



STATE OF WASHINGTON
STATE BUILDING CODE COUNCIL

Washington State Energy Code Development
Standard Energy Code Proposal Form

Jan 2025

Log No. 270 V2

Code being amended: ☒ Commercial Provisions ☐ Residential Provisions

Code Section # _C503.5 Replacement of existing SWH equipment

Brief Description:

Deletion of blanket exceptions allowing like-for-like replacement of existing service water heating equipment

Exemptions and alternative options for replacement of existing service water heating equipment, including:

- Several occupancy types, including affordable housing, Group I (institutional), non-profits, smaller buildings
- Certain equipment types, including smaller units, steam boilers, and in-unit residential water heaters
- Heat pumps that would require a vault or trenching across a traffic lane.
- Allowance for 50% of gas or electric resistance equipment to remain (Changed to 67%)
- Allowance for delay of upgrade
- "Future decarbonization plan" requirement eliminated

Proposed code change text:

~~C503.5 Service water heating equipment.~~ All new service water heating systems, equipment, and components of existing systems that are altered or replaced shall comply with Section C407 or Sections C404, C408.3, C501.6, and C506.1. Additions or alterations shall not be made to an existing service water heating system that will cause the existing system to become out of compliance. Where use of heat pump equipment for service water heating is required by this section, it is permissible to utilize the Fossil Fuel Compliance Path in Section C401.3 to attain the credits required for building additions shown in Table C401.3.3.

Exceptions:

~~((1. The following equipment is not required to comply with Section C401.3 or Section C404.2.1, as applicable:~~

- ~~1.1. Replacement of service water heating appliances with equipment that is the same type and has the same or higher efficiency and the same or lower capacity, provided there are no other alterations made to the existing service water heating system size or configuration.~~
- ~~1.2. Replacement of any of the following water heater appliances: 1.2.1. Electric water heaters with an input of 12 kW or less.~~
 - ~~1.2.2. Gas storage water heaters with an input of 75,000 Btu/h or less.~~
 - ~~1.2.3. Gas instantaneous water heaters with an input of 200,000 Btu/h or less and 2 gallons or less of storage.~~
- ~~1.3. Where it has been determined by the code official that existing building constraints including,~~

~~but not limited to, available floor space or ceiling height, limitations of the existing structure, or electrical service capacity, make compliance technically infeasible.))~~

C503.5 Service water heating equipment. New service water heating systems and components of existing service water heating systems that are altered or replaced shall comply with Section C407 or Section C404, and with Sections C501.6 and C506.1 where applicable. Where the use of heat pump equipment for service water heating is required by this section, it is permissible to attain additional efficiency credits equal to the number of credits awarded by option 17a, heat pump water heating minimum efficiency, in Table C406.2(1) instead of compliance with Section C404.2.1 or C503.4.6. Additions or alterations shall not be made to an existing service water heating system that will cause the existing system to become out of compliance.

Exceptions:

1. Utility service upgrade. Compliance with Section C404.2.1 is not required where such compliance would trigger an unplanned utility electrical service upgrade, based on the Seattle Electrical Code Section 220.87 method for determining existing loads, where one or more of the following is required:
 - a. A new utility transformer vault located in the existing building or on the site, or an enlargement of the floor area of such a vault.
 - b. Trenching across the vehicle lanes of a public way.
 - c. The estimated construction cost for the required electrical service enlargement exceeds 50 percent of the project valuation for the remainder of the work, as approved by the code official. Construction cost shall be documented by an AACE Level 3 or equivalent cost estimate, including required demolition, construction, site work, and utility fees.
2. Exempt Systems. Replacement of any of the following water heater appliances is not required to comply with this section or with Section C404.2.1:
 - 2.1. Electric water heaters with an input of 24 kW or less.
 - 2.2. Gas storage water heaters with an input of 75,000 Btu/h or less.
 - 2.3. Gas instantaneous water heaters with an input of 200,000 Btu/h or less and 2 gallons or less of storage.
 - 2.4. Replacement of existing steam boilers with steam distribution piping to terminal units and replacement of the existing associated boiler feed equipment.
 - 2.5. Any system included in Section C403.5 that serves only one individual dwelling unit or sleeping unit
3. Exempt buildings. Replacement service water heating equipment for the following buildings is permitted to use the same fuel type as the existing equipment, provided the new equipment has no lower efficiency and no higher capacity than the existing.
 - a. Affordable housing.
 - b. Group I-1, I-2, or I-3 occupancies.
 - c. Buildings with more than 50 percent of conditioned floor area occupied by organizations recognized as nonprofit by the State of Washington or by federal tax law.
 - d. Buildings smaller than 20,000 square feet.
4. Retention of portion of existing system capacity. A maximum of 67 percent of the existing central fossil fuel or electric resistance water heating capacity is permitted to be provided as supplemental heat for the new heat pump water heating system, provided that the supplemental heat is controlled to be used only when the heat pump system capacity is insufficient to meet the load, in compliance with Section C404.2.1.4. Where an alteration replaces less than 67 percent of the existing fossil fuel or electric resistance service water heating capacity, the remaining service water heating appliances are permitted to be retained. Where the alteration project decreases the peak service water heating load, the fossil fuel or electric resistance heating capacity shall be limited to 67 percent of the calculated peak heating load.
5. Temporary replacement of failing equipment. Temporary like-for-like replacement of one or more service water heating appliances, in excess of the 67 percent capacity permitted by Exception 5 above, is permitted where those appliances require immediate replacement, and where no other work on the service water heating system is planned. When using this exception, it is acceptable to replace a single appliance with two or more smaller appliances, provided the total capacity is not greater than that of the original appliance. In addition, the applicant shall ensure completion of the required heat pump water heating system in compliance with one of the following options.

