2025 Energy Code Overview

California Energy Commission
Shasta Cascade Chapter
January 7, 2026

Agenda

- 2025 Energy Code basics
- All Buildings Overview
- Nonresidential Overview
- Single-family Overview
- Multifamily Overview
- Resources

2025 Energy Code Basics

2025 Energy Code Goals

State goals

- Contribute to GHG reduction
- Increase building energy efficiency cost-effectively
- Provide equitable housing and home affordability

2025 Energy Code goals

- Increase heat pump baselines
- Promote demand flexibility, solar PV, and battery energy storage systems
- Improve covered process load efficiencies
- Focus on existing building and ADUs

2025 Energy Code

Effective January 1, 2026

- Building permit applications submitted on or after effective date
- Must use 2025 software and forms

2025 Energy Code Webpage

On September 11, 2024, CEC adopted:

- Final express terms
  - Part 1 and Part 6
  - Reference Appendices
- Final statement of reasons
- Responses to comments
- Hard copies available July 1
- Effective date January 1, 2026

2025 Compliance Software

- Download research versions of 2025 CBECC-Res and CBECC at:

-2025 Energy Code Compliance Software webpage

or

- https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2025-energy-code-compliance-software

All Buildings Overview

Administrative § 10-102, 10-103

Mandatory § 100, 110

Water Heating Mandatory Requirements

All Buildings § 110.3(c)7

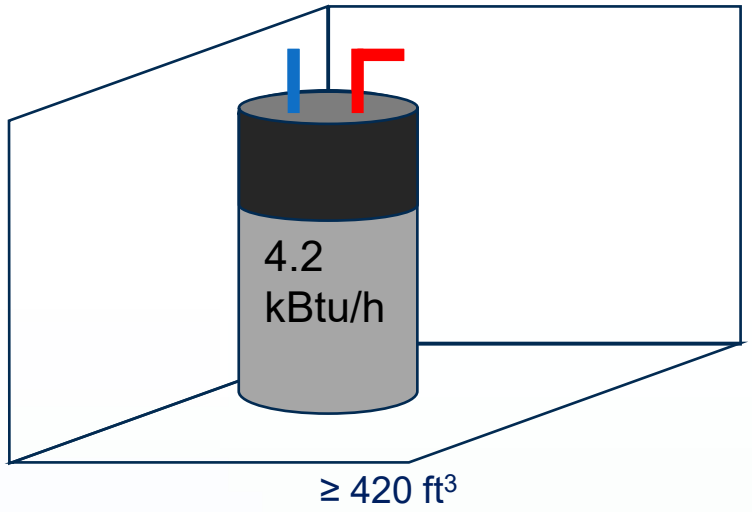
New for 2025

Heat pump water heaters

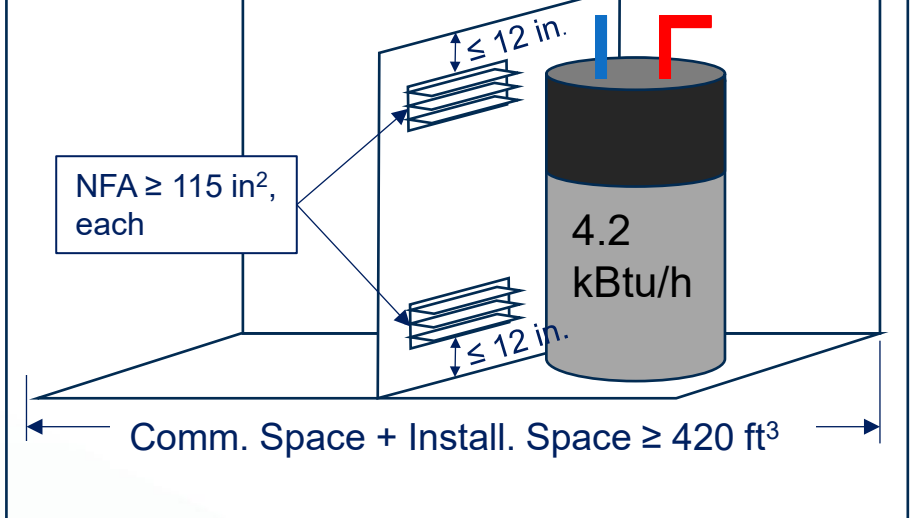
- § 110.3(c)7A - Adds external or internal backup heat required when
  - Inlet air unconditioned
  - Compressor cutoff temperature > winter median of extremes (JA2 Table 2-3)
- § 110.3(c)7B - Adds ventilation requirements
  - Installation space plus ventilation space ≥ 100 ft^3 per kBtu/h or per manufacturer requirement, whichever is greater
  - Louvered/grilled permanent openings or doors with minimum net free area
  - When ducts used
    - R-6 insulation for exhaust ducts and ducts crossing pressure boundaries
    - Air seal all connections and boundary crossings

