2025
CALIFORNIA ENERGY CODE

Photo Credit: Natalia Knezevic

Executive Summary

The California Energy Commission (CEC) is the state's primary energy policy and planning agency with a mission to lead the state to a 100 percent clean energy future. The CEC develops policy to increase the efficiency of energy use, reduce energy costs, align electricity demand with the availability of clean energy resources, limit environmental impacts from energy generation and use, and ensure safe, resilient, and reliable supplies of energy.

What Does the CEC Have to Do With the Building Code?

As California's energy policy agency, the CEC was mandated by the Warren-Alquist Act to periodically update and adopt building standards that increase the energy efficiency of buildings. To implement this mandate, the CEC updates the Building Energy Efficiency Standards (including requirements in Title 24, Part 6 and voluntary standards in Title 24, Part 11) for new construction and renovations to existing buildings. The CEC engages in a lengthy public process, including workshops, hearings and public comment to inform each triennial update, culminating in the adoption of the new standards.

After CEC adoption, the standards are submitted to the California Building Standards Commission for approval and inclusion with other changes to the building code. The Energy Code is designed to be cost-effective so that structures built to code are still affordable, while helping California manage energy demand and advance the state's climate and clean air goals by reducing greenhouse gas emissions.

The Energy Code has revolutionized building construction in California and influenced efficiency goals and practices across the country, and around the globe. In 2022, the code was honored by the Clean Energy States Alliance with a State Leadership in Clean Energy Award.

HOMES AND BUSINESSES USE NEARLY 70% OF CALIFORNIA'S ELECTRICITY

How Do Standards Affect Me?

The standards help everyone! Buildings that are designed and constructed for energy efficiency reduce utility bills and improve comfort inside buildings. Buildings will increasingly rely on heat pumps for space and water heating, simultaneously boosting efficiency and reducing emissions of harmful smog-forming pollutants and climate-changing gases. The standards increase the value of properties by making them more affordable to operate.

The standards also preserve California's water supply and save energy by reducing water use in homes and nonresidential buildings. One measure in the newly-adopted code reduces the size of plumbing pipes in homes to reflect the lower water use of modern plumbing fixtures; another uses water more efficiently for cooling in chillers and cooling towers.

Photo Credit: Merle Stern

2025 Energy Code Benefits

New and more efficient technologies are constantly under development, often supported by funding from state programs. These are crucial steps in the state's progress toward 100 percent clean electricity and carbon neutrality. Some benefits of the 2025 Update include:

- Reducing GHG emissions by encouraging heat pumps for space and water heating in most new buildings and requiring more efficient systems, including heat pumps, in some alteration projects in existing nonresidential buildings.
- Increasing on-site renewable energy using solar panels and batteries, which provide backup power and let customers manage their energy use, while minimizing exports to the electrical grid.
- Encouraging automation of loads to be flexible. Such flexibility can enhance grid reliability, reduce emissions and save consumers money.
- Improving indoor air quality and public health through better ventilation.

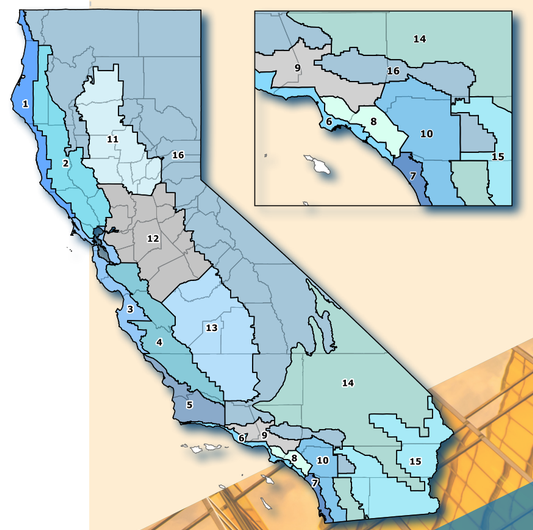
The Energy Code in Action

Since 1978, the Building Energy Efficiency Standards have supported California's long-term strategy to meet rising energy demand, conserve resources, and act as an environmental steward. All standards under consideration must be cost-effective and technically feasible to be adopted. This ensures that new buildings perform well for the long-term by requiring, for example, a quality building envelope (walls, roof, windows), properly installed mechanical systems, and efficient lighting.

IN 2022, THE ENERGY CODE WAS HONORED BY THE CLEAN ENERGY STATES ALLIANCE WITH A STATE LEADERSHIP IN CLEAN ENERGY AWARD

Standards Adapted for Each Climate Zone

California is so vast and varied in landscape and weather that one building design can't be the most energy efficient everywhere. To accommodate differences, the state is divided into 16 climate zones. Each zone represents a geographic area based on such factors as temperature, weather, and typical energy use. Each building type in each zone has an assigned energy budget: the amount of energy that a building (or portion of a building) is designed to consume, based on a package of cost-effective efficiency measures.



