

Town of Friday Harbor

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**2009 PRESCRIPTIVE ENERGY CODE
COMPLIANCE FOR SINGLE FAMILY & DUPLEX HOUSING**

Legal Property Owner (s) Name _____

Mailing Address of Property Owner (s) _____

Job Address _____ Tax Parcel No. _____

This set of forms has been developed to assist permit applicants documenting compliance with the 2009 Washington State Energy Code. This set of forms is for structures built under the International Residential Code (IRC) and located in Climate Zone 1.

The following forms provide much of the required documentation for plan review. The details noted here must also be shown on the drawings (WSEC 104.2).

This form is not a substitute for the energy code itself. To obtain a copy of the energy codes, go to the web address <http://www.energy.wsu.edu/code>.

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)								
<input type="checkbox"/> I.	13%	0.34	0.50	0.20	R-38 or R-49 Adv	R-38	R-21 Int.(7)	R-21 TB	R-10	R-30	R-10 2'
<input type="checkbox"/> II.	25%	0.32	0.50	0.20	R-38 or R-49 Adv	R-38	R-21 Int.(7)	R-21 TB	R-10	R-30	R-10 2'
<input type="checkbox"/> III.	Unlimited	0.30	0.50	0.20	R-38 or R-49 Adv	R-30	R-21	R-21	R-10	R-30	R-10

(See WSEC Table 6-1 for footnotes in parenthesis above)

Glazing Schedule Attached to Document

- Does not apply
Using Prescriptive Option III. All glazing and doors meet maximum U-factor.
Alternate heating size method submitted.
- Option I or II – Glazing to floor area limit (WSEC 602.7.2)
- Area weighted window, skylight or door U-factor (WSEC 602.7.2)
- As part of the heating system sizing calculation (IRC M1401.3 & WSEC 503.2.2)

Radiant slab

- R-10 foam insulation, continuous with thermal break (WSEC 502.1.4.9)

Chapter 9 Options – TOTAL OF 1 CREDIT IS REQUIRED (see credit options on next page)

OPTION	OPTION DESCRIPTION	CREDIT
1a	High Efficiency HVAC Equipment 1	
1b	High Efficiency HVAC Equipment 2	
1c	High Efficiency HVAC Equipment 2	
2	High Efficiency HVAC Distribution System	
3a	Efficient Building Envelope 1	
3b	Efficient Building Envelope 2	
3c	Super-Efficient Building Envelope 3	
4a	Air Leakage Control and Efficient Ventilation	

4b	Additional Air Leakage Control and Efficient Ventilation	
5a	Efficient Water Heating	
5b	High Efficiency Water Heating	
6	Small Dwelling Unit	
7	Large Dwelling Unit	
8	Renewable Electric Energy	

WSEC Chapter 9 Energy Credit Options. Check all that apply. Total of 1 point is required.