Examples HPWH Ventilation

All Buildings § 110.3(c)7B



§110.3(c)7B2 installation space meets minimum ft^3



§110.3(c)7B3 using two equal louvered openings (can also use louvered door)

Pool and Spa Heating Mandatory Requirements

All Buildings § 110.4

Updated for 2025

Pool and spa heating

- § 110.4(a)3 – Updates manufacturer certification to have energy efficiency rating on plate or card that is permanent, easily readable, weatherproof with instructions for energy-efficient heater operation
- § 110.4(a)4 removed – allows electric resistance heating
- § 110.4(b)1 – Adds Table 110.4-A for heating equipment standards
- § 110.4(b)2 – Updates minimum 18 inches of horizontal or vertical pipe between filter and heater
- § 110.4(b)3 – Outdoor heated pools/spas shall have a pool cover
- § 110.4(c) – Heater must be solar and/or heat pump (sized per JA16) or use 60% site-recovered or renewable energy
- § 110.4(d) – Adds controls for heat pump with supplementary heating to prevent supplementary heating when heat pump alone meets load

2025 Nonresidential Overview

Mandatory § 120, 130

Performance and Prescriptive § 140

Additions and Alterations § 141

Envelope Summary

Nonresidential §§ 120.7, 140.3, 141.0

New for 2025

Fenestration

- § 120.7(d) – adds mandatory U-factor 0.47 for vertical fenestration
- § 141.0(b)1E – adds mandatory requirements for vertical fenestration replacements over 150 ft^2 U-factor 0.58

Vestibules

- § 120.7(e) – adds mandatory requirements for vestibules at public entrances that open into spaces 3,000 ft^2 or more for newly constructed occupancies types A, B, E, I, M

Insulation

- 140.3(a) - updates prescriptive U-factors for roofs/ceilings and walls in Table 140.3-B

Lighting Summary

Nonresidential §§ 130.1, 130.2, 130.4, 140.6, 140.8

Updated for 2025

- §130.1(b) – Removes multilevel control uniformity Table 130.1-A
- §130.1(d) - Lowers trigger for mandatory daylighting controls to 75W; adds daylighting control exception for secondary sidelit daylit zones < 85W; updates linear luminaires controllable in up to 8-ft segments
- §130.2(c)3 – Updates exception from motion sensors for building façade, ornamental hardscape, and outdoor dining area lighting
- §130.4(a) – Adds mandatory acceptance testing for controlled environmental horticulture lighting
- §140.6 – Removes prescriptive tailored method; moves mounted and wall display lighting allowances to area category method
- §140.8(b) – Removes most automatically compliant sign light sources; may use LED or neon

Mechanical Summary

Nonresidential §§ 120.1, 120.3, 140.4, 141.0

Updated for 2025

- §120.1 - Updates mandatory requirements for ventilation and indoor air quality
- Table 120.1-B - Adds mandatory exhaust rates for laboratory categories
- Table 120.3-A – Splits into Tables 120.3-A1 & -A2 for mandatory pipe insulation thickness
- §140.4 – Updates prescriptive requirements per ASHRAE 36 for variable air volume (VAV) systems, economizers, supply air temperature reset controls, DDC control logic
- §140.4(a)3 – Adds prescriptive options for multizone HVAC in offices and schools not greater than 150,000 ft^2 or 5 habitable stories in most climate zones
- §140.4(h)5 - Revises prescriptive requirements for cooling tower efficiency
- §140.4(r) – Adds ASHRAE G36 requirements for DDC controllers
- §140.4(s) - Revises prescriptive requirements for heat recovery
- §141.0(b)2Cii – Updates requirements for HVAC alterations: Single Zone Heat Pump or Single Zone Air conditioner per Table 141.0-E-1 with some exceptions

