Ace Resources™

Residential

Domestic Water Heating

What Are the Benefits of Energy Code Compliance for Domestic Water Heating?

Water heaters that provide hot water for household use are the only permanent, that is, not plug-in, pieces of equipment in homes that operate 24 hours a day, 7 days a week, 365 days a year. Even small energy savings associated with these systems can multiply into considerable savings over the equipment's lifetime. As the state of California works toward its decarbonization goals, energy savings realized with domestic hot water equipment, distribution, and design are major factors in reaching those targets.

To learn more about California's electrification goals, see the following Energy Code Ace™ fact sheets: "2025 Designing Single-family Homes to Run on Clean Energy" and "2025 Residential Electric Readiness."

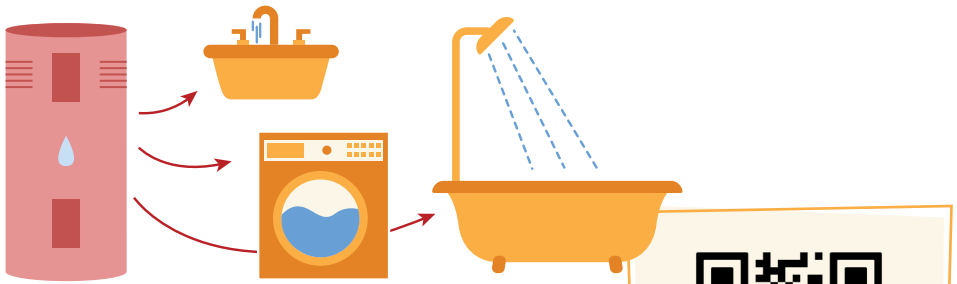

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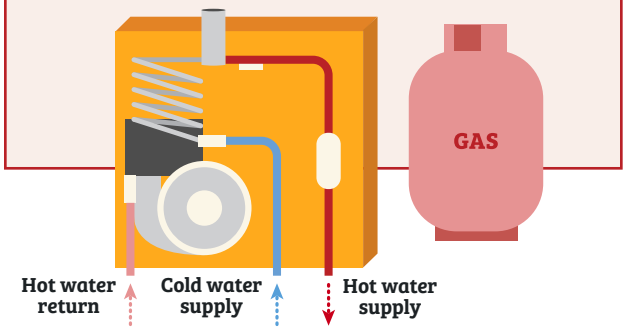
Table of Contents

How Does This Fact Sheet Apply to Your Project?

Gas or Propane Water Heaters

When using gas or propane water heaters in newly constructed multifamily buildings, there are Mandatory electric heat pump water heater-readiness requirements (§§160.9(e) and (f)).

See the Energy Code Ace "2025 Residential Electric Readiness" fact sheet for more information.



Use this fact sheet to get an overview of Energy Code compliance requirements for newly constructed single-family, multifamily, and hotel/motel building service water heating equipment and distribution systems.

This fact sheet does not cover water heating system requirements for nonresidential buildings and occupancies, multifamily common use areas, or water heating systems used for pools and spas.

There are two basic steps to comply with the Energy Code:

1. Meet all Mandatory Measures by installing the required systems, equipment, and devices, and ensuring that they perform all functions required by the Energy Code.
2. Select your method of compliance by choosing either the Performance Approach or the Prescriptive Approach.

Mandatory Measures

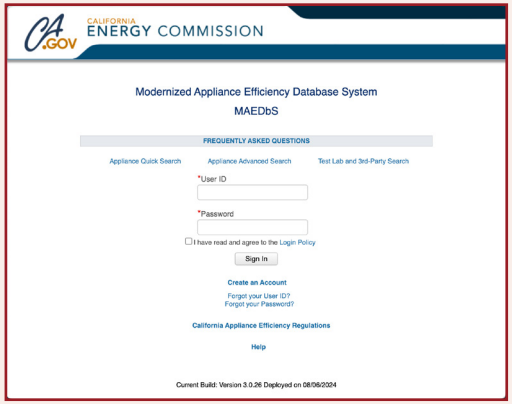
All residential buildings with domestic hot water systems must meet a set of Mandatory requirements for minimum equipment efficiencies and system design. Examples of Mandatory Measures for domestic hot water systems include water heating controls, tank and pipe insulation, and electric heat pump water heater readiness for gas water heaters serving each multifamily dwelling unit or hotel/motel guest room.

See the following Energy Code sections for Mandatory water heating system requirements for different building types:

- §§110.1, 110.3, and 110.8 for all building types
- §§150.0(j) and (n) for single-family buildings
- §§160.4 and 160.9(e) and (f) for multifamily buildings
- §§120.3 and 120.9 for hotel/motel buildings

Mandatory Equipment Certification and Minimum Efficiencies

Installers should confirm and document that only certified products are installed. Use the Product Finder and Modernized Appliance Efficiency Database System (MAEDbS) tools to find certified products.



Products installed must also meet minimum efficiency requirements. See Table 2 in this fact sheet for water heater efficiency requirements.

Prescriptive Approach

The Prescriptive Approach is considered the most direct path to compliance. It is a set of prescribed performance levels for various building components where each component must meet the required minimum efficiency. There are different Prescriptive requirements for different Climate Zones and for New Construction or Additions versus Alterations. If a project does not meet all the applicable Prescriptive measures, the Performance Approach can be used to gain flexibility with the Prescriptive requirements.

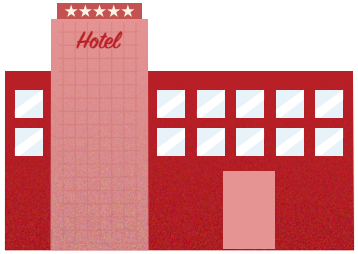
- Single-family Prescriptive water heating requirements for New Construction can be found in §150.1(c)8, Additions in §150.2(a)1D, and Alterations in §150.2(b)1H.
- Multifamily Prescriptive water heating requirements for New Construction can be found in §170.2(d), Additions in §180.1(a)3, and Alterations in §180.2(b)3.
- Hotel/motel Prescriptive water heating requirements are the same as multifamily, per §140.5(b).

Performance Approach

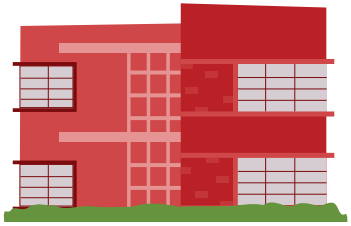
The Performance Approach builds on the Prescriptive Approach by allowing energy allotments to be traded between certain building systems. Energy use trade-offs can be proposed between envelope, domestic water heating, space heating, photovoltaic (PV), and cooling equipment features. This compliance approach requires using energy analysis software that has been approved by the California Energy Commission (CEC). Note that Mandatory Measures cannot be traded away using the Performance Approach.

Occupancies Subject to Residential Domestic Hot Water Requirements

The requirements in this fact sheet apply to hotel/motel, multifamily, and single-family buildings, which include duplexes and townhomes. See below for California Building Code (CBC) occupancy classes and the related Energy Code building types and definitions.



Nonresidential



Multifamily

Single-family

Nonresidential Groups

Occupancy Class: R1, R2, R3

Hotel/Motel Buildings: Include six or more guest rooms for primarily transient occupants.

Multifamily Groups

Referred to as "Multifamily Building" in the Energy Code

Occupancy Class: R2 — Residential

Buildings with three or more dwelling units for permanent residents.

Occupancy Class: R3 — Residential

Multifamily congregate residences with primarily permanent residents. This can include Accessory Dwelling Units (ADUs) on a multifamily property.

Occupancy Class: R4 — Residential

Supervised residential environments for more than 6 ambulatory clients and up to 16 total residents, that is not considered a "Healthcare Facility."

Occupancy Class: U — Miscellaneous

Accessory buildings and structures, and miscellaneous structures not classified in any specific occupancy and on a multifamily property.

Single-family Groups

Referred to as "Single-family Building" in the Energy Code

Occupancy Class: R3 — Residential

Multifamily congregate residences with primarily permanent residents. This can include ADUs on a multifamily property.

Occupancy Class: U — Miscellaneous

Accessory buildings and structures, and miscellaneous structures not classified in any specific occupancy and on a multifamily property.

The following occupancy is *not* subject to the Energy Code

Nonresidential Groups

Occupancy Class: C — Camps

An organized camp is a site with programs and facilities established for the primary purpose of providing an outdoor group living experience with social, spiritual, educational, or recreational objectives, for five days or more during one or more seasons of the year.

Key Terms

NEW for 2025! Air-to-water Heat Pump (AWHP) is a factory-made packaged heat pump system containing one or more compressors, and heat exchangers for transferring heat between refrigerant and air, as well as between refrigerant and water, and various other components. Its primary purpose is to generate heated or cooled water to meet space conditioning loads, domestic hot water loads, or both.

NEW for 2025! Domestic Hot Water System Appurtenances are all elements that are in series in a domestic hot water distribution system, including fittings — for example, elbows, tees, and flanges — pumps, valves —for example, isolation, mixing, balancing, and check — strainers, hose bibs, coil u-bends, meters, sensors, heat exchangers, and air separators.

Domestic Water Heating Systems are also referred to as domestic hot water (DHW) systems. See service water heating.

Drain Water Heat Recovery (DWHR) is a system that recovers heat from effluent in waste piping and uses it to preheat water in a domestic or service water heating system to reduce water heating energy usage.

Dwelling Unit is a single unit providing complete, independent living facilities for one or more people, including access and permanent provisions for living, sleeping, eating, cooking, and sanitation.

Multifamily Common Use Areas are enclosed spaces within the multifamily occupancy that are not dwelling units, such as common corridors or lobbies.

NEEA Advanced Water Heater Specification is the Northwest Energy Efficiency Alliance (NEEA) specification version 6.0 for heat pump water heaters.

Service Water Heating is the heating of water for sanitary purposes for human occupancy, other than for space heating.

Uniform Energy Factor (UEF) is a measure of overall water heater efficiency that is determined by using the applicable test method in the Appliance Efficiency Regulations.

Water Heater definitions include the following:

Consumer Water Heater is a water heater that meets the definition of a consumer product under U.S. DOE 10 CFR 430.

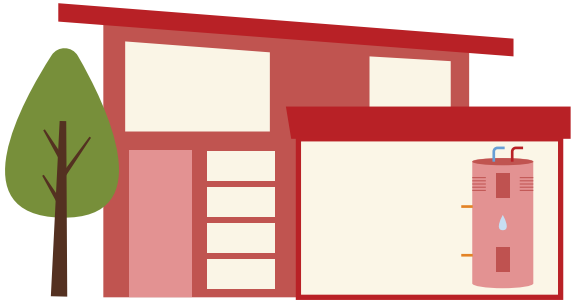
Heat Pump Water Heater is a water heater that transfers thermal energy from one temperature level to another temperature level for the purpose of heating water, including all ancillary equipment such as fans, storage tanks, pumps, or controls necessary for the device to perform its function.

- **Integrated Heat Pump Water Heater** is a heat pump water heater that includes all components, including fans, storage tanks, pumps, or controls necessary for the device to perform its function contained in a single factory-made assembly.
- **Split-refrigerant Heat Pump Water Heater** is a heat pump water heater that has a single outdoor section, and one or more indoor sections connected to the outdoor section via a refrigerant circuit.
- **Split-hydronic Heat Pump Water Heater** is a heat pump water heater that consists of multiple separate sections. One section houses all the refrigerant components, while one or more additional sections are designated for water storage. These sections are interconnected through a hydronic circuit.

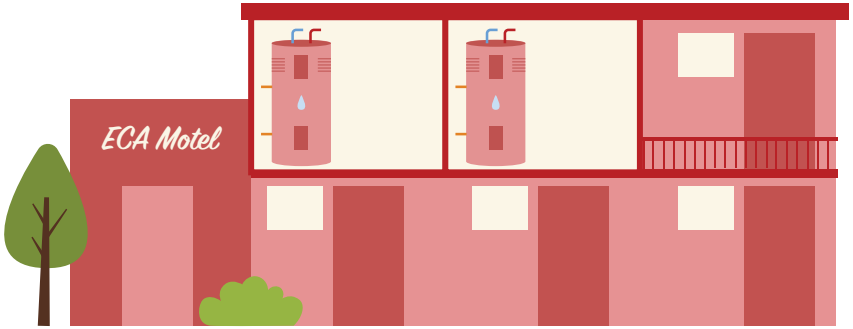
Multi-pass Water Heater is a water heater through which the cold water passes through multiple times. The water temperature increases with each pass until the storage tank reaches the intended storage temperature.

Single-pass Water Heater is a water heater through which the cold water passes through once and is heated to the intended use temperature.

Individual Water Heating Systems



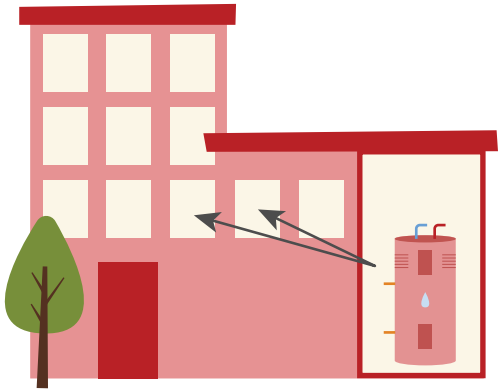
One water heating system serving a single-family home, single-family ADU, townhome, or duplex



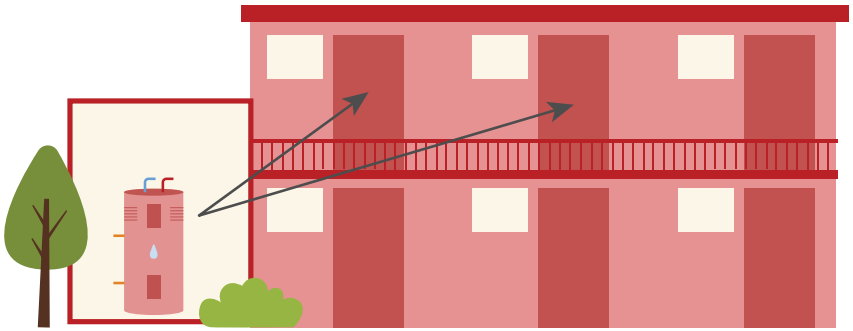
One water heating system serving one hotel/motel guest room or one multifamily dwelling unit

VS

Central Water Heating Systems



One or more water heating systems serving two or more multifamily dwelling units



One or more water heating systems serving two or more hotel/motel guest rooms

When Does a Residential Water Heating Project Trigger the Energy Code?

