

[illegible]

R408.2.2(16)	Gas-fired heat pump (Option 2)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3(1) (a) ^d	Gas-fired storage water heaters (Option 1)	8	7	7	5	6	4	4	3	2
R408.2.3(1) (b) ^d	Gas-fired storage water heaters (Option 2)	9	8	8	6	7	5	4	4	3
R408.2.3(2) (a) ^d	Gas-fired instantaneous water heaters (Option 1)	10	9	9	6	7	5	5	4	3
R408.2.3(2) (b) ^d	Gas-fired instantaneous water heaters (Option 2)	11	10	9	6	7	6	5	4	3
R408.2.3(3) ^d	Electric water heaters (Option 1)	10	9	9	7	6	4	3	3	2
R408.2.3(4) ^d	Electric water heaters (Option 2)	8	8	8	6	5	4	3	3	2
R408.2.3(5) (a) ^d	Electric water heaters (Option 3)	7	8	8	6	7	5	4	3	3
R408.2.3(5) (b) ^d	Electric water heaters (Option 4)	8	9	10	7	8	5	5	4	3
R408.2.3(6) ^d	Electric water heaters (Option 5)	10	9	9	7	6	4	3	3	2
R408.2.3(7) (a) ^d	Solar hot water heating system (Option 1)	13	13	13	9	8	5	4	4	3
R408.2.3(7) (b) ^d	Solar hot water heating system (Option 2)	10	9	9	6	7	6	5	4	3
R408.2.3(8) ^c	Compact hot water distribution	2	2	2	2	2	2	2	2	2
R408.2.4(1) ^c	Ductless or hydronic thermal distribution	3	4	5	7	8	10	10	10	14
R408.2.4(2) ^c	100% of duct systems in conditioned space	2	3	4	6	7	9	9	9	13
R408.2.4(3) ^c	≥ 80% of ductwork inside conditioned space	2	3	3	5	6	7	7	7	9
R408.2.4(4) ^c	Reduced total duct system leakage	1	1	1	1	1	1	2	2	2
R408.2.5(1) ^c	ERV or HRV installed	0	0	0	0	1	3	2	2	2
R408.2.5(2) ^c	≤ 2.0 ACH50 with ERV or HRV installed	0	0	0	4	4	8	5	5	5
R408.2.5(3) ^c	≤ 2.0 ACH50 with a balanced ventilation system	0	0	0	0	0	0	4	4	4
R408.2.5(4) ^c	≤ 1.5 ACH50 with ERV or HRV installed	0	0	0	6	5	10	9	9	9
R408.2.5(5) ^c	≤ 1.0 ACH50 with ERV or HRV installed	0	0	1	7	6	12	12	12	12
R408.2.6 ^a	Energy efficient appliances	1	1	1	1	1	1	0	0	0
R408.2.7	On-site renewable energy measures	17	16	17	11	11	9	8	7	4
R408.2.8 ^c	Demand responsive thermostat	1	1	1	1	1	1	1	1	1
R408.2.10	Whole-home lighting control	1	1	1	0	0	0	0	0	0
R408.2.11	Higher efficacy lighting	0	0	0	0	0	0	0	0	0

NA = Not Applicable.

- Where the measure is selected, each dwelling unit, sleeping unit and common area where the measure is applicable must have the measure installed.
- Where multiple heating or cooling systems are installed, credits shall be determined using a weighted average of the square footage served by each system.
- Where the measure is selected, each dwelling unit and sleeping unit must comply with the measure.

- d. Where the measure is selected, each dwelling unit shall be served by a water heater meeting the applicable requirements. Where multiple service water heating systems are installed, credits shall be determined using a weighted average of the square footage served by each system.
- e. Eleven credits are available for Climate Zone 4 where the following measure is used: gas furnace and heat pump (Option 3): greater than or equal to 95% AFUE fuel gas furnace and 7.8 HSPF2, 15.2 SEER2 and 10.0 EER2 air source heat pump.

R408.2.2 More efficient HVAC equipment performance options. Heating and cooling *equipment* shall meet one of the following measures as applicable for the *climate zone* where heating and cooling efficiencies are represented by Annual Fuel Utilization Efficiency (AFUE), Coefficient of Performance (COP), Energy Efficiency Ratio (EER and EER2), Heating Season Performance Factor (HSPF2) and Seasonal Energy Efficiency Ratio (SEER2). Where multiple heating or cooling systems are installed serving different *zones*, credits shall be earned based on the weighted average of square footage of the *zone* served by the system.

