

MVE Committee
Summary of Proposed Modifications
2021 Code Adoption Cycle
Sept/Oct 2022

Res Energy Code Testimony

Testimony From	Summary																					
<u>Minority Reports</u>																						
052/051/070	<p>Electricity metric to 0.8 or remove carbon emissions table/basis</p> <p style="text-align: center;">TABLE R405.2(2) CARBON EMISSIONS FACTORS</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th data-bbox="709 808 968 873"><u>Type</u></th> <th data-bbox="968 808 1098 873"><u>CO₂e</u> <u>(lb/unit)</u></th> <th data-bbox="1098 808 1224 873"><u>Unit</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="709 873 968 906"><u>Electricity</u></td> <td data-bbox="968 873 1098 906">9.44 0.8</td> <td data-bbox="1098 873 1224 906"><u>kWh</u></td> </tr> <tr> <td data-bbox="709 906 968 938"><u>Natural gas</u></td> <td data-bbox="968 906 1098 938"><u>11.7</u></td> <td data-bbox="1098 906 1224 938"><u>Therm</u></td> </tr> <tr> <td data-bbox="709 938 968 971"><u>Oil</u></td> <td data-bbox="968 938 1098 971"><u>19.2</u></td> <td data-bbox="1098 938 1224 971"><u>Gallon</u></td> </tr> <tr> <td data-bbox="709 971 968 1003"><u>Propane</u></td> <td data-bbox="968 971 1098 1003"><u>10.5</u></td> <td data-bbox="1098 971 1224 1003"><u>Gallon</u></td> </tr> <tr> <td data-bbox="709 1003 968 1036"><u>Other^a</u></td> <td data-bbox="968 1003 1098 1036"><u>195.00</u></td> <td data-bbox="1098 1003 1224 1036"><u>mmBtu</u></td> </tr> <tr> <td data-bbox="709 1036 968 1068"><u>On-site renewable energy</u></td> <td data-bbox="968 1036 1098 1068"><u>0.00</u></td> <td data-bbox="1098 1036 1224 1068"></td> </tr> </tbody> </table> <p>^a District energy systems may use alternative emission factors supported by calculations <i>approved</i> by the <i>code official</i>.</p>	<u>Type</u>	<u>CO₂e</u> <u>(lb/unit)</u>	<u>Unit</u>	<u>Electricity</u>	9.44 0.8	<u>kWh</u>	<u>Natural gas</u>	<u>11.7</u>	<u>Therm</u>	<u>Oil</u>	<u>19.2</u>	<u>Gallon</u>	<u>Propane</u>	<u>10.5</u>	<u>Gallon</u>	<u>Other^a</u>	<u>195.00</u>	<u>mmBtu</u>	<u>On-site renewable energy</u>	<u>0.00</u>	
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065	Do not adopt HP space heating																					
066	Do not adopt HP water heating																					
073/051	Remove the fuel normalization table																					

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080	Do not adopt or modify to add an exception for WH with an efficiency of not less than 1.15 COP R403.5.5 Water heater installation location. Service hot water systems shall be installed within the <i>building thermal envelope</i> . <u>EXCEPTIONS:</u> <u>1. Where the hot water system efficiency is greater than or equal to 2.0 UEF.</u> <u>2. Gas heat pump water heaters with an efficiency of not less than 1.15 COP.</u>
Steve Tapio (Oral testimony, Sept. 29)	The Council should reconsider the ERI Proposal (097) and allow it as an alternate compliance path
<u>Dave Baylon</u>	In Option 2 of R406 add 1.5 points to all dwelling types 1. Small dwelling unit..... 2-54.0 credits 2. Medium dwelling unit 5-06.5 Credits 3. Large Dwelling unit 6-07.5 Credits 4. Group R-2 Dwelling Units 4-56.0 Credits 5. Additions 2-03.5 credits 150 square feet to 500 square feet
<u>Andrea Smith</u> BIAW	Send R406 Options 5.1 and 5.2 to the Plumbing TAG for review before adoption Add HSPF2 and SEER2 efficiency rating crosswalk Define Primary Living Space Add an appendix with alternates for non-compliance with R406 credits Add an additional dwelling unit size between medium and large <u>OPTION 1 (TAG Recommendation based on initial proposal to achieve targeted energy savings for the cycle)</u>

