RESIDENTIAL WATER HEATER REPLACEMENT

THESE REQUIREMENTS APPLY TO BUILDING PERMITS SUBMITTED ON OR AFTER JANUARY 1, 2023

BUILDING DIVISION REQUIREMENTS

A plumbing permit is required for the replacement of an existing water heater. Permits are required prior to installation or replacement of water heaters.

Following are general requirements for water heater replacements based on the 2022 California Plumbing Code. This brochure is intended to provide general information; contact the Building Safety Division for any questions or additional information.

For more information on gas water heaters, please refer to our *Residential Gas Water Heaters* handout.

Seismic Straps (CPC 507.2)

Water heaters require seismic straps; one located within the top 1/3 of the water heater unit and one at the bottom 1/3. The bottom strap must be located at least 4" above the water heater controls.

- Up to 52 gallon unit – requires 2 straps
- 75 gallon unit – requires 3 straps
- 100 gallon unit – requires 4 straps

Several seismic strap kits are available commercially; however, metal plumber's tape can be used if it completely encircles the water heater and is then attached to a structural framing member at each end. Any platform supporting the water heater must be secured to the structure or the slab. Additional blocking at the water heater may be required to resist horizontal displacement.

Venting (CPC 510)

Venting is required for gas water heaters. All vent piping that runs through ceilings, floors, or walls shall be double-wall metal pipe. The vent and the water heater must maintain clearance from combustible materials (such as wall framing or roofing) as required by the manufacturer, which is typically 1" minimum. The vent shall terminate a minimum 1' above the roof, be installed with flashing through the roof, and terminate in a listed and approved vent cap. Vents shall also terminate a minimum of 3' above any building opening (door, operable window, etc.) within 3' of the termination. Venting shall extend in a generally vertical direction with offsets not exceeding 45°. Vents may require additional supports depending on the material and design.

Pressure-Temperature Relief Valve (CPC 504.4, 504.5, and 608.5)

All tank water heaters have a pressure/temperature (P/T) relief valve that is galvanized steel, hard-drawn copper, or CPVC. The valve shall be drained to the exterior, terminate toward the ground maintaining between 6" and 24" of clearance from the ground, and point downward. The diameter of the valve opening (generally 3/4") must be maintained to the termination of the drain. Relief valve drains shall not terminate in a crawl space or an over-flow pan. No part of such drain pipe shall be trapped or subject to freezing, and the terminal end of the drain shall not be threaded. When approved by the Chief Building Official, such drain may terminate at other locations (i.e. laundry tub, floor sink, or floor drain).

Located in a Garage (CPC 507.13)

Gas water heaters located in a garage must be elevated so the pilot light and controls are at least 18"

above the garage floor surface (unless the unit is listed as flammable vapor ignition resistant).

All water heaters subject to vehicular damage shall have adequate barriers installed (e.g. 4" diameter steel pipe filled with concrete installed in a footing measuring 12" in diameter and 3' deep and a minimum of 2'-9" above the finished floor).

Located in a Bedroom, Bathroom, or Bedroom Closet (CPC 504.1)

If located in a bedroom, bathroom, or bedroom closet, a gas water heater shall be located in a closet provided with a listed self-closing, gasketed door and all combustion air shall be obtained from outdoors. The water heater closet shall not be used for any other purpose.

Located in Attic (CPC 508.4)

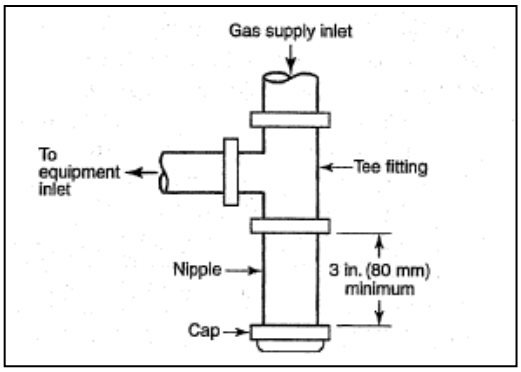
When located in an attic, the water heater shall be accessible through an opening and passageway at least large as the largest component of the appliance, and not less than 22" by 30". Where the height of passageway is less than 6', the distance from the passageway access to appliance shall not exceed 20' measured along the centerline of the passageway. The passageway shall be unobstructed and shall have solid flooring not less than 24" wide. A level working platform not less than 30" by 30" shall be provided in front of the service side of the appliance. A permanent 120-volt receptacle outlet and lighting fixture shall be installed near the appliance. The switch controlling the lighting fixture shall be located at the entrance to the passageway.

Located in an Attic or Furred Space (CPC 507.5)

If located in an attic or furred space (i.e. closet) where leaking could cause damage to underlying wood framing, the water heater must be set in a pan constructed of water tight corrosion resistant material and a minimum of 1-1/2" deep. The pan must be fitted with a minimum 3/4" drain that drains to an approved location. The P/T line is not allowed to terminate at this pan or be connected to it.

Combustion Air (CPC 506)

Combustion air for gas water heaters must be maintained per the California Plumbing Code. When the appliance is located in an unconfined space (e.g. garage) the combustion air can be used from that area. When located in a closet, combustion air must be provided at a minimum of two openings (one within 12" of the top of the water heater and one within 12" of the bottom) sized at 100 square inches each.



Sediment Trap (CPC 1212.9)

A sediment trap shall be installed on the gas line downstream of the appliance shut-off valve and as close to inlet of the appliance as practical.

Tankless Water Heaters

Tankless water heaters shall be listed by an approved testing agency (UL, UPC, etc.) and be installed in accordance with the manufacturer's requirements. Gas tankless water heaters require Category II stainless venting material, and larger gas supply lines may be required based on the manufacturer's specifications/recommendations.

Note: PG&E requires a minimum horizontal clearance of 36" between the gas meter and a tankless water heater when located on the same wall.

Water Heater Efficiency (CalEnergy 150.2(b)1(H)iii)

Replacement water heaters shall meet one of the following:

a. A natural gas or propane water-heating system; or
b. A single heat pump water heater. The storage tank shall not be located outdoors and be placed on an incompressible, rigid insulated surface with a minimum thermal resistance of R-10. The water heater shall be installed with a communication interface that either has demand responsive controls or has an ANSI/CTA-2045-B communication port; or
c. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher; or
d. If the existing water heater is an electric resistance water heater, a consumer electric water heater; or
e. A water-heating system that uses no more energy than the one specified in Item a above; or if no natural gas is connected to the existing water heater location, a water-heating system that uses no more energy than the one specified in Item d above.

PERMIT PROCESS

Building Permit Review

1. Building permits for water heater replacements are available online at the Permit Center or at the One-Stop Permit Center. The One-Stop Permit Center is open between the hours of 8 a.m. to 12:30 p.m. and 1 to 5 p.m., Monday - Friday.

Inspections

2. An electrical inspection is required for new electric water heaters before final inspection.
3. One final inspection is required after all the work has been completed.

Building Permit Application Requirements

☐ A completed Building and Fire Permit Application (available at the One-Stop Permit Center or online at the Permit Center, Applications, Fees and Forms.