California Energy Commission
Energy Efficiency Standards

Title 24, Part 6

CRRC – Membership Meeting

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June 12, 2019

CEC History

- Section 25402 of the Public Resources Code (known as the **Warren-Alquist Act**)
- The act created the Energy Commission in 1974 and gave it authority to develop and maintain Building Energy Efficiency Standards

CEC History

- California Building Code – Part 6
- Building Permits

- CEC role: Facilitate enforcement
  - compliance documentation, training, technical support, and current information.
- Requires the Energy Commission to update the Standards periodically (every 3 years)
- Requires the Standards to be cost-effective over the economic life of the structure

Building Energy Efficiency Standards

- **Mandatory measures**— minimum features for all buildings regardless of compliance method used.

- **Two compliance methods**
  1. **Prescriptive approach**—menu of minimum features for the entire building (roof, walls, floors, HVAC) that sets the minimum threshold for efficiency ***in each climate zone***. No tradeoffs.
  2. **Performance approach**—analytical method to determine annual energy performance based on design features of the proposed building. Tradeoff allowed.

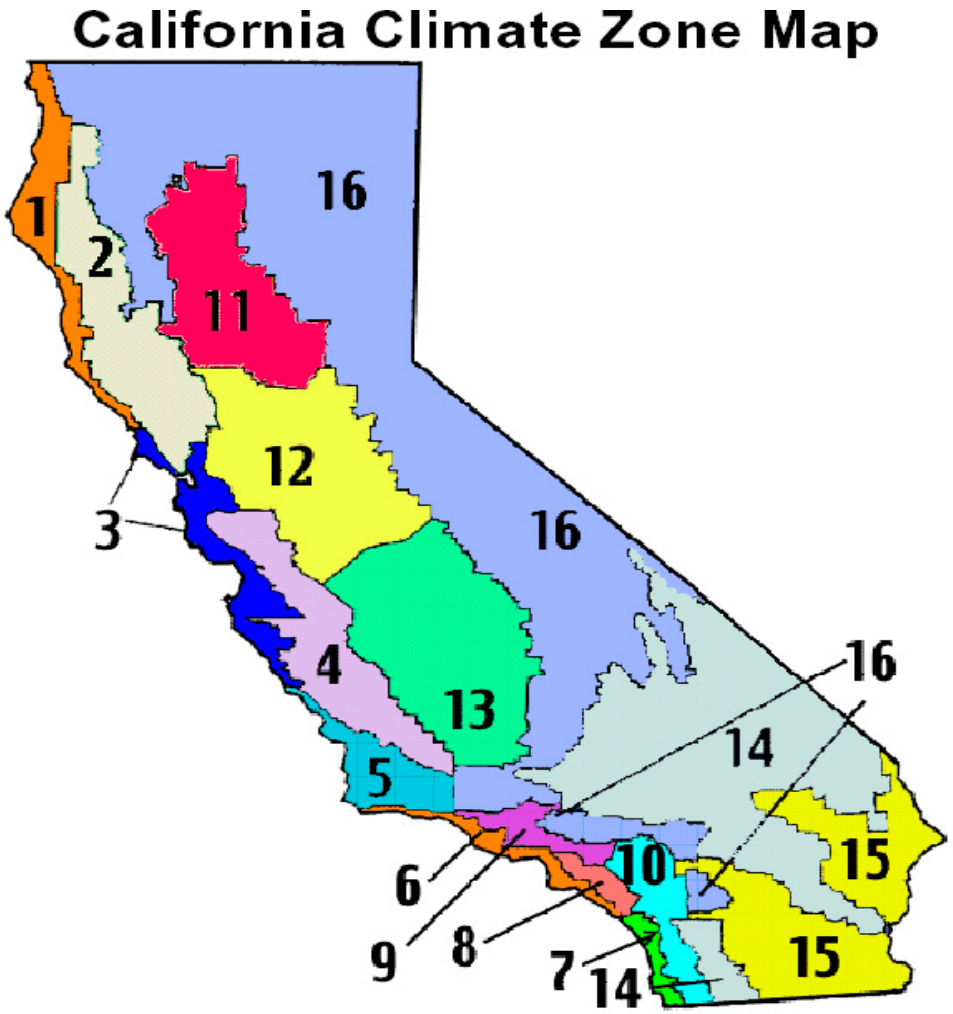
2019 Standards Goals

- Increase building energy efficiency while maintaining cost effectiveness
- Contribute to the State's GHG reduction goals
- Substantially reduce home's impact on grid through efficiency and PV generation/energy storage
- Provide independent compliance paths for both mixed-fuel and all-electric homes
- Develop and provide tools for Part 11 reach codes and other beyond code practices

How Standards Are Updated

- Energy Commission staff, with help from the utility partners and the consultants, write the Triennial Standards update.
- The updates are presented at both utility-sponsored stakeholder meetings and the public in staff workshops and committee hearings.

