

Attachment #1 – Suggested Code Revisions

(Suggested changes in red font, strike-through and underline format)

WAC 51-11R-40211 Table R402.1.2—Insulation and fenestration requirements by component.

TABLE R402.1.2

INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT

CLIMATE ZONE 5 AND MARINE 4

Above-Grade Wall *U*-factor ((0.056))

0.045

[0.056]

WAC 51-11R-40551 Table R405.4.2(1)—Specifications for the standard reference and proposed designs.

TABLE ((R402.4.2(1))) R405.4.2(1)

SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Heating Systems ^{d, e}	The standard reference design shall be an air source heat pump <u>the same system type as proposed</u> meeting the requirements of Section C403 of the WSEC—Commercial Provisions. Capacity: Sized in accordance with Section ((R403.6)) R403.7	As proposed
Service water heating ^{d, e, f, g}	The standard reference design shall be a heat pump water ((heating)) heater meeting the standards for Tier 1 of NEEA's Advanced Water Heating Specifications. the same system type as proposed meeting the requirements of Section C404.2 of the WSEC—Commercial Provisions. Use, in units of gal/day = 25.5 + (8.5 x N _{br}) Where N _{br} = number of bedrooms	As proposed Use, in units of gal/day = 25.5 + (8.5 x N _{br}) x (1 - HWDS) Where: N _{br} = number of bedrooms HWDS = factor for the compactness of the hot water distribution system

WAC 51-11R-40610 Table R406.2—Energy equalization credits.

TABLE R406.2

((FUEL NORMALIZATION)) ENERGY EQUALIZATION CREDITS

System Type	Description of Heating Sources	Credits	
		All Other	Group R-2 ^a
1	For combustion heating system using equipment meeting minimum federal efficiency standards for the equipment listed in Table C403.3.2(5) or C403.3.2(6)	((-3.0) <u>0</u>)	0
2	For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(2) and supplemental heating provided by electric resistance or a combustion furnace meeting minimum standards listed in Table C403.3.2(5)b	((0) 1.5 <u>2.0</u>)	0
3	For heating system based on electric resistance only (either forced air or zonal)	((1.5) <u>0.5</u>)	-0.5
4 ^c	For a heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(2) or C403.3.2(9) or Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590	((1.5) 3.0 <u>2.0</u>)	2.0
5	For heating system based on electric resistance with: 1. Inverter-driven ductless mini-split heat pump system installed in the largest zone in the dwelling or 2. With 2 kW or less total installed heating capacity per dwelling	((0.5) <u>2.0</u>)	0

WAC 51-11R-40620 Section R406.3—Additional energy efficiency requirements.

R406.3 Additional energy efficiency requirements. Each *dwelling unit* in a residential building shall comply with sufficient options from Table R406.2 and R406.3 so as to achieve the following minimum number of credits:

- Small Dwelling Unit: ((~~2.5~~)) ~~5.0~~ 3.5 credits

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 greater than 500 square feet of

- heated floor area but less than 1500 square feet.
2. Medium Dwelling Unit: ~~((5.0))~~ ~~8.0~~ 6.5 credits
- All dwelling units that are not included in #1, #3, or #4.
3. Large Dwelling Unit: ~~((6.0))~~ ~~9.0~~ 7.5 credits
- Dwelling units exceeding 5000 square feet of conditioned floor area.
4. Dwelling units serving Group R-2 occupancies. See Section R401.1 and *residential building* in Section R202 for Group R-2 scope. ~~((4.5))~~ ~~6.5~~ 5.0 credits
5. Additions 150 square feet to 500 square feet: 2.0 credits

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.

WAC 51-11R-40621 Table R406.3—Energy credits.

**TABLE 406.3
ENERGY CREDITS**

OPTION	DESCRIPTION	CREDIT(S)	
		All Other	Group R-2 ^b
5. EFFICIENT WATER HEATING OPTIONS			
Only one option from Items 5.3 through ((5.5)) <u>5.8</u> may be selected in this category. Items 5.1 and 5.2 may be combined with any option.			
5.8	<u>Combination water heating and space heating system shall include one of the following:</u> <u>Gas-fired heat pump water heater(s) meeting Tier 2 of the NEEA Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0.</u> <u>or</u> <u>For R-2 Occupancy, gas-fired heat pump water heater(s) meeting Tier 2 of the NEEA Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0., shall supply all units.</u> <u>or</u>	TBD <u>2.5</u>	TBD <u>2.5</u>

	<p><u>For R-2 Occupancy, gas-fired heat pump(s) meeting ANSI Z21.40.2 and Z21.40.4 or CSA, with a minimum UEF of 1.15, shall supply all units.</u></p> <p><u>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.</u></p>		
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OTS-5008.3 – Option 1

WAC 51-11C-40100 Table C401.3.3—Additional credits required.

