

Natural Gas in the 2021 WA State Residential Energy Code: When is Natural Gas permitted?

With the 2021 WA State Energy Code (WSEC), the State Building Code Council (SBCC) has voted to approve limitations on the use of natural gas in residential buildings in Washington State. These new building and energy codes become effective July 1, 2023. These limitations, intended to reduce greenhouse gas emissions, will generally require the use of heat pumps as the primary equipment for space and/or water heating unless complying with an exception.

Commercial vs. Residential: Which category do I follow? Washington State has two energy codes -- one for residential and one for commercial. The residential energy code (WSEC-R) applies to one-family, two-family, townhouses, and smaller multi-family buildings. Larger multi-family buildings, such as those greater than 3-stories tall or those where access is provided through an interior space, are subject to the commercial energy code (WSEC-C).

Can I use natural gas in my home? Yes! The use of natural gas equipment, except where used for space or water heating, has not been restricted as part of the changes to the residential energy code (WSEC-R). Natural gas may still be used for cooking, fireplaces/pits, lighting, clothes dryers, and emergency power generators. Natural gas may even still be used for space and water heating where used to power a gas heat pump, or as supplemental (backup) energy for electric heat pump water and space heaters. And for homes replacing an existing unit, a like-for-like replacement may continue to use natural gas.

What is a gas heat pump? Gas heat pumps (GHP) are a highly efficient technology that can provide both space heating and cooling and, can even provide hot water as well. While commercial products are available, residential gas heat pumps are not yet commercially available; manufacturers are testing units now and expect to release units as soon as Summer 2023.

What is supplemental heat? Heat-pumps rely on pulling energy from the outdoor air and concentrating it into either the home or a hot water source. However, when it gets cold outside, these systems lose efficiency and have lesser performance; therefore, a supplementary source of heat is often required. Supplementary heat is a backup system where a secondary energy source, or fuel, may be used.

- To use natural gas as a supplementary heat source for space heating, the dwelling must have a thermostat with controls set to only use the natural gas system when the outdoor temperature is 40°F or lower. [WSEC-R403.1.2]
- To use natural gas as a supplementary heat source for water heating, the heat-pump water heater must be incapable of meeting demand; for heat pumps located in unconditioned (exterior or unheated) space, the outside air temperature is below 40°F; the heat pump is operating in defrost mode; or the heat pump has malfunctioned or lost power. [WSEC-R403.5.7.1]

What uses of natural gas does the energy code allow? In order to best assist you, Cascade is pleased to provide the following flowcharts aimed at identifying how natural gas fits into your home and the energy code. For questions regarding these flowcharts or the Washington State Energy Code and natural gas, please contact Cascade's Building Code Specialist Ty Jennings via phone at 509-975-0154 or by email at Ty.Jennings@CNGC.com.



New Residential Construction

New Construction (Ch. 4)

Prescriptive Compliance (R401-R404 and R406)

General requirements (R401)

Note: Clothes dryers, emergency generators, and fire pits are not regulated by the WSEC-R.

Cooking appliances and pools or spas are permitted to use natural gas for heating where not equipped with a continuously burning pilot light. (R403.1.3)

Service hot water systems (R403.5)

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. (R403.5.7)

Gas Heat Pump

R403.5.7, Exception #3 - Dwelling units with no more than 1,000 square feet of conditioned floor area.

R403.5.7, Exception #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.

R403.5.7, Exception #8 - Snow and ice melt systems.

Note: The service hot water systems shall be installed within the building thermal envelope unless the system efficiency is greater than or equal to 2.0 UEF. (R403.5.5)

Heating and Cooling Systems (R403.7 and R403.13)

Space heating shall be provided by a heat pump system. (R403.13)

Gas Heat Pump

R403.13, Exception #6 - Supplementary heat in accordance with Section R403.1.2.

R403.13, Exception #7 - Where there is no electric utility service available at the building site.

Note: Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies. The output capacity of heating and cooling equipment shall not be greater than that of the smallest available equipment size that exceeds the loads calculated, including allowable oversizing limits. Equipment shall meet the minimum federal efficiency standards as referenced in R403.7.

Gas fireplace efficiency (R403.7.1)

All vented gas fireplace heaters rated to ANSI Z21.88 shall be listed and labeled with a fireplace efficiency (FE) rating of 50 percent or greater in accordance with CSA P.4.1. Vented gas fireplaces (decorative appliances) certified to ANSI Z21.50 shall be listed and labeled, including their FE ratings, in accordance with CSA P.4.1.

Electrical Power and Lighting (R404)

Fuel gas lighting systems shall not have continuously burning pilot lights.

Additional Energy Efficiency (R406)

Each dwelling unit in a residential building shall comply with sufficient options from Tables R406.2 and R406.3 so as to achieve sufficient credits to comply with Section R406.3. (R406.3)

For combustion heating systems, System Type 1 from Table R406.2 applies.

Where applying R403.13, Exception #7 (no electric utility service), may claim Option 3.1 for 1.0 credit from Table R406.3.

For an initial heating system using a heat pump and supplemental heating provided by a combustion furnace, System Type 2 from Table R406.2 applies.

Where applying R403.13, Exception #8 (supplementary heat), may claim Option 3.2 for 0.5 credit from Table R406.3.

Total Building Performance Method (R405)

Compliance based on total building performance requires modeling per Section R405.2.

Carbon emissions for both the standard reference design and the proposed design shall be calculated using Table R405.2(2). Energy use derived from simulation analysis shall be expressed in pounds of carbon per square foot of conditioned floor area.

Certified Passive House Method (R407)

Projects shall comply with PHIUS+ 2018 Passive Building Standard, including its USDOE Energy Star and Zero Energy Ready Home co-requisites, and performance calculations by approved software. Projects shall also comply with the provisions of Table R405.2.

Note: Backup, emergency generators are not regulated under the WSEC-R. Natural gas may be used for emergency power generation.

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Existing Residential Construction



Cascade is committed to helping our customers lower their energy usage while saving money and reducing their carbon footprint. To see current incentive offerings, visit www.cngc.com/energy-efficiency or use the provided QR code. Incentives are subject to change and are only applicable for measures approved within the Biennial Conservation Plan at the time of installation.

Energy Efficiency Phonenumber: 866-626-4479 or Email: conserve@cngc.com

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