California Standards for California Climates



- Focus on CA Climate Diversity
- Standards set expectations for climate-specific designs
- CA weather data captures statewide coincident peak demand climate conditions

Coastal - 1, 3, 5, 6, 7, 8

Inland - 2, 4, 9, 10

Central Valley - 11, 12, 13

Desert - 14, 15

Mountains -16

2019 Residential Standards Updates

- Residential envelope efficiency
  - High(er) Performance Attics (HPA)
    - R-19 between rafters becomes new baseline
  - High(er) Performance Walls (HPW)
    - Max U-Factor of 0.048
  - Quality Insulation Installation (QII) prescriptive baseline
  - Increased window efficiency
    - Max U-Factor of 0.30, SHGC of 0.23
- Grid harmonization strategies introduced
  - Credits for PV accompanied with battery storage
- Level playing field for all-electric homes (AEH)

Energy Design Rating (EDR) Metric

- Aligned with RESNET
- Uses the 2006 IECC compliant building as the reference building
- EDR score is the ratio of the Time Dependent Valuation (TDV) energy of proposed building and the TDV energy of the reference building
- Score range from 0-100, 0 is full ZNE, 100 is IECC compliant building
- 2019 compliant buildings have EDR scores of 15-27 in most climate zones, including PV
- Provides builders with flexibility to meet performance targets

Energy Design Rating (EDR) Metric

- EDR has three components
  - Efficiency EDR
  - EDR of PV and demand flexibility
  - Total EDR is calculated by subtracting the PV/flexibility EDR from the efficiency EDR

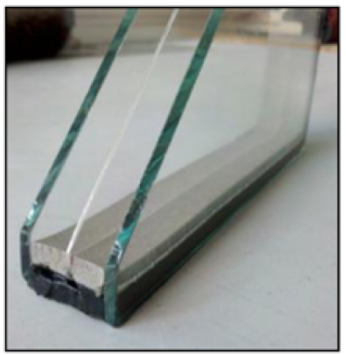
- For a building to comply
  - EDR score of proposed efficiency must be equal or less than the EDR score of the standard efficiency, and
  - Total proposed EDR score must be equal or less than the total standard design EDR score

Work Happening in 2019 for 2022 and Beyond

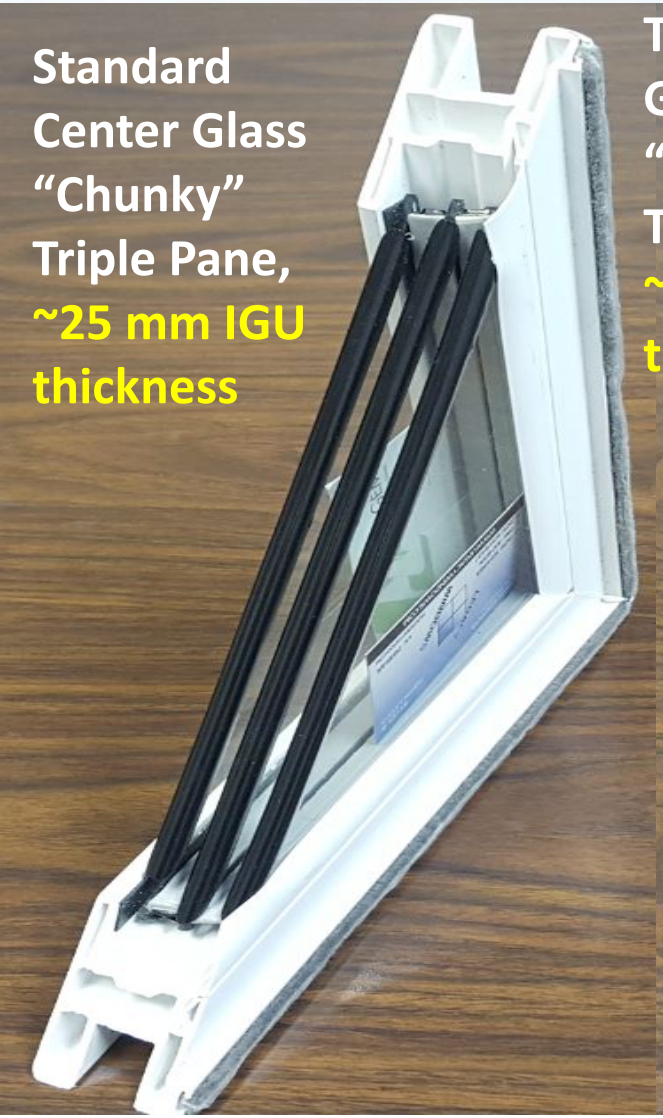
- Low-Rise Newly Constructed Single-Family Residential Buildings