**TABLE C401.3.3
ADDITIONAL CREDITS REQUIRED**

<u>Measure Title</u>	<u>Applicable Section</u>	<u>Occupancy Group</u>						<u>All Other</u>
		<u>Group R-1</u>	<u>Group R-2</u>	<u>Group B</u>	<u>Group E</u>	<u>Group M</u>		
<u>New building - Additional efficiency credits required for space heating systems using the fossil fuel pathway</u>	<u>C401.3.3.1</u>	<u>7</u> <u>TBD</u>	<u>24</u> <u>TBD</u>	<u>101</u> <u>TBD</u>	<u>38</u> <u>TBD</u>	<u>111</u> <u>TBD</u>	<u>56</u> <u>TBD</u>	
<u>New building - Additional efficiency credits required for service water heating systems using the fossil fuel pathway</u>	<u>C401.3.3.2</u>	<u>198</u> <u>TBD</u>	<u>212</u> <u>TBD</u>	<u>27</u> <u>TBD</u>	<u>17</u> <u>TBD</u>	<u>79</u> <u>TBD</u>	<u>107</u> <u>TBD</u>	
<u>Building additions - Additional efficiency credits required for space heating systems using the fossil fuel pathway</u>	<u>C401.3.3.1</u>	<u>4</u> <u>TBD</u>	<u>12</u> <u>TBD</u>	<u>51</u> <u>TBD</u>	<u>19</u> <u>TBD</u>	<u>56</u> <u>TBD</u>	<u>28</u> <u>TBD</u>	
<u>Building additions - Additional efficiency credits required for service water heating systems using the fossil fuel pathway</u>	<u>C402.3.3.2</u>	<u>99</u> <u>TBD</u>	<u>106</u> <u>TBD</u>	<u>14</u> <u>TBD</u>	<u>9</u> <u>TBD</u>	<u>40</u> <u>TBD</u>	<u>54</u> <u>TBD</u>	

TBD – {Contract third party to recalculate values based upon source energy.}

OTS-5008.3 – Option 1

WAC 51-11C-40100 Section C401.3.6—Electrification readiness. ~~[delete in full]~~

~~C401.3.6 Electrification readiness. Additionally, the following provisions shall be required for new construction:~~

- ~~1. Provide a spare electrical branch circuit conduit to that appliance sized to support an equivalent heat pump appliance.~~
- ~~2. Provide spare electrical service entrance conduits for the purpose of upgrading the main electrical service to support all heat pump appliances throughout the building.~~
- ~~3. The main electrical room has sufficient space to accommodate increasing the main electrical service's size to support all heat pump appliances throughout the building.~~
- ~~4. Additional accommodations for the utility equipment comprised of transformer(s) and other equipment necessary to support an electrical service upgrade. These accommodations shall include adequate space on the site. If the utility equipment is located in a transformer vault, that vault must include not only the space but the additional cooling for larger transformer(s).~~

OTS-5008.3 – Option 1 & OTS-5009.3 – Option 2

WAC 51-11C-40314 Section C403.1.4—HVAC heating equipment.

C403.1.4 Use of electric resistance and fossil fuel-fired HVAC heating equipment. HVAC heating energy shall not be provided by electric resistance or fossil fuel combustion appliances. For the purposes of this section, electric resistance HVAC heating appliances include, but are not limited to, electric baseboard, electric resistance fan coil and VAV electric resistance terminal reheat units and electric resistance boilers. For the purposes of this section, fossil fuel combustion HVAC heating appliances include, but are not limited to, appliances burning natural gas, heating oil, propane, or other fossil fuels.

