

# 2018 WSEC RESIDENTIAL ENERGY & IRC VENTILATION PRESCRIPTIVE COMPLIANCE FORM – APRIL 2021

## ABOUT THE PRESCRIPTIVE COMPLIANCE FORM

2018 WSEC & IRC Ventilation are effective starting February 1, 2021. This form applies to new single-family homes and additions to single family homes.

The prescriptive compliance form has been developed to assist applicants documenting compliance with the energy and ventilation codes. The following pages provide much of the required documentation for plan review.

The detailed noted here must also be shown on the drawings.

### To complete the form, do the following:

1. Page 3: specify heating options and energy credits using the tables which follow.
2. Page 12: specify method of whole house ventilation: multiply CFM by the system coefficient on this page.
3. Page 15: complete the heating system size form.

### WSEC TABLE R402.1.1

INSULATION & FENESTRATION REQUIREMENTS BY COMPONENT		
CLIMATE ZONE	MARINE 4	
	R-VALUE <sup>a</sup>	U-FACTOR <sup>a</sup>
Fenestration U-Factor <sup>b</sup>	n/a	0.30
Skylight U-Factor <sup>b</sup>	n/a	0.50
Glazed Fenestration SHGC <sup>b, e</sup>	n/a	n/a
Ceiling <sup>e</sup>	49	0.026
Wood Frame Wall <sup>g, h</sup>	21 int	0.056
Floor	30	0.029
Below Grade Wall <sup>c, h</sup>	10/15/21 int + 5TB	0.042
Slab <sup>d, f</sup> R-Value & Depth	10, 2 ft	n/a

For SI: 1 foot = 304.8 mm, ci = continuous insulation, int = intermediate framing

Please see footnotes on the following page.

### Code Reference

Building & Construction  
Title 16 SMC

### Resources

WSU Energy Program

### Questions?

Submit Project Guidance

Visit the Permit Center

City of Sammamish  
801 228th Ave SE  
Sammamish, WA 98075  
[www.sammamish.us](http://www.sammamish.us)

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## WSEC TABLE R402.1.1 FOOTNOTES

- a R-values are minimums. U-factors and SHGC are maximums. When insulation is installed in a cavity that is less than the label or design thickness of the insulation, the compressed R-value of the insulation from Appendix Table A101.4 shall not be less than the R-value specified in the table.
- b The fenestration U-factor column excludes skylights.
- c "10/15/21+5TB" means R-10 continuous insulation on the exterior of the wall, or R-15 continuous insulation on the interior of the wall, or R-21 cavity insulation plus a thermal break between the slab and the basement wall at the interior of the basement wall. "10/15/21+5TB" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the wall. "5TB" means R-5 thermal break between floor slab and basement wall.
- d R-10 continuous insulation is required under heated slab on grade floors. See R402.2.9.1.
- e For single rafter- or joist-vaulted ceilings, the insulation may be reduced to R-38 if the full insulation depth extends over the top plate of the exterior wall.
- f R-7.5 continuous insulation installed over an existing slab is deemed to be equivalent to the required perimeter slab insulation when applied to existing slabs complying with Section R503.1.1. If foam plastic is used, it shall meet the requirements for thermal barriers protecting foam plastics.
- g For log structures developed in compliance with Standard ICC 400, log walls shall meet the requirements for climate zone 5 of ICC 400.
- h Int. (intermediate framing) denotes framing and insulation as described in Section A103.2.2 including standard framing 16 inches on center, 78% of the wall cavity insulated and headers insulated with a minimum of R-10 insulation.

## RADIANT SLAB

- R-10 foam insulation, continuous with thermal break (WSEC R402.2.9, Table R402.1.1)

## LIGHTING EFFICIENCY

- Mandatory:** A minimum of 90 percent of all light fixtures will be high efficacy. (WSEC R404.1)

## GLAZING SCHEDULE

**The glazing schedule is not necessary if using prescriptive U-values.  
It may be used to facilitate input on the heating size form, when not using the WSU online form.**

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## ENERGY CREDITS

The following Energy Efficiency Credits can be completed electronically by downloading the Single-Family Prescriptive Worksheet at [energy.WSU.edu](http://energy.WSU.edu) (under Prescriptive Method towards the middle of the page).