Covered Processes Summary

Nonresidential §§ 120.3, 120.6, 140.9

Updated for 2025

- §120.3(a) – adds mandatory pipe insulation for process heating and process cooling
- Table 120.3-A – splits into Tables 120.3-A1 & -A2 for mandatory pipe insulation thickness
- §120.6(a) – Adds mandatory efficiency requirements for fan-powered evaporators using volatile refrigerants
- §120.6(h) – Updates mandatory controlled environment horticulture to increase lighting efficiency
- §120.6(k) – Adds mandatory electric-ready for new commercial kitchens
- §140.9(c) - Adds prescriptive requirements for laboratory and factory exhaust systems

PV and Battery Summary

Nonresidential § 140.10

Updated for 2025

- § 140.10(a)
  - Updates formula for PV sizing using solar access roof area (SARA) for steep and low slope roofs
  - Exception 5 – Updates for multitenant building tenant spaces < 2000 ft^2 with separate meter and HVAC to be excluded from PV calculation
- Tables 140.10-A & -B – Adds building types
  - Events and exhibits, religious worship, sports and recreation
- Table 140.10-A - Increases PV capacity factors
  - Libraries in climate zones 2-16
  - Hotel/motel, medical office building/clinic, restaurants, retail, and grocery in all climate zones
- Equations 140.10-B, C, & D – updates BESS sizing equations
- Table 140.10-B
  - Updates BESS capacity factors for all building types and climate zones
  - No requirements in climate zone 1 for schools and offices, financial institutions, unleased tenant space, and medical office buildings/clinics

2025 Single-family Overview

Mandatory § 150.0

Performance and Prescriptive § 150.1

Additions and Alterations § 150.2

Envelope Summary

Single-family § 150.0(q), 150.1(c)

Updated for 2025

Insulation

- §150.0(c) – Updates mandatory wall insulation
  - 2x4 walls U-factor 0.095 or R-15
  - 2x6 walls U-factor of 0.069 or R-21
- § 150.1(c)1A – Adds to prescriptive Option C - Table 150.1-A
  - Cathedral ceiling insulation R-38 all climate zones
  - Ceiling insulation for vented attic
    - R-38 climate zones 1, 8-16 (adds 8, 9, 10)
    - R-30 climate zones 2-7

Fenestration

- § 150.0(q) – Updates mandatory U-factor 0.40 in all climate zones
- § 150.1(c)3 – Updates prescriptive U-factor 0.27 in climate zones 1-5, 11-14, 16
  - Adds exception for new dwelling units 500 square feet or less in climate zone 5 U-factor 0.30

HVAC and IAQ Mandatory Summary

Single-family § 150.0(h, i, o)

Updated for 2025

HVAC

- §150.0(h)5 – limits equipment selection, systems sized based on ACCA
- §150.0(h)6 – adds defrost requirements for heat pumps with defrost delay timer
- §150.0(h)7 – adds supplemental heating control requirements
- §150.0(h)8 – adds supplemental electric resistance heat sizing requirements
- §150.0(h)9 – adds thermostat requirements for variable or multi-speed systems
- §150.0(i)2 – adds thermostat requirements for heat pumps with supplemental heating

Indoor air quality

- §150.0(o)1Civ – Updates for balanced and supply-only ventilation to have accessible air filters, including HRV/ERVs

HVAC Prescriptive Summary

Single-family § 150.1(c)6, 9, 15

Updated for 2025

Heat-pumps and HRV/ERV

- § 150.1(c)6 – Heat pump for space heating in all climate zones; gas space heating only if using performance
- § 150.1(c)9 – Duct systems and air handlers must be entirely in conditioned space and ECC verified; or below ceiling if not high-performance attic (Option B, Table 150.1-A)
- § 150.1(c)15 – Fault indicator display only for heat (HRV) and energy recovery ventilation (ERV) with ECC verification
- Table 150.1-A – Adds refrigerant charge verification for heat pumps in all climate zones with ECC verification

BESS-Ready Summary

Single-family § 150.0(s)

Updated for 2025

Battery energy storage system ready (BESS)