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	<p>1. <i>Small Dwelling Unit:</i> ((3.0)) <u>5.0</u> credits</p> <p><i>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.</i></p> <p>2. Medium Dwelling Units: 1500 square feet to 3000 square feet ((6.0)) <u>8.0</u> 6.0 credits</p> <p><i>All dwelling units that are not included in #1, #3, or #4.</i></p> <p>3. <u>Dwelling units 3001 square feet to 4999 square feet</u> <u>8.0 credits</u></p> <p>34. Large Dwelling Units: exceeding 5000 square feet of conditioned floor area. ((7.0)) <u>9.0</u> credits</p> <p><i>Dwelling units exceeding 5000 square feet of conditioned floor area.</i></p> <p>45. <i>Dwelling units serving Group R-2 occupancies. See Section R401.1 and residential building in Section R202 for Group R-2 scope.</i> ((4.5)) <u>6.5</u> credits</p> <p>56. Additions ((less than or equal to)) 150 to 500 square feet: ((1.5)) <u>2.0</u> credits</p>
	Change the air leakage to 4 ACH and add a credit option for 3 ACH

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	<p>Remove Option 3.1 in R406 Option 2</p> <table border="1" data-bbox="504 397 1438 714"> <tr> <td data-bbox="504 397 583 714">3.1^a</td> <td data-bbox="583 397 1186 714"> <p>For a System Type 1 in Table R406.2:</p> <p>Energy Star rated (U.S. North) gas or propane furnace with minimum AFUE of 95%.</p> <p>or</p> <p>Energy Star rated (U.S. North) gas or propane boiler with minimum AFUE of 90%.</p> <p>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.</p> </td> <td data-bbox="1186 397 1306 714">1.0</td> <td data-bbox="1306 397 1438 714">1.0</td> </tr> </table> <p>Do not require HRV in Options 2.1, 2.2 and 2.3</p> <p>Remove Option 3.6 (R406 Option 1)/3.7 (R406 Option 2) as they don't make sense</p> <p>Retain Option 4.2 in R406 Option 2</p> <p>OPTION 1 (TAG Recommendation based on initial proposal to achieve targeted energy savings for the cycle)</p>	3.1^a	<p>For a System Type 1 in Table R406.2:</p> <p>Energy Star rated (U.S. North) gas or propane furnace with minimum AFUE of 95%.</p> <p>or</p> <p>Energy Star rated (U.S. North) gas or propane boiler with minimum AFUE of 90%.</p> <p>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.</p>	1.0	1.0
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		<u>OPTION</u>	<u>DESCRIPTION</u>	<u>CREDIT(S)</u>		
				<u>All Other</u>		<u>Group R-2^b</u>
				<u>Table R406.2 System Type 1, 2, 3</u>	<u>Table R406.2 System Type 4, 5</u>	<u>Any</u>
		<u>2.1</u>	<p>Compliance based on Section R402.4.1.2:</p> <p><u>Reduce the tested air leakage to 2.0 air changes per hour maximum at 50 Pascals</u></p> <p><u>or</u></p> <p><u>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to 0.25 cfm/ft2 maximum at 50 Pascals</u></p> <p><u>and</u></p> <p><u>All whole house ventilation requirements as determined by Section M1505.3 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 0.65.</u></p> <p><u>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.</u></p>	<u>1.0</u>	<u>0.5</u>	<u>1.0</u>
		<u>2.2</u>	<p>Compliance based on Section R402.4.1.2:</p> <p><u>Reduce the tested air leakage to 1.5 air changes per hour maximum at 50 Pascals</u></p> <p><u>or</u></p> <p><u>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to 0.20 cfm/ft2 maximum at 50 Pascals</u></p> <p><u>and</u></p> <p><u>All whole house ventilation requirements as determined by Section M1505.3 of the International Residential Code or</u></p>	<u>1.5</u>	<u>1.0</u>	<u>1.5</u>

