

➤ Single-family Buildings

What's New in 2025?



Using this Fact Sheet

Use this fact sheet to get a detailed overview of how California's Building Energy Efficiency Standards (Energy Code or Title 24, Part 6) have changed in 2025 for single-family buildings. For more information about the Energy Code changes, refer to the Single-family Buildings: What's Changed in 2025 Fact Sheet.

Highlights and details about the code changes for other building types are given in the following fact sheets:

- ✦ Multifamily Buildings: What's New in 2025?
- ✦ Multifamily Buildings: What's Changed in 2025?
- ✦ Nonresidential Buildings: What's New in 2025?
- ✦ Nonresidential Buildings: What's Changed in 2025?

What's Included:

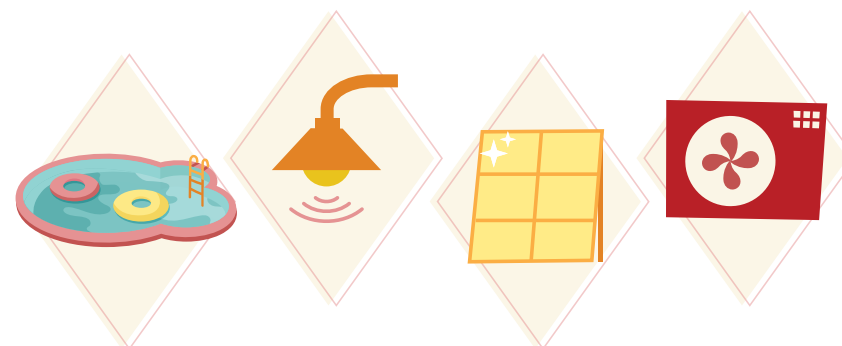
The 2025 Energy Code updated the 2022 Energy Code.

The 2025 Energy Code has an effective date of January 1, 2026. Any projects that apply for a permit on or after this date will be subject to the 2025 Energy Code. Information and documents related to the 2025 Energy Code are available on the [California Energy Commission \(CEC\) website](#).

This fact sheet highlights key changes to the Energy Code that apply to single-family buildings, including single-family homes, accessory dwelling units (ADUs), duplexes, and townhomes of any height. These building types are all classified under California Building Code Occupancy Group R3 (see page 2).

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Building Occupancies Subject to the Energy Code: Single-family

The following Energy Code building types, and their Occupancy class per the California Building Code, are subject to the Energy Code.

Note: See the “Trigger Tables” in our fact sheets for specific scopes of work that trigger the Energy Code, and review the Triggering Energy Code Requirements fact sheets for more information on building occupancies.

Single-family Groups

Referred to as “Single-family Buildings” in the Energy Code

Occupancy Class: R3 — Residential

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

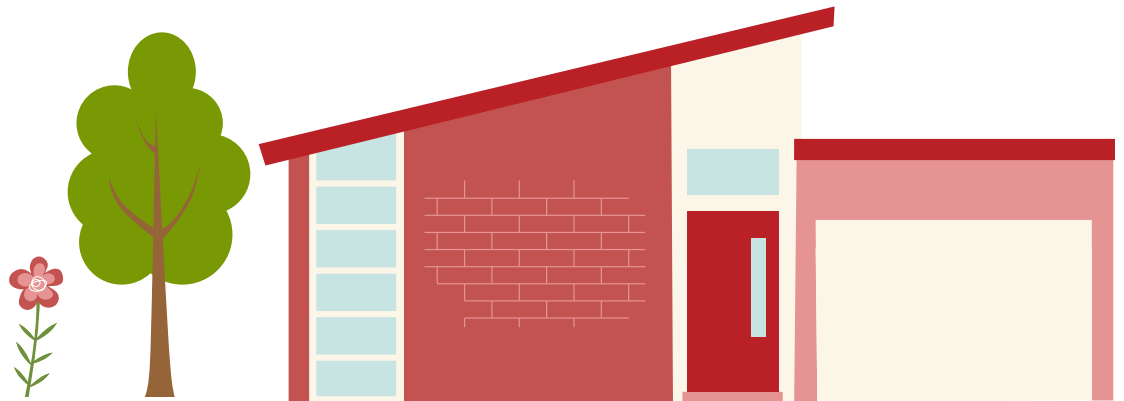
Occupancy Class: U — Miscellaneous

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.

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.



Why Did the Energy Code Change?

The 2025 Energy Code is an important part of California's work to **reduce carbon emissions** and **fight climate change**. The Energy Code is updated every three years with the mandate to increase building energy efficiency while staying cost-effective for building owners over the lifespan of a building.

Expected Benefits of the 2025 Energy Code Across All Building Types:

- ✦ Save \$4.8 billion in energy costs
- ✦ Drive 500,000 heat pump installations in the first three years
- ✦ Save enough water to fill 100 Olympic-sized swimming pools annually
- ✦ Reduce greenhouse gas (GHG) emissions by four million metric tons

Decarbonization Goals

California aims to reduce its GHG emissions while creating an energy system that is resilient to climate risks, spurring innovation and a low-carbon transition both nationally and internationally. Per the CEC Energy Assessment, California has some of the most ambitious climate and energy goals in the world.

GHG Emission Reduction Goals

1. [Assembly Bill 32](#): 1990 levels by 2020
2. [Senate Bill 32](#): 40% below 1990 levels by 2030
3. [Executive Order S-3-05](#): 80% below 1990 levels by 2050

This can be achieved through a variety of measures, such as incremental steps toward “carbon neutral” buildings, and timely balancing of onsite energy production and consumption in support of a healthy, stable grid. The Energy Code supports reaching these goals.

**Learn more from the
[CEC Building Decarbonization Assessment](#)**

Evolving Energy Code Compliance Metrics

The 2025 Energy Code updates the energy compliance metrics that are the basis of the Performance Approach from those used in the 2022 Energy Code (see Table 1). In the 2022 Energy Code, single-family [New Construction](#) had to comply with Energy Design Ratings (EDR) for source energy (EDRs), energy efficiency (EDRe), and a total (EDRt) that combined energy efficiency with solar photovoltaics (PV) and flexibility measures, while building Additions and Alterations had to meet Time Dependent Valuation (TDV) energy budgets.

The terminology and units in the 2025 Energy Code have changed to Source Energy (Source) and Long-term System Cost (LSC) for energy efficiency (LSCe) and for a total that includes energy efficiency measures plus PV and flexibility measures (LSCt). In the 2025 Energy Code, Additions and Alterations show compliance using LSCe alone. See Table 2 and the definitions of Source Energy and LSC under Key Terms for more details.

