CITY OF BUCKLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT
ENERGY FORM

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2012 International Energy Conservation Code, as amended by WAC 51-11 (IECC)
Effective July 1, 2013.

Ventilation code provisions are located in the 2012 International Residential Code (IRC), 2012 International Mechanical Code (IMC), & 2012 International Building Code

A complete energy code application form will include information that clearly identifies compliance methods for heat sizing, thermal envelope, and whole-house ventilation. This form includes compliance instructions and information needed. Energy code compliance information, forms, worksheets, and educational information is also available on the Washington State University Extension Energy Program (WSU-EP) website. To access the website go to http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode/2012EnergyCode.aspx).

The website includes a heat system sizing calculator. Submit a completed heat sizing calculator worksheet when the building permit is submitted. In addition to the heat sizing calculator the website has helpful compliance information and worksheets for prescriptive and component performance options along with a glazing schedule.

INSTRUCTIONS: Complete the City of Buckley Energy Code application and submit with a heat sizing calculator available on the WSU-EP website, see item # 4 below:

1 Identify the compliance method. The most common and simplest approach is the prescriptive method for energy code compliance. See prescriptive table R402.1.1 located at the end of the instructions. The component performance approach referenced in IECC Section R402.1.4 may also be used for energy code compliance. For more information contact City of Buckley building department staff at 360-761-7811 or WSU Energy Program at (360) 956-2042.

2 Identify the whole-house ventilation compliance method. A ventilation system shall be installed in accordance with The International Residential Code, Section M1507. The most common ventilation methods include a whole-house ventilation system using exhaust fans (M1507.3.4) and a whole-house ventilation system integrated with a forced-air system (M1507.3.5). Other ventilation systems include whole-house ventilation system using a supply fan (M1507.3.6) and whole-house ventilation system using a heat-recovery ventilation system (M1507.3.7). If you need additional information we recommend that you discuss with your heating and ventilation system professional. In addition City of Edgewood staff will be happy to discuss the options if you are not sure which compliance option will work for you.

3 Identify the Additional Energy Efficiency Requirements listed in Table R406.2. The drawings included with the building permit application shall identify which options have been selected and the point value of each option. Each one and two-family dwelling unit and townhouses are required to achieve the following minimum number of credits:

a) Small dwelling units less than 1500 sq. feet of heated or cooled area and less than 300 sq. ft fenestration area (skylights, doors, windows, etc), or additions to an existing building that is less than 750 sq. ft. of heated area. – 0.5 points

b) Medium dwelling units not included in a) above {small dwelling}, **OR** c) below {large dwelling} – 1.5 points

c) Large dwelling unit is a dwelling unit that exceeds 5000 sq. ft. of heated or cooled floor area. – 2.5 points.

4 Provide a completed heating/cooling system size worksheet to verify compliance to IECC R403.6. The calculator/worksheet is available on the WSU-Energy Program website at: *http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode/2012EnergyCode.aspx*. Staff can also assist with preparation of the worksheet.

5 To meet the prescriptive option all fenestration products shall comply with the required U-factor listed in Table R402.1.4. Windows, doors, and glazed doors shall have a tested U-factor or .30 or less. When using the small dwelling option for energy credits (a) or component performance approach provide a fenestration schedule that identifies the square feet and U-factor of each item. *Fenestration is defined in the IECC as skylights, roof windows, vertical windows, opaque doors, glazed-doors that include products with glass and non-glass glazing materials.*

6 Identify the location and fuel type of the heating system, water heater, location of exhaust fans (bathroom, laundry, kitchen, etc.) and R-factor of proposed insulation for walls, floors, ceilings, and concrete slab floors on the building plans.

7 Not less than 75% of all permanently installed lamps in lighting fixtures shall be high efficacy lamps. High efficacy lamps are defined in IECC Chapter 2 and are considered compact fluorescent lamps, T-8 or smaller diameter linear fluorescent lamps, or lamps with a minimum efficacy 40 lumens per watt for lamps 15 watts or less, 50 lumens per watt for lamps over 15 watts to 40 watts, and 60 lumens per watt for lamps over 40 watts.

Questions? Call City of Buckley Building Department at 360-761-7811. WSEC compliance information and code text is also available on the WSU-Energy Program website at: *http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode/2012EnergyCode.aspx.*

Prescriptive Requirements [0,1] for City of Buckley
Climate Zone 4-C, Table R402.1.1

Option	Glazing Area % of Floor	Fenestration U-factor		Ceiling	Vaulted Ceiling [j]	Wall Above Grade	Wall int [c] below grade	Floor	Slab [d] on Grade
		Vertical (Includes doors, windows, etc.)	Skylight [b]						
4C	Unlimited	.30	.50	R-49	R-38	R-21 int [k,l]	10/15/21 int TB	R-30	R-10

Visit the WSU Energy Program website at: http://www.energy.wsu.edu/BuildingEfficiency/EnergyCode/2012EnergyCode.aspx or call (360) 427-9670 ext. 352 for footnote information. Log & solid timber wall with a min. avg. thickness of 3.5" are exempt from the above grade wall insulation requirements.

