

Individual Dwelling Units and Heat Pump Water Heaters

2019 Energy Code (Title 24 Part 6) Assistance Sheet

For prescriptive requirements of other water heating systems and configurations refer to the 2019 Building Energy Efficiency Standards section 150.2(b) for alterations, 150.2(a) for additions, or 150.1(c) for new construction.

When does the 2019 Code allow HPWHs?


	Performance Path	Prescriptive Path
New Construction	Allowed	Allowed (two options)
Additions installing a 2 nd water heater	Allowed	Any electric is allowed when no gas service is available
Alterations	Allowed	Allowed as described below

Can a HPWH replace an existing water heater? YES! If:

- The building is in CZ 1-15, **natural gas is connected to the existing water heater location**, and the installed HPWH is not located outdoors
AND:
 - Is rated as NEEA Tier 3 (§ 150.2(b)1Hiiiic); **OR**
 - Meets minimum federal appliance standards with demand responsive controls, and is located on an R-10 rigid surface (§ 150.2(b)1Hiiib); **OR**
- No natural gas is connected to the existing water heater location** and the HPWH meets minimum federal appliance standards. § 150.2(b)1Hiiid; **OR**
- The permit applicant can demonstrate the project complies with Energy Code using the performance method. § 150.2(b)2

What to look for on the required CF1R-ALT-05-E Compliance Form¹ and Permit Application

STATE OF CALIFORNIA
Prescriptive Residential Alterations That Do Not Require HERS Field Verification
CEC-CF1R-ALT-05-E (Revised 01/20)


 CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE										CF1R-ALT-05-E				
Prescriptive Residential Alterations That Do Not Require HERS Field Verification										Page 2 of 3				
Project Name: Smith Res water heater replacement										Date Prepared:				

H. Water Heating Systems (Section 150.2(b)1G)														
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Dwelling Unit Name	Water Heating System ID or Name	Water Heating System Location or Area Served	Water Heating System Type	Water Heater Type	# of Water Heaters in System	Water Heater Storage Volume (gal)	Fuel Type	Rated Input Type	Rated Input Value	Heating Efficiency Type	Heating Efficiency Value	Standby Loss (%)	Exterior Insulation R-Value	Back-Up Solar Savings Fraction
House	HPWH	garage	DHW	HPWH	1	80	Electric	kW	4.5	Uniform Energy Factor	Tier 3	n/a	n/a	n/a
Add Row	Delete Row													

Source: ww2.energy.ca.gov/title24/2019standards/2019_compliance_documents/Residential_Documents/Alterations_and_Additions_Non_HERS_Verified_Forms/

Water Heater Type: HPWH

- Fuel Type: **Electric**
- Heating Efficiency Type: **Uniform Energy Factor (UEF)**
- Heating Efficiency Value: "Tier 3" if required for a building with natural gas service; or a value \geq the minimum UEF in accordance with federal appliance standards. Minimum federal appliance standards for common heat pump water heaters are provided in Page 2.

What to look for when inspecting an installed heat pump water heater

- The installed HPWH matches what's on the approved CF1R form.
- If natural gas is connected to the existing water heater location, the installed HPWH is rated as NEEA Tier 3 or meets the requirements above.
- If no natural gas is connected to the existing water heater location, it's safe to assume any installed HPWH meets federal appliance standards.
- If the water heater being replaced was a natural gas water heater, the natural gas line has been capped off.
- A dedicated 240 V/30 A electrical line (for most HPWHs). If an existing dedicated 240 V/30 A line is not already near the HPWH installation location, electrical work for a new line and an upgrade to the electric panel to accommodate the new electric load may be required.
- Insulation for new and existing hot and cold-water pipes from the storage tank (when accessible).
- Condensate waste removal, and if necessary, a drop/overflow basin and drainage piping. Note that condensate contains no combustion products or acids and so may be drained to sanitary sewer or to outside via a hose.
- A visible AC disconnect.
- Seismic bracing for the storage tank.

¹ Similar for CF1R-ALT-01 (altering other parts of the house) and CF1R-ADD-01 (prescriptive addition)

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Minimum federal appliance standards UEF for common heat pump water heaters[†]

Volume (gallons)	0 ≤ FHR < 18	18 ≤ FHR < 51	51 ≤ FHR < 75	FHR ≥ 75
60	1.86	1.98	2.05	2.18
75	1.84	1.96	2.03	2.16
80	1.84	1.96	2.03	2.15

Source: https://www.energy.ca.gov/sites/default/files/2020-07/2019_WaterHeating_Guide.pdf

[†]UEF varies depending on the size of the tank (volume) and the first hour rating (FHR) which is the number of gallons of hot water that a water heater can supply per hour starting with a tankful of hot water.

NEEA Rated HPWHs

The Northwest Energy Efficiency Alliance maintains a list of products that meets its Advanced Water Heater Specifications. Some commonly available products are listed below. If the water heater you are looking at is not listed, please refer to the full list which is available online here: <https://neea.org/img/documents/qualified-products-list.pdf>.

Common NEEA Tier 3 products in the Bay Area nine county region

NEEA Rating	Product Brand	Model	Volume (gallons)	UEF
Tier 3	A. O. Smith	HPTU 50N 120	50	2.9
Tier 3	A. O. Smith	HPTU 80 120	80	2.9
Tier 3	Bradford White	RE2H50R10B-1NCWT	50	2.8
Tier 3	Bradford White	RE2H50S10-1NCWT	50	2.8
Tier 3	Bradford White	RE2H80R10B-1NCWT	80	3.1
Tier 3	Rheem	PROPH50 T2 RH350 D	50	3.2
Tier 3	Rheem	PROPH80 T2 RH350 D	80	3.4
Tier 3	Rheem	XE50T10HD50U1	50	3.2
Tier 3	Rheem	XE65T10HD50U1	65	3.4
Tier 3	Rheem	XE80T10HD50U1	80	3.4

Table last updated 11/1/19. Please email codes@bayrencodes.org if you know of other heaters that are currently available in the Bay Area and should be listed here.