NO CHANGE

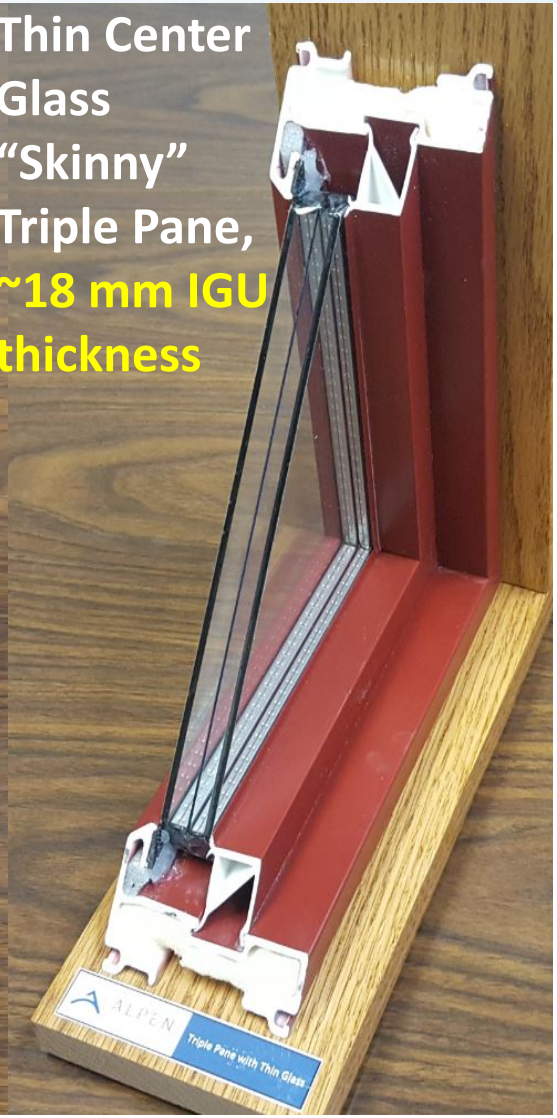
  - Increased window efficiency for a compliance option
    - Looking at the Thin Triple pane



Anatomy of Skinny Versus Chunky Triple Pane Windows



Standard Center Glass "Chunky" Triple Pane, ~25 mm IGU thickness



Thin Center Glass "Skinny" Triple Pane, ~18 mm IGU thickness

Standard Double Pane, ~18 mm IGU thickness

Work Happening in 2019 for 2022

- Low-Rise and Hi-Rise Multi-Family Residential Buildings and Nonresidential Buildings
  - Cool Roof Requirements for existing buildings:
    - Look to increase performance (aged solar reflectance/emittance) where cost-effective
    - Re-evaluate current Exceptions to the Cool Roof Requirements for Existing Buildings (§ 150.2(b)1Ii)
  - Evaluated the Cool Wall as a compliance option

2022 Standards Schedule

ESTIMATED DATE	ACTIVITY OR MILESTONE
November 2018 - July 2019	Metrics Development
November 2018 - July 2019	Measures Identified and Approved (Internal at the Energy Commission)
April 24, 2019	Present the Efficiency Measure Proposal Template for public to submit measures
August 13, 2019	**Draft Metric and Climate Data workshop**
???	Final Metrics Workshop
August, 2019	Research Version of CBECC Available with new weather data files and updated Metric
August 2019 - March 2020	**Utility-Sponsored Stakeholder Workshops**
March, 2020	All Initial CASE/PUBLIC Reports Submitted to Commission
March - August 2020	Commission-Sponsored Workshops
July, 2020	All Final CASE/PUBLIC Reports Submitted to the Commission
July - September 2020	Express Terms Developed
January, 2021	45-day Language posted and set to list serve, Start of 45-day review/comment period
January, 2021	Lead Commissioner Hearing
April, 2021	Adoption of 2022 Standards at Business Meeting
May - November 2021	Staff work on Software, Compliance Manuals, Electronic Documents
May - November 2021	Final Statement of Reasons Drafted and Approved
October, 2021	Adoption CalGREEN (energy provisions) - Business Meeting
December, 2021	CBSC Approval Hearing
January, 2022	Software, Compliance Manuals, Electronic Documents Available to Industry
January - December 2022	Standards Training (provided by 3rd parties)
June 1, 2022	6 Month Statutory Wait Period Deadline
January 1, 2023	Effective Date

California Energy
Code & Standards

- California Energy Code Stakeholders:
  - https://title24stakeholders.com/

- Stay Informed
  - Sign Up

Online Resource Center (ORC)

Online Resource Center

The Online Resource Center is provided to assist the building community and enforcement agencies with Building Energy Efficiency Standards (Energy Standards) compliance. Energy Standards apply to newly constructed buildings, as well as additions and alterations for existing buildings. Presently, the Energy Standards are updated every three years.