Each dwelling unit in a residential building shall comply with sufficient options from Table R406.2 (fuel normalization credits) and Table 406.3 (energy credits) to achieve the following minimum number of credits.

To claim this credit, the building permit drawings shall specify the option selected and the maximum tested building air leakage and show the qualifying ventilation system and its control sequence of operation.

- 1. Small Dwelling Unit: 3 credits**
  - Dwelling units less than 1,500 sf in conditioned floor area with less than 300 sf of fenestration area.
  - Additions to existing building that are greater than 500 sf of heated floor area but less than 1,500 sf.
- 2. Medium Dwelling Unit: 6 credits**
  - All dwelling units that are not included in #1 or #3
- 3. Large Dwelling Unit: 7 credits**
  - Dwelling units exceeding 5,000 sf of conditioned floor area
- 4. Additions less than 500 square feet: 1.5 credits**
  - All other additions shall meet 1-3 above

## ENERGY CREDIT SUMMARY TABLES

Before selecting your credits on these Summary Tables, review the details in the corresponding tables on pages 5-12.

Heating Options - Summary of Table R406.2				
Heating Options	Fuel Normalization Descriptions	Credits select ONE		User Notes
1	Combustion heating min. NAECA <sup>b</sup> [min. 80% eff.]	0.0		
2	Heat pump <sup>c</sup> [14.0 SEER or HSPF of 10.0]	1.0		
3	Electric resistance heat only – furnace or zonal	-1.0		
4	DHP with zonal electric resistance per option 3.4 [HSPF of 10.0]	0.5		
5	All other heating systems	-1.0		

Energy Options - Summary of Table R406.3				
Energy Options	Energy Credit Option Descriptions	Credits select ONE from each category <sup>d</sup>		
1.1	Efficient Building Envelope	0.5		
1.2	Efficient Building Envelope	1.0		
1.3	Efficient Building Envelope	0.5		

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Summary of Table R406.3 (cont.)				
Energy Options	Energy Credit Option Descriptions (cont.)	Credits select <u>ONE</u> from each category <sup>d</sup>		User Notes
1.4	Efficient Building Envelope	1.0	<input type="checkbox"/>	
1.5	Efficient Building Envelope	2.0	<input type="checkbox"/>	
1.6	Efficient Building Envelope	3.0	<input type="checkbox"/>	
1.7	Efficient Building Envelope	0.5	<input type="checkbox"/>	
<hr/>				
2.1	Air Leakage Control and Efficient Ventilation	0.5	<input type="checkbox"/>	
2.2	Air Leakage Control and Efficient Ventilation	1.0	<input type="checkbox"/>	
2.3	Air Leakage Control and Efficient Ventilation	1.5	<input type="checkbox"/>	
2.4	Air Leakage Control and Efficient Ventilation	2.0	<input type="checkbox"/>	
<hr/>				
3.1 <sup>a</sup>	High Efficiency HVAC	1.0	<input type="checkbox"/>	
3.2	High Efficiency HVAC	1.0	<input type="checkbox"/>	
3.3 <sup>a</sup>	High Efficiency HVAC	1.5	<input type="checkbox"/>	
3.4	High Efficiency HVAC	1.5	<input type="checkbox"/>	
3.5	High Efficiency HVAC	1.5	<input type="checkbox"/>	
3.6 <sup>a</sup>	High Efficiency HVAC	2.0	<input type="checkbox"/>	
<hr/>				
4.1	High Efficiency HVAC Distribution System	0.5	<input type="checkbox"/>	
4.2	High Efficiency HVAC Distribution System	1.0	<input type="checkbox"/>	
<hr/>				
5.1 <sup>d</sup>	Efficient Water Heating	0.5	<input type="checkbox"/>	
5.2	Efficient Water Heating	0.5	<input type="checkbox"/>	
5.3	Efficient Water Heating	1.0	<input type="checkbox"/>	
5.4	Efficient Water Heating	1.5	<input type="checkbox"/>	
5.5	Efficient Water Heating	2.0	<input type="checkbox"/>	
5.6	Efficient Water Heating	2.5	<input type="checkbox"/>	
<hr/>				
6.1	Renewable Electric Energy (3 credits max)	1.0	<input type="checkbox"/>	
<hr/>				
7.1	Appliance Package	0.5	<input type="checkbox"/>	

Please see footnotes on the following page.