			<p><u>Section 403.8 of the International Mechanical Code shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.75.</u></p> <p><u>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.</u></p>			
		2.3	<p><u>Compliance based on Section R402.4.1.2:</u></p> <p><u>Reduce the tested air leakage to 0.6 air changes per hour maximum at 50 Pascals</u></p> <p><u>or</u></p> <p><u>For R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to 0.15 cfm/ft2 maximum at 50 Pascals</u></p> <p><u>and</u></p> <p><u>All whole house ventilation requirements as determined by Section M1505.3 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 0.80. Duct installation shall comply with Section R403.3.7.</u></p> <p><u>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.</u></p>	<u>2.0</u>	<u>1.5</u>	<u>2.0</u>
		3.6a	<p><u>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 entire dwelling unit at the design outdoor air temperature.</u></p> <p><u>Exception: In homes with total heating loads of 24,000 or less using multi-zone mini-split systems with nominal ratings of 24,000 or less, the minimum HSPF to claim this credit shall be 9 HSPF.</u></p> <p><u>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).</u></p>	<u>N/A</u>	<u>2.0</u>	<u>3.0</u>

Commented [BK(1): Add to Option 2

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		4.2	<p>HVAC equipment and associated duct system(s) installation shall comply with the requirements of Section R403.3.2.</p> <p>Electric resistance heat and ductless heat pumps are not permitted under this option.</p> <p>Direct combustion heating equipment with AFUE less than 80% is not permitted under this option.</p> <p>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.</p>	1.5	1.0	N/A			
Allow water heater/sealed air handler in semi-conditioned spaces (garage)									
Paul Rozenberg	Modify 065/066 to allow technology-neutral carbon reduction and permit other fuels such as propane								
Chuck Murray	<p>Change the leakage rate in Table R405.4.2(1) to match the required leakage rate in the prescriptive code</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">WAC 51-11R-40551 Table ((R405.5-2(1+)) R405.4.2(1)— Specifications for the standard reference and proposed designs.</p> <p style="text-align: center;"><small>TABLE ((R405.5-2(1+)) R402.4.2(1))</small> <small>SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Air exchange rate</td> <td style="padding: 5px;"> <p>Air leakage rate of 5 3 air changes per hour at a pressure of 0.2 inches w.g. (50 Pa). The mechanical ventilation rate shall be in addition to the air leakage rate and the same as in the proposed design, but no greater than $0.01 \times CFA + 7.5 \times (N_{br} + 1)$</p> <p>where: CFA = conditioned floor area N_{br} = number of bedrooms</p> <p>- The mechanical ventilation system type shall be the same as in the proposed design. Energy recovery shall not be assumed for mechanical ventilation.</p> </td> <td style="padding: 5px;"> <p>As proposed^a. The mechanical ventilation rate^b shall be in addition to the air leakage rate and shall be as proposed.</p> </td> </tr> </table> </div>						Air exchange rate	<p>Air leakage rate of 5 3 air changes per hour at a pressure of 0.2 inches w.g. (50 Pa). The mechanical ventilation rate shall be in addition to the air leakage rate and the same as in the proposed design, but no greater than $0.01 \times CFA + 7.5 \times (N_{br} + 1)$</p> <p>where: CFA = conditioned floor area N_{br} = number of bedrooms</p> <p>- The mechanical ventilation system type shall be the same as in the proposed design. Energy recovery shall not be assumed for mechanical ventilation.</p>	<p>As proposed^a. The mechanical ventilation rate^b shall be in addition to the air leakage rate and shall be as proposed.</p>
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<p><u>Craig Olson</u> WA ACCA</p>	<p>Delay the adoption date for the heat pump proposals</p> <p>Add a crosswalk for the HPSF2 efficiency rating</p> <p>Address the L&I rules for electricians</p> <p>Add an appendix with alternates for non-compliance with R406 credits</p>																								
<p><u>Lorna Luebke</u> PSE</p>	<p>Adjust the natural gas metric</p> <table border="1" data-bbox="709 586 1226 911"> <thead> <tr> <th colspan="3" data-bbox="856 586 1079 626">TABLE R405.2(2) CARBON EMISSIONS FACTORS</th> </tr> <tr> <th data-bbox="709 626 970 683"><u>Type</u></th> <th data-bbox="970 626 1100 683"><u>CO₂e (lb/unit)</u></th> <th data-bbox="1100 626 1226 683"><u>Unit</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="709 683 970 721"><u>Electricity</u></td> <td data-bbox="970 683 1100 721">0.44 0.8</td> <td data-bbox="1100 683 1226 721"><u>kWh</u></td> </tr> <tr> <td data-bbox="709 721 970 758"><u>Natural gas</u></td> <td data-bbox="970 721 1100 758">11.7 10.53</td> <td data-bbox="1100 721 1226 758"><u>Therm</u></td> </tr> <tr> <td data-bbox="709 758 970 795"><u>Oil</u></td> <td data-bbox="970 758 1100 795">19.2</td> <td data-bbox="1100 758 1226 795"><u>Gallon</u></td> </tr> <tr> <td data-bbox="709 795 970 833"><u>Propane</u></td> <td data-bbox="970 795 1100 833">10.5</td> <td data-bbox="1100 795 1226 833"><u>Gallon</u></td> </tr> <tr> <td data-bbox="709 833 970 870"><u>Other^a</u></td> <td data-bbox="970 833 1100 870">195.00</td> <td data-bbox="1100 833 1226 870"><u>mmBtu</u></td> </tr> <tr> <td data-bbox="709 870 970 911"><u>On-site renewable energy</u></td> <td data-bbox="970 870 1100 911">0.00</td> <td data-bbox="1100 870 1226 911"></td> </tr> </tbody> </table> <p data-bbox="709 922 1226 963">^a District energy systems may use alternative emission factors supported by calculations approved by the code official.</p>	TABLE R405.2(2) CARBON EMISSIONS FACTORS			<u>Type</u>	<u>CO₂e (lb/unit)</u>	<u>Unit</u>	<u>Electricity</u>	0.44 0.8	<u>kWh</u>	<u>Natural gas</u>	11.7 10.53	<u>Therm</u>	<u>Oil</u>	19.2	<u>Gallon</u>	<u>Propane</u>	10.5	<u>Gallon</u>	<u>Other^a</u>	195.00	<u>mmBtu</u>	<u>On-site renewable energy</u>	0.00	