To assist in the compliance process, we provide compliance documents and free Public Domain Compliance Software programs for commercial and residential buildings. Training and links to the Energy Standards and compliance software are available on the Energy Commission website and at utility training centers throughout the state. To help direct you to an appropriate resource, Energy Commission and external resource information are provided on this page.

Building Energy Efficiency Standards

2016 Energy Standards

2013 Energy Standards

Past Energy Standards

Energy Standards Information and Training Materials

Overview

Commissioning

Covered Processes

Follow

Energy Standards Questions?

- Energy Standards Hotline

Energy Standards Booth Handouts

- Handouts - 02212017 (zip file, 507 mb)
- Help with the zip file

Forms

- 2016 Residential Compliance Forms
- 2016 Nonresidential Compliance Forms

Trainings & Events

- Energy Standards Outreach & Education Schedule
- Utility Sponsored Training Schedules

Subscribe

Building Standards List Serve

Automated Email Notifications

First name:

Last name:

Email address:

www.energy.ca.gov/title24/orc/

Blueprint Newsletter

- Email Newsletter
- Published quarterly
- Clarifications on frequently asked questions

Issue 113 | March – April 2016

BLUEPRINT

California Energy Commission
Efficiency Division

In This Issue

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- Demand Responsive Controls for Additions and Alterations
- Residential Water Heating Options
- EnergyPro Version 7.0
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- Lighting Standards to Save Californians More Than $4 Billion in Electricity Costs
- Q&A
  - Illuminated Areas
  - Track Lighting Alterations
  - Compliance Documents
  - Townhouses and Duplexes
  - Commissioning
- Energy Code Ace Training Schedule

New Mechanical Acceptance Test Technician Certification Provider

On January 13, 2016, the California Energy Commission (Energy Commission) approved the National Environmental Balancing Bureau (NEBB), as a mechanical Acceptance Test Technician Certification Provider (ATTCP).

This gives NEBB the authority to train, certify, and oversee acceptance test technicians (ATTs) and their employers. NEBB will train and certify ATTs to perform all 17 mechanical acceptance tests required in the *2013 Building Energy Efficiency Standards* (Energy Standards).

The Conditions of Approval are available for review in the **Executive Director's recommendation**.

For more information, please visit: **http://energy.ca.gov/title24/attcp/**.

Small Duct High Velocity Space Conditioning Systems

Small duct high velocity (SDHV) systems may be used to comply with the Energy Standards. The following is a list of requirements with direction on how SDHV systems can comply with the low-rise residential requirements of the Energy Standards.

Mandatory Requirements

United States Department of Energy Standards:

SDHV systems manufactured on or after January 23, 2006, and before January 1, 2015, must have a minimum Seasonal Energy Efficiency Ratio (SEER) of 11, and a minimum Heating Seasonal Performance Factor (HSPF) of 6.8.

SDHV systems manufactured on or after January 1, 2015, must have a minimum SEER of 12, and a minimum HSPF of 7.2.

Energy Standards:

Section 150.0(m)13B - Single zone systems that use forced air ducts to supply cooled air to an occupiable space must either meet minimum airflow and fan efficacy requirements, or meet the return duct and grille sizing requirements of **TABLES 150.0-C or 150.0-D**.

NOTE: The return duct and grille sizing alternative will likely be the method chosen for compliance when installing a SDHV system.

Section 150.0(m)15 - Specific to systems with multiple thermostatically controlled zones, this section requires the same mandatory airflow and fan efficacy requirements as **Section 150.0(m)13B**. However, it does not have the same duct and grille sizing alternative. If such systems cannot satisfy the airflow and fan efficacy requirements of this section, compliance must be demonstrated via the performance approach.

The duct leakage and insulation requirements apply as with any other system.

Prescriptive Requirements

The refrigerant charge and duct insulation requirements apply as with any other system.

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www.energy.ca.gov/efficiency/blueprint/

Email Lists

- Receive updates on the Energy Standards
- Sign up:
  - www.energy.ca.gov/listservers/
- Subscribe to the following Efficiency Lists:
  - Building Standards
  - Blueprint
- Respond to confirmation email within 24 hours

Energy Standards Hotline

- Open Monday through Friday
  - 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 4:30 p.m.
- Call
  - 800-772-3300 (in CA)
  - 916-654-5106 (outside CA)
- Email
  - Title24@energy.ca.gov

Contact Information

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Questions