Total Credits: \_\_\_\_\_

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## Summary of Table R406.3 Footnotes

- a An alternative heating source sized at a maximum of 0.5 W/sf (equivalent) of heated floor area or 500 W, whichever is bigger, may be installed in the dwelling unit.
- b Equipment listed in Table C403.3.2(4) or C403.3.2(5)
- c Equipment listed in Table C403.3.2(1) or C403.3.2(2)
- d **You cannot select more than one option from any category EXCEPT in category 5 where option 5.1 may be combined with options 5.2 through 5.6. See Table 406.3.**
- f 1.0 credit for each 1,200 kWh of electrical generation provided annually, up to 3 credits max. See the complete Table R406.2 for all requirements and option descriptions.

## ENERGY CREDIT DETAIL TABLES

Table 406.2 – Energy Credits (Single Family)		
System Type	Description of Primary Heating Source	Credit
1	Combustion heating equipment meeting minimum federal efficiency standards for the equipment listed in Table C403.3.2(4) or C403.3.2(5) [80% efficiency]	0
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C or C403.2(2) [14.0 SEER or HSPF of 10.0] <b>or</b> <b>Air to water</b> heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590	1.0
3	For heating system based on electric resistance only (either forced air or Zonal)	-1.0
4	For heating system based on electric resistance with a ductless mini-split heat pump system in accordance with Section R403.7.1 including the exception.	0.5
5	All other heating systems.	-1.0

Table 406.3 – Energy Credits (Single Family)		
1. EFFICIENT BUILDING ENVELOPE OPTIONS		
<i>Only one option from Items 1.1 through 1.7 may be selected in this category. Compliance with the conductive UA targets is demonstrated using Section R402.1.4, Total UA alternative, where [1- (Proposed UA/Target UA)] &gt; the required %UA reduction.</i>		
Option	Descriptions	Credit
1.1	Prescriptive compliance is based on Table R402.1.1 with the following modifications: <b>Vertical fenestration U = 0.24</b>	0.5
1.2	Prescriptive compliance is based on Table R402.1.1 with the following modifications: <b>Vertical fenestration U = 0.20</b>	1.0
<b>1. Efficient Building Envelope Options continues on next page</b>		

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**Table 406.3 – Energy Credits (Single Family) (Continued)**

**1. EFFICIENT BUILDING ENVELOPE OPTIONS - CONTINUED**

*Only one option from Items 1.1 through 1.7 may be selected in this category. Compliance with the conductive UA targets is demonstrated using Section R402.1.4, Total UA alternative, where  $[1 - (\text{Proposed UA} / \text{Target UA})] > \text{the required \%UA reduction}$ .*

Option	Descriptions	Credit
1.3	Prescriptive compliance is based on Table R402.1.1 with the following modifications: <b>Vertical fenestration U = 0.28</b> Floor R-38 Slab on grade R-10 perimeter and under entire slab below grade slab R-10 perimeter and under entire slab <b>or</b> Compliance based on Section R402.1.4: Reduce the Total conductive UA by 5%	0.5
1.4	Prescriptive compliance is based on Table R402.1.1 with the following modifications: <b>Vertical fenestration U = 0.25</b> Wall R-21 plus R-4 ci 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 <b>or</b> Compliance based on Section R402.1.4: Reduce the Total conductive UA by 15%	1.0
1.5	Prescriptive compliance is based on Table R402.1.1 with the following modifications: <b>Vertical fenestration U = 0.22</b> 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 <b>or</b> Compliance based on Section R402.1.4: Reduce the Total conductive UA by 30%	2.0
1.6	Prescriptive compliance is based on Table R402.1.1 with the following modifications: <b>Vertical fenestration U = 0.18</b> Ceiling and single-rafter or joist-vaulted R-60 advanced Wood frame wall R-21 int plus R-16 ci Floor R-48 Basement wall R-21 int plus R-16 ci Slab on grade R-20 perimeter and under entire slab Below grade slab R-20 perimeter and under entire slab <b>or</b> Compliance based on Section R402.1.4: Reduce the Total conductive UA by 40%.	3.0

