equipment Options

1. Use the dropdown to review credits available and read description to see if you qualify.
2. **Click Select Credit -Yes** next to the option you would like to add credits to your total credits selected. A list of your selected credits selected will automatically populate a summary on the next page.

***Projects may only include credit from one space heating option, 3a, 3b, 3c or 3d. When a housing unit has two pieces of equipment (i.e., two furnaces) both must meet the standard to receive the credit.**

To See Details and Select Credit Choose from Options Below

High Efficiency HVAC Equipment 3b -- Air source heat pump

Select This Option	Credits	HIGH EFFICIENCY HVAC EQUIPMENT 3b:*
Yes	1	Air-source heat pump with a minimum HSPF of 9.0

To qualify to claim this credit, the building permit drawings shall:

- Show location of HVAC equipment in the applicable location
- Label the HSPF on/near equipment

***Since you have selected 3b YOU MAY NOT CHOOSE 3a, 3c or 3d.**

When a housing unit has two pieces of equipment (i.e., two furnaces) both must meet the standard to receive the credit.

Whole House Air Leakage Control and Efficiency

These credits set a standard for a structure's air tightness using a [Blower Door Test](#). This reduces energy consumption due to air leaks. If a credit from this section is selected, Blower Door Test results are required to be on site for final inspection. Each credit contains requirements for the maximum air leakage and whole house ventilation requirements.

1. Use the dropdown to review credits available and read description to see if you qualify.
2. **Click Select Credit -Yes** next to the option you would like to add credits to your total credits selected. A list of your selected credits selected will automatically populate a summary on the next page.

To See Details and Select Credit Choose from Options Below

Air Leakage Control and Efficiency 2a

Select This Option	Credits	AIR LEAKAGE CONTROL AND EFFICIENCY VENTILATION 2a:
Yes	.5	<ul style="list-style-type: none">• Compliance is based on Table R402.4.1.2; Reduce the tested air leakage to 3.0 air changes per hour maximum <p>AND All whole house ventilation requirements as determined by IRC Section M1507.3 shall be met with a high efficiency fan (max 0.35 watts/cfm), not interlocked with the furnace fan ventilation systems using a furnace including an ECM motor are allowed, provided that they are controlled to operate at low speed in ventilation only mode.</p> <p>To qualify to claim this credit:</p> <ul style="list-style-type: none">• Fan Specifics (If Fan is not labeled)• Documentation of Blower Door test results from qualified third party must be on site at Final Inspection WSU Air Leakage Test (Blower Door Test) Results

Building Envelope (Windows, Walls, and Floors etc.)

These credits relate to whole house energy efficiency. Each credit contains requirements for [insulation \(R-Values\)](#) and [energy efficient windows \(U-Factor\)](#).

R-value: An insulating material's resistance to conductive heat flow is rated using an R-value -- *the higher the R-value, the more effective the insulation.*

U-factor: Indicates how much energy will be lost from a building through its windows -- *the lower the U-value, the more efficient.*

1. Use the dropdown to review credits available and read description to see if you can qualify.
2. **Click Select Credit -Yes** next to the option you would like to add credits to your total credits selected. A list of your selected credits selected will automatically populate a summary on the next page.

***All options in this category require that you :**

- Label R-Values and U-Factors on building permit drawing in the applicable location
- Submit completed [Glazing Schedule Form](#) or add to construction plans for review with this worksheet.

To See Details and Select Credit Choose from Options Below
Efficiency Envelope 1a

***Would you like to see table displaying prescriptive requirements to meet Washington State Energy Code for building envelope?**

No

Select This Option	Credits	EFFICIENCY BUILDING ENVELOPE 1a:
Yes	.5	Prescriptive compliance is based on Table R402.1.1* <ul style="list-style-type: none">○ Fenestration- U-Factor= 0.28○ Skylight- U-Factor = .50○ Ceiling- R-Value= 49○ Wood Frame Wall- R-Value= 21 int○ Mass Wall-R-Value= R-value= 21/21

- Floor- R-Value= 38
- Slab- on grade R-10 perimeter and entire slab
- Below grade slab- R-10, perimeter and under entire slab
- **OR** Compliance based on section R402.4; Reduced the Total UA by 5%

To qualify to claim this credit:

- Label R-Values and U-Factors on building permit drawing in the applicable location
- Submit completed [Glazing Schedule Form](#) or add to construction plans for review with this worksheet. Find Glazing schedule at WSU site, half way down the page: <http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode.aspx>

Would you like to see Renewable Energy credits for on-site wind or solar?
No

Summary of Total Energy Credits

Minimum must match selected

Minimum Required Energy Credits	Total Energy Credits Selected
3.5	3.5

Energy Credit Options Selected

EFFICIENCY BUILDING ENVELOPE 1a

AIR LEAKAGE CONTROL AND
EFFICIENCY VENTILATION 2a

HIGH EFFICIENCY HVAC EQUIPMENT 3b

EFFICIENT WATER HEATING 5c

Qualified Water Heating Option Selected:

Electric heat pump water heater with a minimum EF of 2.0 and meeting the standards of NEES's Northern Climate Specifications for Heat Pump Water Heaters.

You selected a Building Envelope Credit, to qualify to claim this credit you must:

Label R-Values and U-Factors on building permit drawing in the applicable location

Submit required completed [Glazing Schedule Form](#) or add to construction plans for review with this worksheet. Find Glazing schedule at WSU site, half way down the page: <http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode.aspx>

By checking this box, I confirm that I understand I must submit a glazing schedule and label R Values and U Factors on my building plans.

Yes

Clicking the "Create PDF of Complete Energy Code Worksheet" will allow to download a completed PDF copy of your worksheet. If you are not finished, click the "Save" button to receive a link for you to finish later.

Clicking this button does not submit your completed worksheet for review!