Table 1: Evolving Energy Code Compliance Metrics for Single-family Construction

Energy Code	New Construction	Additions	Alterations
2022	EDRs, EDRe, EDRt	TDV	TDV
2025	Source, LSCe, LSCt	LSCe	LSCe

2022: EDRs = Source EDR; EDRe = Efficiency EDR; EDRt = Total EDR; TDV = Time Dependent Valuation
2025: Source = Total Annual Source Energy; LSCe = Efficiency LSC; LSCt = Total LSC

This change to assessing single-family buildings using LSC is intended to give an idea of how the energy and carbon efficiency of current building construction will impact California’s energy systems over the next 30 years. **Note that LSC does not predict individual utility bills.**

New Peak Cooling Energy Metric

The 2025 Single-family Residential Alternative Calculation Method (ACM) Reference Manual introduces a Peak Cooling Energy compliance metric to the Performance Approach for single-family buildings. To comply using the Performance Approach in Climate Zones (CZs) 4 and 8 through 15, the Peak Cooling Energy calculated for the proposed design must not be greater than 120% of the Peak Cooling Energy for the standard design (see definition of Peak Cooling Energy under Key Terms for more details). This is in addition to complying with the Source and LSC energy metrics described above. This cap on Peak Cooling Energy supports California’s goal to reduce demand on the state’s electrical grid during peak cooling hours.

Table 2: Source Energy and Long-term System Cost as Compliance Metrics

Source Energy (Source)	Efficiency Long-Term System Costs (LSCe)	Total Long-term System Costs (LSCt)
<p>A score representing the building long run source energy use due to fossil fuel combustion expressed as an hourly source-carbon metric.</p> <p>Source Energy includes:</p> <ul style="list-style-type: none"> ✦ Envelope ✦ Indoor fans ✦ HVAC ✦ DHW ✦ PV ✦ Batteries ✦ Other loads 	<p>A score representing the building energy efficiency expressed as long-term system costs.</p> <p>Efficiency LSC includes:</p> <ul style="list-style-type: none"> ✦ Envelope ✦ Indoor fans ✦ HVAC ✦ DHW ✦ Other loads, including self-utilization credit when applicable 	<p>A score representing the building long-term system costs for energy efficiency while also factoring in photovoltaics (PV) and flexibility.</p> <p>Total LSC includes:</p> <ul style="list-style-type: none"> ✦ Efficiency measures ✦ PV ✦ Batteries ✦ Precooling

PV = Solar photovoltaics, **HVAC** = Heating, ventilation, and air conditioning, **DHW** = Domestic hot water

Important Note: For New Construction, a building complies with the Performance Approach **ONLY** if **all three** compliance scores are met, which means that each Proposed Design score is **lower than or equal to** the Standard Design score.

Key Terms

Mandatory Requirements: The Energy Code includes Mandatory requirements for single-family building features and systems that must be met regardless of the overall compliance approach (§150.0).

Prescriptive Approach: The Prescriptive Approach — a set of prescribed performance levels for various building components, where each component must meet or exceed specific requirements — is considered the most direct path to Energy Code compliance. There are different single-family Prescriptive requirements for different Climate Zones (CZs) and for New Construction (§150.1(c)) or Additions versus Alterations (§150.2). The Performance Approach allows for more flexibility than the Prescriptive requirements.

Performance Approach: The Performance Approach builds on the Prescriptive Approach by allowing energy allotments to be traded between building systems for single-family buildings (§150.1(b)). There can be proposed energy use tradeoffs between features of the building envelope, domestic water-heating, space-heating, and space-cooling equipment. A building complies with the Performance Approach if the energy consumption calculated for the Proposed Design building is less than or equal to the energy budget calculated for the Standard Design building using energy analysis software approved by the California Energy Commission (CEC).

Performance Approach Terms: 2022 Energy Code

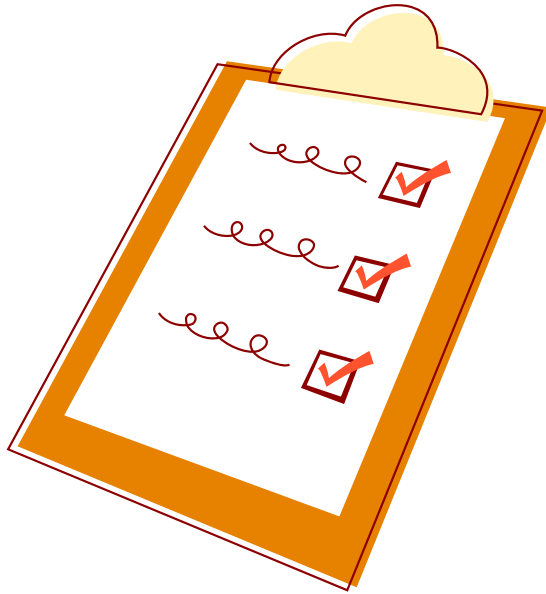
- ✦ **Energy Design Rating (EDR):** An alternate way to express the energy performance of a home using a scoring system where 100 represents the energy performance of a reference design building meeting the envelope requirements of the 2006 International Energy Conservation Code (IECC). Zero (0) represents a building that has zero net energy consumption.

- ✦ **Source Energy Design Rating (EDRs):** EDRs is a separate EDR metric based on “hourly source energy,” which establishes a “carbon-proxy” analysis of the building in kBtu/ft²-yr units to support decarbonization and electrification policy goals.
- ✦ **Time Dependent Valuation (TDV):** “TDV Energy” is the time varying energy used by the building to provide space conditioning, water heating, and specified building lighting. It accounts for the energy used at the building site and consumed in producing and delivering energy to a site, including, but not limited to, power generation, transmission, and distribution losses.

Performance Approach Terms: 2025 Energy Code

- ✦ **Long-term System Cost (LSC):** LSC is the CEC-projected present value of costs to California’s energy systems over a period of 30 years in units of dollars per square foot of conditioned floor area (\$/ft²). **Note that even though the units are in \$/ft², LSC does not predict individual utility bills.** Using the LSC metric ensures that all modeled building features are specified on a one-for-one equivalent energy use or equivalent energy cost basis. LSC consists of large data sets that convert electricity, gas, and propane to LSC energy. The rate of conversion varies for each hour of the year, Climate Zone, energy type (electricity, natural gas, or propane), and building type (low-rise residential, including single-family, high-rise residential, nonresidential, and hotel or motel).
- ✦ **Peak Cooling Energy:** Peak cooling energy in the Performance Approach is the total annual mechanical cooling site energy in kWh that occurs at peak hours between 4:00 pm and 9:00 pm.
- ✦ **Site Energy:** Site energy is the energy consumed in a building as reflected on utility bills, such as electricity kWh or natural gas therms.