**1. Efficient Building Envelope Options continues on next page**

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Table 406.3 – Energy Credits (Single Family) (Continued)		
1. EFFICIENT BUILDING ENVELOPE OPTIONS - CONTINUED		
<p><i>Only one option from Items 1.1 through 1.7 may be selected in this category. Compliance with the conductive UA targets is demonstrated using Section R402.1.4, Total UA alternative, where [1- (Proposed UA/Target UA)] &gt; the required %UA reduction.</i></p>		
Option	Descriptions	Credit
1.7	<p>Advanced framing and raised heel trusses or rafters</p> <p><b>Vertical Glazing U-0.28</b></p> <p>R-49 Advanced (U-0.020) as listed in Section A102.2.1, Ceilings below a vented attic and R-49 vaulted ceilings with full height of uncompressed insulation extending over the wall top plate at the eaves.</p>	0.5
2. AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION OPTIONS		
<p><i>Only one option from Items 2.1 through 2.4 may be selected in this category.</i></p>		
Option	Descriptions	Credit
2.1	<p>Compliance based on R402.4.1.2: Reduce the tested air leakage to 3.0 air changes per hour maximum at 50 Pascals <b>or</b></p> <p>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.3 cfm/sf maximum at 50 Pascals and</b></p> <p>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a high efficiency fan(s) (<b>maximum 0.35 watts/cfm</b>), not interlocked with the furnace fan (if present). 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, the building permit drawings shall specify the option being selected and the maximum tested building air leakage and shall show the qualifying ventilation system and its control sequence of operation.</p>	0.5
2.2	<p>Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>2.0 air changes per hour maximum at 50 Pascals or</b></p> <p>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to 0.25 cfm/sf maximum at 50 Pascals <b>and</b></p> <p>All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of <b>0.65.</b><sup>1</sup></p>	1.0
<p><b>2. Air Leakage Control &amp; Efficient Ventilation Options continues on next page</b></p>		

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Table 406.3 – Energy Credits (Single Family) (Continued)		
2. AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION OPTIONS - CONTINUED		
<i>Only one option from Items 2.1 through 2.4 may be selected in this category.</i>		
Option	Descriptions	Credit
2.3	Compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>1.5 air changes per hour</b> maximum at 50 Pascals <b>or</b> For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.25 cfm/sf</b> maximum at 50 Pascals <b>and</b> All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of <b>0.75</b> .	1.5
2.4	Compliance based on Section R402.4.1.2: Reduce the tested air leakage to 0.6 air changes per hour maximum at 50 Pascals <b>or</b> For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to <b>0.15 cfm/sf</b> maximum at 50 Pascals <b>and</b> All whole house ventilation requirements as determined by Section M1507.3 of the International Residential Code or Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of <b>0.80. Duct installation shall comply with Section R403.3.7.</b>	2.0
<sup>1</sup> 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.		

3. HIGH EFFICIENCY HVAC EQUIPMENT OPTIONS		
<i>Only one option from Items 3.1 through 3.6 may be selected in this category.</i>		
Option	Descriptions	Credit
3.1 <sup>2</sup>	Energy Star rated (U.S. North) Gas or propane furnace with minimum AFUE of 95% <b>or</b> Energy Star rated (U.S. North) Gas or propane boiler with minimum AFUE 90%. <sup>2</sup>	1.0
3.2 <sup>2</sup>	Air-source centrally ducted heat pump with minimum HSPF of 9.5. <sup>3</sup>	1.0
3.3 <sup>2</sup>	Closed-loop ground source heat pump; with a minimum COP of 3.3 <b>or</b> Open loop water source heat pump with a maximum pumping hydraulic head of 150 feet and minimum COP of 3.6. <sup>3</sup>	1.5
3.4	Ductless mini-split heat pump system zonal control: In homes where the primary space heating system is zonal electric heating, a ductless mini-split heat pump system with a minimum HSPF of 10.0 shall be installed and provide heating to the <b>largest zone</b> of the housing unit. <sup>4</sup>	1.5
3.5 <sup>2</sup>	Air-source, centrally ducted heat pump with minimum HSPF of 11.0. <sup>4</sup>	1.5
<b>3. High Efficiency HVAC Equipment Options continues on next page</b>		