The Energy Code classifies projects as New Construction, Additions, Alterations, or Repairs, depending on their scope. All project types, except for Repairs, can trigger the Energy Code. Table 1 below lists typical project scopes involving water heating systems, identifies their project types, and notes whether each project triggers the Energy Code or not.

Table 1: Residential Water Heating Projects that Trigger the Energy Code

Project Type	Project Scope Examples	Energy Code Triggered?
New Construction	Construct a new single-family dwelling unit, including any new detached Accessory Dwelling Units (ADUs), that includes a water-heating system or systems	**YES**
New Construction	Construct a new building on a single-family site that does not include a dwelling unit, such as a workshop, that includes a water heating system or systems	No
New Construction	Construct a new multifamily or hotel/motel building that includes a water heating system or systems serving dwelling units or guest rooms	**YES**
Addition	Add a new water heating system as part of an Addition to an existing dwelling unit or hotel/motel guest room	**YES**
Addition	Add a new water heating system to serve a new ADU that is attached to an existing single-family or multifamily building	**YES**
Alteration	Add a new water heating system to serve a non-dwelling-unit space, such as a garage or workshop	No
Alteration	Replace an existing water heater with the same type, serving an existing dwelling unit or hotel/motel guest room	**YES**
Alteration	Replace an existing water heater with a different type, serving an existing dwelling unit or hotel/motel guest room	**YES**
Alteration	Add a new water heater to serve an existing dwelling unit or hotel/motel guest room	**YES**
Alteration	Add a new water heater to serve an existing multifamily common use area	**YES**

Table 1: Residential Water Heating Projects that Trigger the Energy Code *(continued)*

Project Type	Project Scope Examples	Energy Code Triggered?
Alteration	Add or replace a recirculation pump to an existing distribution system	**YES**
Alteration	Add or replace hot water piping of an existing distribution system	**YES**
Alteration	Add or replace hot water pipe insulation of an existing distribution system	**YES**
Repair	Repair any type of existing water heater *Examples of Repairs include replacing components such as an anode rod, thermostat, flue, or tank insulation.*	No

Addition: Any change to a building that increases conditioned floor area and conditioned volume; any change that increases the floor area and volume of an unconditioned building of an occupancy group or type regulated by Title 24, Part 6; or any change that increases the illuminated area of an outdoor lighting application regulated by Title 24, Part 6 (see also newly conditioned space).

Alteration: Any change to a building's water heating system, space conditioning system, lighting system, electrical power distribution system, or envelope that is not an Addition; any change that is regulated by Title 24, Part 6 to an outdoor lighting system that is not an Addition; any change that is regulated by Title 24, Part 6 to signs located either indoors or outdoors; or any change that is regulated by Title 24, Part 6 to a covered process that is not an Addition.

Newly Conditioned Space: Any space being converted from unconditioned to directly conditioned or indirectly conditioned space, and must comply with the requirements for an Addition.

Newly Constructed Building: A building that has never been used or occupied for any purpose.

Repair: The reconstruction or renewal for the purpose of maintenance of any component, system, or equipment of an existing building that does not increase the preexisting energy consumption of the repaired component, system, or equipment; replacing any component, system, or equipment for which there are requirements in the Energy Code is considered an Alteration, not a Repair.

Mandatory Minimum Domestic Hot Water Efficiencies

The Energy Code requires domestic water heaters to meet the efficiency levels from §1605.1(f) of California's Title 20 Appliance Efficiency Standards. These efficiency levels are taken from the Code of Federal Regulations (CFR) Title 10 §430.32(d) for federally regulated residential water heaters.

Table 2 on page 10 in this fact sheet lists Mandatory minimum Uniform Energy Factor (UEF) requirements for gas and electric water heaters, including electric heat pumps. UEF values vary by water heater product class, draw pattern, and rated storage volume. The draw pattern is based on the water heater's design first hour rating for storage water heaters, or gallons per minute for instantaneous water heaters.

The original tables in the CFR and in Title 20 include equations for calculating UEF for different products. Table 2 in this fact sheet includes pre-calculated UEF values for typical domestic water heater types.

Water Heater Types

Consumer Electric Instantaneous water heaters are federally regulated consumer products that use electricity as the energy source. They have nameplate input ratings of 12 kW or less, and they contain no more than one gallon of water per 4,000 Btuh input, with rated storage volume less than two gallons overall.

Consumer Gas-fired Instantaneous water heaters are federally regulated consumer products using gas as the main energy source. They have nameplate input ratings greater than 50,000 Btuh and less than 200,000 Btuh. They contain no more than one gallon of water per 4,000 Btuh input and have rated storage volume less than two gallons overall.

Consumer Gas-fired Storage water heaters are federally regulated consumer products using gas as the main energy source. They have nameplate input ratings of 75,000 Btuh or less and contain more than one gallon of water per 4,000 Btuh input. Total rated storage volumes range from 20 to 100 gallons.

Electric Grid-enabled Storage water heater water heaters are electric resistance water heaters that (1) have a rated storage tank volume over 75 gallons, (2) were manufactured on or after April 16, 2015, and (3) are equipped at the point of manufacture with an activation lock. **Important Information:** Electric grid-enabled storage is a specialized type of water heater intended only for use as part of an electric thermal storage or demand response program. It will not provide adequate hot water unless enrolled in such a program and activated by the local utility company or another program operator. Confirm the availability of a program in the local area before purchasing or installing this product.

Electric Storage water heaters, including heat pumps, are federally regulated consumer products that use electricity as the energy source. They have nameplate input ratings of 12 kW or less and contain more than one gallon of water per 4,000 Btuh input. Total rated storage volumes range from 20 to 100 gallons.

Residential-duty Commercial Gas-fired Storage water heaters are commercial gas-fired storage water heaters that (1) use single-phase external power supply for models requiring electricity, (2) are not designed to provide outlet hot water at temperatures greater than 180°F, and (3) have rated input greater than 75,000 Btuh and less than or equal to 105,000 Btuh. Their rated storage volume equals 120 gallons or less.

Table 2: Federally Regulated Residential Water Heaters: Mandatory Minimum Domestic Hot Water (DHW) Efficiencies

(Adapted from the Code of Federal Regulations, per 10 CFR 430.32(d))

Product Class	Draw Pattern	Rated Storage Volume (Gallons)	Uniform Energy Factor (UEF) Minimum Requirement
Consumer Gas-fired Instantaneous (> 50,000 Btuh, < 200,000 Btuh)	Low, Medium, High	< 2	0.81
Consumer Gas-fired Storage (≤ 75,000 Btuh) (≥ 20gal, ≤ 100gal)	Medium	40	0.58
		50	0.56
		60	0.77
		70	0.76
		80	0.76
	High	40	0.64
		50	0.63
		60	0.79
		70	0.79
		80	0.78
Residential-duty Commercial Gas-fired Storage (Single-phase only) (> 75,000 Btuh, ≤ 105,000 Btuh) (≤ 120gal)	Medium	50	0.55
		60	0.53
		70	0.52
		80	0.51
	High	50	0.61
		60	0.61
		70	0.59
		80	0.59

Table 2: Federally Regulated Residential Water Heaters: Mandatory Minimum Domestic Hot Water (DHW) Efficiencies *(continued)* (Adapted from the Code of Federal Regulations, per 10 CFR 430.32(d))

Product Class	Draw Pattern	Rated Storage Volume (Gallons)	Uniform Energy Factor (UEF) Minimum Requirement
Consumer Electric Instantaneous (≤ 12 kW))	Very Small, Low, Medium	< 2	0.91
Electric Grid-enabled Storage (≤ 12 kW) (> 75 gal)	High	80	0.92
		100	0.90
		120	0.89
Electric Storage (including Heat Pump) (≤ 12 kW) (≥ 20gal, ≤ 120gal)	Medium	20	0.93
		40	0.92
		50	0.92
		60	2.05
	High	20	0.93
		40	0.93
		50	0.93
		60	2.18

Energy Code Requirements for Individual Water Heating Systems

Newly Constructed Buildings and Additions

In New Construction and Addition projects where an individual water heating system serves one single-family or multifamily dwelling unit or one hotel/motel guest room, the Energy Code sets requirements for the water heating equipment type, installation criteria, and distribution systems.

Individual Water Heating Systems

One water heating system serving a single-family home, single-family accessory dwelling unit (ADU), townhome, or duplex (top) and one water heating system serving one hotel or motel guest room or one multifamily dwelling unit (bottom)

Individual Water Heaters — General Requirements

Mandatory Requirements

- **Section 110.1: "Mandatory Requirements for Appliances"**
- **Section 110.3(a): "Certification by Manufacturers"**
- **Section 110.3(b): "Efficiency"**
- **Section 110.3(c): "Installation"**
- **Section 110.8(d)2: "Water Heaters"**

All water heaters:

- Must meet minimum efficiency requirements.
- Require equipment certified by the manufacturer within Modernized Appliance Efficiency Database System (MAEDbS).
- On systems that have a total capacity greater than 167,000 Btuh, outlets that require a service water temperature higher than what is supported in the ASHRAE Handbook, Applications Volume, Chapter 51 "Service Water Heating," must use separate systems or boosters to supply the higher temperature.

Unfired service water heater storage tanks or solar backup tanks:

- Must have R-3.5 external insulation, or a combined total R-value of R-16 for internal plus external insulation, or the heat loss of the tank surface must be less than 6.5 Btuh/ft², based on an 80°F water-air temperature difference; if external insulation is installed on an existing unfired water storage tank or on an existing back up tank for a solar water heating system, the external insulation must be at least R-3.5, or the heat loss of the tank surface must be less than 6.5 Btuh/ft², based on an 80°F water-air temperature difference.

Tankless water heaters:

- With an input rating greater than 6.8 kBtuh (2 kW) must have isolation valves on both the cold-water supply and the hot water piping leaving the water heater, and hose bibbs or other fittings on each valve for flushing the water heater when the valves are closed.

Heat Pump — Tank Systems General Requirements

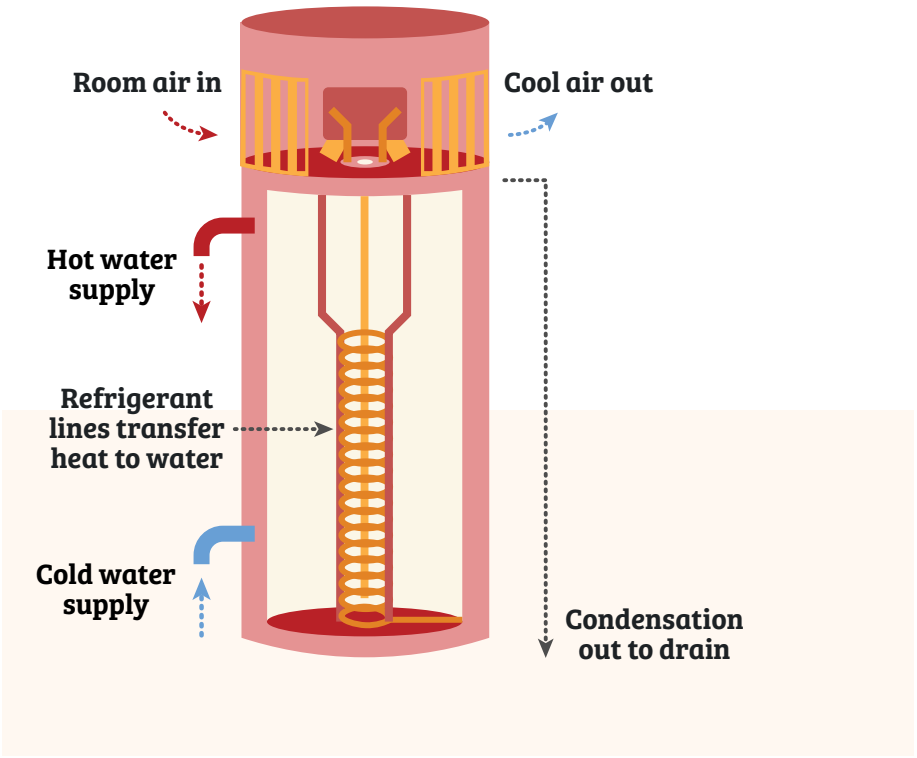
Mandatory Requirements

› Section 110.3(c)7: "Installation – Air-source Heat Pump Water Heaters (HPWHs)"

NEW for 2025! Heat pump water heaters have new Mandatory installation requirements including the following:

- Backup heat when the inlet air is unconditioned. Inlet air is the room air into the heat pump water heater. Backup heat is not required if the compressor cut-off temperature is below the "Heating Winter Median of Extremes" temperature for the closest location listed in Joint Reference Appendix JA2 Table 2-3. Backup heat may be internal or external to the heat pump water heater.
- Ventilation design options, supporting minimum volume and opening size requirements of all heat pump water heaters installed within a space, must be one of the four following:

  1. **A method provided by the manufacturer:** This method must meet or exceed all applicable requirements from options two through four below.
  2. **Heat pump water heater is installed without ducts:** The volume of the installation space for one or more heat pump water heaters must be at least the larger of:
     - » 100 cubic feet per kBtuh of compressor capacity, or
     - » The minimum requirements of the manufacturer.



