

STATE OF WASHINGTON STATE BUILDING CODE COUNCIL

Washington State Energy Code Development Standard Energy Code Proposal Form

Residential Provisions

Code Section #	C401.2 & C402.2	
Brief Descriptior	n:	

Commercial Provisions

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 <u>underline</u> 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:

Code being amended:

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.

- 2. The input rating of water heaters installed in individual dwelling units shall not be required to be included in the total input rating of the service water heating equipment for a building.
- 3. The input rating of water heaters with an input rating of not greater than 100,000 Btu/h (29 kW) shall not be required to be included in the total input rating of service water heating equipment for a building.

Purpose of code change:

The revised requirement will expand an existing code requirement to more high-output water heating systems. This new requirement will significantly increase the efficiency of the systems serving this critical load. It is worded to provide significant flexibility for compliance and is narrowly defined so that it only applies to the buildings types where it can generate meaningful savings.

Your amendment m	oust meet one of the	following criteria. Sel	ect at least one:		
Addresses a critical life/safety need.			Consistency with state or federal regulations		
Addresses a specific state policy or statute. (Note that energy conservation is a state policy)			Addresses a unique character of the state.		
			Corrects errors and omissions.		
Check the building t	ypes that would be in	npacted by your code	change:		
Single family/duplex/townhome		Multi-family 4 + stories		Institutional	
☐ Multi-family 1 – 3 stories		Commercial / Retail		Industrial	
Your name	Eric Makela		Email address	ericm@newbuildings.org	
Your organization	New Buildings Institute		Phone number	208 863-6924	
Other contact name	Sean Denniston				
Instructions: Send tl	his form as an email a	ttachment, along wit	n any other document	tation available, to:	

sbcc@des.wa.gov. For further information, call the State Building Code Council at 360-407-9278.

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 <u>Analysis tool</u> and <u>Instructions</u>; use these <u>Inputs</u>. Webinars on the tool can be found <u>Here</u> and <u>Here</u>)

\$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.