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Kjell Anderson	<p>I have a two minor comments to clarify and clean up language:</p> <ul style="list-style-type: none"> To clarify what is meant by primary living spaces, add to footnote a to R406.3. "primary living areas include living, dining, kitchen, bedrooms, family rooms, and similar areas." In Section R406 tables...we need to clean up the language to use back-up, secondary or supplemental but not all interchangeably. This includes changing table R406.2 option 2 from secondary to supplemental as well as some other editorial changes. <p style="text-align: center;">TABLE R406.2 FUEL NORMALIZATION CREDITS</p> <p style="text-align: center;">TABLE R406.2 OPTION 1 (TAG Recommendation based on initial proposal to achieve targeted energy savings for the cycle)</p> <table border="1" data-bbox="390 902 1472 1302"> <thead> <tr> <th rowspan="2">System Type</th> <th rowspan="2">Description of Primary Space Heating Sources</th> <th colspan="2">Credits</th> </tr> <tr> <th>All Other</th> <th>Group R-2^a</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Combustion heating equipment meeting minimum federal efficiency standards for the equipment listed in Table C403.3.2(4) or C403.3.2(5)</td> <td>0</td> <td>0</td> </tr> <tr> <td>2</td> <td>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 C403.3.2(2) 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</td> <td>1.0</td> <td>1.0</td> </tr> <tr> <td>3</td> <td>For heating system based on electric resistance only (either forced air or Zonal)</td> <td>-1.0</td> <td>-1.0</td> </tr> <tr> <td>4</td> <td>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</td> <td>0.5</td> <td>N/A</td> </tr> <tr> <td>5</td> <td>All other heating systems</td> <td>-1</td> <td>-0.5))</td> </tr> </tbody> </table>				System Type	Description of Primary Space Heating Sources	Credits		All Other	Group R-2 ^a	1	Combustion heating equipment meeting minimum federal efficiency standards for the equipment listed in Table C403.3.2(4) or C403.3.2(5)	0	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 C403.3.2(2) 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	1.0	1.0	3	For heating system based on electric resistance only (either forced air or Zonal)	-1.0	-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	N/A	5	All other heating systems	-1	-0.5))
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	<u>1</u>	For combustion heating system using equipment meeting minimum federal efficiency standards for the equipment listed in Table C403.3.2(4) Table C403.3.2(5) or C403.3.2(5) C403.3.2(6)	0	0
	<u>2</u>	For a primary heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(2) and secondary supplemental heating provided by <u>electric resistance</u> or a combustion furnace meeting minimum standards listed in Table Table C403.3.2(4) ^b Table C403.3.2(5) ^b	1.5	0
	<u>3</u>	For heating system based on electric resistance only (either forced air or zonal)	0.5	-0.5
	<u>4^c</u>	For an initial a heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1) Table C403.3.2(9) or C403.3.2(2) <u>or</u> Air to water heat pump units that are configured to provide both heating and cooling and are rated in accordance with AHRI 550/590	3.0	2.0
	<u>5</u>	For heating system based on electric resistance with: 1. <u>Inverter-driven ductless mini-split heat pump system installed in the largest zone in the dwelling</u> <u>or</u> 2. <u>With 2 kW or less total installed heating capacity per dwelling</u>	2.0	0
<p>^a See Section R401.1 and <i>residential building</i> in Section R202 for Group R-2 scope.</p>				
<p>^b The gas back-up furnace will operate as fan-only when the heat pump is operating. The heat pump shall operate at all temperatures above 38°F (3.3°C) (or lower). Below that "changeover" temperature, the heat pump would not operate to provide space heating. The gas furnace provides heating below 38°F (3.3°C) (or lower).</p>				
<p>^c Additional points for this HVAC system are included in Table R406.3.</p>				
<p><u>(Also make these changes in Option 2)</u></p>				
<p>TABLE R406.2 OPTION 2 (Post-TAG modifications to account for energy savings of other proposals to achieve the targeted energy reduction for the cycle)</p>				
System Type	Description of Primary Space Heating Sources	Credits		
		All Other	Group R-2 ^a	
(1)	Combustion heating equipment meeting minimum federal efficiency standards for the equipment listed in Table C403.3.2(4) or C403.3.2(5)	0	0	