- ✦ **Source Energy (Source):** The long run marginal source energy of fossil fuels that are combusted as a result of building energy consumed either directly at the building site or to meet the electrical demand of the building. The source energy metric considers the long-term marginal hourly resources of CEC-projected electric system resource procurement. For a given hour, the value in that hour for each forecasted year is averaged to get a lifetime average source energy measured in kBtu/ft²-yr.
- ✦ **Photovoltaics (PV):** A system that generates electricity from solar energy.



Important Note: Long-term system cost (LSC) does not predict individual utility bills.

Terminology Change: “HERS” Is Now “ECC”

California’s Energy Code requires that third-party special inspectors perform field verification and diagnostic testing of certain installed building features and systems. Through the 2022 Energy Code cycle, these special inspectors were called Home Energy Rating System (HERS) Raters, and HERS program requirements were covered in California’s Title 20 Appliance Efficiency Regulations.

For the 2025 code cycle, the HERS program has been renamed the Energy Code Compliance (ECC) program, and the ECC program requirements have been moved from Title 20 to Title 24, Part 1, §10-103.3. HERS Raters will now be known as ECC-Raters. See Table 3 for a summary of the new terminology with updated definitions.

Table 3: “Home Energy Rating System (HERS)” Renamed “Energy Code Compliance (ECC)” Program

Through 2022 Energy Code Cycle	Starting 2025 Energy Code Cycle	Definition
HERS	ECC	<ul style="list-style-type: none"> ✦ ECC = Energy Code Compliance Program ✦ Confirms compliance with Energy Code via field verification and diagnostic testing as applicable in Residential construction: <ul style="list-style-type: none"> » New Construction » Additions » Alterations ✦ Program requirements moved from Title 20 to Title 24, Part 1
HERS Provider	ECC-Provider	<ul style="list-style-type: none"> ✦ An organization approved by the CEC to administer the ECC program per Energy Code §10-103.3
HERS Rater	ECC-Rater	<ul style="list-style-type: none"> ✦ A person trained, tested, and certified by an ECC-Provider ✦ Performs ECC field verification and diagnostic testing
N/A	ECC-Rater Company	<ul style="list-style-type: none"> ✦ An organization certified by an ECC-Provider ✦ Offers field verification and diagnostic testing services by the ECC-Rater Company’s ECC-Raters
HERS Measures	ECC Measures	<ul style="list-style-type: none"> ✦ Building feature installations that must demonstrate compliance with Energy Code via field verification and diagnostic testing

Envelope Highlights

New Construction

Wall U-factor and Insulation



› **Mandatory**

› **Section 150.0(c)**

The 2025 Energy Code tightens maximum overall assembly U-factor requirements for 2x4 and 2x6 framed walls that separate conditioned space from either enclosed unconditioned space or outdoor air:

- ✦ 2x4 framed walls must have a maximum assembly U-factor of 0.095, reduced from 0.102. Existing 2x4 walls with a U-factor less than or equal to 0.110 or with at least R-11 insulation installed between framing members do not have to meet the new 0.095 U-factor requirement.
- ✦ 2x6 framed walls must have a maximum assembly U-factor of 0.069, reduced from 0.071.
- ✦ Wood-framed walls can meet these new U-factor requirements by installing the following insulation with 16 inch on center spacing:
 - » R-15 in 2x4 assemblies, increased from R-13
 - » R-21 in 2x6 assemblies, increased from R-20

Mandatory Maximum Fenestration U-factor



› **Mandatory**

› **Section 150.0(q)**

Fenestration products which separate conditioned space from unconditioned space or outdoors, including skylights, must meet a new maximum U-factor of 0.40. This is reduced from the 2022 Energy Code maximum U-factor of 0.45.

The Mandatory maximum U-factor is NOT required for the following:

- ✦ A fenestration area up to 10 ft² or 0.5% of conditioned floor area, whichever is greater
- ✦ Up to 30 ft² of dual-glazed greenhouse or garden windows
- ✦ **New for the 2025 Energy Code:** Fenestration installed to meet Part 7 of the California Building Code in buildings located in Fire Hazard Severity Zones or Wildland-Urban Interface (WUI) Fire Areas

Roof Deck Insulation for Cathedral Ceilings



› **Prescriptive Requirements**

› **Section 150.1(c)1Aiii, Table 150.1-A**

§150.1(c)1Aiii and Table 150.1-A of the 2025 Energy Code expand Prescriptive Option C to include insulated non-attic cathedral ceilings and ventilated attics with only ceiling insulation. The new Prescriptive cathedral ceiling option requires R-38 roof deck insulation in all 16 California Climate Zones.

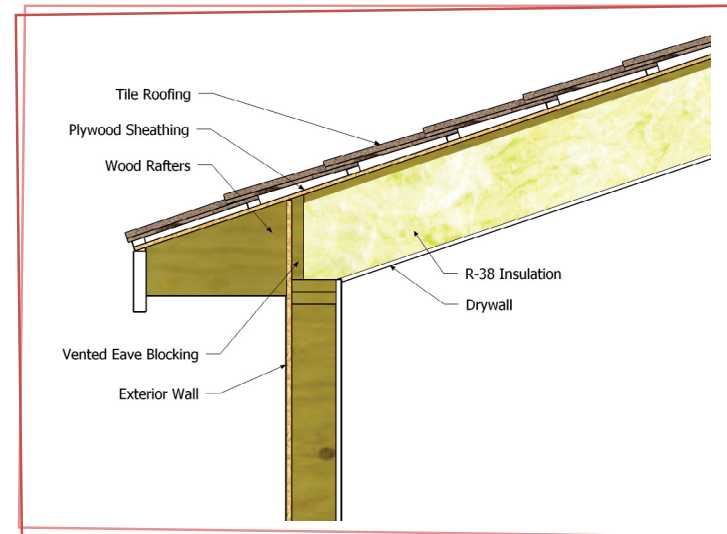


Figure 1: Prescriptive R-38 Roof Deck Insulation for Cathedral Ceilings

Prescriptive Fenestration Updates



› Prescriptive

› Section 150.1(c)3A, Table 150.1-A

The 2025 Energy Code updates Prescriptive maximum area-weighted average U-factors for fenestration from 0.30 to 0.27 in Climate Zones (CZs) 1 through 5, 11 through 14, and 16. Fenestration U-values remain at 0.30 for CZs 6 through 10 and 15 (see Table 4). New dwelling units with conditioned floor area of 500 ft² or less in CZ 5 may comply with a fenestration maximum U-factor of 0.30.