- a. The *code official* will issue a temporary certificate of occupancy (TCO), which will remain in force until the heat pump water heating system is installed and the final inspection of the system has been completed.
- b. Applicant shall post a performance bond in the amount of the full estimated cost of installation of the required heat pump water heating system, to ensure completion of the system within 48 months.

Purpose of code change:

- Requires upgrade to more efficient systems at time of equipment replacement
- Provides options to delay upgrade to full compliance with Section C404.

Your amendment must meet one of the following criteria. Select at least one

- | | |
|--|---|
| <input type="checkbox"/> Addresses a critical life/safety need. | <input type="checkbox"/> Consistency with state or federal regulations. |
| <input checked="" type="checkbox"/> The amendment clarifies the intent or application of the code. | <input type="checkbox"/> Addresses a unique character of the state. |
| <input checked="" type="checkbox"/> Addresses a specific state policy or statute. (Note that energy conservation is a state policy) | <input type="checkbox"/> Corrects errors and omissions. |

Check the building types that would be impacted by your code change:

- | | | |
|--|--|---|
| <input type="checkbox"/> Single family/duplex/townhome | <input checked="" type="checkbox"/> Multi-family 4 + stories | <input checked="" type="checkbox"/> Institutional |
| <input checked="" type="checkbox"/> Multi-family 1 – 3 stories | <input checked="" type="checkbox"/> Commercial / Retail | <input checked="" type="checkbox"/> Industrial |

Your name Duane Jonlin

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Economic Impact Data Sheet

Is there an economic impact: ☒ Yes ☐ No

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants, and businesses. If you answered "No" above, explain your reasoning.

- Requires replacement equipment to meet C404 requirements, essentially either to use heat pump or add efficiency credits per fossil fuel compliance path.
- Provides multiple options to delay upgrade to full compliance with Section C404.

Provide your best estimate of the **construction cost** (or cost savings) of your code change proposal? (See OFM Life Cycle Cost [Analysis tool](#) and [Instructions](#); use these [Inputs](#). **Webinars on the tool can be found [Here](#)**)

\$[Click here to enter text.](#)/square foot (For residential projects, also provide \$[Click here to enter text.](#)/ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

The scale of water heating varies extremely by occupancy type, so a square foot cost would not be meaningful. Estimate that replacement of a gas boiler with HPWH is 2X the cost of a like-for-like replacement.

Provide your best estimate of the **annual energy savings** (or additional energy use) for your code change proposal?

[Click here to enter text.](#)KWH/ square foot (or) [Click here to enter text.](#)KBTU/ square foot

(For residential projects, also provide [Click here to enter text.](#)KWH/KBTU / dwelling unit)

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

HPWH will reduce water heating energy use by 2/3 from its original level.

List any **code enforcement** time for additional plan review or inspections that your proposal will require, in hours per permit application:

Modest additional enforcement time.

Small Business Impact. Describe economic impacts to small businesses:

None

Housing Affordability. Describe economic impacts on housing affordability:

None

Other. Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

Instructions: Send this form as an email attachment, along with any other documentation available, to: sbcc@des.wa.gov. For further information, call the State Building Code Council at 360-407-9255.

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.