

[Note: New definitions to add]

TEMPERATURE MAINTENANCE: The system used to maintain the temperature of the building domestic hot water delivery system, typically by circulation and reheating or by a heat trace system.

SINGLE-PASS: A heat pump water heater control strategy using variable flow or variable capacity to deliver water from the heat pump at the final target storage water temperature in a single pass through the heat exchanger with variable incoming water temperatures.

MULTI-PASS: A heat pump water heater control strategy requiring multiple passes of water through the heat pump to reach the final target storage water temperature.

[Note: Strike all of Section C404.2.1 and C404.2.2 and replace with the new language below.]

C404.2.1 Service water heating system type. Service water heating systems shall not use fossil fuel combustion or electric resistance. Service hot water shall be provided by an air-source heat pump water heating (HPWH) system meeting the requirements of the Northwest Energy Efficiency Alliance (NEEA) Advanced Water Heating Specification (<https://neea.org/our-work/advanced-water-heating-specification>) and this section. Supplemental service water heating equipment is permitted to use electric resistance in compliance with Section C404.2.2.

Exceptions:

1. Solar thermal, wastewater heat recovery, other approved waste heat recovery, ground source heat pump, water-source heat pump system utilizing waste heat, and combinations thereof, are permitted to offset all or any portion of the required HPWH capacity where such systems comply with this code and the WA State Plumbing Code.

C404.2.2 Supplemental water heaters. Supplemental electric resistance heating is permitted for the following uses:

1. Temperature maintenance of heated-water circulation systems, physically separate from the primary service water heating system (including heat tracing for temperature maintenance). Temperature maintenance heating capacity shall be no greater than the primary water heating capacity at 40°F.
2. Defrost of compressor coils.
3. Heat tracing of piping for freeze protection.
4. Emergency or supplemental backup for the primary heat pump plant sized no greater than the primary heat pump service water heating output capacity at 40°F.
5. 24kW plus 0.1kW/SF of building area of stand-alone electric resistance water heating capacity is allowed per building.

Table C406.1

EFFICIENCY PACKAGE CREDITS

Code Section	Commercial Building Occupancy					
	Group R-1	Group R-2	Group B	Group E	Group M	All Other
	Additional Efficiency Credits					
8. High efficiency service water heating in accordance with Sections C406.8.1 and C406.8.2	4 <u>3</u>	5 <u>3</u>	NA	NA	NA	8 <u>3</u>
9. High efficiency service water heating in multifamily buildings systems in accordance with Section C406.9	7 <u>3</u>	8 <u>3</u>	NA	NA	NA	NA <u>3</u>

C406.8.2 Load fraction. Not less than 60 percent of the annual service hot water heating energy use, or not less than 100 percent of the annual service hot water heating energy use in buildings with water-cooled systems subject to the requirements of Section C403.9.5 or qualifying for one of its exceptions, shall be provided by one or more of the following:

1. ~~Service hot water system delivering heating requirements using heat pump technology with a minimum COP of 3.0. For air source equipment, the COP rating will be reported at the design leaving heat pump water temperature with an entering air temperature of 60°F (15.6°C) or lower. For water source equipment, the COP rating will be reported at the design leaving load water temperature with an entering water temperature of 74°F (23.3°C) or~~ A heat pump water heating system(s) meeting the requirements of Tier 2 or higher of the Northwest Energy Efficiency Alliance Advanced Water Heating Specification.
2. Waste heat recovery from service hot water, heat recovery chillers, building equipment, process equipment, or other approved system. Qualifying heat recovery must be above and beyond heat recovery required by other sections of this code.
3. On site renewable energy water-heating systems.

C406.9 High performance service water heating ~~in multifamily buildings.~~ For a whole building, building addition, or tenant space with not less than 90 percent of the conditioned floor area being Group R-1, R-2, A-2, A-3, I-2, or F occupancy, not less than 90 percent of the annual building service hot water energy use shall be provided by a heat pump water heating system(s) meeting the requirements of Tier 3 or higher of the Northwest Energy Efficiency Alliance Advanced Water Heating Specification. ~~with a minimum COP of 3.0.~~ This efficiency package is allowed be taken in addition to Section C406.8.2.