



# The California Energy Commission Building Energy Efficiency Standards

For more than 35 years, the California Energy Commission has adopted *Building Energy Efficiency Standards* that help reduce a building's energy consumption. These standards serve as a foundational part of California's long-term strategy for meeting energy demand, resource conservation, and environmental stewardship.

## Benefits

Building standards ensure that cost-effective energy efficiency measures are incorporated into each new building during design and construction and when additions and alterations are made to existing buildings.

As a result of California's *Building Energy Efficiency Standards*, the state's per capita energy use has remained virtually flat since the early 1970's even while the state's economy grew by 80 percent. These standards have also avoided the generation output equivalent to nearly seven 500 megawatt (MW) natural gas-fired power plants. In addition, these standards help improve building comfort, increase market value, and reduce energy costs and greenhouse gas (GHG) emissions.

## Policy Drivers

Two state energy policies and goals currently drive the design of the state's *Building Energy Efficiency Standards*:

1. The state's Loading Order states that growing energy demand must first be met with cost-effective energy efficiency before investments in other energy resources; and
2. The state's energy agencies have established the goal of achieving Zero Net Energy (ZNE) for newly constructed low-rise residential buildings by 2020 and 2030 for all new commercial buildings.

## Standards Requirements

California's *Building Energy Efficiency Standards* cover new construction and additions and alterations to residential buildings – single family, multifamily (up to three floors) and duplexes – and nonresidential buildings – multifamily (four or more floors), institutional, public, and commercial. These categories do not include hospitals, nursing homes, correctional centers, jails, and prisons. The standards are tailored to California's 16 climate zones.

Under these standards, builders must install a list of mandatory energy efficiency measures (minimum features that all buildings must include) and can choose one of two design and construction methods – the prescriptive or performance approach – to achieve the remaining energy efficiency requirements.

## Standards Design & Construction Approaches

The **prescriptive approach** is a set of additional features (cool roof; insulation; floors; windows; heating, ventilation, and air conditioning [HVAC]; and so forth) that meet the minimum threshold for energy efficiency in each of California's 16 climate zones. No energy efficiency tradeoffs are allowed, meaning that if a developer were to choose a more energy-efficient measure in one category than the minimum, then the developer cannot choose a less energy-efficient measure in another category to make up the difference.

The **performance approach** determines annual energy performance based on design features of the proposed building. Under this approach, energy efficiency tradeoffs are allowed.

## Standards Update

The Energy Commission is mandated to adopt and periodically update the California *Building Energy Efficiency Standards* to reduce the wasteful, uneconomical, inefficient, or unnecessary consumption of energy. Since first adopted in 1977, the building standards have been periodically updated roughly every three years. The Energy Commission holds meetings over two years with more than 50 industry stakeholder groups, in addition to conducting multiple public workshops on proposed updates to the standards. To adopt updates, the Energy Commission follows the formal rulemaking process and once vetted over a 45- to 60- day period of time the final updates are considered for adoption by the Energy Commission. Once adopted, the Building Energy Efficiency Standards are then presented to the California Building Standards Commission (BSC) to be considered and included with other changes to California's building code.

## Standards Implementation

The Energy Commission strives to make the implementation of its *Building Energy Efficiency Standards* as practical as possible. After the standards are adopted, the Energy Commission provides stakeholders with informational resources such as fact sheets, webinars, and updates that help ensure new standards and compliance pathways are understood.

The Energy Commission also works with the state's utilities to develop and administer training courses for contractors, builders, architects, and consultants. These courses provide the building community with step-by-step training on the new standards and the California Building Energy Code Compliance (CBECC) software, which is used to comply

with the standards under the performance approach for new residential and nonresidential buildings.

To ensure compliance with new residential *Building Energy Efficiency Standards*, the Energy Commission approves third-party providers that train and certify individuals who physically verify that builders have installed the energy efficiency measures according to the requirements and protocols in the standards. Certified Home Energy Rating System (HERS) Raters are individuals that have received this approved level of provider training and certification. Once certified, HERS Raters inspect new homes upon completion and submit documentation to their HERS Provider for registration. The HERS Provider manages and maintains a compliance document registry/database for enforcement. HERS Providers also review HERS Raters through their quality assurance programs to ensure that they are providing high-quality work to their clients.

For new nonresidential buildings, the Energy Commission approves Acceptance Test Technician Certification Providers (ATTCP). These providers are responsible for training and certifying field technicians and contractors who perform acceptance tests to ensure that HVAC systems and lighting and controls systems are appropriately installed and comply with the state's Building Energy Efficiency Standards.

## Standards Enforcement

Traditionally, building agencies and local building officials enforce building standards through plan-check and inspections. California's Contractors State Licensing Board (CSLB) has statutory enforcement authority and can fine and suspend a contractor's license. To ensure compliance and avoid contractor suspensions, the Energy Commission works with the CSLB to inform contractors about requirements under updated standards that impact the building industry. These agencies and officials are committed to helping contractors comply with building standard requirements to increase energy savings statewide.

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