Heat pump water heater installed without ducts

Individual Electric Water Heating Equipment

3. **Heat pump water heater is installed without ducts:** The space containing one or more heat pump water heaters must be vented to a communicating space using permanent openings and meet all the following requirements:
   - » Vented to a communicating space that meets the volume requirement of option two above, excluding the volume of the space in which the heat pump water heaters are installed
   - » Vented via permanent openings using a single layer of fixed flat slat louvers or grilles, as follows:
     - Permanent openings can be fully louvered doors or have two openings of equal area. If there are two openings, one must be in the upper half of the enclosure within 12 inches of the enclosure top, and the other must be in the bottom half of the enclosure within 12 inches of the enclosure bottom.
     - The total minimum net free area (NFA) must be either 125 square inches plus 25 square inches per kBtuh of compressor capacity, or the minimum NFA provided by the manufacturer, whichever is greater.
4. **Heat pump water heater is installed with ducts:**
   - » System uses ducts to connect to a space that must meet the volume requirement of option two, excluding the volume of the space in which the heat pump water heaters are installed.
   - » Duct connections and building penetrations must be sealed.
   - » Exhaust air ducts and all ducts that cross pressure boundaries must be insulated with R-6 or greater.
   - » When only the heat pump water heater inlet or outlet air is ducted, the installation space must be vented via permanent openings using a single layer of fixed flat slat louvers or grilles, or by undercutting the door.
     - When using a ducted inlet, the NFA must be equal to or greater than the cross-sectional area of the duct.
     - When using a ducted exhaust, the NFA must be either 20 square inches or the manufacturer minimum, whichever is greater.
   - » When the inlet and outlet ducts both terminate within the same pressure boundary, airflow from the termination points must be diverted away from each other.

Note: Ducting only the inlet or the exhaust across the pressure boundary could interfere with balanced ventilation systems and needs to be coordinated with indoor air quality design.

Individual Electric Water Heating Equipment

Heat Pump — Tank Systems

Prescriptive Requirements

Single-family

› **Section 150.1(c)8: "Domestic Water-heating Systems"**

Multifamily and Hotel/Motel

› **Section 170.2(d): "Domestic Hot Water Systems"**

› **Section 180.1(a)3: Additions - "Water Heater"**

1. **Option 1:** One 240-volt heat pump water heater with the storage tank in the garage or in conditioned space, plus the following requirements:
   - » In Climate Zones (CZs) 1 and 16, install a compact hot water distribution system meeting the criteria of Residential Reference Appendix RA4.4.6.
   - » In CZ 16, install a drain water heat recovery system that is ECC verified as meeting the criteria of Residential Reference Appendix RA3.6.9.
2. **Option 2:** One 240-volt heat pump water heater rated NEEA Tier 3 or higher. CZ 16 also requires:
   - » An installed drain water heat recovery system that is Energy Code compliance (ECC, formerly known as HERS) verified as meeting the criteria of Residential Reference Appendix RA3.6.9.
   - » **Single-family only:** Storage tank must be in the garage or a conditioned space.

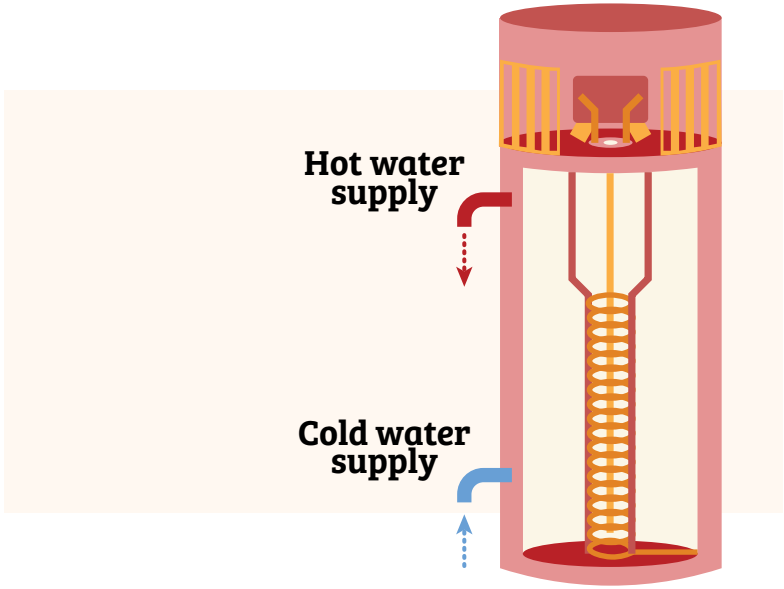
Exception: Single-family and multifamily dwelling units and hotel/motel guest rooms with one bedroom or fewer are allowed one 120-volt heat pump water heater instead of a 240-volt heat pump water heater.

Single-family Additions

› **Section 150.2(a)1D "Water Heating"**

When adding a single heat pump water heater that is not rated NEEA Tier 3 or higher to serve an Addition, Prescriptive compliance requires the measures in §150.1(c)8 listed above, plus the following:

- ✦ Install the storage tank in an enclosed space.
- ✦ Place the water heater, or storage tank of a split system, on rigid insulation that is R-10 or greater.
- ✦ Install the heat pump water heater with a communication interface that either meets §110.12(a) "Demand Responsive Controls" or that has an ANSI/CTA-2045-B communication port.



Individual Electric Water Heating Equipment

New Construction and Additions

Prescriptive Requirements

Electric Resistance — Tank or Tankless Systems

Single-family
New Construction and Additions over 500 ft²

- **Section 150.1(c)8: "Domestic Water-heating Systems"**
- **Section 150.2(a)1D: Additions - "Water Heater"**

Electric resistance water heating is not allowed in the Prescriptive Approach for new single-family dwelling units and Additions over 500 ft². Projects that propose electric resistance water heating must show compliance using the Performance Approach by making energy trade-offs from other, more efficient building systems or components.

Single-family
New Construction and Additions 500 ft² or less

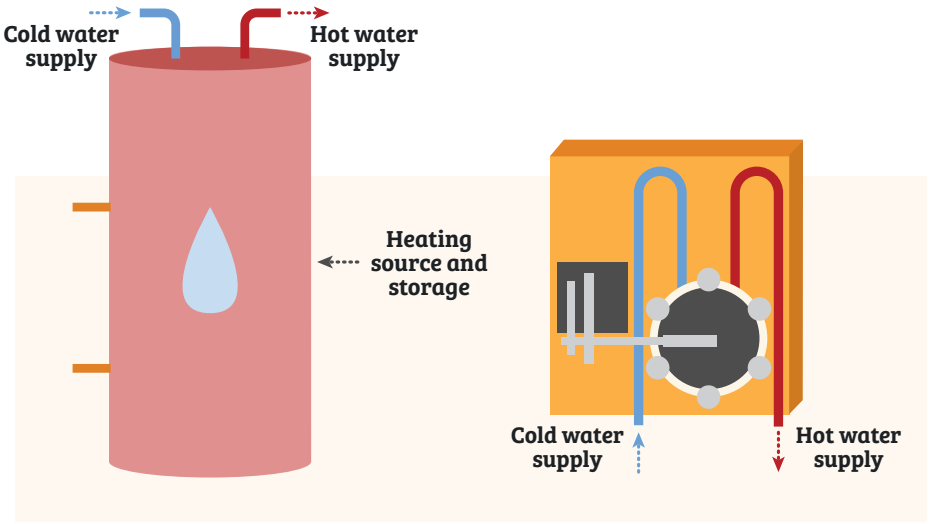
- **Section 150.1(c)8: "Domestic Water-heating Systems"**
- **Section 150.2(a)1D: Additions - "Water Heater"**

REVISED for 2025! New single-family dwelling units and Additions 500 ft² or less may comply prescriptively by installing an electric resistance water heater (tank or tankless) meeting the point of use (POU) distribution design requirements of Residential Reference Appendix RA4.4.5. In the 2022 Energy Code, this only applied to tankless electric resistance water heaters with POU distribution. Projects that propose electric resistance water heating without POU must show compliance using the Performance Approach by making energy trade-offs from other more efficient building systems or components.

Multifamily and Hotel/Motel
New Construction and Additions

- **Sections 170.2(d): "Domestic Hot Water Systems"**
- **Section 180.1(a)3: Additions - "Water Heater"**

Electric resistance water heating is not allowed in the Prescriptive Approach for new multifamily dwelling units, hotel/motel guest rooms, or Additions. Projects that propose electric resistance water heating must show compliance using the Performance Approach by making energy trade-offs from other more efficient building systems or components.



Electric resistance tank water heater (left) and tankless water heater (right)

Individual Electric Water Heating Equipment

Tank with Solar Thermal or Photovoltaic Water Heating, Including Electric Resistance Backup

Mandatory Requirements

Single-family

- **Section 150.0(j): "Insulation for Piping and Tanks"**
- **Section 150.0(n): "Water Heating System"**
  - Solar water heating system piping must meet the Mandatory insulation requirements of §150.0(j) "Insulation for Piping and Tanks."
  - Solar water-heating systems and collectors must be certified and rated per §150.0(n)2. See "Solar Water Heating Equipment Certification" at the right for more information.

Multifamily

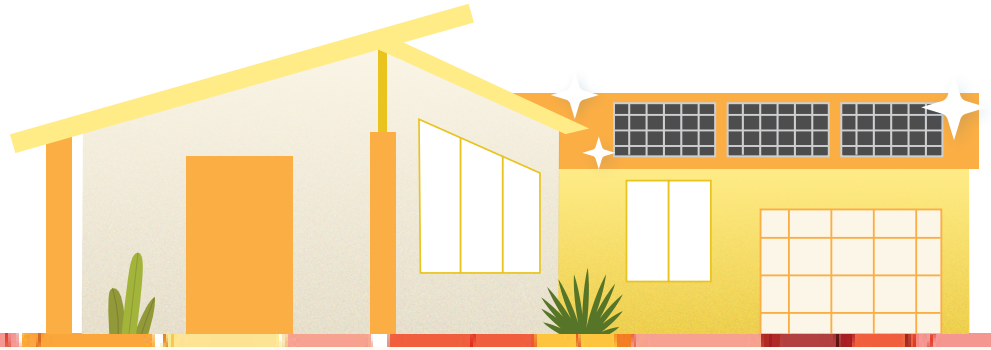
- **Section 160.4: "Mandatory Requirements for Water Heating Systems"**
  - Solar water-heating system piping must meet the Mandatory insulation requirements of §160.4(e) "Pipe Insulation."
  - Solar water-heating systems and collectors must be certified and rated per §160.4(b). See "Solar Water Heating Equipment Certification" at the right for more information.

Hotel/Motel

- **Section 120.3: "Requirements for Pipe Insulation"**
  - Solar water-heating system piping must meet the Mandatory insulation requirements of §120.3 "Pipe Insulation."
  - Solar water-heating systems and collectors must be certified and rated per §160.4(b). See "Solar Water Heating Equipment Certification" at the right for more information.

Solar Water Heating Equipment Certification

When using solar thermal or solar photovoltaic (PV) water heating systems to show compliance with the Energy Code, those systems must be installed per the requirements of the Residential Reference Appendix RA4.4.20 including, but not limited to, certification and rating of the solar water heating system or collectors by the Solar Rating and Certification Corporation (SRCC) or the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T).



Tank with Solar Thermal or Photovoltaic Water Heating, Including Electric Resistance Backup

Prescriptive Requirements

Single-family

› **Section 150.1(c)8C: "Domestic Water-heating Systems"**

For Prescriptive compliance, solar water heating systems with electric resistance backup must meet the installation criteria of Residential Reference Appendix RA4.4.20 and have an annual Solar Saving Fraction (SSF) of 70% or more. If the SSF is less than 70%, this system type must show Energy Code compliance using the Performance Approach.

Single-family Additions

› **Section 150.2(a)1D: "Water Heating"**

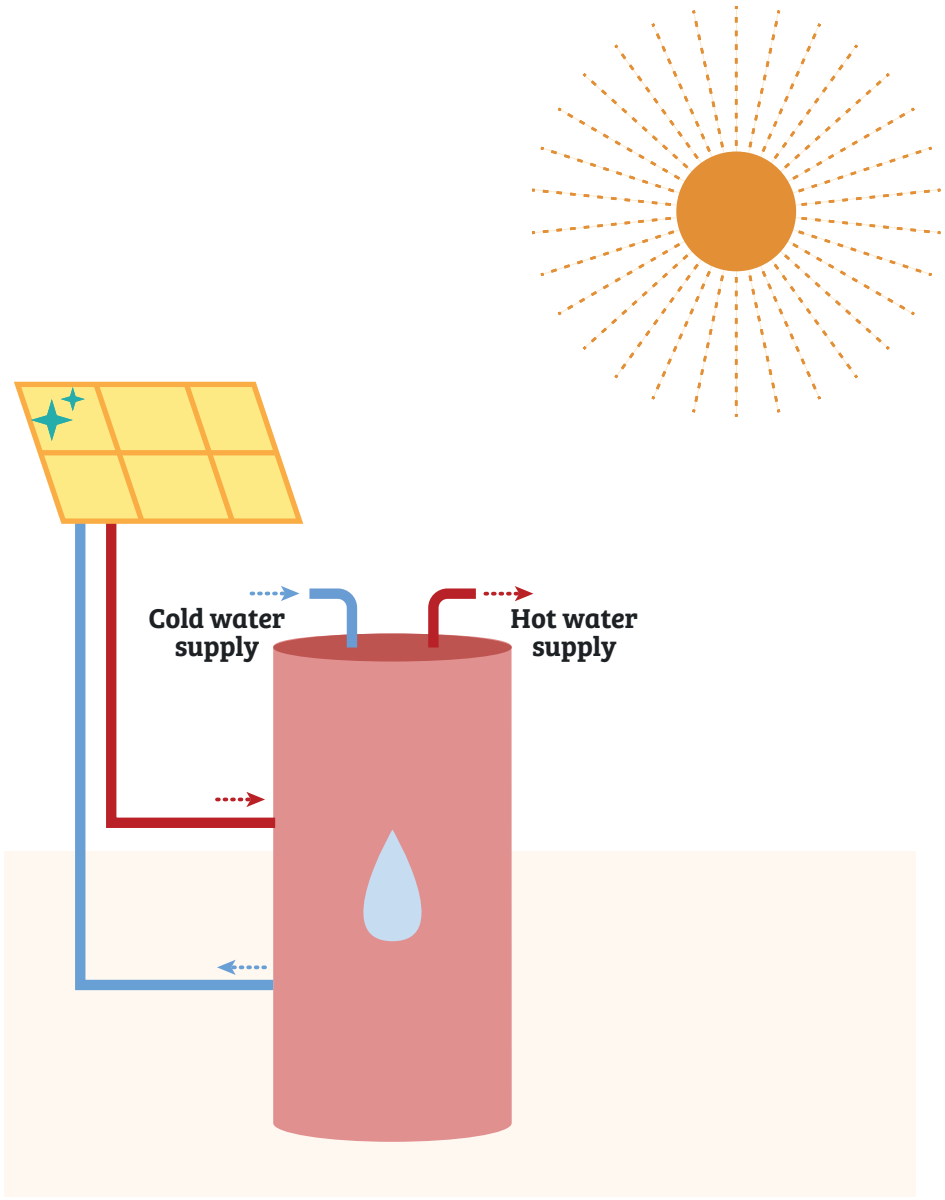
Solar water heating with electric resistance backup is not a Prescriptive option for single-family Additions. Single-family Additions with this kind of system must show compliance using the Performance Approach.