- §150.0(s) – Updates mandatory BESS-ready applies to newly constructed single-family buildings with dwelling unit electrical service over 125A
- §150.0(s) – Adds exception for buildings with BESS installed not required to meet §150.0(s)

Solar PV Summary

Single-family § 150.1(c)14

Updated for 2025

Solar PV

- §150.1(c)14 – Updates prescriptive PV sizing using Solar Access Roof Area (SARA) for steep and low slope roofs
  - SARA multiplied by
    - 18 Watts per ft^2 for steep sloped roofs
    - 14 Watts per ft^2 for low sloped roofs

Additions Summary

Single-family § 150.2(a)

Updated for 2025

- §150.2(a)1D – Removes gas water heating prescriptive option
- §150.2(a)1E – Adds HVAC load calculations and system capacity requirements
  - Adds Table 150.2-A for maximum heating capacity
  - Adds Table 150.2-B for maximum cooling capacity
  - Adds Table 150.2-C for maximum infiltration air changes per hour for load calculations

2025 Multifamily Overview

Mandatory § 160

Performance and Prescriptive § 170

Additions and Alterations § 180

Envelope Summary

Multifamily § § 160.1, 170.2

Updated for 2025

Insulation

- § 160.1(b) - Updates mandatory wall insulation U-factors
  - Metal-framed U-factor 0.151
  - Wood-framed 2x4 U-factor 0.095
  - Wood-framed 2x6 U-factor 0.069

Roofing products

- Table 170.2-A - Updates prescriptive requirements
  - Option B: Steep-sloped roof aged solar reflectance(SR) 0.25 in climate zones 10, 11, 13, 15, aged SR 0.20 in climate zones 12, 14
  - Option D: Low-sloped roof aged solar reflectance 0.63 in climate zones 2, 4, 6-15
  - Option D: Low-sloped roof thermal emittance 0.75 in climate zones 2, 4, 6-15

Fenestration

- Table 170.2-A - Updates to U-factor varies by climate zone. Removes number of stories designation for U-factors, SHGC. VT applicable only to common areas

HVAC and IAQ Summary

Multifamily §§ 160.2, 160.3, 170.2

Updated for 2025

Dwelling units

- § 160.2(b)2Axi – Updates mandatory balanced and supply-only ventilation to have accessible air filters, including HRV/ERVs
- § 160.3(b)7 – Adds mandatory defrost requirements for heat pumps with defrost delay timer
- § 160.3(b)8 – Adds mandatory thermostat requirements for variable or multi-speed systems
- § 170.2(c)3Biv – Adds prescriptive HRV/ERV for balanced systems in climate zones 1, 2, 4, 11-14, 16
- § 170.2(c)3Bvi – Updates prescriptive fault indicator display only for heat recovery ventilation (HRV) and energy recovery ventilation (ERV) with ECC-rater verification

HVAC Summary

Multifamily § 170.2

Updated for 2025

Common use areas

- §170.2(c)4Fv - Revises prescriptive requirements for cooling tower efficiency, adds Table 170.2-I
- §170.2(c)4N2 – Revises prescriptive requirements for dedicated outdoor air systems (DOAS)

Water Heating Summary

Multifamily § 160.4, 170.2

Updated for 2025

- § 160.4(e) – Adds mandatory piping insulation requirements, including continuous insulation, pipe supports must be on outside of insulation, insulation required for hot water plumbing appurtenances
- § 170.2(d)1 – Changes prescriptive options for dwellings with individual water heaters
  - Removed gas tankless water heaters (low-rise multifamily buildings only)
  - Adds 120V HPWH
- § 170.2(d)2A – Updates central HPWH may meet NEEA Advanced Water Heater Specification for Commercial HPWH Tier 2; main HPWH must prescriptively be single-pass
- § 170.2(d)2C – All hot water pipes must meet CA Plumbing Code Appendix M
- § 170.2(d)2D – central systems must have recirc. system w/ thermostatic master mixing valve on each supply & return loop, unless building has no more than 8 dwellings
- § 170.2(d)2E – Pipe insulation must be ECC-rated per RA3.6.3