The Prescriptive maximum area-weighted average fenestration solar heat gain coefficient (SHGC) changed from 0.23 to 0.20 in CZ 15 only (see Table 4).

In addition, the Prescriptive maximum U-factor allowed for up to 16 ft² of new skylight area per dwelling unit changed from 0.55 to 0.40 to match the new Mandatory maximum fenestration U-factor (see Exception 3 to §150.1(c)3A).

Table 4: Prescriptive Fenestration Maximum Area-weighted Average U-factors and SHGCs by Climate Zone
(Adapted from Table 150.1-A)

Fenestration Feature	CZ1	CZ2	CZ3	CZ4	CZ5	CZ6	CZ7	CZ8	CZ9	CZ10	CZ11	CZ12	CZ13	CZ14	CZ15	CZ16
Maximum U-factor by Climate Zone¹	0.27 NEW!	0.27 NEW!	0.27 NEW!	0.27 NEW!	0.27 NEW!	0.30	0.30	0.30	0.30	0.30	0.27 NEW!	0.27 NEW!	0.27 NEW!	0.27 NEW!	0.30	0.27 NEW!
Maximum SHGC by Climate Zone	NR	0.23	NR	0.23	NR	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.20 NEW!	NR

¹ New dwelling units with a conditioned floor area ≤ 500 ft² in CZ 5 may comply with a maximum U-factor of 0.30.

NEW! = Updated for 2025 Energy Code, **NR** = No requirement

Additions and Alterations

Fenestration Additions and Alterations



› Prescriptive

› Sections 150.2(a)1A and 150.2(b)1A

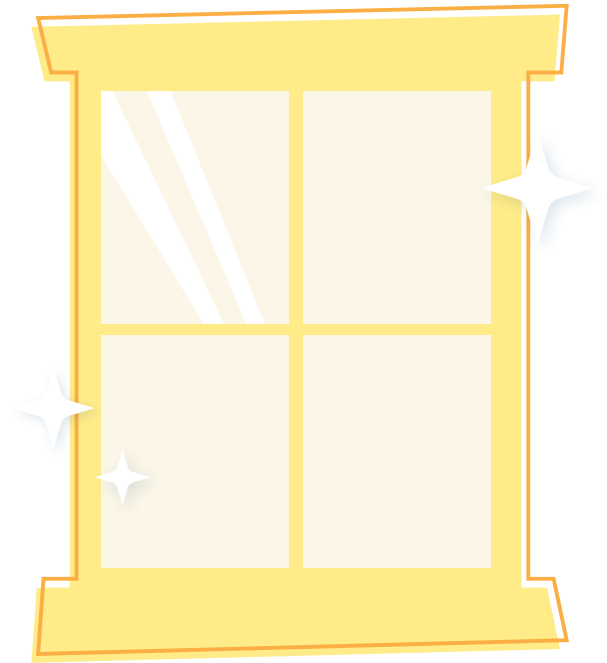
There are several adjustments to Prescriptive fenestration Addition and Alteration requirements in the 2025 Energy Code, as follows:

Additions:

- ✦ For Additions larger than 700 ft² in CZ 15, any fenestration area added as an Alteration to the existing residence must have a maximum SHGC of 0.23.

Alterations:

- ✦ Alterations that increase fenestration area must have a maximum SHGC of 0.23 in CZ 15.
- ✦ The 2025 Energy Code removes the 2022 Energy Code exception from Prescriptive total and west-facing fenestration area restrictions for up to 75 ft² of added fenestration.
- ✦ The 75 ft² added fenestration exception is replaced by an updated version of the similar 2022 Prescriptive exception for up to 16 ft² of added skylights. For 2025, the exception for 16 ft² of added skylights is modified to include other fenestration as well as skylights. This reduces the combined area of skylights and other fenestration that can be added as part of an Alteration without having to account for the existing total and west-facing fenestration areas.



Mechanical System Highlights

New Construction

Limits on Space Conditioning Equipment Selections



› **Mandatory**

› **Section 150.0(h)5**

The new §150.0(h)5 emphasizes that space heating and cooling equipment must be sized and selected based on the heating and cooling loads calculated per §§150.0(h)1 and 2.

§150.0(h)5 states that systems must be sized based on Air Conditioning Contractors of America (ACCA) Manual S-2023 to meet new output capacity limits, as follows:

- ✦ Cooling equipment has no limit on minimum cooling capacity.
- ✦ Furnace heating capacity must be sized based on ACCA Manual S-2023, Table N2.5.
- ✦ Heat pumps must have a minimum heating capacity that meets the minimum California Building Code (CBC) requirements without including the capacity of any supplementary heating. Heat pumps have no limit on maximum heating capacity.

Sizing Limit on Heat Pump Supplemental Electric Strip Heat



› **Mandatory**

› **Section 150.0(h)8**

Heat pumps sometimes have supplemental electric resistance heating installed to help meet peak loads. §150.0(h)8 adds the requirement that supplemental electric resistance heating capacity must not exceed the heat pump's nominal cooling capacity (at 95°F ambient conditions) multiplied by 2.7 kW per ton, rounded up to the closest kW.

Heat Pump Setback Thermostats



› **Mandatory**

› **Section 150.0(i)**

§150.0(i)2 updates existing setback thermostat regulations with new requirements for thermostats controlling heat pumps that have either electric resistance or gas furnace supplemental heating.

These thermostats must be setback thermostats per §150.0(i)1, and they must:

- ✦ Receive outdoor air temperature from an outdoor air sensor or an internet weather service
- ✦ Display outdoor air temperature
- ✦ Lock out supplementary heat when the outdoor air temperature is over 35°F, except during defrost or when the user selects emergency heating
- ✦ Have an indicator to notify when supplementary or emergency heat is in use

In addition, the installer must certify on the Certificate of Installation (CF2R) that the system has been tested according to the required procedure found in the CF2R.

Note that these measures are not required when:

- ✦ Supplementary heat is already locked out above 35°F by another control device per §150.0(h)7.
- ✦ Systems comply with Exception 1 to §150.0(h)7 which may apply to buildings that have conditioned floor area less than 500 ft² and to buildings of any size in CZs 7 and 15.
- ✦ Room air-conditioner heat pumps are installed.

Balanced and Supply-only Ventilation System Service Accessibility



- › **Mandatory**
- › **Section 150.0(o)1Civ**

There are new Mandatory service accessibility requirements for indoor air quality (IAQ) filters and heat recovery ventilator (HRV) and energy recovery ventilator (ERV) components of balanced and supply-only ventilation systems.