Multifamily and Hotel/Motel

› **Section 170.2(d): "Domestic Hot Water Systems"**

› **Section 180.1(a)3: Additons - "Water Heater"**

The Prescriptive Approach for multifamily dwelling units and hotel/motel guest rooms does not allow solar water heating with electric resistance backup as an option. Projects with this kind of system must show compliance using the Performance Approach.



Solar thermal or photovoltaic water heating system with storage tank and electric resistance backup

Individual Gas Water Heating Equipment

New Construction and Additions

Gas Tank Water Heater

Mandatory Requirements

Single-family

- **Section 110.3(c)6 "Isolation Valves"**
  - Instantaneous water heaters with an input rating greater than 6.8 kBTU/hr (2 kW) must use isolation valves on both the cold water and hot water piping leaving the water heater. Hose bibbs, or other fittings, are required on each valve to facilitate flushing the water heater.
- **Section 150.0(j): "Insulation for Piping and Tanks"**
- **Section 150.0(n): "Water Heating System"**

All gas water heaters serving individual single-family dwelling units must meet the following Mandatory Measures:

- Pipe insulation per §150.0(j) (see "Individual Distribution Systems" on page 22).
- Electric-readiness requirements to facilitate a future heat pump water heater installation per §150.0(n)1. For more information, see the "2025 Residential Electric Readiness" fact sheet.

Multifamily

- **Section 160.9(e): "Mandatory Requirements for Water Heating Systems"**

All gas water heaters serving individual multifamily dwelling units must meet the following Mandatory Measures:

- Heat pump water heater-readiness requirements per §160.9(e). For more information, see the "2025 Residential Electric Readiness" fact sheet.

Prescriptive Requirements

Single-family

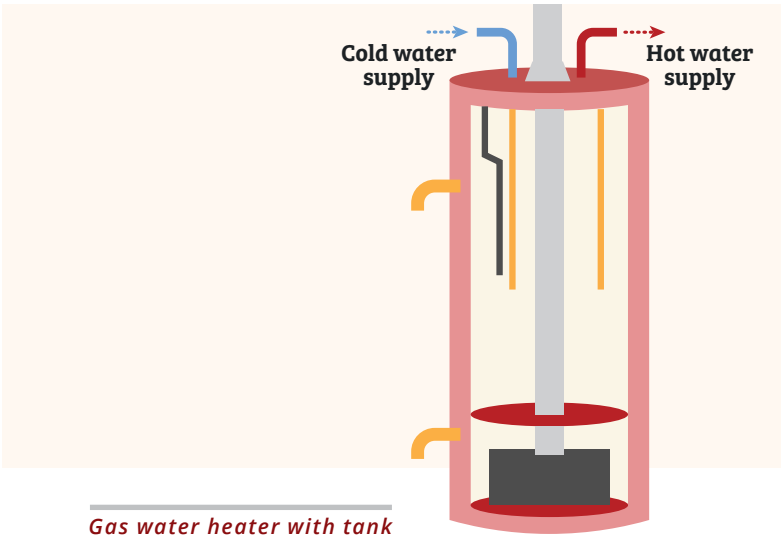
- **Sections 150.1(c)8: "Domestic Water-heating Systems"**
- **Section 150.2(a)1D: Additions - "Water Heating"**

NEW for 2025! The Prescriptive Approach does not allow tankless gas water heaters for new single-family buildings or Additions in any Climate Zone. Projects with tankless gas water heating must show compliance using the Performance Approach.

Multifamily

- **Section 170.2(d): "Domestic Hot Water Systems"**
- **Section 180.1(a)3: Additions - "Water Heater"**

NEW for 2025! The Prescriptive Approach does not allow tankless gas water heaters for multifamily dwelling units and hotel/motel guest rooms in buildings of three stories or fewer, so those projects must show compliance using the Performance Approach. The Prescriptive Approach does allow tankless gas water heaters with input of 200,000 Btuh or less for multifamily dwelling units and hotel/motel guest rooms in buildings with four or more habitable stories.



Gas water heater with tank

Individual Gas Water Heating Equipment

Gas Tankless (Instantaneous) Water Heater

Mandatory Requirements

Single-family

- **Section 150.0(j): "Insulation for Piping and Tanks"**
- **Section 150.0(n): "Water Heating System"**
  - All gas water heaters serving individual single-family dwelling units must meet the following Mandatory Measures:
    - Pipe insulation per §150.0(j) (see "Individual Distribution Systems" on page 22).
    - Electric readiness requirements to facilitate a future heat pump water heater per §150.0(n)1. For more information, see the "2025 Residential Electric Readiness" fact sheet.

Multifamily

- **Sections 160.4(e): "Pipe Insulation"**
- **Section 160.9(e): "Mandatory Requirements for Water Heating Systems"**
  - All gas water heaters serving individual multifamily dwelling units must meet the following Mandatory Measures:
    - Pipe insulation per §160.4(e) (see "Individual Distribution Systems" on page 22).
    - Heat pump water heater-readiness requirements per §160.9(e). For more information, see the "2025 Residential Electric Readiness" fact sheet.

Hotel/Motel

- **Section 120.3: "Requirements for Pipe Insulation"**
  - Pipe insulation per §120.3 (see "Individual Distribution Systems" on page 22).

Prescriptive Requirements

Single-family

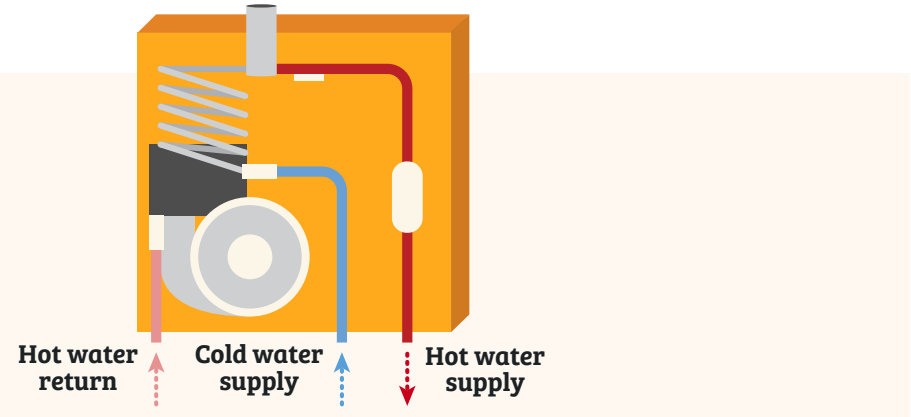
- **Sections 150.1(c)8: "Domestic Water-heating Systems"**
- **Section 150.2(a)1D: Additions - "Water Heating"**

NEW for 2025! The Prescriptive Approach does not allow tankless gas water heaters for new single-family buildings or Additions in any Climate Zone. Projects with tankless gas water heating must show compliance using the Performance Approach.

Multifamily and Hotel/Motel

- **Section 170.2(d): "Domestic Hot Water Systems"**
- **Section 180.1(a)3: Additions - "Water Heater"**

NEW for 2025! The Prescriptive Approach does not allow tankless gas water heaters for multifamily dwelling units and hotel/motel guest rooms in buildings of three stories or fewer, so those projects must show compliance using the Performance Approach. The Prescriptive Approach does allow tankless gas water heaters with input of 200,000 Btuh or less for multifamily dwelling units and hotel/motel guest rooms in buildings with four or more habitable stories.



Tankless (instantaneous) gas water heater

Individual Gas Water Heating Equipment

Gas Water Heater with Solar Thermal System

Mandatory Requirements

Single-family

- **Section 150.0(j): "Insulation for Piping and Tanks"**
- **Section 150.0(n): "Water Heating System"**
  - Solar water heating system piping must meet the requirements of §150.0(j).
  - Solar water heating systems and collectors must be certified and rated per §150.0(n)2. See "Solar Water Heating Equipment Certification" on page 17 for more information.

Multifamily

- **Section 160.4: "Mandatory Requirements for Water Heating Systems"**
  - Solar water heating system piping must meet the requirements of §160.4(e).
  - Solar water heating systems and collectors must be certified and rated per §160.4(b). See "Solar Water Heating Equipment Certification" on page 17 for more information.

Prescriptive Requirements

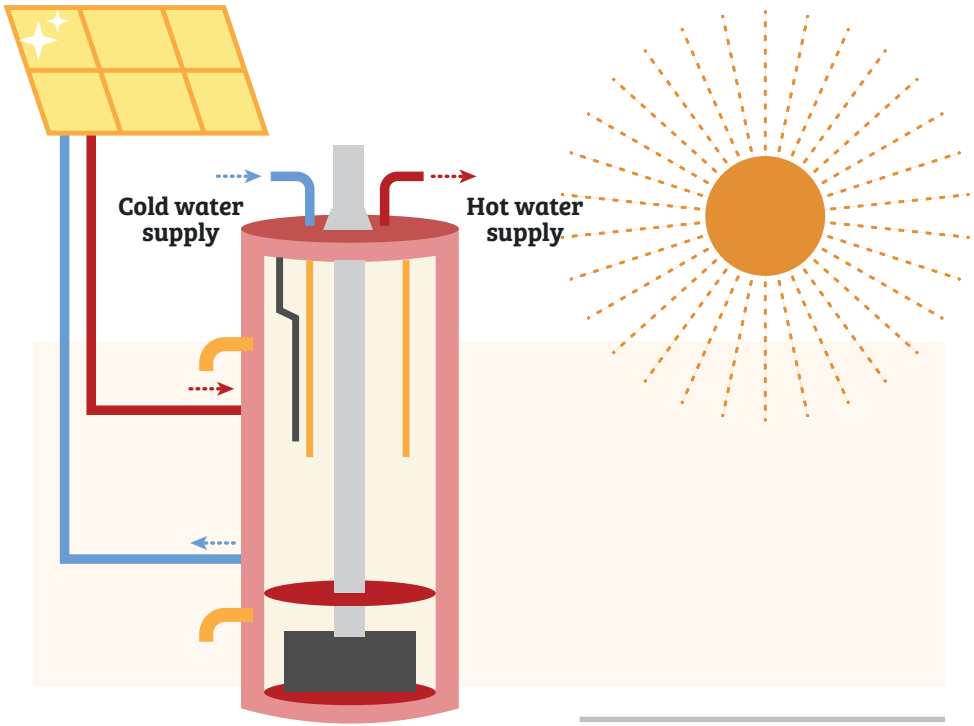
Single-family

- **Sections 150.1(c)8: "Domestic Water-heating Systems"**
- **Section 150.2(a)1D: Additions - "Water Heating"**

Multifamily and Hotel/Motel

- **Section 170.2(d): "Domestic Hot Water Systems"**
- **Section 180.1(a)3: Additions - "Water Heater"**

The Prescriptive Approach does not allow individual storage gas water heating with solar thermal systems. Projects with storage gas water heating must show compliance using the Performance Approach.



Gas tank water heater with solar thermal system

Individual Distribution Systems

New Construction and Additions

This section covers distribution system requirements for single water heating systems that serve one dwelling unit or hotel/motel guest room. See "Individual Water Heating Systems" below.

Individual Water Heating Systems

One water heating system serving a single-family home, single-family accessory dwelling unit (ADU), townhome, or duplex (top) and one water heating system serving one hotel or motel guest room or one multifamily dwelling unit (bottom)

Individual Distribution Systems

Mandatory Requirements

General

› **Section 110.3(c)2: "Installation"**

As a minimum Mandatory requirement, distribution systems using recirculation pumps or with electrical heat trace systems require controls that can turn the system off automatically.

Single-family

› **Section 150.0(j): "Insulation for Piping and Tanks"**

Hotel/Motel

› **Section 120.3(b) "Insulation Protection"**

Multifamily

› **Section 160.4(e)**

Pipe Insulation: Single-family water heating pipes and tanks must be insulated as specified in California Plumbing Code §609.12 and must meet the installation requirements of Residential Reference Appendix RA4.4.1.

Insulation Protection: Pipe Insulation must be protected from damage caused by sunlight, moisture, equipment maintenance, and wind through the following methods, or better:

- Pipe insulation exposed to weather must be protected by a cover suitable for outdoor service that is water retardant and shields from solar radiation. Adhesive tape must not be used to support pipe insulation protection.
- Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.

Individual Water Heaters General Requirements — Alterations

Mandatory Requirements

- **Section 110.1: "Mandatory Requirements for Appliances"**
- **Section 110.3(a): "Certification by Manufacturers"**
- **Section 110.3(b): "Efficiency"**
- **Section 110.3(c): "Installation"**
- **Section 110.8(d)2: "Water Heaters"**

All water heaters:

- Must meet minimum efficiency requirements.
- Require equipment certified by the manufacturer within Modernized Appliance Efficiency Database System (MAEDbS).
- On systems that have a total capacity greater than 167,000 Btuh, outlets that require a service water temperature higher than what is supported in the ASHRAE Handbook, Applications Volume, Chapter 51 "Service Water Heating," must use separate systems or boosters to supply the higher temperature.