Lighting Summary

Multifamily §§160.5, 170.2, JA8

Updated for 2025

- §160.5(a)1 – Removes Table 160.5-A , moves automatically high-efficacy light sources under Exception 4, All luminaires and light sources must now meet JA8 requirements
- §160.5(b)4B – Removes uniformity requirements under Table 160.5-B
- §160.5(b)4D – Reduces trigger for daylighting controls to 75W; adds daylighting control exception for secondary sidelit daylit zones < 85W; updates linear luminaires controllable in up to 8-ft segments
- §160.5(c)2C – Updates building façade, ornamental hardscape, and outdoor dining area lighting exempt from motion sensors
- §170.2(e) – Removes prescriptive tailored method; moves mounted and wall display lighting allowances to area category method; removes most automatically compliant sign light sources
- Reference appendices JA8
  - Removes luminous efficacy and CCT tests, except for LEDs, HIDs, and induction lamps
  - Removes ENERGY STAR specifications; references elevated temperature tests federal procedures at higher ambient temperatures
  - Adds JA8.7, JA8.8 – Start time and noise test methods

Electric-Ready Summary

Multifamily § 160.9(e)&(f)

New for 2025

Mandatory HPWH-ready requirements

- (e) – Adds mandatory HPWH-ready requirements for individual dwelling units, including dedicated receptacle, condensate drain, designated space, and ventilation
- (f) – Adds mandatory requirements for central HPWH-ready, including dedicated receptacle, condensate drain, designated space, and ventilation

PV and Battery Summary

Multifamily § 170.2(f-h)

Updated for 2025

Low-rise and high-rise multifamily

- §170.2(f-g) – Updates PV sizing using solar access roof area (SARA)
  - Multiply by 18 for steep-slope and 14 for low-slope
- §170.2(f-g) – Updates Exception 2 for minimum PV system size < 4kW