System air filters, HRV cores, and ERV cores must be located so that they can be serviced from occupiable spaces, basements, garages, balconies, and mechanical closets. If any of these components are within these areas but located behind access panels, access doors, or grilles, they comply with the service accessibility requirement as long as they are no more than 10 feet above a walking surface (see Figure 2).

In an exception to §150.0(o)1Civa, the Energy Code sets different accessibility requirements for systems that need to be serviced from inside an attic. Those systems must have:

- ✦ A fault indicator display (FID) that meets the requirements of Joint Reference Appendix JA17
- ✦ An attic access door located in a wall, or, for ceiling access, an attic access hatch with an integrated ladder
- ✦ A walkway from the attic access door to the HRV or ERV

Per §150.0(o)1Civb, c, and d, these systems must also meet California Mechanical Code (CMC) requirements for IAQ system service accessibility (CMC §304.0), outdoor air intake design (CMC §402.4.1), and outdoor air intake location and accessibility (CMC §304.3.1). Outdoor air intakes serving systems with JA17-compliant FIDs are exempt from the CMC location and accessibility requirements.

Fault Indicator Display Devices (FIDs)

Manufacturer-certified JA17-compliant FIDs indicate if systems maintain rated airflow and fan efficacy for the life of the equipment. To comply with Joint Reference Appendix JA17, FIDs must have instrumentation that measures system airflow and fan power and notifies dwelling unit occupants if the system is not working properly. FIDs must provide information using one or more of the following:

- ✦ A visual display that is readily accessible to occupants of the dwelling unit
- ✦ An electronic application
- ✦ An audible alarm accompanied by a visual display

Manufacturers of FID systems must certify to the CEC that their FID systems meet the requirements of JA17.2 through JA17.4. The CEC maintains the “[Residential Fault Indicator Certification List](#)” of FID products that are available for residential Energy Code compliance.

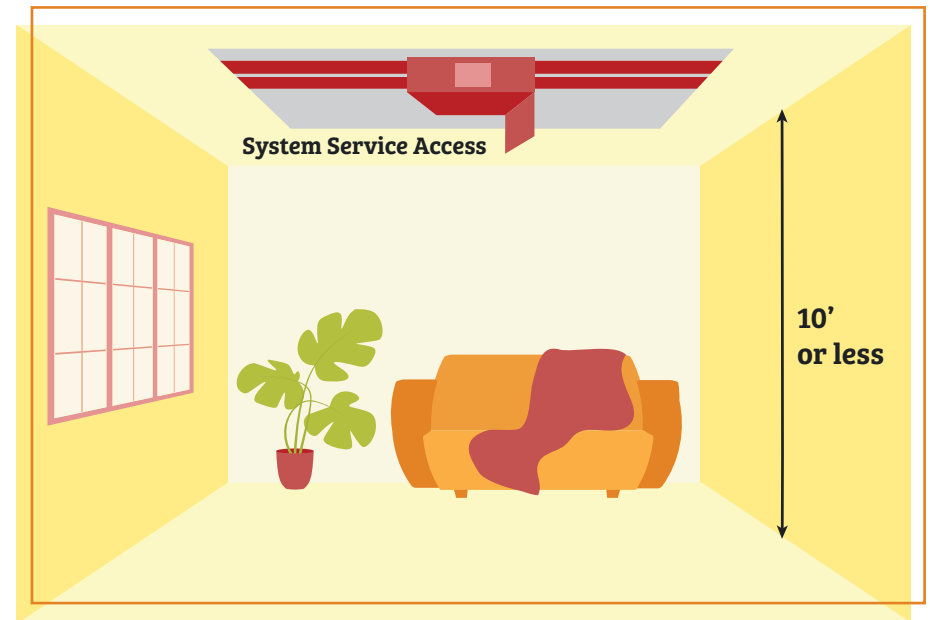


Figure 2: Image of an ERV or HRV Core Accessible through a Ceiling Access Panel Less Than or Equal to 10' Above the Floor

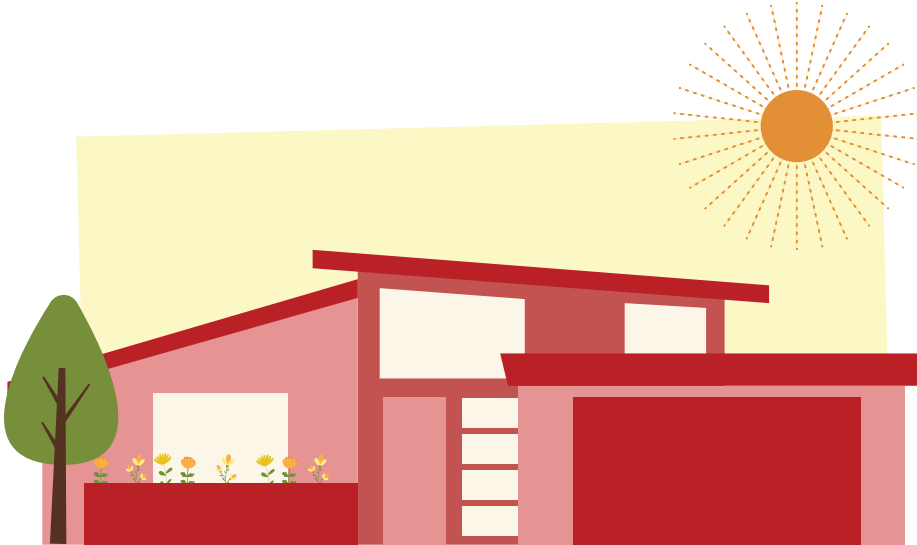
Prescriptive Fault Indicator Display for HRV and ERV



› Prescriptive

› Section 150.1(c)15, Table 150.1-A

§150.1(c)15 and Table 150.1-A include a new Prescriptive requirement to provide a ventilation system FID for all HRV and ERV systems serving individual dwelling units. These FID systems must be field-verified by an ECC-Rater per Joint Reference Appendix JA17. FID field verification involves confirming that the proposed system is in the CEC's "[Residential Fault Indicator Certification List](#)." This means that the manufacturer of the proposed FID system has certified to the CEC that the system meets the requirements of JA17.2 through JA17.4. This new Prescriptive FID requirement applies to projects in all California Climate Zones.



Refrigerant Charge Verification



› Prescriptive

› Section 150.1(c)7A, Table 150.1-A

The 2025 Energy Code includes some changes to the Prescriptive refrigerant charge verification (RCV) requirements for air conditioners and air-source heat pumps.