Unfired service water heater storage tanks or solar backup tanks:

- Must have R-3.5 external insulation, or a combined total R-value of R-16 for internal plus external insulation, or the heat loss of the tank surface must be less than 6.5 Btuh/ft², based on an 80°F water-air temperature difference.
- If external insulation is installed on an existing unfired water storage tank or on an existing back up tank for a solar water heating system, the external insulation must be at least R-3.5, or the heat loss of the tank surface must be less than 6.5 Btuh/ft², based on an 80°F water-air temperature difference.

Tankless water heaters:

- Tankless water heaters with an input rating greater than 6.8 kBtuh (2 kW) must have isolation valves on both the cold water supply and the hot water piping leaving the water heater, and hose bibbs or other fittings on each valve for flushing the water heater when the valves are closed.

Multifamily

› Section 160.4(e): "Pipe Insulation"

NEW for 2025! Pipe Insulation: Water heating pipes for water heaters serving individual multifamily dwelling units or hotel/motel guest rooms must be insulated and meet the applicable requirements below:

a. The first eight feet of inlet cold water piping from the storage tanks, including piping between a storage tank and heat trap, must be insulated.

b. Insulation on the piping and domestic hot water system appurtenances must be continuous. Appurtenances are accessory components of the piping system, such as pipe elbows, valves, and faucets.

c. Pipe supports, hangers, and pipe clamps must be attached on the outside of rigid pipe insulation to prevent thermal bridges.

d. All pipe insulation seams must be mitered, preformed, or site fabricated with PVC cover.

e. Insulation for tees must be notched, preformed, or site fabricated with PVC covers.

f. Extended stem isolation valves must be installed.

g. All plumbing appurtenances on hot water piping from a heating source to the heating plant, at the heating plant, and distribution supply and return piping, must be insulated to meet the following:

- Where the outer diameter of the appurtenance is less than the outer diameter of the insulated pipe that it is attached to, the appurtenance shall be insulated flush with the insulation surrounding the pipe.
- Where the outer diameter of the appurtenance is greater than the outer diameter of the insulated pipe that it is attached to, the appurtenance shall be insulated with a minimum thickness of one inch.
- The insulation must be removable and re-installable to ensure maintenance or replacement services can be completed.
- Valves must be fully functional without impediment from the insulation.

Multifamily

› Section 160.4(e): "Pipe Insulation"

Insulation Thickness: Domestic hot water systems must meet the insulation thickness requirements or R-values specified in Table 160.4-A for different nominal pipe diameters. The thicknesses listed assume fluid operating temperatures between 105°F and 140°F and insulation conductivity between 0.22 to 0.28 Btu-in/hr·ft²-°F at a 100°F mean rating temperature.

Table 160.4-A, with a Fluid Operating Temperature Range of 105-140 °F, at an insulation conductivity of 0.22 - 0.28 Btu-in/hr·ft²-°F and an insulation mean rating of 100 °F:

- < 1" Pipe Diameter: 1" pipe insulation, R-7.7
- 1" to < 1.5" Pipe Diameter: 1.5" pipe insulation, R-12.5
- 1.5" to < 4" Pipe Diameter: 2.0" pipe insulation, R-16
- 4" to < 8" Pipe Diameter: 2.0" pipe insulation, R-12.5
- > 8" Pipe Diameter: 2.0" pipe insulation, R-11

Hotel/Motel

› Section 120.3 "Pipe Insulation"

Insulation Thickness: Domestic hot water systems must meet the insulation thickness requirements or R-values specified in Table 120.3-A-1 Space Heating and Service Water Heating Systems for different nominal pipe diameters. The thicknesses listed assume fluid operating temperatures between 105°F and 140°F and insulation conductivity between 0.22 to 0.28 Btu-in/hr·ft²-°F at a 100°F mean rating temperature.

Per Table 120.3-A-1, with a Fluid Operating Temperature Range of 105-140°F, at an insulation conductivity of 0.22 Btu-in/hr·ft²-°F and an insulation mean rating of 100°F:

- < 1" Pipe Diameter: 1" pipe insulation, R-7.7
- 1" to < 1.5" Pipe Diameter: 1.5" pipe insulation, R-12.5
- 1.5" to < 4" Pipe Diameter: 1.5" pipe insulation, R-11
- 4" to < 8" Pipe Diameter: 1.5" pipe insulation, R-9
- > 8" Pipe Diameter: 1.5" pipe insulation, R-8

Insulation Protection: Pipe Insulation must be protected from damage caused by sunlight, moisture, equipment maintenance, and wind through the following methods, or better:

- Pipe and appurtenance insulation exposed to weather must be protected by a cover suitable for outdoor service that is water retardant and shields from solar radiation. Appurtenance insulation covers must be removable and reusable. Adhesive tape must not be used to support pipe insulation protection.
- Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.

Exceptions to Pipe Insulation for Single-family and Multifamily Buildings:

- Piping that penetrates framing members does not require insulation for the distance of the framing penetration. Piping that penetrates metal framing must use grommets, plugs, wrapping, or other insulating material to ensure that the piping does not touch the metal framing.
- Piping installed in interior or exterior walls does not require pipe insulation if the walls meet all the "Quality Insulation Installation (QII)" requirements in Residential Reference Appendix RA3.5.
- Piping surrounded with at least one inch of wall insulation, two inches of crawl space insulation, or four inches of attic insulation does not require pipe insulation.

Exceptions to Pipe Insulation for Hotel/Motel Buildings:

- Where the heat gain or heat loss to or from piping without insulation will not increase building source energy use.
- Piping that penetrates framing members shall not be required to have pipe insulation for the distance of the framing penetration. Metal piping that penetrates metal framing shall use grommets, plugs, wrapping or other insulating material to assure that no contact is made with the metal framing.

Prescriptive Requirements

Single-family

- **Section 150.1(c)8: "Domestic Water-heating Systems"**
- **Section 150.2(a)1D: Additions - "Water Heating"**

Multifamily, and Hotel/Motel

- **Section 170.2(d): "Domestic Hot Water Systems"**
- **Section 180.1(a)3 Additions - "Water Heater"**

The Energy Code has different requirements for a variety of residential water heating distribution systems. These vary based on building and water heating equipment types, and on any Energy Code Compliance (ECC, formerly known as HERS) verification measures that are utilized by the project. All hot water distribution options must, at a minimum, meet all applicable Mandatory Measures. Prescriptive water heating options build on that baseline and may require more energy-efficient distribution measures for specific Climate Zones (CZs). If the distribution system for a specific project does not comply with the Prescriptive Approach, the building must show compliance using the Performance Approach. Buildings may also gain some Performance Approach compliance credits by using higher-efficiency distribution systems.

Below are descriptions of hot water distribution types for individual dwelling units or hotel/motel guest rooms:

- **Standard Hot Water Piping System:** Standard distribution has no recirculation pumps or additional ECC verification measures. Pipe insulation must be installed according to Residential Reference Appendix RA4.4.1, plus §§150.0(j) for single-family, §160.4(e) for multifamily dwelling units, or §120.3 for hotel/motel buildings.

  Standard distribution is the default requirement unless one of the following distribution systems is required for Prescriptive compliance or for ECC-verification measure extra credit in the Performance Approach.

- **Compact Hot Water Distribution System:** Use the floor plan to make straight-line measurements from the water heater to the master bath, kitchen, and the remaining furthest hot water fixture. For compact distribution, the "weighted distance" from the water heater to those key hot water use points must meet the "qualification distance" calculated per Residential Reference Appendix RA4.4.6.

  The Prescriptive Approach requires compact distribution in CZs 1 and 16 when using a single 240-volt heat pump water heater **without** a NEEA Tier 3 rating or higher.

- **Point of Use Distribution System:** Point of use distribution limits the pipe lengths between the water heater and the separate hot water fixtures, that is, the "pipe per run", in a dwelling unit. All hot water fixtures in the dwelling unit, except for a standalone tub, must use no more pipe per run than defined in Table 4.4.5 in Residential Reference Appendix RA4.4.5.

Single-family

- A combination of electric resistance water heating plus point of use distribution is one of several Prescriptive compliance options for new single-family dwelling units or Additions of 500 ft² or less.
- **Recirculation System with Non-demand Control Options:** This includes all recirculation strategies that do not incorporate a demand control to minimize recirculating pump operation. For example: Aquastat, timer or timeclock, motion or occupancy sensor, or no controls.

  The Prescriptive Approach does not allow recirculation without demand control. Projects using recirculation systems without demand controls must show compliance using the Performance Approach.

- **Recirculation System with Demand Control:** This system uses brief pump operation in response to a hot water demand "manual-on" signal to circulate hot water through the recirculation loop. The system must turn the pump off within five minutes of being activated. For ECC-verification measures, demand control recirculation systems must meet the requirements of Residential Reference Appendix RA4.4.9. Manual-on examples: Push button controls, switch near fixture or at room level, or vacancy sensor with push button to activate.

  If an individual distribution system uses recirculation pumps, Prescriptive compliance requires demand controls meeting RA4.4.9.

- **Drain Water Heat Recovery System:** This system recovers heat from hot water that would otherwise be lost down the drain during showers, and it transfers that heat back to the water heater, shower mixing valve, or both.

  Drain water heat recovery, installed per Residential Reference Appendix RA3.6.9 and verified by an ECC-Rater, is required for Prescriptive compliance in CZ 16 when using a single 240-volt heat pump water heater with or without at least a NEEA Tier 3 rating.

Energy Code Requirements for Individual Water Heating Systems

Alterations

Single-family

- **Section 150.0(j): “Insulation for Piping and Tanks”**
- **Section 150.2(b)1H: Alterations - “Water Heating System”**

Multifamily

- **Sections 160.4(e): Alterations - “Pipe Insulation”**
- **Section 180.2(b)3A : Alterations - “Pipe Insulation”**
- **Section 180.2(b)3B: Alterations - “Distribution System”**
- **Section 180.2(b)3C: Alterations - “Water-heating System”**

Hotel/motel

- **Section 120.3 “Pipe Insulation”**
- **Section 141.0(b)2N Alterations - “Water-heating System”**

Alterations to existing individual water heating systems may trigger Energy Code requirements. See Table 3 on the following pages for common Alterations and Repairs and whether they trigger the Energy Code or not.

Alteration: Any change to a building's water heating system, space conditioning system, lighting system, electrical power distribution system, or envelope that is not an Addition; any change that is regulated by Title 24, Part 6 to an outdoor lighting system that is not an Addition; any change that is regulated by Title 24, Part 6 to signs located either indoors or outdoors; or any change that is regulated by Title 24, Part 6 to a covered process that is not an Addition.

Repair: The reconstruction or renewal for the purpose of maintenance of any component, system, or equipment of an existing building that does not increase the preexisting energy consumption of the repaired component, system, or equipment; replacing any component, system, or equipment for which there are requirements in the Energy Code is considered an Alteration, not a Repair.

Table 3, Part 1: Individual Water Heating Alteration Changes that Trigger the Energy Code

Alteration Project Scope	Requirements for Equipment Select Energy Code Triggers and Relevant Code Sections	Requirements by Water Heater Type Select Energy Code Triggers and Relevant Code Sections	Individual Heat Pump Ready Requirements Select Energy Code Triggers and Relevant Code Sections
	Certification: §110.3(a) **Efficiency:** §110.3(b) **Controls:** §110.3(c)1 **Insulation:** §110.3(c)3 **Isolation Valves:** §110.3(c)6 **Heat Pump:** §110.3(c)7 **Solar:** §150.0(n)2 *Further supported on Page 12.*	**Single-family:** §150.2(b)1H **Multifamily:** §180.2(b)3C Replacement electric resistance or gas allowed. Heat pump NEEA Tier 3 or installed inside with R-10 and communication interface (see page 16, §150.2(a)1D). **Hotel/Motel:** §141.0(b)2N - No restrictions	**Single-family**: Not required **Multifamily:** Not required **Hotel/Motel:** Not required
Replace water heater with the same type or a different type, including distribution.	**YES**	**YES**	No
Replace water heater with the same type or a different type.	**YES**	**YES**	No
Add a water heater to an existing system that is not serving an Addition (see New Construction and Addition section if serving an Addition).	**YES**	**YES**	No
Add storage capacity, such as an unfired storage tank, to an existing water-heating system.	**YES**	No	No
Add a solar thermal system to an existing water-heating system.	**YES**	No	No
Replace hot water piping or replace hot water pipe insulation.	**YES** §110.3(c): Installation	No	No
Replace or add recirculation pump(s) to existing system.	**YES** §110.3(c): Installation	No	No
Repair of any type of existing system. Examples of repairs include replacing components such as an anode rod, thermostat, flue, or tank insulation.	No	No	No

Table 3, Part 2: Individual Water Heating Alteration Changes that Trigger the Energy Code