EXCEPTIONS:

1. **Low heating capacity.** Buildings or areas of buildings, other than *dwelling units* or sleeping units, that meet the interior temperature requirements of Chapter 12 of the *International Building Code* with a total installed HVAC heating capacity no greater than 8.5 Btu/h (2.5 watts) per square foot of *conditioned space* are permitted to be heated using electric resistance or fossil fuel-fired appliances.
2. **Dwelling and sleeping units.** Dwelling or sleeping units are permitted to be heated using electric resistance or fossil fuel-fired appliances as long as the installed HVAC heating capacity in any separate space is not greater than:
 1. Seven hundred fifty (750) watts in Climate Zone 4, and 1000 watts in Climate Zone 5 in each habitable space with fenestration.
 2. One thousand (1,000) watts in Climate Zone 4, and 1300 watts in Climate Zone 5 for each habitable space that has two primary walls facing different cardinal directions, each with exterior fenestration. Bay windows and other minor offsets are not considered primary walls.
 3. Two hundred fifty (250) watts in spaces adjoining the *building thermal envelope* but without fenestration.
 4. Or, where the total fossil fuel-fired heating capacity provided within the dwelling unit does not exceed 10,000 Btu/hr.

For the purposes of this section, habitable space is as defined in the International Building Code. For buildings in locations with exterior design conditions below 4°F (-16°C), an additional 250 watts above that allowed for Climate Zone 5 is permitted in each space with fenestration.

3. **Small buildings.** Buildings with less than 2,500 square feet (232 m²) of *conditioned floor area* are permitted to be heated using electric resistance or fossil fuel-fired appliances.
4. **Defrost.** Heat pumps are permitted to utilize electric resistance or fossil fuel-fired heating when a heat pump defrost cycle is required and is in operation.
5. *{Continues...}*

OTS-5008.3 – Option 1 & OTS-5009.3 – Option 2

WAC 51-11C-40600 Section C406.1.2—Discrete area-weighted project compliance.

C406.1.2 Discrete area-weighted project compliance. Discrete building areas (~~(shall be)~~) are permitted to select different packages of measures provided that the whole project complies with both the energy and load management credit requirements. Compliance shall be determined as follows:

1. (~~(Project credit requirement shall be the individual occupancy group requirements from Table C406.1 for each discrete area weighted by discrete area conditioned floor area.)~~) Required project credits shall be prorated on an area-weighted basis for each occupancy group by multiplying the occupancy group floor area by the number of credits required, and then dividing this value by the total area of all the occupancy groups combined. Where ~~one occupancy group is~~ an accessory use being less than 10 percent of the floor area of the project exists, use the accessory use shall be included within the floor area of primary occupancy group for ~~all~~ credits weighting.

2. *{Continues...}*

OTS-5008.3 – Option 1 & OTS-5009.3 – Option 2

WAC 51-11C-50300 Section C503—Alterations.

Table C503.4.6

Compliance Options for Mechanical Heating Equipment Alterations

{Table omitted for clarity; change relates to footnotes only}

- a. Includes replacement of equipment with a unit that is the same type or higher efficiency and the same or lower capacity, or a replacement of one equipment type with a different equipment type.
- b. Equipment shall have a capacity-weighted average heating system efficiency that is ~~10.5~~ 10.5 percent better than that shown in the reference table (~~((1.10))~~ 1.05 x values in reference table).
- c. Option 1 and Option 2 can be combined.

OTS-5009.3 – Option 2

WAC 51-11C-40314 Section C403.1.4—HVAC heating equipment.

C403.1.4 Use of electric resistance and fossil fuel-fired HVAC heating equipment.

Commercial buildings shall comply with one of the following:

1. Fossil fuel space heating pathway: HVAC heating provided by a fossil fuel appliance shall comply with Section C406.1.3. Fossil fuel combustion appliances are permitted for HVAC heating, and shall comply with the applicable efficiency standards referenced in Section

C403.3.3.2. Additionally, the following provisions shall be required for new construction:

1.1. Provide a spare electrical branch circuit conduit to that appliance sized to support an equivalent heat pump appliance.

1.2. Provide spare electrical service entrance conduits for the purpose of upgrading the main electrical service to support all heat pump appliances throughout the building.

1.3. The main electrical room has sufficient space to accommodate increasing the main electrical service's size to support all heat pump appliances throughout the building.

1.4. Additional accommodations for the utility equipment comprised of transformer(s) and other equipment necessary to support an electrical service upgrade. These accommodations shall include adequate space on the site. Where the utility equipment is located in a transformer vault, that vault must include not only the space but the additional cooling for larger transformer(s).

2. {Continues...}

OTS-5009.3 – Option 2

WAC 51-11C-40402 Section C404.2—Service water-heating equipment performance efficiency.