In the 2022 Energy Code, Table 150.1-A, which outlines Prescriptive single-family requirements by Climate Zone (CZ), included a single row showing space cooling RCV requirements in CZs 2 and 8 through 15. These requirements applied to space cooling for both air conditioners and air-source heat pumps. Table 150.1-A in the 2025 Energy Code renames the cooling RCV row to show it only applies to air conditioners and adds a new RCV row for heat pumps. The 2025 Energy Code requires RCV for heat pumps in all CZs.

Another change for both air conditioners and heat pumps is that it is no longer an option to install FIDs instead of verifying the refrigerant charge. Also note that RCV involves the newly renamed Energy Code compliance raters (ECC-Raters, previously called HERS Raters).

Prescriptive Refrigerant Charge Verification Requirements from Table 150.1-A

Air Conditioners

- ✦ **Required** in Climate Zones 2, 8-15
- ✦ **Not Required** in Climate Zones 1, 3-7, 16

Heat Pumps

- ✦ **Required** in all Climate Zones

Prescriptive Space Heating Changes to Heat Pumps



› Prescriptive

› Section 150.1(c)6, Table 150.1-A

In a major change for the 2025 Energy Code, only heat pump space heating is allowed for single-family Prescriptive compliance in all Climate Zones. Gas space heating is not allowed under the 2025 Prescriptive Approach. The Performance Approach must be used to assess single-family Energy Code compliance for new homes with gas furnaces, including propane. The Performance Approach continues to be the only Energy Code compliance option for electric resistance space heating.

Note that efficiency ratings for heat pumps are now all changed from Heating Seasonal Performance Factor (HSPF) to HSPF2 and from Seasonal Energy Efficiency Rating (SEER) to SEER2.

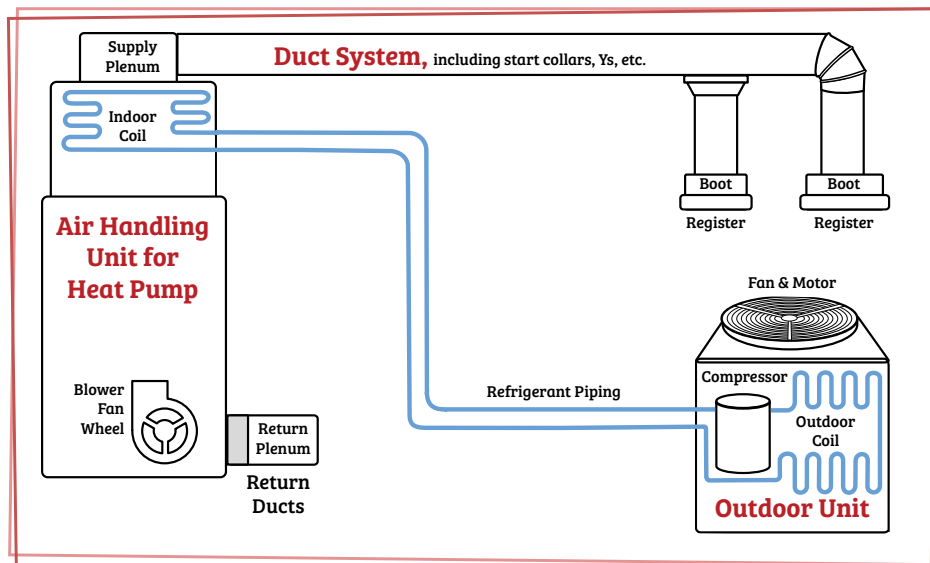


Figure 3: Heat Pump for Space Conditioning: Ducted Split System Diagram

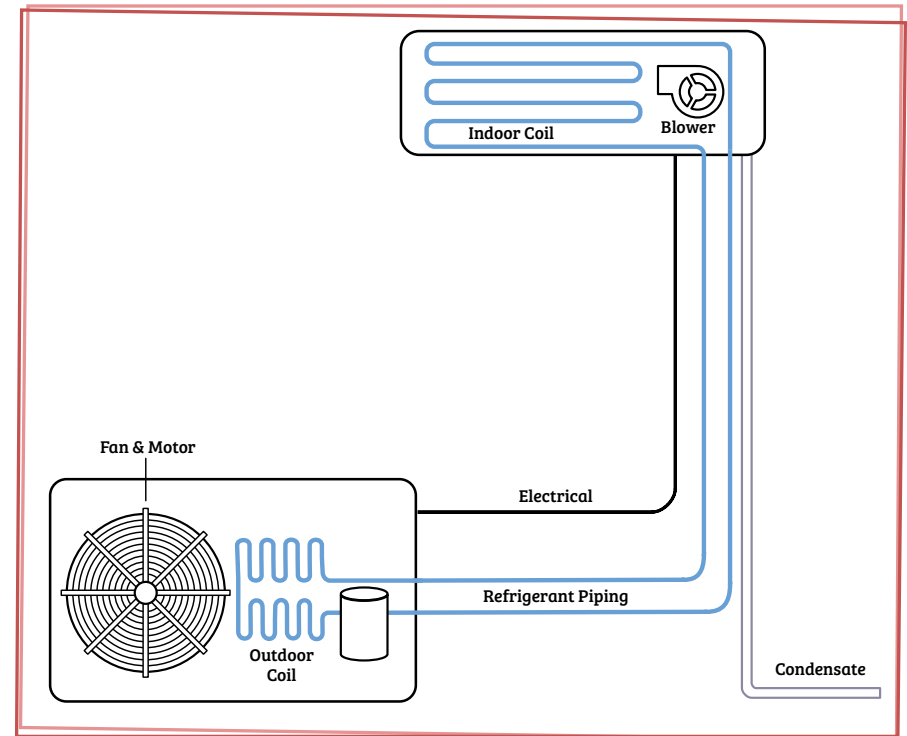


Figure 4: Heat Pump for Space Conditioning: Ductless Mini-split System Diagram

Domestic Water-heating Systems



› Prescriptive

› Section 150.1(c)8, Table 150.1-A

One notable change for the 2025 Energy Code is that gas tankless water heaters are no longer allowed as a Prescriptive water heating option for New Construction in any Climate Zone (CZ), regardless of the type of space-heating equipment. This means that the **2025 Prescriptive Approach does not allow any kind of gas or propane water heating.** The Performance Approach must be used to assess single-family Energy Code compliance for new homes with gas or propane water heaters.

Additionally, new dwelling units with conditioned floor area less than or equal to 500 ft² may comply using any electric water heater in combination with point of use distribution, instead of meeting one of the other Prescriptive options. In the past Energy Code cycle, this exception required an instantaneous electric water heater plus point of use distribution.