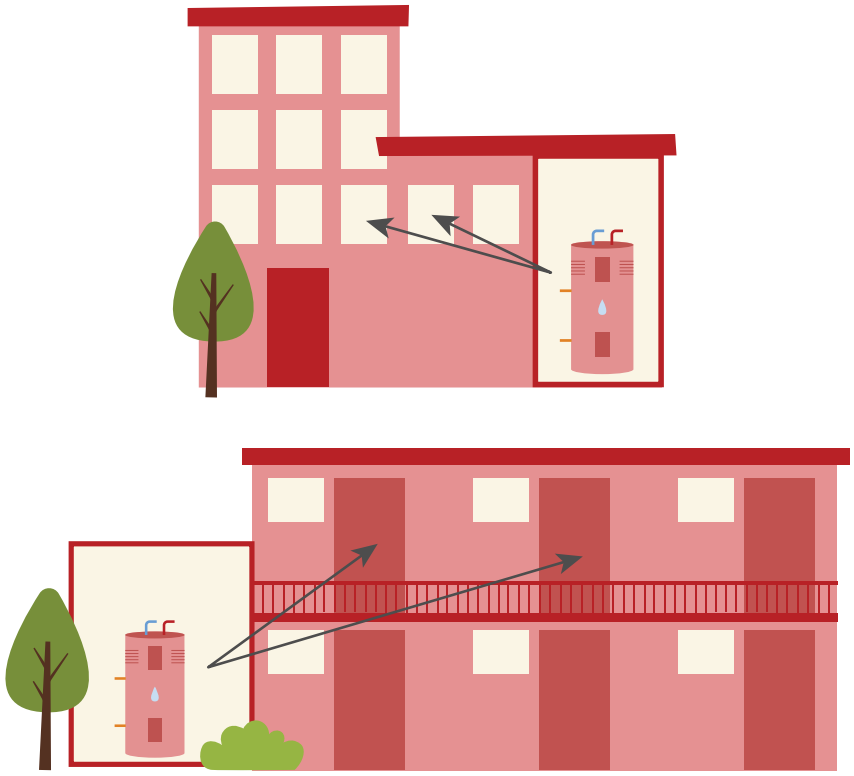
Alteration Project Scope	**Requirements for Recirculation Pumps and Controls** Select Energy Code Triggers and Relevant Code Sections	**Pipe Sizing Appendix M** Select Energy Code Triggers and Relevant Code Sections	**Requirements for Pipe Insulation** Select Energy Code Triggers and Relevant Code Sections
	§110.3(c)2 **Single-family:** §150.1(c)8 **Multifamily:** §170.2(d) **Hotel/Motel:** §170.2(d) *Supported on Page 22 and 26.*	**Single-family**: Not required **Multifamily:** Not required **Hotel/Motel:** Not required	**Single-family**: §150.0(j) **Multifamily:** §160.4(e) **Hotel/Motel:** §120.3 *Supported on Page 22 and 24.*
Replace water heater with the same type or a different type, including distribution.	**YES** If replacing pumps	No	**YES** New and accessible piping
Replace water heater with the same type or a different type.	No	No	No
Add a water heater to an existing system that is not serving an Addition (see New Construction and Addition section if serving an Addition).	No	No	**YES** New and accessible piping
Add storage capacity, such as an unfired storage tank, to an existing water-heating system.	No	No	**YES** New and accessible piping
Add a solar thermal system to an existing water-heating system.	No	No	N/A
Replace hot water piping or replace hot water pipe insulation.	**YES** If replacing pumps	No	**YES** New and accessible piping
Replace or add recirculation pump(s) to existing system.	**YES**	No	No
Repair of any type of existing system. Examples of repairs include replacing components such as an anode rod, thermostat, flue, or tank insulation.	No	No	No

Energy Code Requirements for Central Water Heating Systems

Newly Constructed Buildings and Additions

In New Construction and Addition projects where a central water heating system serves two or more multifamily dwelling units or hotel/motel guest rooms, the Energy Code sets requirements for the water heating equipment type, installation criteria, and distribution systems.

Central Water Heating Systems



One or more water heating systems serving two or more multifamily dwelling units (top) and one or more water heating systems serving two or more hotel or motel guest rooms (bottom)

Central Water Heating — General Requirements

Mandatory Requirements

- **Section 110.1: "Mandatory Requirements for Appliances"**
- **Section 110.3(a): "Certification by Manufacturers"**
- **Section 110.3(b): "Efficiency"**
- **Section 110.3(c): "Installation"**
- **Section 110.8(d)2: "Water Heaters"**
- **Section 110.7(c)7: "Installation - Air-source Heat Pump Water Heaters"**

All water heaters:

- Must meet minimum efficiency requirements.
- Require equipment certified by the manufacturer within Modernized Appliance Efficiency Database System (MAEDbS).
- On systems that have a total capacity greater than 167,000 Btuh, outlets that require a service water temperature higher than what is supported in the ASHRAE Handbook, Applications Volume, Chapter 51 "Service Water Heating," must use separate systems or boosters to supply the higher temperature.

Unfired service water heater storage tanks or solar backup tanks:

- Must have R-3.5 external insulation, or a combined total R-value of R-16 for internal plus external insulation, or the heat loss of the tank surface must be less than 6.5 Btuh/ft², based on an 80°F water-air temperature difference.
- If external insulation is installed on an existing unfired water storage tank or on an existing back up tank for a solar water heating system, the external insulation must be at least R-3.5, or the heat loss of the tank surface must be less than 6.5 Btuh/ft², based on an 80°F water-air temperature difference.

Tankless water heaters:

- With an input rating greater than 6.8 kBtuh (2 kW) must have isolation valves on both the cold water supply and the hot water piping leaving the water heater, and hose bibbs or other fittings on each valve for flushing the water heater when the valves are closed.

Central Electric Water Heating Equipment

Mandatory Requirements

› **Section 110.3(c)7: "Installation – Air-source Heat Pump Water Heaters (HPWHs)"**

NEW for 2025! Heat pump water heaters have new Mandatory installation requirements including the following:

- Backup heat when the inlet air is unconditioned. Inlet air is the room air into the heat pump water heater. Backup heat is not required if the compressor cut-off temperature is below the "Heating Winter Median of Extremes" temperature for the closest location listed in Joint Reference Appendix JA2 Table 2-3. Backup heat may be internal or external to the heat pump water heater.
- Ventilation design options, supporting minimum volume and opening size requirements of all heat pump water heaters installed within a space, must be one of the four following:

1. **A method provided by the manufacturer:** This method must meet or exceed all applicable requirements from options two through four below.
2. **Heat pump water heater is installed without ducts:** The volume of the installation space for one or more heat pump water heaters must be at least the larger of:
   - » 100 cubic feet per kBtuh of compressor capacity, or
   - » The minimum requirements of the manufacturer.

Central Electric Water Heating Equipment

New Construction and Additions

Central Electric Boiler Systems

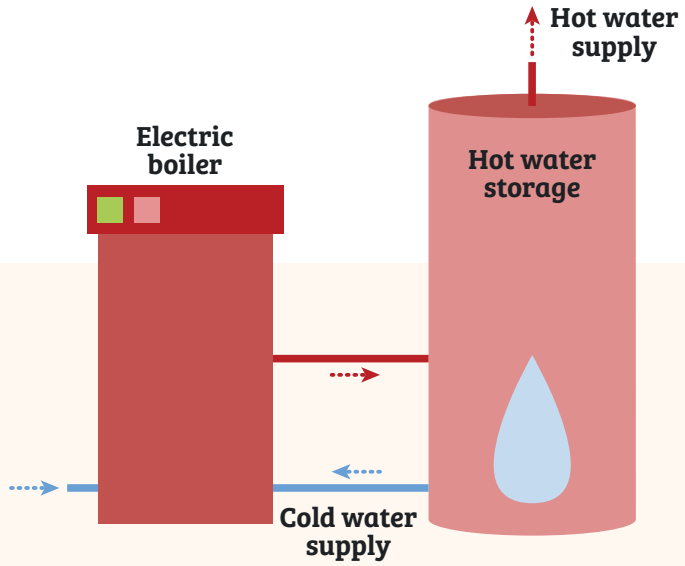
Prescriptive Requirements

Multifamily and Hotel/Motel

› **Section 170.2(d): "Domestic Hot Water Systems"**

› **Section 180.2(b)3C: Additions - "Water Heating System"**

The Prescriptive Approach does not allow central electric boilers. Projects with central electric boilers must show compliance using the Performance Approach which allows energy trade-offs with other building components.



Central electric boilers must comply using the Performance Approach.

Central electric boiler heat pump water heater

Central Heat Pump Water Heating Systems

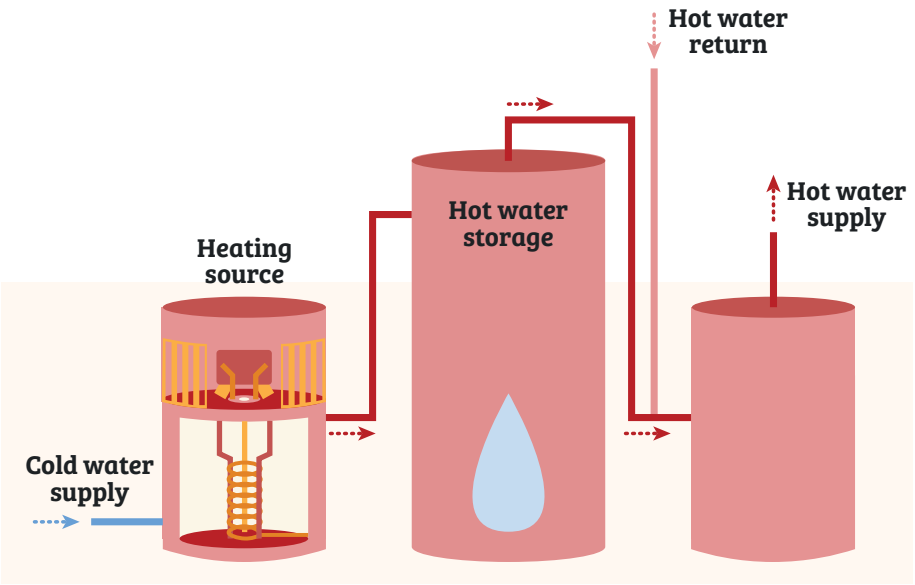
Prescriptive Requirements

Multifamily and Hotel/Motel

- **Section 170.2(d): "Domestic Hot Water Systems"**
- **Section 180.2(b)3C: Additions - "Water Heating System"**

The Prescriptive Approach for multifamily dwelling units and hotel/motel guest rooms allows three different central water heating system options including two heat pump options, as follows:

1. **Central Heat Pump Water Heater Option 1:** Install a commercial NEEA Tier 2 or higher heat pump water heater system.



Central heat pump water heater single-pass system

2. **Central Heat Pump Water Heater Option 2:** Use a heat pump water heater system that meets all the following requirements:
   - » **Single-pass:** The primary heat pump water heater must be a single-pass heat pump water heater system. **NEW for 2025!** Note that the Prescriptive Approach does not allow multi-pass heat pump water heaters, so a project with that system type must comply using the Performance Approach.
   - » **Primary Storage:** The temperature setpoint for the primary storage tank must be 135°F or higher.
   - » **Recirculation Loop Hot Water Return:** The recirculation loop hot water return must connect to a recirculation loop tank and NOT directly to primary heat pump water heater inlet or the primary thermal storage tanks.
   - » **REVISED for 2025! Recirculation Loop Tank:** The recirculation loop tank must be electric, that is, electric resistance or heat pump, and have a temperature setpoint at least 10°F lower than the primary storage tank setpoint.
   - » **Compressor Cut-off Temperature:** The minimum heat pump water heater compressor cut-off temperature must equal or be lower than 40°F ambient air temperature.
   - » **Design:** Documentation must be provided per Joint Reference Appendix JA14.4 including correctly sized storage capacity. Projects without this documentation must comply using the Performance Approach.

Any project that does not meet all the Prescriptive water heating requirements for a particular option must show compliance using the Performance Approach. Mandatory Measures cannot be traded away.

Additions: There are no Prescriptive requirements when extending an existing central heat pump water heater system to serve an Addition.

Central Gas Water Heating Systems

New Construction and Additions

Mandatory Requirements

Hotel/Motel

› **Section 120.9: "Mandatory Requirements for Commercial Boilers"**

Multifamily

› **Section 160.4(e): "Mandatory Requirements for Water Heating Systems"**

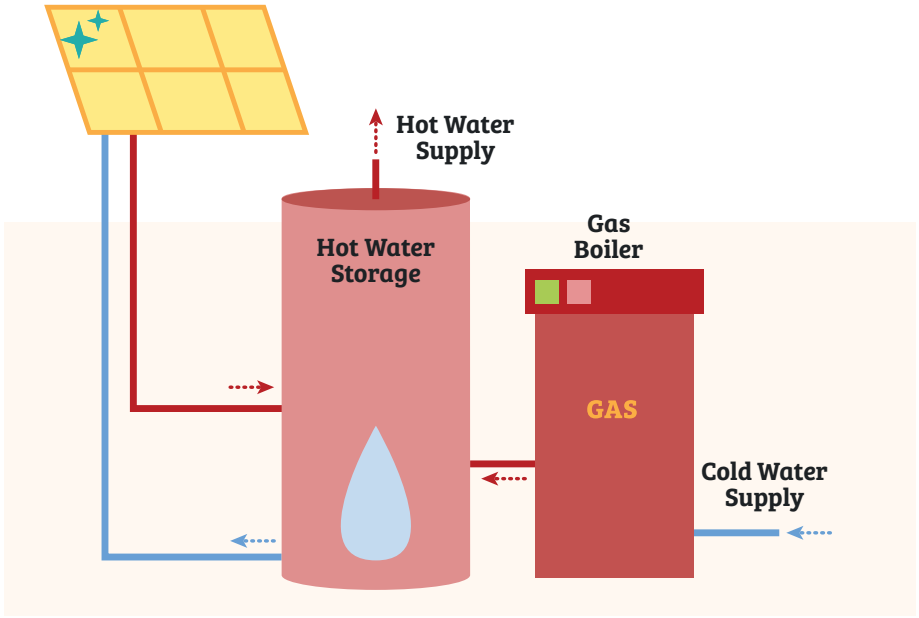
Commercial boilers must meet the following requirements for multifamily dwelling units and hotel/motel guest rooms:

- Systems with 2.5 MMBtuh or greater input capacity with non-positive vent static pressure must meet combustion air positive shut-off requirements.
- Combustion air fans rated at 10 hp or greater combustion air fans must have variable speed drives or have controls meeting limits of §160.4(d)2B "Commercial Boilers."
- Systems with an input capacity of 5 MMBtuh or greater must meet excess oxygen concentration requirements of §160.4(d)3 "Commercial Boilers," unless the steady state full-load thermal efficiency is 90% or greater.