CITY OF BUCKLEY DEPARTMENT OF COMMUNITY DEVELOPMENT
WSEC/ Ventilation Code Compliance Application
Submit with heating/cooling system size worksheet (see instructions #4)

Owner:	Parcel#:	Type of project:

Total Sq. Ft. of heated area::	1st Floor :	2nd floor:	Heated Basement:

Heating System Type: O Electric wall heater O Electric Central Furnace O LPG Furnace
O Heat Pump with electric furnace O Heat pump with gas furnace O Ductless Heat Pump
O Boiler, specify fuel type: _____ O Other: Specify:_____

Compliance Method *Check one::*	☐ Prescriptive Option Table R402.1.1
	☐ Component Performance, R402.1.3 – *Calculation worksheets required*
	☐ Other *(Specify)*:_____

Check one Ventilation System	☐Whole House Ventilation system using exhaust fans & window or wall fresh air vents *(M1507.3.4)*	☐Whole House Ventilation Integrated with a Forced Air System *(M1507.3.5)*	☐Other, describe:_____ _____

Additional Energy Efficiency Requirements *Energy credits required:* _____	Referencing Table R406.2, "Additional Residential Energy Efficiency Requirements," all residential units must develop credits as specified in Table 406.2. Identify and describe which option(s) will be used to comply. If the table is not attached to this form you can access the table on our website at: www.cityofedgewood.org a) Description: Small dwelling units with less than 1500 sq. feet of heated or cooled space and less than 300 sq. ft fenestration (see definition below) <u>or</u> additions to an existing building that is less than 750 sq. ft. of heated area. To use this option complete a window schedule in order to verify that the fenestration area does not exceed 300 sq. ft. ***Fenestration*** *is defined in the IECC as skylights, roof windows, vertical windows, opaque doors, glazed-doors that include products with glass and non-glass glazing materials.* – 0.5 points b) Medium dwelling units not includes in a) above, or b) below – 1.5 points c) Large dwelling unit is a dwelling unit that exceeds 5000 sq. ft. of heated or cooled floor area. – 2.5 points.

Using Option number(s): _____	Describe Energy Credit Option(s):

FENESTRATION[1] SCHEDULE

USE FOR ENERGY CREDIT, a) SMALL DWELLING OPTION & COMPONENT PERFORMANCE COMPLIANCE

List all windows, doors, skylights. *(If needed, attach an additional sheet)*

[1]*Fenestration is defined in IECC Chapter 2 as skylights, roof windows, vertical windows, opaque doors, glazed-doors that include products with glass and non-glass glazing materials.*

Manufacturer	**Location**	**U-Factor**	**Size** (rough opening)	**Quantity**	**Total Square Feet**
Total Fenestration: windows, skylights and door area					

1. Small Dwelling Unit: .....0.5 points
   Dwelling units less than 1500 square feet in conditioned floor area with less than 300 square feet of fenestration area. Additions to existing building that are less than 750 square feet of heated floor area.

2. Medium Dwelling Unit: ..... 1.5 points
   All dwelling units that are not included in #1 or #3.

3. Large Dwelling Unit: ..... 2.5 points
   Dwelling units exceeding 5000 square feet of conditioned floor area.

The drawings included with the building permit application shall identify which options have been selected and the point value of each option, regardless of whether separate mechanical, plumbing, electrical, or other permits are utilized for the project.

TABLE 406.2
ENERGY CREDITS (DEBITS)

OPTION	DESCRIPTION	CREDIT(S)
1a	EFFICIENT BUILDING ENVELOPE 1a: Prescriptive compliance is based on Table R402.1.1 with the following modifications: Fenestration U .= 0.28 Floor R-38 Slab on grade R-10 perimeter and under entire slab Below grade slab R-10 perimeter and under entire slab **or** Compliance based on Section R402.1.4: Reduce the Total UA by 5%.	0.5
1b	EFFICIENT BUILDING ENVELOPE 1b: Prescriptive compliance is based on Table R402.1.1 with the following modifications: Fenestration U .= 0.25 Wall R-21 plus R-4 Floor R-38 Basement wall R-21 int plus R-5 ci Slab on grade R-10 perimeter and under entire slab Below grade slab R-10 perimeter and under entire slab **or** Compliance based on Section R402.1.4: Reduce the Total UA by 15%.	1.0
1c	EFFICIENT BUILDING ENVELOPE 1c: Prescriptive compliance is based on Table R402.1.1 with the following modifications: Fenestration U .= 0.22 Ceiling and single-rafter or joist-vaulted R-49 advanced Wood frame wall R-21 int plus R-12 ci Floor R-38 Basement wall R-21 int plus R-12 ci Slab on grade R-10 perimeter and under entire slab Below grade slab R-10 perimeter and under entire slab **or** Compliance based on Section R402.1.4: Reduce the Total UA by 30%.	2.0
2a	AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION 2a: Compliance based on R402.4.1.2: Reduce the tested air leakage to 4.0 air changes per hour maximum **and** All whole house ventilation requirements as determined by Section M1507.3 of the *International Residential Code* shall be met with a high efficiency fan (maximum 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. To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the option being selected and shall specify the maximum tested building air leakage and shall show the heat recovery ventilation system.	0.5