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Table 406.3 – Energy Credits (Single Family) (Continued)		
3. HIGH EFFICIENCY HVAC EQUIPMENT OPTIONS - CONTINUED		
<i>Only one option from Items 3.1 through 3.6 may be selected in this category.</i>		
Option	Descriptions	Credit
3.6 <sup>2</sup>	Ductless split system heat pumps with no electric resistance heating in the primary living areas. A ductless heat pump system with a minimum HSPF of 10 shall be sized and installed to provide heat to <b>entire dwelling unit</b> at the design outdoor air temperature. To qualify to claim this credit, the building permit drawings shall specify the option being selected, the heated floor area calculation, the heating equipment type(s), the minimum equipment efficiency, and total installed heat capacity (by equipment type).	2.0
<sup>2</sup>	An alternative heating source sized at a maximum of 0.5 W/sf(equivalent) of heated floor area or 500 W, whichever is bigger, may be installed in the dwelling unit.	
<sup>3</sup>	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.	
<sup>4</sup>	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.	

4. HIGH EFFICIENCY HVAC DISTRIBUTION SYSTEM OPTIONS		
Option	Descriptions	Credit
4.1	All supply and return ducts located in an unconditioned attic shall be deeply buried in ceiling insulation in accordance with Section R403.3.7. For mechanical equipment located outside the conditioned space, a maximum of 10 linear feet of return duct and 5 linear feet of supply duct connections to the equipment may be outside the deeply buried insulation. All metallic ducts located outside the conditioned space must have both transverse and longitudinal joints sealed with mastic. If flex ducts are used, they cannot contain splices. Duct leakage shall be limited to 3 cfm per 100 square feet of conditioned floor area. Air handler(s) shall be located within the conditioned space.	0.5
4.2	HVAC equipment and associated duct system(s) installation shall comply with the requirements of Section R403.3.7. [Ducts located within conditioned space.] Locating system components in conditioned crawl spaces is not permitted under this option. Electric resistance heat and ductless heat pumps are 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

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Table 406.3 – Energy Credits (Single Family) (Continued)		
5. EFFICIENT WATER HEATING OPTIONS		
<i>Only one option from Items 5.2 through 5.6 may be selected in this category. Item 5.1 may be combined with any option.</i>		
Option	Descriptions	Credit
5.1	A drain water heat recovery unit(s) shall be installed, which captures wastewater heat from all and only the showers and has a minimum efficiency of 40% if installed for equal flow or a minimum efficiency of 54% if installed for unequal flow. Such units shall be rated in accordance with CSA B55.1 or IAPMO IGC 346-2017 and be so labeled.  To qualify to claim this credit, the building permit drawings shall include a plumbing diagram that specifies the drain water heat recovery units and the plumbing layout needed to install it. Labels or other documentation shall be provided that demonstrates that the unit complies with the standard.	0.5
5.2	Water heating system shall include one of the following: Energy Star rated gas or propane water heater with a minimum UEF of 0.80. <sup>5</sup>	0.5
5.3	Water heating system shall include one of the following: Energy Star rated gas or propane water heater with a minimum UEF of 0.91 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 <b>or</b> Water heater heated by ground source heat pump meeting requirements of Option 3.3.  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 minimum energy savings.	1.0
5.4	Water heating system shall include one of the following: Electric heat pump water heater meeting the standards for Tier I of NEEA's advanced water heating specification [Energy Star compliant] <b>or</b> For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier I of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup>	1.5
5.5	Water heating system shall include one of the following: Electric heat pump water heater meeting the standards for Tier III of NEEA's advanced water heating specification <b>or</b> For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier III of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup>	2.0
<b>5. Efficient Water Heating Options continues on next page</b>		

