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10. Electric Ready Requirements

10.1 Overview

Sections §150.0(n) and §150.0(t-v) describe the mandatory requirements for electric readiness in single family buildings. The electric readiness requirements apply when natural gas or propane equipment is installed for space heating, water heating, cooking or clothes drying. The intent of the requirements is to facilitate future installations of high efficiency electric equipment and minimize future retrofit costs when gas appliances are replaced with electric appliances.

This section outlines how to comply with the new mandatory electric ready requirements for space heating, water heating, cooking, and laundry.

10.2 What's New in 2022

Electric-readiness is a new mandatory requirement for gas space heating, cooking, and clothes drying for the 2022 Energy Standards. The electric-ready requirements for gas water heaters have been revised and expanded.

10.3 Mandatory Requirements §150.0(n) and §150.0(t-v)

Electric readiness requires the following for the applicable gas appliances listed in Table 10-1.

Table 10-1 summarizes the electrical capacity, panel, and other requirements for electric-readiness for each gas appliance installed in a new single family building. There are no electric ready requirements for additions or alterations. There are no performance or prescriptive electric ready requirements for single family buildings.

These requirements are for newly constructed buildings and are not applicable to additions or alterations. Moreover, these requirements are not applicable when electric equipment is installed.

Table 10-1: Summary of Compliance Requirements

Gas or Propane Equipment Installed	Electrical Capacity requirements for new circuit (amps, volts)	Panel requirements	Other Requirements
Water heater §150.0(n)	1. 125V, 20 amp receptacle with copper 120V/240V, 10 AWG, 3-conductor wire. Unused conductor shall be labeled and electrically isolated. OR 2. 240V, 30 amp dedicated circuit	1. Reserved space (labeled "For Future 240V use") for single pole circuit breaker adjacent to 125V, 20A circuit breaker. OR 2. Reserved space (labeled "For Future 240V use") for double pole circuit breaker	A designated space for a future HPWH (2.5 ft x 2.5 ft wide x 7 ft high) Condensate drain no more than 2 inches higher than the base of installed water heater to allow for natural drainage without pump assistance
Furnace §150.0(t)	240V, 30 amp	Reserved space for double pole circuit breaker	n/a
Range §150.0(u)	240V, 50 amp	Reserved space for double pole circuit breaker	n/a
Clothes dryer §150.0(v)	240V, 30 amp	Reserved space for double pole circuit breaker	n/a

10.3.1 Water Heater

The following mandatory requirements apply to gas or propane water heaters serving single family buildings. These requirements make it easier for someone to retrofit existing water heater with a HPWH in the future. Wiring for a future HPWH during initial construction stage is much less costly than trying to retrofit it later.

10.3.1.1 Designated Space

A designated space needs to be reserved for installation of a future HPWH. That space needs to be 2.5 feet wide by 2.5 feet deep by 7 feet tall. This space can be located where the gas or propane water heater is installed. If there is not adequate space at the installed water heater location, then another suitable location should be identified.

10.3.1.2 Electrical Requirements

The goal of this requirement is to allow easy installation of a HPWH, which typically require a 240V circuit, when the existing gas water heater is replaced.

If the designated HPWH space is within 3 feet of the gas water heater, a dedicated 125-volt (V), 20 amp electrical receptacle shall be installed that is within 3 feet of the water heater and accessible to the water heater with no obstructions. The wiring to this dedicated receptacle shall be connected to a 120/240V, three conductor, minimum 10 AWG branch circuit. The ends of the unused conductor must be labeled as "spare" and be electrically isolated.

Additionally, a reserved single pole circuit breaker space must be placed in the electrical panel next to the circuit breaker for the branch circuit and labeled with the words "Future 240V Use."

If the designated HPWH space is more than 3 feet from the gas water heater, a 240V branch circuit must be installed rated at a minimum of 30 amps with no obstructions, in addition to a dedicated space in the main service panel for a future double pole breaker that will serve the future HPWH. The dedicated space in the panels shall be identified as "Future 240V Use". The circuit shall be dedicated to future electric replacement equipment and cannot be used for other appliances.

10.3.1.3 Condensate Drain

A condensate drain must be placed near the water heater no higher than 2 inches above the base of the tank. This will allow for gravity flow of the condensate without relying on a sump pump.

10.3.1.4 Hot and Cold Water Supply

If the designated HPWH space is more than 3 feet from the gas water heater, both cold water and hot water supply piping, exposed and readily accessible to serve a future HPWH, must be provided at the designated HPWH location. The location shall have a dedicated cold water supply, or a cold water supply shall pass through the designated location before reaching the gas water heater. Hot water supply from the gas water heater must be routed to the designated HPWH location first before serving any of the hot water fixtures in the house.