Testimony From	Summary			
	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 C403.3.2(2) 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	1.0	1.0
	3	For heating system based on electric resistance only (either forced air or Zonal)	-1.0	-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	N/A
	5	All other heating systems	-1	-0.5))
	1	For combustion heating system using equipment meeting minimum federal efficiency standards for the equipment listed in Table C403.3.2(4) Table C403.3.2(5) or C403.3.2(5) ; C403.3.2(6)	-3.0	0
	2	For a primary heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(2) and secondary supplemental heating provided by electric resistance or a combustion furnace meeting minimum standards listed in Table Table C403.3.2(4) ^b Table C403.3.2(5) ^b	0	0
	3	For heating system based on electric resistance only (either forced air or zonal)	-1.0	-0.5
	4 ^c	For an initial a heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(1)C Table C403.3.2(9) or C403.3.2(2) 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	2.0
	5	For heating system based on electric resistance with: 1. <u>Inverter-driven ductless mini-split heat pump system installed in the largest zone in the dwelling</u> or 2. <u>With 2 kW or less total installed heating capacity per dwelling</u>	0.5	0
	<p>^d See Section R401.1 and residential building in Section R202 for Group R-2 scope.</p> <p>^e The gas back-up furnace will operate as fan-only when the heat pump is operating. The heat pump shall operate at all temperatures above 38°F (3.3°C) (or lower). Below that "changeover" temperature, the heat pump would not operate to provide space heating. The gas furnace provides heating below 38°F ((3.3°C) (or lower).</p> <p>^f Additional points for this HVAC system are included in Table R406.3.</p> <ul style="list-style-type: none"> • Add point value for R406 Option 3.9 in Option 2 and correct the footnote reference. 			