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Table 406.3 – Energy Credits (Single Family) (Continued)		
5. EFFICIENT WATER HEATING OPTIONS - CONTINUED		
<i>Only one option from Items 5.2 through 5.6 may be selected in this category. Item 5.1 may be combined with any option.</i>		
Option	Descriptions	Credit
5.6	<p>Water heating system shall include one of the following:</p> <p>Electric heat pump water heater with a minimum UEF of 2.9 and utilizing a split system configuration with the air-to-refrigerant heat exchanger located outdoors. Equipment shall meet Section 4, requirements for all units, of the NEEA standard Advanced Water Heating Specification with the UEF noted above [Cool climate efficiency rating of 2.6] <b>or</b></p> <p>For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier III of NEEA's advanced water heating specification and utilizing a split system configuration with the air-to-refrigerant heat exchanger located outdoors, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation. <sup>5</sup></p>	2.5
<p><sup>5</sup> 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.</p>		

6. RENEWABLE ELECTRIC ENERGY OPTIONS		
Option	Descriptions	Credit
6.1	<p>For each 1200 kWh of electrical generation per housing unit provided annually by on-site wind or solar equipment a 1.0 credit shall be allowed, up to 3 credits. Generation shall be calculated as follows:</p> <p>For solar electric systems, the design shall be demonstrated to meet this requirement using the National Renewable Energy Laboratory calculator PVWATTS or approved alternate by the code official.</p> <p>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.</p> <p>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.</p>	1.0

**Table 406.3 – Energy Credits (Single Family) continues on next page**



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TABLE M1505.4.3(1) WHOLE-HOUSE MECHANICAL VENTILATION AIRFLOW RATE					
DWELLING UNIT FLOOR AREA (SQUARE FEET)	NUMBER OF BEDROOMS				
	0-1	2	3	4	5 OR MORE
	AIRFLOW IN CFM				
< 500	30	30	35	45	50
501 – 1,000	30	35	40	50	55
1,001 – 1,500	30	40	45	55	60
1,501 – 2,500	35	45	50	60	65
2,001 – 2,500	40	50	55	65	70
2,501 – 3,000	45	55	60	70	75
3,001 – 3,500	50	60	65	75	80
3,501 – 4,000	55	65	70	80	85
4,001 – 4,500	60	70	75	85	90
4,501 – 5,000	65	75	80	90	95
**5,001 – 5,500	70	80	85	95	100
5,501 – 6,000	75	85	90	100	105
6,001 – 6,500	80	90	95	105	110
6,501 – 7,000	85	95	100	110	115

For SI: 1 square foot = 0.0929 m<sup>2</sup>, 1 cubic foot per minute = 0.0004719 m<sup>3</sup>/s  
 \*\* Expanded table incrementally, based on established values.

TABLE M1505.4.3(3) INTERMITTENT OFF WHOLE-HOUSE MECHANICAL VENILATION RATE FACTORS <sup>a, b</sup>				
RUN-TIME % IN EACH 4-HOUR SEGMENT	50%	66%	75%	100%
Factor <sup>a</sup>	2	1.5	1.3	1.0

a For ventilation system run-time values between those given, the factors are permitted to be determined by interpolation.  
 b Extrapolation beyond the table is prohibited.

TABLE M1505.4.4(1) MINIMUM LOCAL EXHAUST RATES		
AREA TO BE EXHAUSTED	EXHAUST RATES	
	INTERMITTENT	CONTINUOUS
Kitchens	100 cfm	30 cfm
Bathrooms-Toilet Rooms	50 cfm	20 cfm



# 2018 WSEC RESIDENTIAL ENERGY & IRC VENTILATION PRESCRIPTIVE COMPLIANCE FORM

## SIMPLE HEATING SYSTEM SIZE

The below can be completed electronically. Please see the Heating System Sizing Calculator section at [energy.WSU.edu](http://energy.WSU.edu). The heating system sizing calculator is based on the Prescriptive Requirements of the 2018 Washington State Energy Code (WSEC) and ACCA Manuals J and S. This tool will calculate heating loads only. ACCA procedures for sizing cooling systems should be used to determine cooling loads.