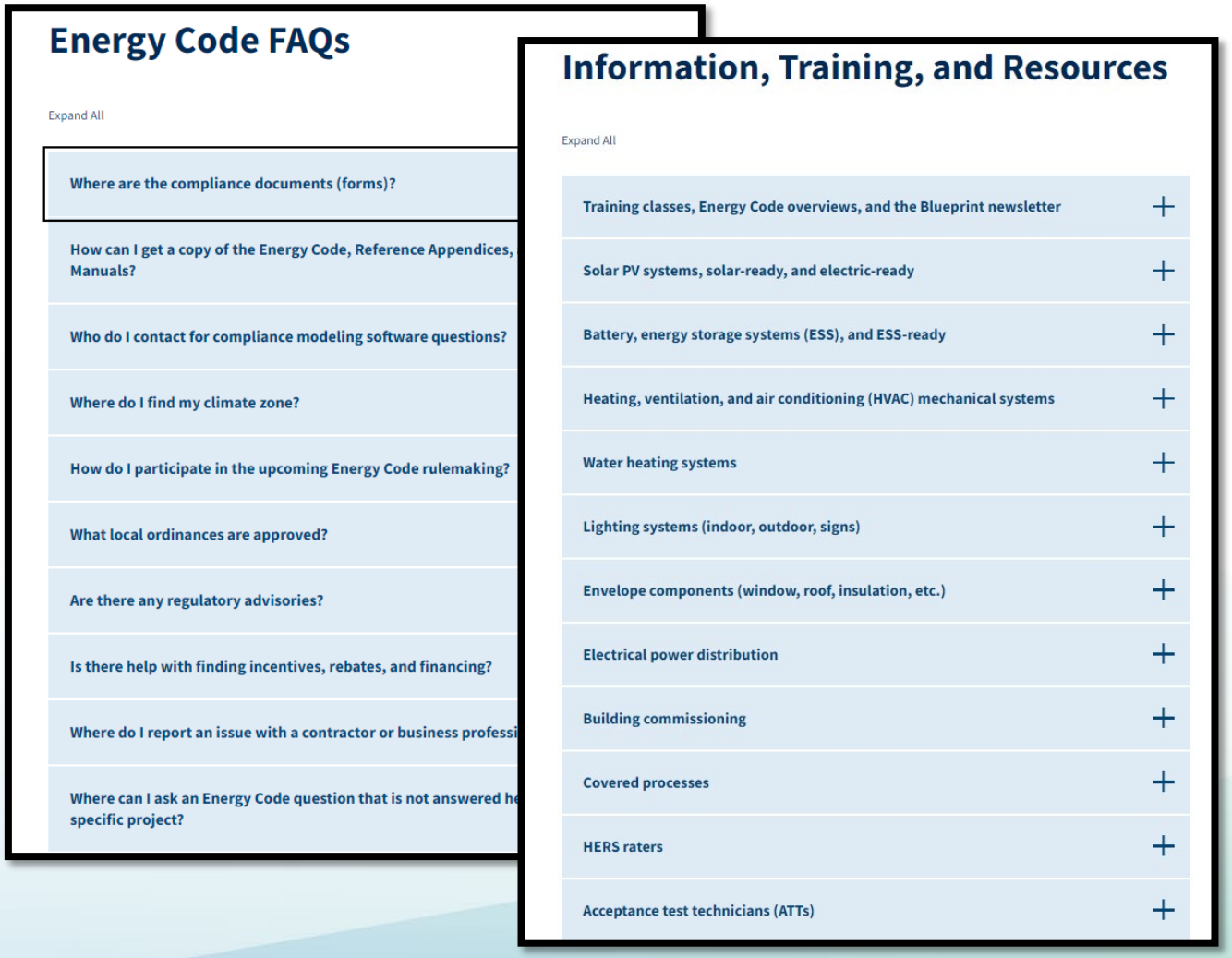
High-rise multifamily

- §170.2(g) – Updates Exception 5 in areas with no program for PV compensation through virtual energy bill credits
- Tables 170.2-U & -V – Adds building types for events and exhibits, religious worship, sports and recreation
- Table 170.2-U – Updates PV capacity factors for libraries, hotel/motel, medical office building/clinic, and warehouse
- §170.2(h) – Updates BESS Equations 170.2-E, F, G
- Table 170.2-V – Updates BESS capacity factors for all building types; no BESS in climate zone 1 for offices, financial institutions, unleased tenant space, and medical office buildings/clinics