2b	AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION 2b: Compliance based on Section R402.4.1.2: Reduce the tested air leakage to 2.0 air changes per hour maximum **and** All whole house ventilation requirements as determined by Section M1507.3 of the *International Residential Code* shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.70. To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the maximum tested building air leakage and shall show the heat recovery ventilation system.	1.0
2c	AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION 2c: Compliance based on Section R402.4.1.2: Reduce the tested air leakage to 1.5 air changes per hour maximum **and** All whole house ventilation requirements as determined by Section M1507.3 of the *International Residential Code* shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.85. To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the maximum tested building air leakage and shall show the heat recovery ventilation system.	1.5
3a	HIGH EFFICIENCY HVAC EQUIPMENT 3a: Gas, propane or oil-fired furnace with minimum AFUE of 95% To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.	0.5
3b	HIGH EFFICIENCY HVAC EQUIPMENT 3b: Air-source heat pump with minimum HSPF of 8.5 To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.	1.0
3c	HIGH EFFICIENCY HVAC EQUIPMENT 3c: Closed-loop ground source heat pump; with a minimum COP of 3.3 **or** Open loop water source heat pump with a maximum pumping hydraulic head of 150 feet and minimum COP of 3.6 To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.	2.0
3d	HIGH EFFICIENCY HVAC EQUIPMENT 3d: DUCTLESS SPLIT SYSTEM HEAT PUMPS, ZONAL CONTROL: In homes where the primary space heating system is zonal electric heating, a ductless heat pump system shall be installed and provide heating to at least one zone of the housing unit. To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.	1.0
4	HIGH EFFICIENCY HVAC DISTRIBUTION SYSTEM:[a] All heating and cooling system components installed inside the conditioned space. All combustion equipment shall be direct vent or sealed combustion. Locating system components in conditioned crawl spaces is not permitted under this option. Electric resistance heat is not permitted under this option. Direct combustion heating equipment with AFUE less than 80% is not permitted under this option. To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and shall show the location of the heating and cooling equipment and all the ductwork.	1.0

5a	EFFICIENT WATER HEATING 5a: Water heating system shall include one of the following: Gas, propane or oil water heater with a minimum EF of 0.62 **or** Electric water heater with a minimum EF of 0.93. **and for both cases** All showerhead and kitchen sink faucets installed in the house shall be rated at 1.75 GPM or less. All other lavatory faucets shall be rated at 1.0 GPM or less.[b] To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency and shall specify the maximum flow rates for all showerheads, kitchen sink faucets, and other lavatory faucets.	0.5
5b	EFFICIENT WATER HEATING 5b: Water heating system shall include one of the following: Gas, propane or oil water heater with a minimum EF of 0.82 **or** Solar water heating supplementing a minimum standard water heater. Solar water heating will provide a rated minimum savings of 85 therms or 2000 kWh based on the Solar Rating and Certification Corporation (SRCC) Annual Performance of OG-300 Certified Solar Water Heating Systems **or** Electric heat pump water heater with a minimum EF of 2.0 and meeting the standards of NEEA's Northern Climate Specifications for Heat Pump Water Heaters **or** Water heater heated by ground source heat pump meeting the requirements of Option 3c. To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency and, for solar water heating systems, the calculation of the minimum energy savings.	1.5
6	RENEWABLE ELECTRIC ENERGY: For each 1200 kWh of electrical generation provided annually by on-site wind or solar equipment a 0.5 credit shall be allowed, up to 3 credits. Generation shall be calculated as follows: For solar electric systems, the design shall be demonstrated to meet this requirement using the National Renewable Energy Laboratory calculator PVWATTs. Documentation noting solar access shall be included on the plans. For wind generation projects designs shall document annual power generation based on the following factors: The wind turbine power curve; average annual wind speed at the site; frequency distribution of the wind speed at the site and height of the tower. To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall show the photovoltaic or wind turbine equipment type, provide documentation of solar and wind access, and include a calculation of the minimum annual energy power production.	0.5

a. **Interior Duct Placement.** Ducts included as Option 4 of Table R406.2 shall be placed wholly within the heated envelope of the housing unit. The placement shall be inspected and certified to receive the credits associated with this option.

Exception: Ducts complying with this section may have up to 5% of the total linear feet of ducts located in the exterior cavities or buffer spaces of the dwelling. If this exception is used the ducts will be tested to the following standards:

Post-construction test: Leakage to outdoors shall be less than or equal to 1 CFM per 100 ft^2 of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.

b. **Plumbing Fixtures Flow Ratings.** Low flow plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following requirements:

1. Residential bathroom lavatory sink faucets: Maximum flow rate - 3.8 L/min (1.0 gal/min) when tested in accordance with ASME A112.18.1/CSA B125.1.
2. Residential kitchen faucets: Maximum flow rate - 6.6 L/min (1.75 gal/min) when tested in accordance with ASME A112.18.1/CSA B125.1.
3. Residential showerheads: Maximum flow rate - 6.6 L/min (1.75 gal/min) when tested in accordance with ASME A112.18.1/CSA B125.1.