Multifamily

› **Section 160.9(f) "Central Heat Pump Water Heater Ready"**

- All service gas central systems serving a new construction multifamily building must:
  - » Meet electric-readiness requirements. For more information, see the "2025 Residential Electric Readiness" fact sheet.



Central gas boiler with solar thermal

Prescriptive Requirements

Multifamily and Hotel/Motel

- **Section 170.2(d): "Domestic Hot Water Systems"**
- **Section §180.2(b)3C: Multifamily Additions - "Water Heating System"**
- **Section 140.5: "Service Water Heating Systems"**

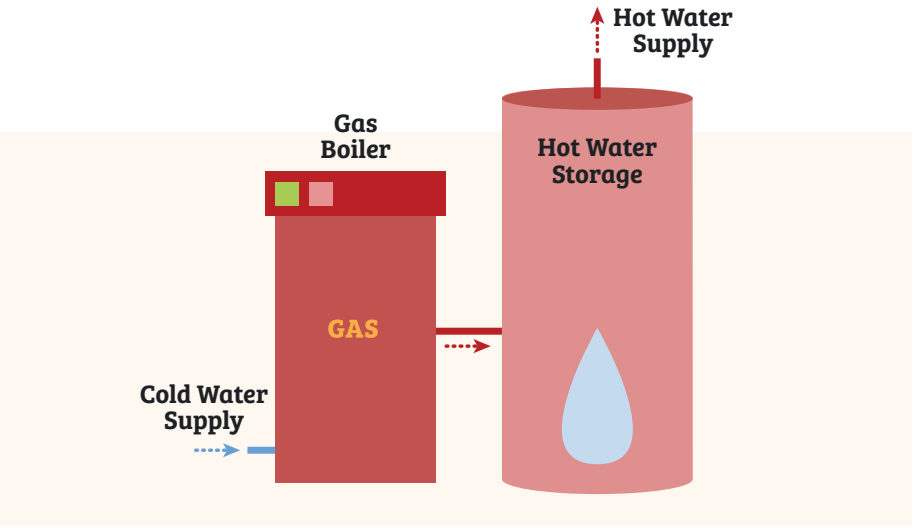
The Prescriptive Approach for multifamily dwelling units and hotel/motel guest rooms allows three different central water heating system options, including one that combines gas and solar water heating, as follows:

Central Gas plus Solar Water Heating:

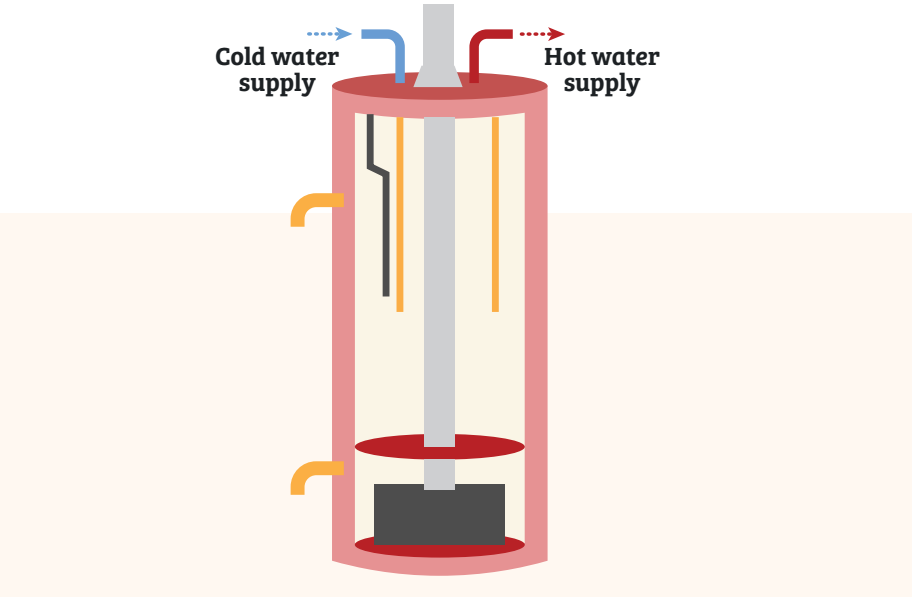
For Prescriptive compliance, the central gas plus solar water heating system option requires all the following:

- The gas water heating system must meet all applicable Mandatory Measures.
- In CZs 1 through 9, gas water heating systems with input capacity of one MMBtuh or greater must have thermal efficiency of 90% or greater, not including individual gas water heaters with input of 100 MBtuh or less. Multiple units can be used to meet these requirements using an input-capacity-weighted average efficiency. The 90% or greater efficiency is not required when site-solar or recovered energy provides 25% or more of annual water heating.
- The gas water heating must be combined with a solar water heating system installed according to Residential Reference Appendix RA4 and meeting the following:
  - In CZs 1 through 9: Require 20% Solar Savings Fraction (SSF) or greater without drain water heat recovery or 15% SSF or greater with ECC-verified drain water heat recovery, per Residential Reference Appendix RA3.6.9.
  - In CZs 10 through 16: Require 35% SSF or greater without drain water heat recovery or 30% SSF or greater with ECC-verified drain water heat recovery, per RA3.6.9.

Any project that does not meet all the Prescriptive water heating requirements for a particular option must show compliance using the Performance Approach.



Central gas boiler with storage - This central gas water heating system must show compliance using the Performance Approach



Central gas single tank system (sometimes called pod or cluster design) - This central gas water heating system must show compliance using the Performance Approach

Central Distribution Systems

New Construction and Additions

This section covers distribution system requirements for central water heating systems that serve multiple dwelling units or hotel/motel guest rooms. See "Central Water Heating Systems" on page 32 of this fact sheet for more information.

Central Distribution Systems — General Requirements

Mandatory Requirements

› Section 110.3(c): "Installation"

As a minimum Mandatory requirement, distribution systems using recirculation pumps or with electrical heat trace systems require controls that can turn the system off automatically.

Water heating recirculation loops must meet the Mandatory air release valve, backflow prevention, pump priming and isolation equipment, and cold water piping to storage tank design of §110.3(c)4 "Water Heating Recirculation Loops."

Hotel/Motel

› Section 120.3: "Requirements for Pipe Insulation"

Supported on Page 25

Multifamily and Hotel/Motel

› NEW for 2025! Section 160.4(e): "Pipe Insulation"

Piping for central water heating systems serving multiple multifamily dwelling units must meet the Mandatory pipe insulation requirements of §160.4(e) — the same requirements as those for individual distribution systems. See "Individual Distribution Systems for New Construction and Additions" for multifamily on page 22 of this fact sheet for more information.

Prescriptive Requirements

Multifamily and Hotel/Motel

› Section 170.2(d): "Domestic Hot Water Systems"

› Section 180.1(a)3: Additions - "Water Heater"

NEW for 2025! Hot Water Piping: Hot water piping must be sized using California Plumbing Code Appendix M. Insulation for hot water pipes and plumbing appurtenances must be field verified by an ECC-Rater per Residential Reference Appendix RA3.6.3.

NEW for 2025! Recirculation Systems: Recirculation systems must use a mechanical or digital thermostatic master mixing valve on each distribution supply and return loop and meet the requirements of Residential Reference Appendix RA4.4.19.

Exceptions: Multifamily buildings with eight or fewer dwelling units, or hotel/motel buildings with eight or fewer guest rooms.

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

Now **Prescriptively** required by the 2025 Energy Code for multifamily and hotel/motel New Construction, domestic hot water pipe sizing must meet the requirements of the California Plumbing Code Appendix M "Peak Water Demand Calculator" for central distribution systems. For more information, the "Energy Plus Water" section of California's Statewide Reach Codes website offers an overview and other resources explaining Appendix M.

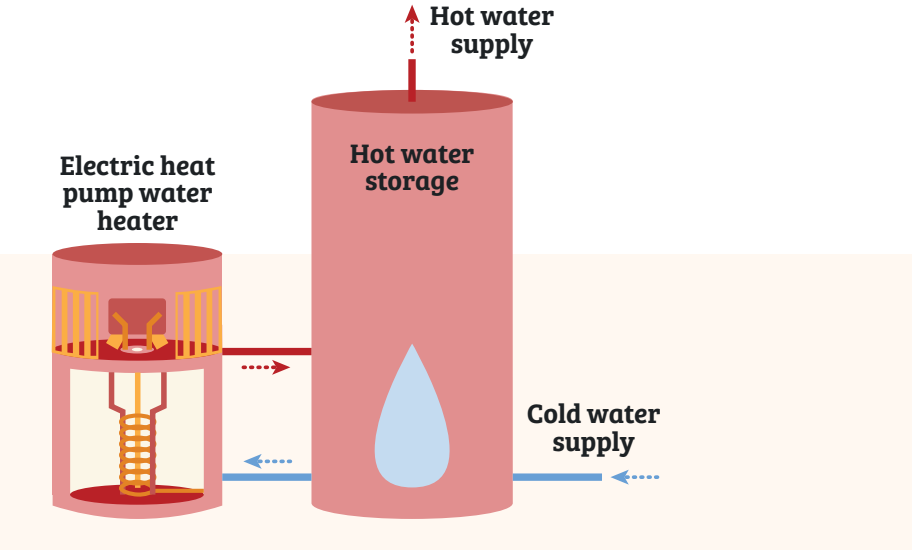
Central Distribution System Options:

This section describes distribution system options for central water heating systems that serve two or more multifamily dwelling units or hotel/motel guest rooms. See "Central Water Heating Systems" on page 32 of this fact sheet for more information.

- **Central Demand Recirculation System (Standard Distribution System):** The standard distribution system for water heaters serving multiple dwelling units or hotel/motel guest rooms incorporates recirculation loops, which bring hot water to different parts of the building, and a demand control, which automatically shuts off the recirculation pump when the recirculation flow is not needed. Demand controls for central recirculation systems are automatic control systems that control the recirculation pump operation based on measurement of hot water demand and hot water return temperatures.
- **Drain Water Heat Recovery System:** This system recovers heat from hot water that would otherwise be lost down the drain during showers, and it transfers that heat back to the water heater, shower mixing valve, or both. Drain water heat recovery, installed per Residential Reference Appendix RA3.6.9 and verified by an ECC-Rater, can be used to reduce the solar savings fraction needed for Prescriptive compliance when using a central gas water heating system.
- **Central Heat Pump Water Heating Configurations:**
  - **Single-pass Heat Pump Water Heater System:** In a single-pass heat pump water heater system, the cold water passes through the heat pump or heat pumps once and is heated to the intended storage temperature. See "Central Water Heating Systems" on page 32 of this fact sheet for more information.

    Single-pass heat pump water heater is one of the Prescriptive central heat pump water heater options.
  - **Multi-pass Heat Pump Water Heater System:** In a multi-pass heat pump water heater system, the cold water passes through the heat pump or heat pumps multiple times, each time gaining a 7 to 10°F temperature increase, until the tank reaches the intended storage temperature. See "Central Water Heating Systems" on page 32 of this fact sheet for more information.

    Multi-pass heat pump water heater is *not* allowed for Prescriptive compliance, unless the multi-pass heat pump water heater meets or exceeds the NEEA Tier 2 Advanced Water Heater Specification for commercial water heaters (see page 35). Projects using multi-pass heat pump water heating without the NEEA Tier 2 rating or higher must show Energy Code compliance using the Performance Approach.



Central electric heat pump water heater multi-pass system

Energy Code Requirements for Central Water Heating Systems

Alterations

Multifamily

- **Sections 160.4(e): Alterations - “Pipe Insulation”**
- **Section 180.2(b)3A: Alterations - “Pipe Insulation”**
- **Section 180.2(b)3B: Alterations - “Distribution System”**
- **Section 180.2(b)3C: Alterations - “Water-heating System”**

Hotel/Motel

- **Section 120.3: “Requirements for Pipe Insulation”**
- **Section 141.0(b)2N: Alterations - “Service Water-heating Systems”**

In Alteration projects involving multifamily dwelling units and hotel/motel guest rooms using central water heating systems, replacing some components triggers Energy Code requirements. See Table 4 on the following pages for common Alterations and Repairs and whether they trigger the Energy Code or not.