The other 2025 Prescriptive water-heating options and exceptions for new single-family homes remain the same as in the past Energy Code cycle. These options are:

- ✦ Per §150.1(c)8A, a single 240-volt heat pump water heater with compact distribution in CZs 1 and 16 and a drain water heat recovery system in CZ 16, **or**
- ✦ Per §150.1(c)8B, a single 240-volt heat pump water heater with a Northwest Energy Efficiency Alliance (NEEA) Tier 3 rating or higher and a drain water heat recovery system in CZ 16, **or**
- ✦ Per §150.1(c)8C, a solar water-heating system with electric backup and a minimum 70% solar savings fraction (SSF)
- ✦ Per the exception to §§150.1(c)8A and B, new dwellings with one bedroom or less may use a single 120-volt heat pump water heater instead of a single 240-volt heat pump water heater.

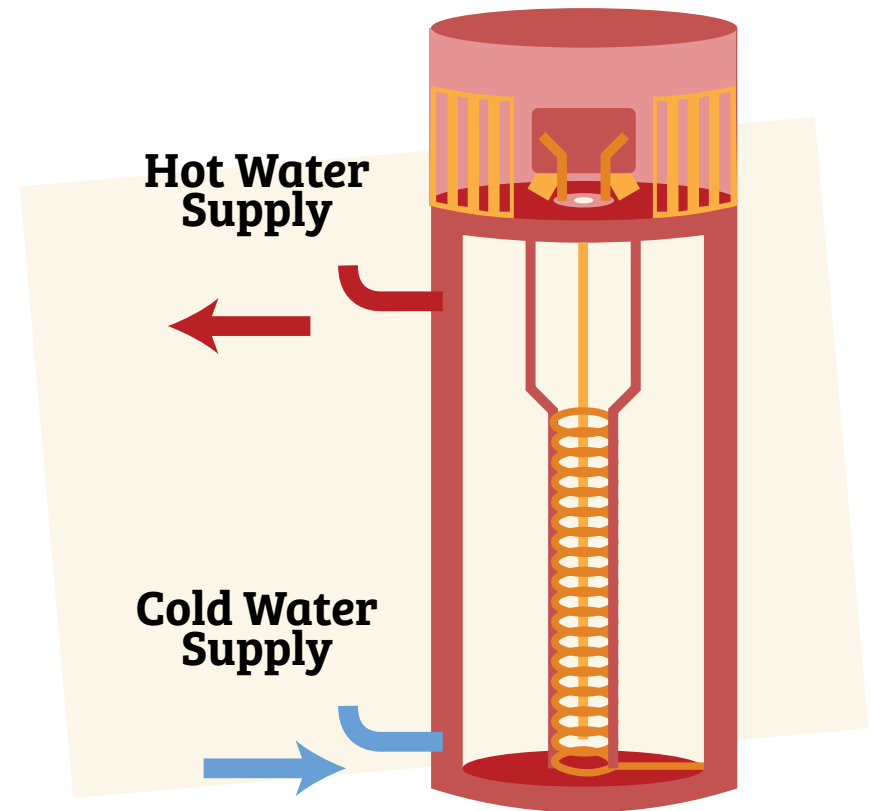


Figure 5: Heat Pump Water Heater Graphic

Additions and Alterations

Domestic Water-heating Systems



- › Prescriptive
- › Section 150.2(a)1D

There are several changes to the 2025 Prescriptive domestic water-heating requirements for single-family Additions. First, the regulations now apply to installing any additional water heater as part of an Addition, not just when adding a second water heater.

A second notable change is that instantaneous gas or propane water heaters are no longer allowed as a Prescriptive water-heating option for Additions. This means that the **2025 Prescriptive Approach does not allow any NEW gas or propane water heating for Additions**. Note, however, that **the Energy Code allows existing gas or propane water-heating systems to remain**. The Performance Approach must be used to determine single-family Energy Code compliance for Additions with new gas or propane water heaters.

Further, Additions less than or equal to 500 ft² may comply using any electric water heater in combination with point of use distribution. In the past Energy Code cycle, this option required an instantaneous electric water heater plus point of use distribution.

The other 2025 Prescriptive water-heating options for additional water heaters in Additions remain the same as in the past Energy Code cycle. These options are:

- ✦ A single heat pump water heater with the storage tank installed indoors and placed on a rigid, incompressible surface with an R-value greater than or equal to R-10. The water heater must also have a communication interface that meets either the requirements of 110.12(a) or has an ANSI/CTA-2045-B communication port (§150.2(a)1Di), **or**
- ✦ A single 240-volt heat pump water heater with a NEEA Tier 3 rating or higher (§150.2(a)1Dii), **or**
- ✦ A water-heating system that the Executive Director determines uses no more energy than any of the other options in §150.2(a)1D

Additions with New HVAC



- › Prescriptive
- › Section 150.2(a)

For 2025 Prescriptive compliance, any new or replacement HVAC system that also serves an Addition must use heat pump space heating. **The 2025 Prescriptive Approach does not allow NEW gas or propane space heating for Additions**. However, **the 2025 Energy Code allows existing gas or propane space-heating systems to remain**. The Performance Approach must be used to determine Energy Code compliance for single-family Additions using new gas or propane space heating.

HVAC System Sizing for Additions



- › Prescriptive
- › Section 150.2(a)1E

There are new 2025 Prescriptive requirements for HVAC system sizing for Additions. The initial requirement is to meet the Mandatory minimum capacity limits and supplemental heating requirements from §150.0(h). In addition to that, Prescriptive maximum heating and cooling capacities are based on the relative sizes of the calculated heating design load and cooling design load (i.e., is the heating load larger than the cooling load or vice versa), the type of space-conditioning system, and the duct sizing. Note that ductless HVAC systems do not have to meet §150.2(a)1E.

The Prescriptive maximum capacities for Additions also factor in the airflow of the proposed HVAC system. If the airflow is field verified by an ECC-Rater to be at least 350 CFM/ton, then there is no maximum capacity limit. If the airflow is NOT field verified by an ECC-Rater to be at least 350 CFM/ton, then the maximum heating capacity is calculated using Table 5 (adapted from Table 150.2-A), and the maximum cooling capacity is calculated using Table 6 (adapted from Table 150.2-B). These tables include some other instances where there are no maximum capacity requirements for particular system types.

See §150.2(a)1E for more details on exceptions and load calculations.