+1 pt	1A	HIGH EFFICIENCY HVAC EQUIP: Gas, propane, or oil fired furnace or boiler with minimum AFUE of 92% or air source heat pump with minimum of HSPF of 8.5
+2 pts	1B	HIGH EFFICIENCY HVAC EQUIP 2: Closed loop ground source heat pump with minimum COP of 3.3
+1 pt	1C	HIGH EFFICIENCY HVAC EQUIP 3: Where primary space heating system is zonal electric heating, a ductless heat pump system shall be installed to provide heating to at least one zone
+1 pt	2	HIGH EFFICIENCY HVAC DISTRIBUTION: 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.
+1/2 pt	3A	EFFICIENT BUILDING ENVELOPE 1: Prescriptive compliance per Table 6-1, Option III **as modified per CH 9** or component performance compliance: reduce the Target UA from Table 5-1 by 5% as determined using EQ.1
+1 pt	3B	EFFICIENT BUILDING ENVELOPE 2: Prescriptive compliance per Table 6-1, Option III **as modified per CH 9** or component performance compliance: reduce the Target UA from Table 5-1 by 15% as determined using EQ.1
+2 pts	3C	EFFICIENT BUILDING ENVELOPE 3: Prescriptive compliance per Table 6-1, Option III **as modified per CH 9** or component performance compliance: reduce the Target UA from Table 5-1 by 30% as determined using EQ.1
+1/2 pt	4A	AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION: Envelope leakage reduced to SLA of 0.00020 building tightness when tested with blower door at pressure difference of 50 Pa after rough in and installation of all building envelope penetrations, all whole house ventilation requirements met by heat recovery ventilation system per IRC Section 1508.7
+1/2 pt	5A	EFFICIENT WATER HEATING: Water heating system shall include one of the following: gas, propane, or oil water heater with minimum IF of 0.62; OR electric water heater with minimum EF of 0.93 AND for both cases all showerheads and kitchen sink faucets shall be rated at 1.75 gpm or less, all other 1.0 gpm or less when tested in accordance with ASME A112.18/CSA B125.1
+1.5 pt	5B	EFFICIENT WATER HEATING: Water heating system shall include one of the following: gas, propane or oil water heater with minimum EF of 0.82; OR solar water heating supplementing minimum standard water heater. Solar water heating will provide minimum savings of 85 terms or 2000 kWh based on Solar Rating and Certification Corp (SRCC) Annual performance of OG-300 Certified Solar Water Heating Systems; OR Electric heat pump water heater with minimum EF of 2.0
+1 pt	6	SMALL DWELLING UNIT: Dwelling less than 1500 sq ft with less than 300 sq ft window and door openings. Additions to existing buildings that are less than 750 sq ft of heated floor area
- 1 pt	7	LARGE DWELLING UNIT: Dwelling exceeding 5000 sq ft floor area shall be assessed a deduction
+1/2 pt	8	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 the height of the tower.

FOOTNOTES:

- 1) Interior duct placement: Ducts included as Option 1 above 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 sq ft of conditioned floor area when tested at the pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacture's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.
- 2) Plumbing Fixtures Flow Ratings: Low flow plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
 - a) Residential bath lavatory sinks faucets: Max. flow rate 1.0 gal/min (tested in accordance with ASME 112.18.1/CSA B125.1)
 - b) Residential kitchen faucets: Max. flow rate 1.75 gal/min (tested in accordance with ASME 112.18.1/CSA B125.1)
 - c) Residential shower heads: Max. flow rate 7.75 gal/min (tested in accordance with ASME 112.18.1/CSA B125.1)

OVERHEAD GLAZING

Plan ID	Component Description	Qty.	Width		Height		Glazing U-Factor	Glazing Area	Glazing UA (area x U)
			feet	inch	feet	inch			
Sum of Area and UA									
Area Weighted UA = UA divided by Area									

Completing the Glazing Schedule Worksheet:

Exterior Doors:

The exterior door section is for swinging doors only. Enter sliding doors in the vertical glazing section of the worksheet.

If a swinging door includes glazing, it may be included in the vertical glazing schedule or the exterior door schedule.

Obtain NFRC tested U-Factors from the door manufacturer or use U-Factors from WSEC tables. (Ch 10)

Areas of windows, doors, and skylights are measured using the area of the rough opening.

Glazing area in exterior doors is added to the total of glazing areas of the project as follows:

If greater than 50%, 100% of the area is entered in the door glazing area.

If less than 50%, only the glazed area will be entered in the door glazing area.

Exempt Door: One door, 24 sq ft or less is not included in the U-Factor of the glazing area calculations. You must calculate the door area to verify that it is 24 sq ft or less. This also enters the door heat loss into the heat system size calculation.

Vertical and Horizontal Glazing:

Obtain NFRC tested U-Factors from the glazing supplier. These will give the most accurate and likely the most favorable results. If you can't obtain this data, the tables in WSEC Ch 10 must be used.