**Project Information**


**Contact Information**


**Heating System Type:**  All Other Systems  Heat Pump

To see detailed instructions for each section, place your cursor on the word "Instructions"

**Design Temperature**

*Instructions*

**Design Temperature Difference ( $\Delta T$ )**  
 $\Delta T = \text{Indoor (70 degrees)} - \text{Outdoor Design Temp}$

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**Area of Building**

**Conditioned Floor Area**

*Instructions*

Conditioned Floor Area (sq ft)

**Average Ceiling Height**

*Instructions*

Average Ceiling Height (ft)

Conditioned Volume

**Glazing and Doors**

*Instructions*

**U-Factor X Area = UA**

X  =

**Skylights**

*Instructions*

**U-Factor X Area = UA**

0.50 X  =

**Insulation**

**Attic**

*Instructions*

**U-Factor X Area = UA**

0.26 X  =

**Single Rafter or Joist Vaulted Ceilings**

*Instructions*

**U-Factor X Area = UA**

X  =

**Above Grade Walls (see Figure 1)**

*Instructions*

**U-Factor X Area = UA**

X  =

**Floors**

*Instructions*

**U-Factor X Area = UA**

X  =

**Below Grade Walls (see Figure 1)**

*Instructions*

**U-Factor X Area = UA**

X  =

**Slab Below Grade (see Figure 1)**

*Instructions*

**F-Factor X Length = UA**

X  =

**Slab on Grade (see Figure 1)**

*Instructions*

**F-Factor X Length = UA**

X  =

**Location of Ducts**

*Instructions*

**Duct Leakage Coefficient**

**Sum of UA**

**Envelope Heat Load** \_\_\_\_\_ Btu / Hour

*Sum of UA x  $\Delta T$*

**Air Leakage Heat Load** \_\_\_\_\_ Btu / Hour

*Volume x 0.6 x  $\Delta T$  x 0.018*

**Building Design Heat Load** \_\_\_\_\_ Btu / Hour

*Air leakage + envelope heat loss*

**Building and Duct Heat Load** \_\_\_\_\_ Btu / Hour

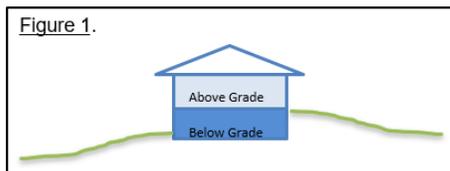
*Ducts in unconditioned space: sum of building heat loss x 1.10*

*Ducts in conditioned space: sum of building heat loss x 1*

**Maximum Heat Equipment Output** \_\_\_\_\_ Btu / Hour

*Building and duct heat loss x 1.40 for forced air furnace*

*Building and duct heat loss x 1.25 for heat pump*



# 2018 WSEC RESIDENTIAL ENERGY & IRC VENTILATION PRESCRIPTIVE COMPLIANCE FORM



## DOCUMENTS REQUIRED PRIOR TO FINAL

- Insulation Certification (R303.1.1)
- Blower Door Test Result Form (R402.4.1.2)
- Duct Testing Affidavit (New or Existing Construction)
- Air Leakage Testing
- WSEC 2018 Certificate

## COMPLIANCE PUBLICATIONS & TOOLS

Available online: [energy.WSU.edu](http://energy.WSU.edu)

- Blower Door Test Result Form
- 2015 Prescriptive Energy Code Checklist
- Duct and Blower Door Test Hand Calculator
- Duct and Blower Door Test Calculator
- Duct Testing Standard (RS-33)
- Duct Testing Affidavit (New Construction)
- Duct Testing Affidavit (Existing Construction)
- Contact jurisdiction for a modifiable copy of the Duct Testing Affidavit, via [WSU.edu](http://WSU.edu), Energy Program
- Air Leakage Testing
- WSEC 2018 Certificate
- Insulation Certificate
- Getting to Know Your Ventilation System: Exhaust Type – Whole House
- Benefits of Duct Sealing

## ENERGY CODE WORKSHEETS

Available online: [energy.WSU.edu](http://energy.WSU.edu)

- Total UA Alternative Worksheet – rarely used
- Alterations (Remodel) Worksheet
- Code Compliance Calculator