



STATE OF WASHINGTON
STATE BUILDING CODE COUNCIL

Washington State Energy Code Development
Standard Energy Code Proposal Form

Code being amended: Commercial Provisions Residential Provisions

Code Section # C401.2 & C402.2

Brief Description:

Water heating is one of the largest loads in R-1 (hotels) and R-2 (multifamily) occupancies. It composes around 30% of the total building load in typical multifamily buildings. It therefore represents a tremendous opportunity to improve the efficiency of these occupancies. This is especially important considering the number of dwelling units being constructed in Washington. The code already has a requirement for high output water heating systems but this requirement specifically exempts many systems used in R occupancies. The code has done far less to address how hot water loads in these residential occupancies than it has done for other aspects of building efficiency such as HVAC and lighting. Utilities are second only to rent in determining actual housing affordability.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

C404.2.1 High input-rated service water heating systems. ~~Gas-fired water heating equipment installed in new buildings shall be in compliance with this section. Where a singular piece of water heating equipment serves the entire building and the input rating of the equipment is 1,000,000 Btu/h (293 kW) or greater, such equipment shall have a thermal efficiency, Et, of not less than 90 percent. Where multiple pieces of water heating equipment serve the building and the combined input rating of the water heating equipment is 1,000,000 Btu/h (293 kW) or greater, the combined input-capacity-weighted-average thermal efficiency, Et, shall not be less than 90 percent. Where the combined input rating of all water heating equipment serving *dwelling units, sleeping units*, commercial kitchens and laundries in the building is 1,000,000 Btu/h (293 kW) or greater, the combined input-capacity-weighted-average equipment rating shall be no less than 95% Et or 0.95 EF.~~

Exceptions:

- ~~1. Where not less than 25 percent of the annual service water heating requirement is provided by on-site renewable energy or site-recovered energy, the minimum thermal efficiency requirements of this section shall not apply.~~ Where not less than 25 percent of the annual service water-heating requirement of commercial kitchens, laundries, *dwelling units* and *sleeping units* in the building is provided by *on-site renewable energy* or heat recovery from service hot water, heat-recovery chillers, building equipment, or process equipment, the minimum thermal efficiency requirements of this section shall not apply. Renewable energy used to comply with Section 406.5 shall not be counted toward this requirement.

Economic Impact Data Sheet

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants and businesses.

Because water heating represents such a large percentage of the energy use in multifamily this proposal will result in a reduction in energy use for the building tenants.

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](#) and [Here](#)**)

\$0.54/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

Increased cost of water heating from:

Technical Document: Incremental Cost for NBI's *Building Innovation – Multifamily* June, 2017

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

2.071KWH/ 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

Incremental savings data taken from:

Technical Document: Energy Savings Study for NBI's *Building Innovation – Multifamily* June, 2017

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

No additional time is required by the plan review and inspection staff to enforce this provision.

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