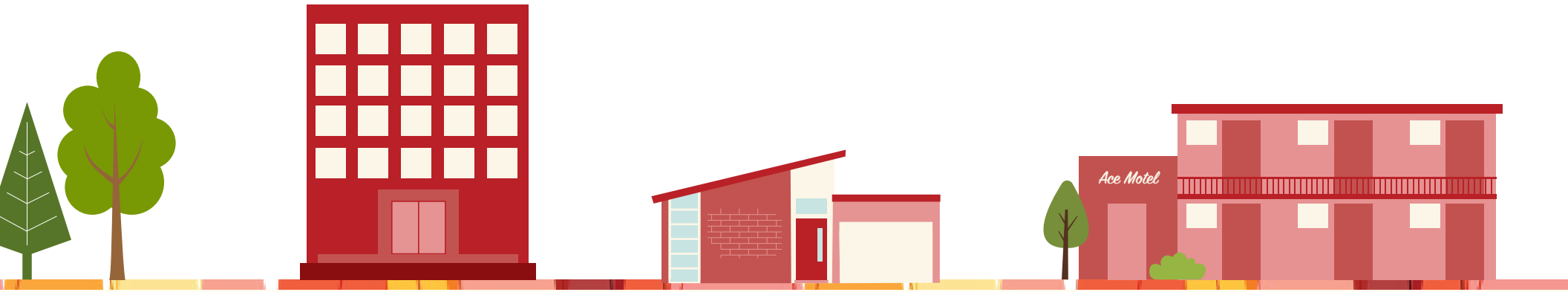


Table 4, Part 1: Central Water Heating Alteration Changes that Trigger the Energy Code

Alteration Project Scope	Requirements for Equipment Select Energy Code Triggers and Relevant Code Sections	Requirements by Water Heater Type Select Energy Code Triggers and Relevant Code Sections	Central Heat Pump Ready Requirements Select Energy Code Triggers and Relevant Code Sections
	Certification: §110.3(a) **Efficiency:** §110.3(b) **Controls:** §110.3(c)1 **Insulation:** §110.3(c)3 **Isolation Valves:** §110.3(c)6 **Heat Pump:** §110.3(c)7 *Further supported on Page 12.*	**Multifamily:** §180.2(b)3C Replacement electric resistance or gas allowed. Heat pump allowed. **Hotel/Motel:** §141.0(b)2N - No restrictions	**Multifamily:** §160.9(f) **Hotel/Motel:** N/A *Further supported on Page 34*
Replace water heater with the same type or a different type, including distribution.	**YES**	**YES** Solar thermal not required	No
Replace water heater with the same type or a different type.	**YES**	**YES** Solar thermal not required	No
Add a water-heating component, such as a water heater or boiler, to an existing water-heating system.	**YES**	**YES** Solar thermal not required	No
Add storage capacity, such as an unfired storage tank, to an existing water-heating system.	**YES**	No	No
Add a solar thermal system to an existing water-heating system.	**YES**	No	No
Replace hot water piping or replace hot water pipe insulation.	**YES** §110.3(c): Installation	No	No
Replace or add recirculation pump(s) to existing system.	**YES** §110.3(c): Installation	No	No
Repair of any type of existing system. Examples of repairs include replacing components such as an anode rod, thermostat, flue, or tank insulation.	No	No	No

Table 4, Part 2: Central Water Heating Alteration Changes that Trigger the Energy Code

Alteration Project Scope	Requirements for Recirculation Pumps and Controls Select Energy Code Triggers and Relevant Code Sections	Pipe Sizing Appendix M Select Energy Code Triggers and Relevant Code Sections	Requirements for Pipe Insulation Select Energy Code Triggers and Relevant Code Sections
	§110.3(c)2 and 4 *Supported on Page 37.*	**Multifamily:** §170.2(d) **Hotel/Motel:** Not required	**Multifamily:** §160.4(e) **Hotel/Motel:** §120.3 *Supported on Page 24-25*
Replace water heater with the same type or a different type, including distribution.	**YES** If replacing pumps	No	**YES**
Replace water heater with the same type or a different type.	No	No	No
Add a water-heating component, such as a water heater or boiler, to an existing water-heating system.	No	No	**YES**
Add storage capacity, such as an unfired storage tank, to an existing water-heating system.	No	No	**YES**
Add a solar thermal system to an existing water-heating system.	No	No	N/A
Replace hot water piping or replace hot water pipe insulation.	No If replacing pumps	No	**YES**
Replace or add recirculation pump(s) to existing system.	**YES**	No	No
Repair of any type of existing system. Examples of repairs include replacing components such as an anode rod, thermostat, flue, or tank insulation.	No	No	No

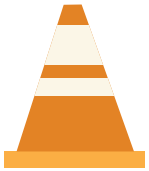
Summary of Compliance Documentation Process

Permit Submittal

Certificates of Compliance

Verify that a project's design meets Energy Code requirements. Certificates of Compliance are completed by the design team and must be included in the permit submission.

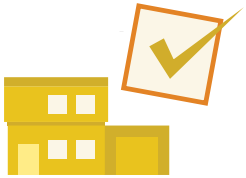
Construction



Certificates of Installation

Verify that installed building features comply with, or exceed, the requirements stated in the Certificate of Compliance. Certificates of Installation are completed by the contractor and left on the job site for the building inspector.

Testing and Verification



Certificates of Verification

Completed by a third-party Energy Code Compliance (ECC) rater—formerly known as HERS— when certain installed features must be verified.

Certificates of Acceptance

Completed by a certified Acceptance Test Technician or a project's contractor when certain installed features must be tested during construction.

Energy Code Compliance Forms for Water Heating: Single-family Buildings

For single-family buildings, forms are supported on the Energy Code Ace "Get Forms" landing page at energycodeace.com/content/get-forms.

- **The CF1R form** defines Energy Code requirements for a whole project, including any water heating requirements. If there are Energy Code Compliance (ECC) requirements, the form must be registered via an ECC-Provider. Find an ECC-Provider at bit.ly/CEC-HERS-Providers.
- **The CF2R form** must be provided by installers to match or exceed the CF1R form water heating requirements and registered via an ECC-Provider.
- **The CF3R form** must be provided by the ECC-Rater who inspected the water heating features called out in the CF1R as requiring ECC verification.

Certificates of Compliance:

Prescriptive Forms:

- **CF1R-NCB-01-E:** This form must be filled out by an ECC-Provider for a registered document.
- **CF1R-ADD-01-E:** This form for additions must be filled out by an ECC-Provider for a registered document when there are any ECC measures associated with the project.
- **CF1R-ALT-01-E:** This form for alterations must be filled out by an ECC-Provider for a registered document when there are any ECC measures associated with the project.
- **CF1R-ADD-02-E:** This form for additions is used when there are NO ECC measures associated with the project.
- **CF1R-ALT-01-E:** This form for alterations is used when there are NO ECC measures associated with the project.

Performance Forms:

- **CF1R-PRF-01-E:** This form must be filled out with CEC-certified software and then registered by an ECC-Provider when there are any ECC measures associated with the project.

Certificates of Installation:

- **CF2R-PLB-22-H:** This form is used by the installer to document distribution systems and must be filled out by an ECC-Provider for a registered document when there are any ECC measures associated with the project.
- **CF2R-PLB-02-E:** This form is used to document distribution systems when there are NO ECC measures associated with the project.
- **CF2R-STH-01-E Solar Thermal System:** This form is used by the installer to document solar thermal systems and must be filled out by an ECC-Provider for a registered document when there are any ECC measures associated with the project.
- **CF2R-ADD-02-E:** This form is used by the installer for water heating systems serving additions when there are NO ECC measures associated with the project.
- **CF2R-ALT-05-E:** This form is used by the installer for existing water heating systems that are being altered when there are NO ECC measures associated with the project.

Certificates of Verification:

- **CF3R-PLB-22-H:** This form is used by the ECC-Rater to document any of the following:
  - Pipe Insulation or Parallel Piping Compliance Credit
  - Compact Hot Water Distribution System Expanded Credit
  - Recirculation Pump Controls
  - Drain Water Heat Recovery

Energy Code Compliance Forms for Water Heating: Multifamily and Hotel/Motel Buildings

For multifamily buildings with three or fewer habitable stories, LMCC and LMCI Prescriptive forms are available through the Virtual Compliance Assistant at energycodeace.com/content/project-tool. LMCC Performance forms are available by using CEC-approved Performance compliance software. See more about this software at bit.ly/CEC-2022-Compliance-Software.

Certificates of Compliance:

Prescriptive Forms:

- **LMCC-PLB-E:** This form It is available through the Energy Code Ace Virtual Compliance Assistant.

Performance Forms:

- **LMCC-PRF-E:** This form must be filled out with CEC-certified software and then registered via an ECC-Provider when there are any ECC measures associated with the project.

Certificates of Installation:

- **LMCI-PLB-E:** This form is used by the installer to document the water heating system. It is available through the Energy Code Ace Virtual Compliance Assistant.

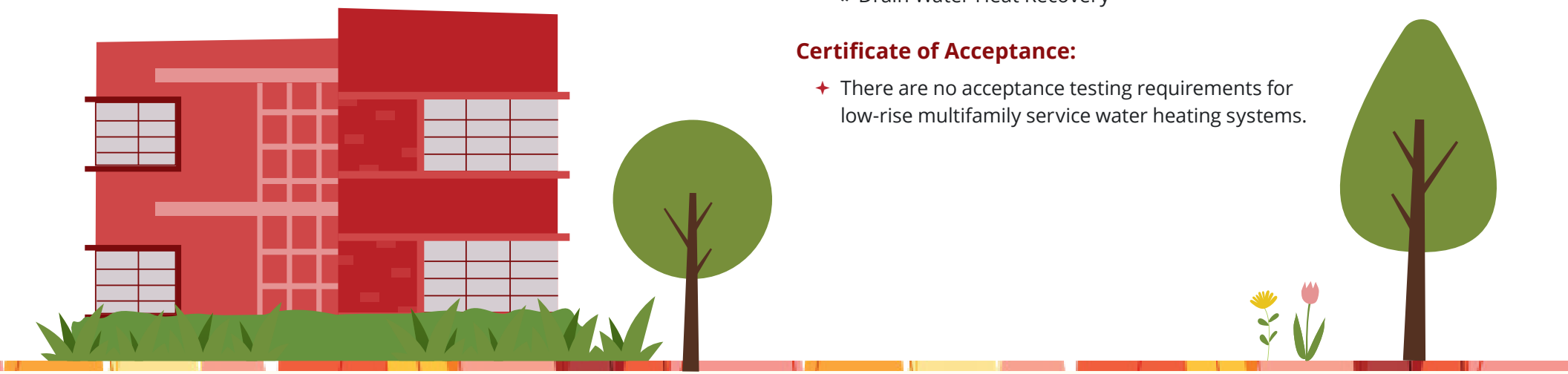
Certificates of Verification:

- **LMCV-PLB-21-H Central System**
- **LMCV-PLB-22-H Individual System**

  These forms are used by the ECC-Rater to document any of the following:
  - » Multifamily Central Hot Water Distribution
  - » Pipe Insulation Compliance Credit
  - » Parallel Piping Compliance Credit
  - » Compact Hot Water Distribution System
  - » Recirculation Pump Controls
  - » Drain Water Heat Recovery

Certificate of Acceptance:

- There are no acceptance testing requirements for low-rise multifamily service water heating systems.



Energy Code Compliance Forms for Water Heating: Multifamily and Hotel/Motel Buildings

For multifamily buildings with four or more habitable stories, NRCC and NRCI Prescriptive forms are available through the Virtual Compliance Assistant at energycodeace.com/content/project-tool. NRCC Performance forms are available by using CEC-approved Performance compliance software. See more about this software at bit.ly/CEC-2022-Compliance-Software.

Certificates of Compliance:

Prescriptive Forms:

- **NRCC-PLB-E:** This form It is available through the Energy Code Ace Virtual Compliance Assistant.

Performance Forms:

- **NRCC-PRF-E:** This Performance form must be filled out with CEC-certified software.

Certificates of Installation:

- **NRCI-PLB-E:** This form is used by the installer to document the water heating system. It is available through the Energy Code Ace Virtual Compliance Assistant.

Certificates of Verification:

- **NRCV-PLB-21-H Central System**
- **NRCV-PLB-22-H Individual System**

  These forms are used by the ECC-Rater to document any of the following:
  - » Multifamily Central Hot Water Distribution
  - » Pipe Insulation Compliance Credit
  - » Compact Hot Water Distribution System

Certificate of Acceptance:

- There are no acceptance testing requirements for low-rise multifamily service water heating systems.

For More Information

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energycodeace.com

Your "one-stop-shop" for no-cost tools, training, and resources to help you comply with California's Building Energy Efficiency Standards (Title 24, Part 6) and Appliance Efficiency Standards (Title 20).

Create an account on the EnergyCodeAce.com website and select an industry role for your profile in order to receive our newsletter and messages about all our offerings!

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Explore this suite of interactive tools to understand the compliance process, required forms, installation techniques, and efficiency regulations in California.

- Reference Ace: Navigate Title 24, Part 6 using an index, keyword search, and hyperlinked text.
- Q&Ace: Search our online knowledge base or submit your question to Energy Code Ace experts.
- Product Finder: Find Title 24, Part 6 compliant products.

Ace Training™

energycodeace.com/training

On-demand, live in-person, and online training alternatives are tailored to a variety of industry professionals and address key measures.

Of special interest:

- 2025 Title 24, Part 6 Essentials – Residential Standards: What's New
- 2025 Title 24, Part 6 Essentials – Nonresidential Standards: What's New

Ace Resources™

energycodeace.com/resources

Downloadable materials provide practical and concise guidance on how and when to comply with Title 24, Part 6 and Title 20.

Of special interest:

- Fact Sheets for Buildings
- Fact Sheets for Appliances
  - » MAEDbS 101
- **COMING SOON!** 2025 Title 24, Part 6: Residential Electric Readiness Fact Sheet

CALIFORNIA ENERGY COMMISSION

California Energy Commission (CEC)
energy.ca.gov

Learn more about the CEC and its programs.

- 2025 Building Energy Efficiency Standards: Explore the main CEC web portal for the 2025 Energy Code, including information, documents, and historical information.
- 2025 California Energy Code Fact Sheet: Download this brief summary of the Title 24, Part 6 purpose, current changes, and impact.
- California Appliance Efficiency Standards Site: Visit this site for information on California's Title 20 Appliance Efficiency Regulations.
- **Energy Code Hotline**
  - » Call: 1-800-772-3300 (Free)
  - » Submission Form
- Energy Code Support Center: Use these online resources developed for building and enforcement communities to learn more about Title 24, Part 6.
- Modernized Appliance Efficiency Database System (MAEDbS): Search this database to find products that comply with Title 24, Part 6 and Title 20.

Additional Resources

Title 24 Stakeholders
title24stakeholders.com

The Codes and Standards Enhancement (CASE) initiative presents recommendations to support the CEC's efforts to update Title 24, Part 6 to include new requirements or to upgrade existing requirements for various technologies. Three California investor-owned utilities sponsor this effort. The Statewide CASE Team encourages the open exchange of comments and concerns from all stakeholders engaged in the Title 24, Part 6 code change process. Contact them and they will put you in touch with the appropriate CASE Team members.

Reach Codes
localenergycodes.com

Collaborating with cities, counties, and stakeholders to drive reach code development and adoption for long-term climate and energy efficiency benefits. View a list of adopted ordinances at the link provided.

CALGreen
calgreeninfo.com

CALGreen is a mandatory green building code with additional voluntary provisions. CALGreen is Part 11 of the California Building Standards Code, Title 24 of the California Code of Regulations. Codes are updated and adopted on an 18-month cycle, triennial and intervening. The current code is effective through December 31, 2025.

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