The Energy-Efficient Revolution Continues

From their first iteration in the 1970s, the building standards have focused primarily on ensuring energy efficiency. Improvements in energy efficiency align well with California's more recent goals to reduce GHG emissions and improve grid resilience. On-site solar generation systems and battery energy storage strengthen the grid and help manage utility bills while reducing GHG emissions. Efficient appliances such as heat-pump-based heating, ventilation, and air conditioning (HVAC) systems and water heaters can follow signals from utilities and third-party service providers to further enhance the reliability of power supply and reduce consumers' energy bills. Such load flexibility -- shifting energy use to cleaner, less expensive generation hours – will help Californians decarbonize at least cost.

WHAT'S NEW FOR 2025?

With climate change impacts accelerating, there is an even greater need for comfortable, efficient, and resilient buildings. Each updated code guides the construction of buildings to keep energy use down, better withstand extreme weather, and reduce climate and air pollution.

How Does the 2025 Energy Code Affect Homes?

- Encourages inherently efficient heat pumps for space conditioning and water heating in newly constructed single-family and some multifamily homes.
- Establishes electric-ready requirements for some multifamily buildings, so owners can more easily switch to cleaner electric appliances, when ready.
- Updates HVAC efficiency and controls standards.
- Strengthens ventilation standards to improve indoor air quality in multifamily buildings.

How Does It Affect Businesses?

- Encourages expanded use of heat pumps for space conditioning in select newly constructed, nonresidential buildings.
- Replaces end-of-life rooftop HVAC units of a certain size with high efficiency systems including heat pumps for existing retail, schools, offices and libraries.
- Establishes electric-ready requirements for commercial kitchens, so owners can more easily switch to cleaner electric appliances, when ready.
- Adds solar photovoltaic and battery energy storage requirements for assembly buildings, including those for religious worship, sport and recreation to make clean energy available for onsite use while minimizing exports to the electrical grid.
- Updates photovoltaic and battery energy storage standards for multifamily and nonresidential buildings to be cost effective in the face of revised billing rules while minimizing exports to the electrical grid.
- Updates HVAC efficiency and control standards for nonresidential buildings.

THE PROPOSED STANDARDS FOR 2025 ARE COST-EFFECTIVE AND ARE ESTIMATED TO PROVIDE $4.8 BILLION IN STATEWIDE ENERGY COST SAVINGS

Cleaning up Existing Buildings

In addition to newly constructed buildings, the standards apply to substantial additions and alterations to existing homes and businesses.

At least 50 percent of single-family homes and nearly 60 percent of California's apartment complexes (about 14 million total residences) were built before the state's first energy standards.

Updating older buildings is critical to reduce their energy use and GHG emissions. Some of these older buildings are being updated at low or no cost through a variety of programs funded by the CEC and other state agencies.

CALGreen, Reach Codes, and Voluntary Standards

California is an international leader in energy efficiency and clean energy. Nonetheless, many of its cities and counties are interested in adopting standards that exceed state minimums. The California Green Building Standards (CALGreen or Part 11 of Title 24) include voluntary "reach codes" that offer model building code language for local governments wishing to go beyond the minimum requirements for their climate zone.

Historically, such local ordinances have served as a bellwether for statewide standards. They provide a place to test market readiness for new technologies and regulations, drive innovation of new technologies and efficiencies, and bring down the cost of efficient building technologies by creating consumer demand that encourages larger-scale manufacturing.

For 2025, CALGreen proposals include the following voluntary elements:

Performance compliance margins for new single-family homes.

- *Benefits: This measure enhances the energy efficiency of single-family homes through performance targets that focus on more efficient hot water and HVAC systems.*

Outdoor lighting requirements for new residential and nonresidential buildings.

- *Benefits: Increase efficiency of outdoor lighting through proper aiming and tilting.*

Installation of a heat pump when replacing an air conditioner in an existing single-family home.

- *Benefits: Increasing the energy efficiency of space conditioning in existing buildings. This measure also reduces GHG emissions.*

Installation of a solar thermal pool heater or heat pump pool heater when replacing pool or spa heaters in existing multifamily or nonresidential buildings.

- *Benefits: Improving the efficiency of pool and/or spa heaters and reducing GHG emissions. That encourages larger-scale manufacturing.*

2025 Energy Code Update Timeline

- California Energy Commission Adoption:
  September 2024
- Approval for Inclusion in California's Building Code:
  December 2024
- Effective Date:
  January 1, 2026

For Further Reading

- The Rulemaking Process:
  www energy.ca.gov/2025EnergyCode
- Load Flexibility:
  www.energy.ca.gov/LoadFlex

December 2024