Testimony From	Summary				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center; vertical-align: top;"><u>3.9</u>^e</td> <td style="width: 60%; padding: 5px;"> <p><u>Connected thermostat meeting ENERGY STAR Certified Smart Thermostats/EPA ENERGY STAR specifications.</u></p> <p><u>To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the thermostat model.</u></p> </td> <td style="width: 10%; text-align: center; vertical-align: top;"><u>0.5</u></td> <td style="width: 15%; text-align: center; vertical-align: top;"><u>0.5</u></td> </tr> </table> <p>^e Option 3.9 can only be taken with Options 3.1 and 3-23.3.</p>	<u>3.9</u> ^e	<p><u>Connected thermostat meeting ENERGY STAR Certified Smart Thermostats/EPA ENERGY STAR specifications.</u></p> <p><u>To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the thermostat model.</u></p>	<u>0.5</u>	<u>0.5</u>
<u>3.9</u> ^e	<p><u>Connected thermostat meeting ENERGY STAR Certified Smart Thermostats/EPA ENERGY STAR specifications.</u></p> <p><u>To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the thermostat model.</u></p>	<u>0.5</u>	<u>0.5</u>		
<p>Kevin Duell NW Natural</p>	<p>Do not adopt R403.58.5 on water heater installation location, or modify to add an exception for WH with an efficiency of not less than 1.15 COP</p> <p><u>Proposed Code Language</u></p> <p>R403.5.5 Water heater installation location. Service hot water systems shall be installed within the building thermal envelope.</p> <p>EXCEPTIONS:</p> <ol style="list-style-type: none"> <u>1. Where the hot water system efficiency is greater than or equal to 2.0 UEF.</u> <u>2. Gas heat pumps with an efficiency greater than or equal to 1.15 UEF.</u> 				
<p>Kevin Duell NW Natural</p>	<p>Table R406.3, OPTION 1 and 2 in the CR02 both provide credits for gas high-efficiency furnaces and boilers, yet Proposal 21-GP3-065 does not allow them. This proposal seeks to correct that by adding another exception (in bold and underlined below) that resolves this inconsistency.</p> <p><u>Proposed Code Language</u></p> <p>R403.13 Heat pump space heating. Space heating shall be provided by a heat pump system.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Detached one- and two-family dwellings and multiple-single family dwellings (townhouses up to three stories in height above grade having an installed HVAC heating capacity no greater than 1.5 watts of electric resistance heating per square foot of dwelling unit conditioned floor area, or up to 500 watts, whichever is greater. 2. Group R-2 dwelling or sleeping units having an installed HVAC heating capacity no greater than 750 watts in Climate Zone 4, and 1,000 watts in Climate Zone 5, in any separate habitable room with exterior fenestration are permitted to be heated 				

Testimony From	Summary
	<p>using electric resistance appliances. Four buildings in location with exterior design conditions below 4°F (-15.6°C), an additional 250 watts above that allowed for Climate Zone 5 is permitted.</p> <p>2.1. A room within a dwelling or sleeping unit that has two primary walls facing different cardinal directions, each with exterior fenestration, is permitted to have an installed HVAC heating capacity not greater than 1,000 watts in Climate Zone 4, and 1,300 watts in Climate Zone 5. Bay windows and other minor offsets are not considered primary walls. For buildings in location with exterior design conditions below 4°F (-15.6°C), an additional 250 watts above that allowed for Climate Zone 5 is permitted.</p> <p>3. Resistance heating elements integrated into heat pump equipment.</p> <p>4. Solar thermal systems.</p> <p>5. Waste heat, radiant heat exchanger, and energy recovery systems.</p> <p>6. Supplementary heat in accordance with Section R403.1.2.</p> <p>7. Where there is no electric utility service available at the building site.</p> <p>8. Heating systems that rely primarily on biomass are allowed in Climate Zone 5.</p> <p><u>9. Gas or propane furnaces or gas or propane boilers from Table 406.3, Energy Credits.</u></p>
<p><u>Kevin Duell</u> NW Natural</p>	<ul style="list-style-type: none"> • Proposal 21-GP2-063 – To remain consistent with nationwide and international standards, maintain the previous table for minimum kitchen exhaust rates and delete the exhaust rates proposed in IMC – Table R403.4.7.3 and IRC – Table M1505.4.4.3. • Proposal 21-GP2-065 – For consistency, add an exemption under R403.13 for gas or propane furnaces or gas or propane boilers from Table 406.3, Energy Credits. This aligns with Table R406.3, Option 1 and 2, which both provide credits for high-efficiency gas furnaces and boilers. • Proposal 21-GP2-066 – For consistency, add an exemption under R403.5.7 for gas or propane water heaters from Table 406.3, Energy Credits. This aligns with Table R406.3, Option 1, provides credits for high-efficiency gas water heaters. • Proposal 21-GP2-067 – To advance energy efficiency, appliance affordability, and energy reliability, amend Table R406.3 to include energy credits for gas-fired heat pumps. • Proposal 21-GP2-069 – To advance energy efficiency, appliance affordability, and energy reliability, amend Table R406.3 to include energy credits for gas-fired heat pumps. • Additionally, NW Natural urges the Council to amend the emission factor for gas to be 10.53 lb CO2e/therm in Table R405.2(2), which reflects the greenhouse gas emission reductions that will occur in the gas sector as a result of the Climate Commitment Act.