C404.2 Service water-heating equipment performance efficiency. Water-heating equipment and hot water storage tanks shall meet the requirements of Table C404.2. The efficiency shall be verified through certification and *listed* under an *approved* certification program, or if no certification program exists, the equipment efficiency ratings shall be supported by data furnished by the manufacturer. Water-heating equipment intended to be used to provide space heating shall meet the applicable provisions of Table C404.2. Commercial buildings shall comply with one of the following:

1. Fossil fuel water heater pathway: Service water heating provided by a fossil fuel combustion appliance shall comply with Section 406.1.3. Additionally, the following provisions shall be required for new construction:

1.1. Provide a spare electrical branch circuit conduit to that appliance sized to support an equivalent heat pump appliance.

1.2. Provide spare electrical service entrance conduits for the purpose of upgrading the main electrical service to support all heat pump appliances throughout the building.

1.3. The main electrical room has sufficient space to accommodate increasing the main electrical service's size to support all heat pump appliances throughout the building.

1.4. Additional accommodations for the utility equipment comprised of transformer(s) and other equipment necessary to support an electrical service upgrade. These accommodations shall include adequate space on the site. Where the utility equipment is located in a transformer

vault, that vault must include not only the space but the additional cooling for larger transformer(s):

2. Heat pump water heater pathway: Comply with Section C404.2.1.

C404.2.1 Service water heating system type. Service hot water shall be provided by an electric air-source heat pump water heating (HPWH) system meeting the requirements of this section. Supplemental service water heating equipment is permitted to use electric resistance or fossil fuel in compliance with Section C404.2.1.4.

EXCEPTIONS:

1. 24 kW plus 0.1 watts per square foot of building area of electric resistance service water heating capacity is allowed per building.
2. Solar thermal, wastewater heat recovery, other approved waste heat recovery, ground source heat pumps, water-source heat pump systems utilizing waste heat, and combinations thereof, are permitted to offset all or any portion of the required HPWH capacity where such systems comply with this code and the Uniform Plumbing Code.
3. Systems that comply with the Northwest Energy Efficiency Alliance (NEEA) Commercial Electric Advanced Water Heating Specification.
4. Service hot water systems served by a district energy system that serves multiple buildings and that was in service before the effective date of this code.
5. Commercial dishwashers, commercial food service equipment, and other approved process equipment are permitted to utilize electric or fossil fuel-fired** booster heaters for supply water temperatures 120°F (49°C) or higher.
6. Systems connected to a low-carbon district energy exchange system or a low-carbon district heating and cooling or heating only system.
7. Essential facilities. Groups I-2 and I-3 occupancies that by regulation are required to have in place redundant emergency backup systems.

*** C404.2.1 is not amended via OTS 5008.3 – Option 1 and is therefore not included in the CR-102 filing; however, this change should also be made should Option 1 be selected.*

OTS-5009.3 – Option 2

WAC 51-11C-40600 Section C406—Efficiency and load management measures.

TABLE C406.1.3.1

FOSSIL FUEL SPACE HEATING BASELINE NORMALIZATION

<u>Measure Title</u>	<u>Applicable Section</u>	<u>Occupancy Group</u>					
		<u>Group R-1</u>	<u>Group R-2</u>	<u>Group B</u>	<u>Group E</u>	<u>Group M</u>	<u>All Other</u>
<u>Additional baseline credits required for space heating systems using the fossil fuel pathway.</u>	<u>C406.1.3.1</u>	7 <u>TBD</u>	22 <u>TBD</u>	101 <u>TBD</u>	38 <u>TBD</u>	111 <u>TBD</u>	56 <u>TBD</u>

**TABLE C406.1.3.2
FOSSIL FUEL SERVICE WATER HEATING BASELINE NORMALIZATION**

<u>Measure Title</u>	<u>Applicable Section</u>	<u>Occupancy Group</u>					
		<u>Group R-1</u>	<u>Group R-2</u>	<u>Group B</u>	<u>Group E</u>	<u>Group M</u>	<u>All Other</u>
<u>Additional baseline credits required for service water heating systems using the fossil fuel pathway.</u>	<u>C406.1.3.2</u>	<u>198</u> <u>TBD</u>	<u>204</u> <u>TBD</u>	<u>27</u> <u>TBD</u>	<u>17</u> <u>TBD</u>	<u>79</u> <u>TBD</u>	<u>105</u> <u>TBD</u>

TBD – {Contract third party to recalculate values based upon source energy.}