10.3.2 Space Heater

When gas furnaces are installed, the following electric-ready requirements must be met.

1. Installation of branch circuits within 3 feet of the gas furnace with no obstructions. The circuit shall be 240V rated at a minimum of 30 amps. The circuit shall be dedicated to future electric replacement equipment and cannot be used for other appliances. A receptacle is not required, but the unused circuits must have a blank cover identified as "240V ready". Other electrical components must be installed in accordance with the *California Electrical Code*.
2. Dedicated space in the main service panel for a double pole breaker that will serve the future space heating. The dedicated space in the panels shall be identified as "Future 240V Use." The code does not require the installation of breakers at time of construction.

If gas equipment other than a furnace is installed these electric ready requirements do not apply.

10.3.3 Cooktops

When gas cooktops are installed, the following electric-ready requirements must be met. Note that this requirement applies when installing a gas range but is not required for gas ovens when installed as a separate appliance.

1. Installation of branch circuits within 3 feet of the gas cooktop with no obstructions. The circuit shall be 240V rated at a minimum of 50 amps. The circuit shall be dedicated to future electric replacement equipment and cannot be used for other appliances. A receptacle is not required, but the unused circuits must have a blank cover identified as "240V ready". Other electrical components must be installed in accordance with the *California Electrical Code*.
2. Dedicated space in the main service panel for a double pole breaker that will serve the future electric cooktop. The dedicated space in the panels shall be identified as "Future 240V Use." The code does not require the installation of breakers at time of construction.

These electric ready requirements do not apply to stand-alone ovens.

10.3.4 Clothes Dryer

When gas piping to serve a clothes dryer is installed, the following electric-ready requirements must be met.

1. Installation of a branch circuit within 3 feet of and accessible to the dryer location with no obstructions. The circuit shall be 240V rated at a minimum of 30 amps. The circuit shall be dedicated to future electric replacement equipment and cannot be used for other appliances. A receptacle is not required, but the unused circuits must have a blank cover identified as "240V ready". Other electrical components must be installed in accordance with the *California Electrical Code*.

2. Dedicated space in the main service panel for a double pole breaker that will serve the future electric clothes dryer. The dedicated space in the panels shall be identified as “Future 240V Use.” The code does not require the installation of breakers at time of construction.

10.3.5 Gas Uses not Covered by Electric Ready Requirements

Any gas appliances not listed in Table 10-2 are not required to meet the mandatory electric ready requirements. This includes outdoor grills, barbeque pits, fireplaces, and stand-alone ovens.

10.4 Compliance and Enforcement

This section describes compliance documentation and field verification requirements related to electric readiness. When a building permit application is submitted to the enforcement agency, the applicant also submits plans and energy compliance documentation.

Example 10-1 – HPWH Ready:

Question:

I am installing a propane water heater in a garage and the designated future HPWH location is in the same space, do I need to install a dedicated 125V, 20 amp electrical plug connected to a 3-conductor 10 AWG wire?

Answer:

Yes. Most modern efficient gas water heaters require 125V, 20 amp power to operate. The electric ready requirement is designed to easily convert the installed 120V electrical circuit to 240V, capable of powering a HPWH. If the installed gas water heater does not have an electrical connection, a dedicated 240V, 30 amp circuit can be provided at the designated HPWH location, along with dedicated space in the main panel for a double pole breaker.

Example 10-2 – HPWH Ready:

Question:

I am installing a split-system HPWH. The storage tank is in an interior closet and is separate from the compressor and evaporator, which is located outside, do I need to meet the electric ready requirements for water heating?

Answer:

No. If a HPWH is being installed, either split-system or integrated, the electric ready requirements do not apply. They only apply when a gas water heater is being installed.

Example 10-3 – HPWH Ready:

Question:

I am installing a 120V HPWH, do I need to meet the electric ready requirements for water heating?

Answer:

No. If a HPWH is being installed, regardless of the voltage, the electric ready requirements do not apply. They only apply when a gas water heater is being installed.

Example 10-4 – Electric Cooktop Ready:

Question:

If I am installing a gas range, do I need to meet the electric ready requirements for cooktops?

Answer:

Yes. Because your range includes a gas cooktop, the electric ready requirements need to be met.

Example 10-5 – Electric Clothes Dryer Ready:

Question:

If I am providing both gas piping and a dedicated electrical circuit for the potential for either a gas or electric dryer to be installed by the homeowner, do I need to meet the electric ready requirements at the dryer location?

Answer:

If you are installing a dedicated 240V, 30 amp or greater plug for an electric dryer, in addition to a gas stub-out for a gas dryer, you are meeting the electric ready requirements for clothes dryer.