Table 5: Maximum Heating Capacity (adapted from Table 150.2-A)³

System Types at Different Settings	Maximum Heating Capacity for Heating Only Systems	Heat Pump Maximum Heating Capacity When Heating Load > Cooling Load	Heat Pump Maximum Heating Capacity When Cooling Load > Heating Load by Less Than 12 kBtuh	Heat Pump Maximum Heating Capacity When Cooling Load > Heating Load by 12 kBtuh or more
Single Speed System: Output Capacity	Heating Load + 6 kBtuh	No Maximum	Heating Load + 12 kBtuh	No Maximum
Variable or Multi Speed System: Maximum Capacity	Heating Load + 6 kBtuh	No Maximum	Heating Load + 12 kBtuh	No Maximum
Variable or Multi Speed System: Capacity at Lowest Speed	80% of Heating Load	80% of Heating Load	No Maximum	No Maximum

Table 6: Maximum Cooling Capacity (adapted from Table 150.2-B)³

System Types at Different Settings	Maximum Heating Capacity for Cooling Only Systems	Heat Pump Maximum Cooling Capacity When Heating Load > Cooling Load	Heat Pump Maximum Cooling Capacity When Cooling Load > Heating Load by Less Than 12 kBtuh	Heat Pump Maximum Cooling Capacity When Cooling Load > Heating Load by 12 kBtuh or more
Single Speed System: Output Capacity	Cooling Load + 6 kBtuh	No Maximum	Cooling Load + 6 kBtuh	Cooling Load + 6 kBtuh
Variable or Multi Speed System: Maximum Capacity	Cooling Load + 6 kBtuh	No Maximum	Cooling Load + 6 kBtuh	Cooling Load + 6 kBtuh
Variable or Multi Speed System: Capacity at Lowest Speed	80% of Cooling Load	No Maximum	80% of Cooling Load	80% of Cooling Load

³Heating load and cooling load refer to the design heating load and design cooling load respectively

New Construction

Pool and Spa Heating Systems



› Mandatory

› Sections 110.4(c) and 150.0(p)

Mandatory §110.4(c) of the 2025 Energy Code adds five new heat source sizing options for newly-constructed swimming pools and for newly-installed pool heaters for existing pools.

To comply with the Energy Code, pool heaters must meet one of the following:

1. A solar pool heating system with solar collector surface area greater than or equal to 60% of the pool surface area
2. A heat pump pool heater as the primary heating system that meets sizing requirements in Reference Joint Appendix JA16.3; the supplementary heating system can be any energy source
3. A heating system that derives greater than or equal to 60% annual heating energy from on-site renewable or recovered energy
4. A combination of a solar pool heating system and a heat pump pool heater without a supplementary heater
5. A pool-heating system that the Executive Director determines uses no more energy than the systems above

There are five exceptions to the requirements of §110.4(c):

Exception 1: Portable electric spas compliant with 20 CCR §1605.3(g)(7) of the Appliance Efficiency Regulations

Exception 2: Alterations to existing pools, spas, and combined pools and spas with existing heating systems or equipment

Exception 3: A pool, spa, or combined pool and spa that is only heated by a solar pool heating system without any backup heater

Exception 4: Heating systems which are used exclusively for permanent spa applications in existing buildings with gas availability

Exception 5: Heating systems which are used exclusively for permanent spa applications where there is not enough Solar Access Roof Area (SARA) per §150.1(c)14 for a solar pool heating system to be installed



Battery Energy Storage and Solar Photovoltaic (PV) System Highlights

New Construction

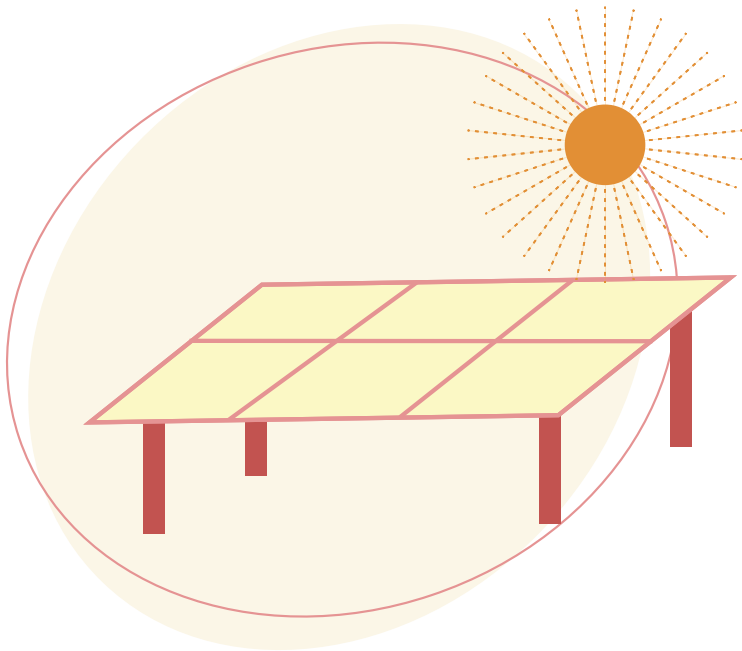
Battery Energy Storage System Ready



- › **Mandatory**
- › **Section 150.0(s)**

The Battery Energy Storage System (BESS) ready requirements apply to all new single-family residences with one or two dwelling units, including single-family homes, duplexes, and single-family homes with an accessory dwelling unit (ADU).

The BESS ready requirements have not changed significantly for the 2025 Energy Code. However, there are two new exceptions to the requirements: BESS readiness is not required (1) if the electrical service for the dwelling unit is 125 amps or less, or (2) if the building already has a BESS installed.



Solar Photovoltaic (PV) System Sizing



- › **Prescriptive**
- › **Section 150.1(c)14**

The Prescriptive single-family solar PV kW DC (direct current) requirement is determined as the smaller result from two calculation options, one of which has changed in the 2025 Energy Code.

- ✦ One option is to calculate the required kW DC using Equation 150.1-C, and that has not changed for the 2025 Energy Code.
- ✦ The updated calculation option is to multiply the total Solar Access Roof Area (SARA, measured in ft²), by certain W/ft² allowances. For the 2025 Energy Code those allowances have changed to 18 W/ft² for steep-sloped roofs and 14 W/ft² for low-sloped roofs.

The 2025 Energy Code also clarifies that the SARA always excludes roof areas unavailable due to compliance with other California state building codes. The SARA may also exclude areas needed to meet local building codes, but the Energy Code only allows those exclusions if the Executive Director confirms them.

For More Information



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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).



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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](#)

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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](#)
 - » Coming soon – search for “single-family buildings” on our website for new 2025 resources
- ✦ [Fact Sheets for Appliances](#)
 - » [MAEDbS 101](#)

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.



This program is funded by California utility customers and administered by Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E®), and Southern California Edison Company (SCE) under the auspices of the California Public Utilities Commission.

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