Testimony From	Summary
<p>Kevin Duell NW Natural</p>	<p>Table R406.3, OPTION 1 in the CRO2 provides credits for high-efficiency gas water heaters, yet Proposal 21- GP3-066 does not allow them. This proposal seeks to correct that inconsistency by adding another exception (in bold and underline below).</p> <p>Proposed Code Language – Based on Table R406.3, OPTION 1</p> <p><u>R403.5.7 Heat pump water heating.</u> Service hot water in one- and two family dwellings and multiple single-family dwellings (townhouses) shall be provided by a heat pump system. The heat pump water heating system shall be sized to provide 100 percent of peak hot water demand. Where the heat pump is located in unconditioned space, the heat pump water heating system shall be sized to provide 100 percent of peak hot water demand at an entering source dry bulb (or wet bulb if rated for wet bulb temperatures) air temperature of 40°F (4°C).</p> <p>EXCEPTIONS:</p> <ol style="list-style-type: none"> 1. Resistance heating elements integrated into heat pump equipment. 2. Electric water heaters with a rated water storage volume of no greater than 20 gallons. 3. Dwelling units with no more than 1,000 square feet of conditioned floor area. 4. Supplementary water heating systems in accordance with Section R403.5.7.1, provided the system capacity does not exceed the capacity of the heat pump water heating system. 5. Solar water heating systems. 6. Waste heat and energy recovery systems. 7. Heat trace freeze protection systems. 8. Snow and ice melt systems. <u>9. Gas or propane water heaters from Table 406.3, Energy Credits.</u>
<p>Kevin Duell NW Natural</p>	<p>The WSEC-R TAG voted down Proposal 21-GP2-067 over concerns about the basis for energy savings, because there is no federal minimum efficiency for gas heat pumps (GHPs) – as of yet. However, there are federal standards for gas water heaters and gas furnaces that do serve as a solid basis for evaluating energy savings. This proposal includes a minimum gas-fired heat pump (GHP) efficiency that would help effectuate the goal of Washington’s building codes to encourage efficiency while retaining energy source neutrality.</p> <p>The intent of the original proposal was to provide energy credits for GHP. Proposals 065 and 066 allow the use of GHPs for space and water heating. This equipment has up to 50% (or more) greater efficiency than federal minimum equipment, therefore it only makes sense that credit should be given. The purpose of this proposed code change is to advance energy efficiency with existing products on the market, to promote advanced gas equipment and to broaden options for builders and owners.</p>

Testimony From	Summary
	The point values would need to be validated by the third party that provided the energy modeling for Table R406.3 in the CR102. The proposed changes below are in bold and underlined.

		OPTION	DESCRIPTION	CREDIT(S)		
				All Other		Group R-2 ^b
				Table R406.2 System Type 1, 2, 3	Table R406.2 System Type 4, 5	Any
<p>5. EFFICIENT WATER HEATING OPTIONS Only one option from Items 5.3 through 5.65.9 may be selected in this category. Items 5.1 and 5.2 may be combined with any option.</p>						
		<u>5.7</u>	<u>Water heating system shall include one of the following:</u> <u>Gas-fired heat pump water heater(s) meeting NEEA's Tier 2.0 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 the standards for NEEA's Tier 2.0 Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0. shall supply domestic hot water to all units.</u> <u>or</u> <u>For R-2 Occupancy, gas-fired heat pump water heater(s) meeting ANSI Z21.40.2 and Z21.40.4 or CSA, with a minimum UEF of 1.15, shall supply domestic hot</u>	<u>2.0</u>	<u>2.0</u>	<u>2.5</u>

