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

California Climate Zone Map

- 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
  
  o 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)1li)

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

• California Energy Code Stakeholders:
  o [https://title24stakeholders.com/](https://title24stakeholders.com/)

• Stay Informed
  o Sign Up
Online Resource Center (ORC)

www.energy.ca.gov/title24/orc/
• Email Newsletter

• Published quarterly

• Clarifications on frequently asked questions
Email Lists

• Receive updates on the Energy Standards

• Sign up:
  o www.energy.ca.gov/listservers/

• Subscribe to the following Efficiency Lists:
  o Building Standards
  o 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