HVAC options applicable to all *climate zones*:

1. Ground source heat pump: Greater than or equal to 16.1 EER and 3.1 COP ground source heat pump.
2. Cooling (Option 1): Greater than or equal to 15.2 SEER2 and 12.0 EER2 air conditioner.
3. Cooling (Option 2): Greater than or equal to 16.0 SEER2 and 12.0 EER2 air conditioner.
4. Gas furnace (Option 1): Greater than or equal to 97 percent AFUE *fuel gas* furnace.
5. Gas furnace (Option 2): Greater than or equal to 95 percent AFUE *fuel gas* furnace.

~~VAC options applicable to Climate Zones 0, 1, 2 and 3:~~

6. Gas furnace (Option 3): Greater than or equal to 90 percent AFUE *fuel gas* furnace.
7. Gas furnace and cooling (Option 1): Greater than or equal to 90 percent AFUE *fuel gas* furnace and 15.2 SEER2 and 10.0 EER2 air conditioner.
8. Gas furnace and cooling (Option 2): Greater than or equal to 95 percent AFUE *fuel gas* furnace and 16.0 SEER2 and 10.0 EER2 air conditioner.
9. Gas furnace and heat pump (Option 1): Greater than or equal to 90 percent AFUE *fuel gas* furnace and 7.8 HSPF2, 15.2 SEER2 and 10.0 EER2 air source heat pump.
10. Heat pump (Option 1): Greater than or equal to 7.8 HSPF2, 15.2 SEER2, and 11.7 EER2 air source heat pump.

~~HVAC options applicable to Climate Zones 4, 5, 6, 7 and 8:~~

11. Gas furnace and cooling (Option 3): Greater than or equal to 95 percent AFUE *fuel gas* furnace and 15.2 SEER2 and 12.0 EER2 air conditioner.
12. Gas furnace and cooling (Option 4): Greater than or equal to 97 percent AFUE *fuel gas* furnace and 16.0 SEER2 and 12.0 EER2 air conditioner.
13. Gas furnace and heat pump (Option 2): Greater than or equal to 95 percent AFUE *fuel gas* furnace and 8.1 HSPF2 and 15.2 SEER2 air source heat pump capable of meeting a capacity ratio ≥ 70 percent of heating capacity at 5°F (-15°C) versus rated heating capacity at 47°F (8.3°C).
14. Heat pump (Option 2): Greater than or equal to 8.1 HSPF2 and 15.2 SEER2 air source heat pump capable of meeting a capacity ratio ≥ 70 percent of heating capacity at 5°F (-15°C) versus rated heating capacity at 47°F (8.3°C).
15. Gas-fired heat pump (Option 1): Greater than or equal to 1.2 COP at 47 F as tested and rated in accordance with CSA/ANSI Z21.40.4 and capable of meeting a capacity ratio ≥ 70 percent of heating capacity at 5°F (-15°C) versus rated heating capacity at 47°F (8.3°C).
16. Gas-fired heat pump (Option 2): Greater than or equal to 1.4 COP at 47 F as tested and rated in accordance with CSA/ANSI Z21.40.4 and capable of meeting a capacity ratio ≥ 70 percent of heating capacity at 5°F (-15°C) versus rated heating capacity at 47°F (8.3°C).

Reason: This proposal adds credits to existing options that were deemed NA in the 2024 code even though PNNL analysis showed that they should earn credits. Options were also added for Gas-Fired Heat Pumps. There are a number of gas-fired heat pumps in the market today with more in development. GFHPs have efficiencies above 1.0 COP and up to 1.4 COP. They provide another good option for the credits table. Credit options showing TBD need modeling by PNNL to determine appropriate credit values.

Cost Impact: The code change proposal will neither increase nor decrease the cost of construction. This proposal is simply correcting credit values to options that should have credits associated with them and is adding an option for gas-fired heat pumps.

Cost Impact (Detailed): The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification:

This proposal is simply correcting previous errors and adding an option.