			<u>water to all units. 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>			
		<u>5.8</u>	<u>Combination water heating and space heating system shall include one of the following:</u> <u>A gas-fired water heater/boiler with a minimum UEF of 0.91</u> <u>or</u> <u>For R-2 Occupancy, gas-fired water heater(s)/boiler(s) with a minimum UEF of 0.91 shall supply all units.</u> <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>	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
		<u>5.9</u>	<u>Combination water heating and space heating system shall include one of the following:</u>	<u>2.0</u>	<u>2.0</u>	<u>2.5</u>

Testimony From	Summary					
			<p><u>Gas-fired heat pump water heater(s) meeting NEEA’s Tier 2.0 Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0.</u></p> <p><u>or</u></p> <p><u>For R-2 Occupancy, gas-fired heat pump water heater(s) meeting the standards for NEEA’s Tier 2.0 Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0. shall supply all units.</u></p> <p><u>or</u></p> <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>			
<p>Chapter 6, Reference Standards add:</p> <p><u>NEEA-2019 Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters, Vers. 1.0 Section R403.5</u></p>						

Testimony From	Summary
<p data-bbox="163 397 294 457">Kevin Duell NW Natural</p>	<p data-bbox="373 397 1560 539">The WSEC-R TAG voted down proposal 21-GP2-069 over concerns about the basis for energy savings, because there is no federal minimum efficiency for gas heat pumps (GHPs) – as of yet. However, there are federal standards for gas water heaters and gas furnaces that do serve as a solid basis for evaluating energy savings. This proposal includes a minimum gas-fired heat pump (GHP) efficiency that would help effectuate the goal of Washington’s building codes to encourage efficiency while retaining energy source neutrality.</p> <p data-bbox="373 544 1539 685">The intent of the original proposal was to provide energy credits for GHP. Proposals 065 and 066 allow the use of GHPs for space and water heating. This equipment has up to 50% (or more) greater efficiency than federal minimum equipment, therefore it only makes sense that credit should be given. The purpose of this proposed code change is to advance energy efficiency with existing products on the market, to promote advanced gas equipment and to broaden options for builders and owners.</p> <p data-bbox="373 690 1533 750">The point values would need to be validated by the third party that provided the energy modeling for Table R406.3 in the CR102. The proposed changes below are in bold and underlined.</p>

		OPTION	DESCRIPTION	CREDIT(S)		
				All Other		Group R-2 ^b
				Table R406.2 System Type 1, 2, 3	Table R406.2 System Type 4, 5	Any
		3. HIGH EFFICIENCY HVAC EQUIPMENT OPTIONS Only one option from Items 3.1 through 3.6 3.9 may be selected in this category.				
		3.7	<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>	==	==	2.0
		3.8	<u>Combination water heating and space heating system shall include one of the following:</u> <u>A gas-fired water heater/boiler with a minimum UEF of 0.91</u> <u>or</u> <u>For R-2 Occupancy, gas-fired water heater(s)/boiler(s) with a minimum UEF of 0.91 shall supply all units.</u> <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</u>	1.5	1.5	1.5

			<p><u>calculation of the minimum energy savings.</u></p>			
		<u>3.9</u>	<p><u>Combination water heating and space heating system shall include one of the following:</u></p> <p><u>Gas-fired heat pump water heater(s) meeting NEEA's Tier 2.0 Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0.</u></p> <p><u>or</u></p> <p><u>For R-2 Occupancy, gas-fired heat pump water heater(s) meeting the standards for NEEA's Tier 2.0 Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0. shall supply all units.</u></p> <p><u>or</u></p> <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</u></p>	<u>2.0</u>	<u>2.0</u>	<u>2.5</u>

Testimony From	Summary			
		calculation of the minimum energy savings.		
	<p>Chapter 6, Reference Standards add:</p> <p>ANSI <u>Z21.40.2-1996 Gas-Fired, Work Activated Air-Conditioning and Heat Pump Appliances (Internal Combustion) Table R406.3</u> <u>Z21.40.4-1996 Performance Testing And Rating Of Gas-Fired, Air Conditioning And Heat Pump Appliances Table R406.3</u></p> <p>NEEA <u>NEEA-2019 Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters, Vers. 1.0 Section R403.5</u></p>			