Resources

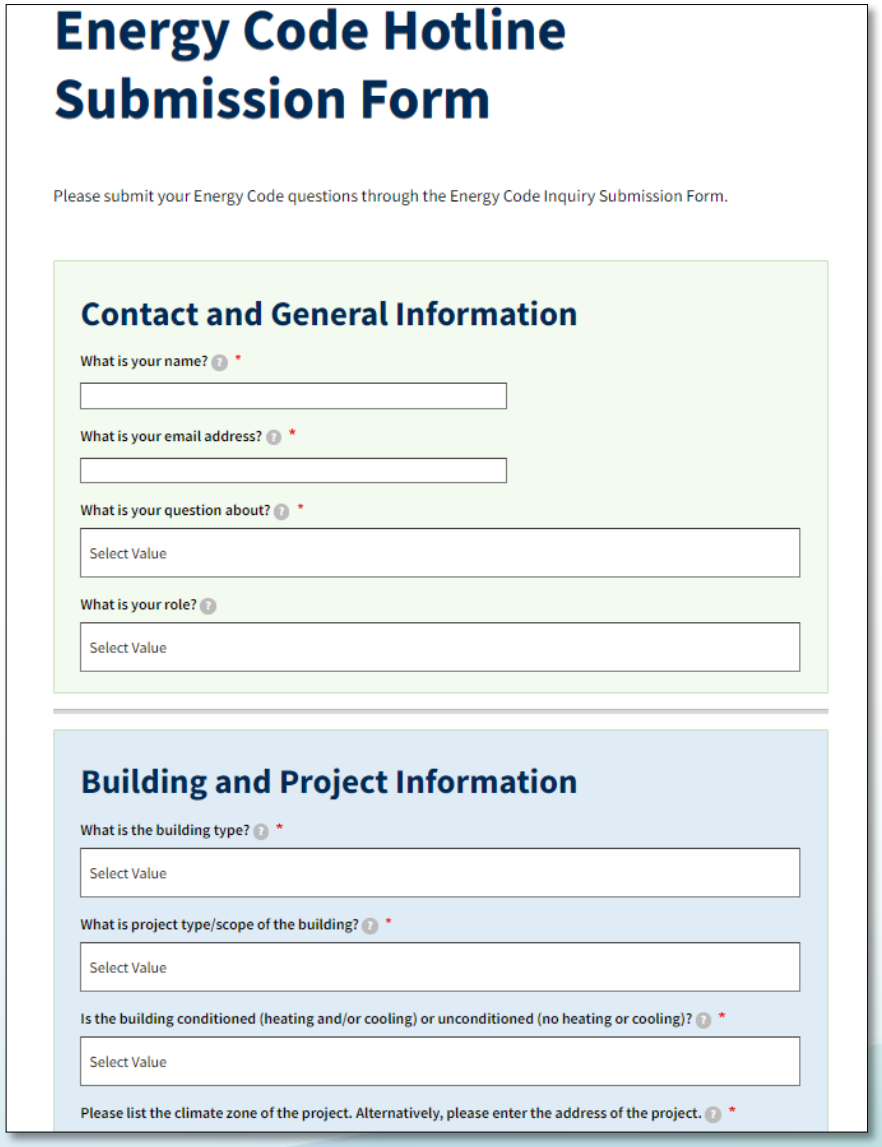
Energy Code Support Center

https://www.energy.ca.gov/energy-code-support-center



- **FAQs**
- **Handouts**
  - Fact sheets
  - Guides
- **Tools**
  - Checklists
  - Blueprint newsletter
- **Training**
  - Presentations
  - Videos
- **Links**
  - Internal resources
  - External resources

Energy Code Hotline



Energy Code Hotline Submission Form

Please submit your Energy Code questions through the Energy Code Inquiry Submission Form.

Contact and General Information

What is your name? *

What is your email address? *

What is your question about? *

Select Value

What is your role?

Select Value

Building and Project Information

What is the building type? *

Select Value

What is project type/scope of the building? *

Select Value

Is the building conditioned (heating and/or cooling) or unconditioned (no heating or cooling)? *

Select Value

Please list the climate zone of the project. Alternatively, please enter the address of the project. *

Monday through Friday

- 8:00 a.m. to 12:00 p.m.
- 1:00 p.m. to 4:30 p.m.

Call

- 800-772-3300 in CA
- 916-654-5106 outside CA

Contact

- Hotline Submission Form

Blueprint Newsletter

Energy Code quarterly newsletter

- Updates
- Clarifications
- Frequently asked questions

Issue 148 | October - December 2024

BLUEPRINT

CALIFORNIA ENERGY COMMISSION

EFFICIENCY DIVISION

In This Issue

- 2022 Energy Code: HVAC Efficiencies
- HERS Program Updates
- JA8 Lighting Test Updates
- Energy Code Support Center
- Q&A
  - Single-Family Ductless Mini-Splits
  - Single-Family Solar Photovoltaic (PV) Exceptions
  - Nonresidential Solar PV and Battery Storage Systems

The CEC welcomes feedback on Blueprint. Please contact the editor at **Title24@energy.ca.gov**

2022 Energy Code: HVAC Efficiencies

The **2022 Energy Code Section 110.2** includes minimum efficiency requirements for variable refrigerant flow (VRF) air conditioners and heat pumps. The efficiency metrics were based on an AHRI test procedure that was updated. Effective January 1, 2024, the US Department of Energy (DOE) adopted new minimum integrated energy efficiency ratio (IEER) efficiencies for VRF equipment with cooling capacity of 65,000 Btu/h or greater based on the updated testing procedures.

The California Energy Commission (CEC) has published an advisory on the **VRF minimum efficiency requirements** to assist the authorities having jurisdiction (AHJ) in confirming that the proposed equipment on the certificate of compliance forms and the installed equipment on the certificate of installation forms meet the updated efficiencies. Please see the advisory on the **Regulatory Advisories webpage** for additional guidance.

HERS Program Updates

The CEC adopted the **2025 Energy Code** which includes updates to HERS field verification and diagnostic testing (FV&DT) requirements to support compliance. The FV&DT program regulations were migrated from Title 20 to Title 24 under the **2025 Energy Code**.

The FV&DT compliance program will become the Energy Code Compliance (ECC) Program. A new **ECC Program webpage** has been launched to provide guidance on the upcoming ECC program, including frequently asked questions. For more information about the new ECC program please visit the **Energy Code Compliance program webpage**.

The current HERS FV&DT program will remain in place until the **2025 Energy Code** is effective January 1, 2026. For more information about the existing HERS program please visit the **HERS program webpage**.

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Thank you