DOCKETED

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Building Energy Efficiency Standards

2019 Pre-Rulemaking for Building Energy Efficiency Standards

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April 20, 2017

Housekeeping Items

- In Case of an Emergency
- Restrooms
- Snacks

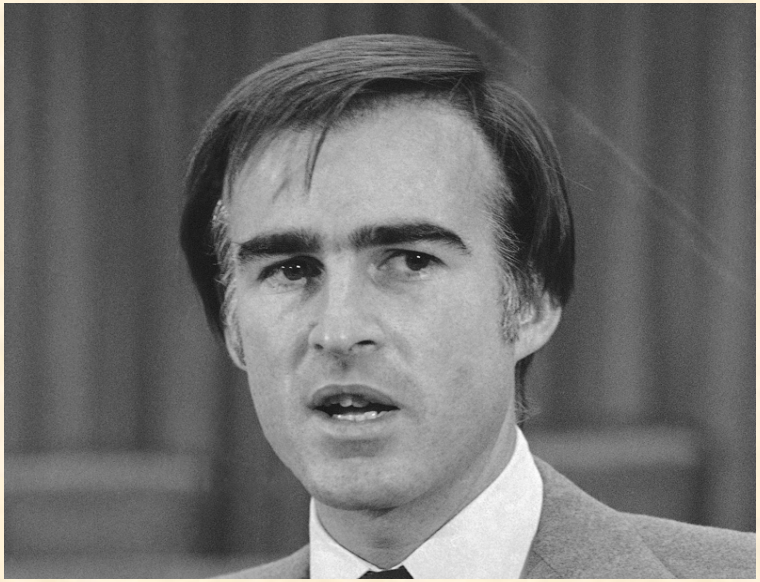
What We Will Cover Today

- Some Basics, Background
- How Title 24, Part 6 is Developed
- Mazi Shirakh
  - Introduce the Energy Design Rating (EDR) for the Residential Buildings.
    - For Efficiency-only
    - Efficiency and PV
- Christopher Meyer
  - Proposed Model PV Ordinance for local Jurisdictions.

Authority & Process

Public Resources Code (PRC 25402): Reduction of wasteful, uneconomic, inefficient, or unnecessary consumption of energy

- (a)(1) Prescribe, by regulation, lighting, insulation, climate control system, and other building design and construction standards that increase the efficiency in the use of energy and water…
- Warren Alquist Act Signed into law in 1974 by Governor Ronald Reagan and launched by Governor Jerry Brown in 1975 which mandates updates Building Efficiency Standards and requires the building departments to enforce them through the permit process.



California Energy Commission Responsibilities

Forecasting: Forecasts future energy needs and maintains historical energy data

Permitting: Permits thermal power plants 50 MW or larger

R&D: Administers research and development programs, advancing science and technology in energy related fields

Energy Efficiency: Promotes energy efficiency by setting the state's appliance and building standards (Title 20 & 24)

Renewable Energy: Supports the development of renewables through certification of facilities and verification of generation

Contingency Planning: Plans for and directs the State's response to energy emergencies

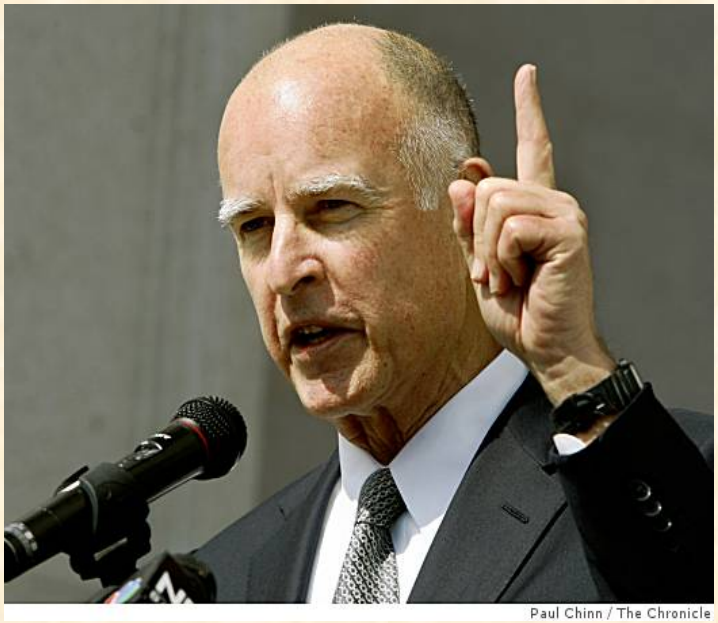
Transportation: Supports deployment of alternative and renewable fuel sources

IEPR: Publishes the Integrated Energy Policy Report – the State's energy policy document

Title 24
2019
Standards

Policy Drivers For Building Standards

- Governor's "Clean Energy Jobs Plan"
- Governor Brown's ZNE goals – focused on ZNE building code requirement by 2020 for newly constructed residential buildings – get there in three code cycles (2013, 2016, 2019)
  - Zero Net Energy: Residential by 2020 and Nonresidential by 2030
  - CARB Climate Change Scoping Plan
  - California Long Term Energy Efficiency Strategic Plan



Paul Chinn / The Chronicle

California Energy Efficiency Policy

- Avoid new power plants & transmission while maintaining reliability, affordability & safety
- Meet resource needs at lowest cost & least environmental impact
- Loading order

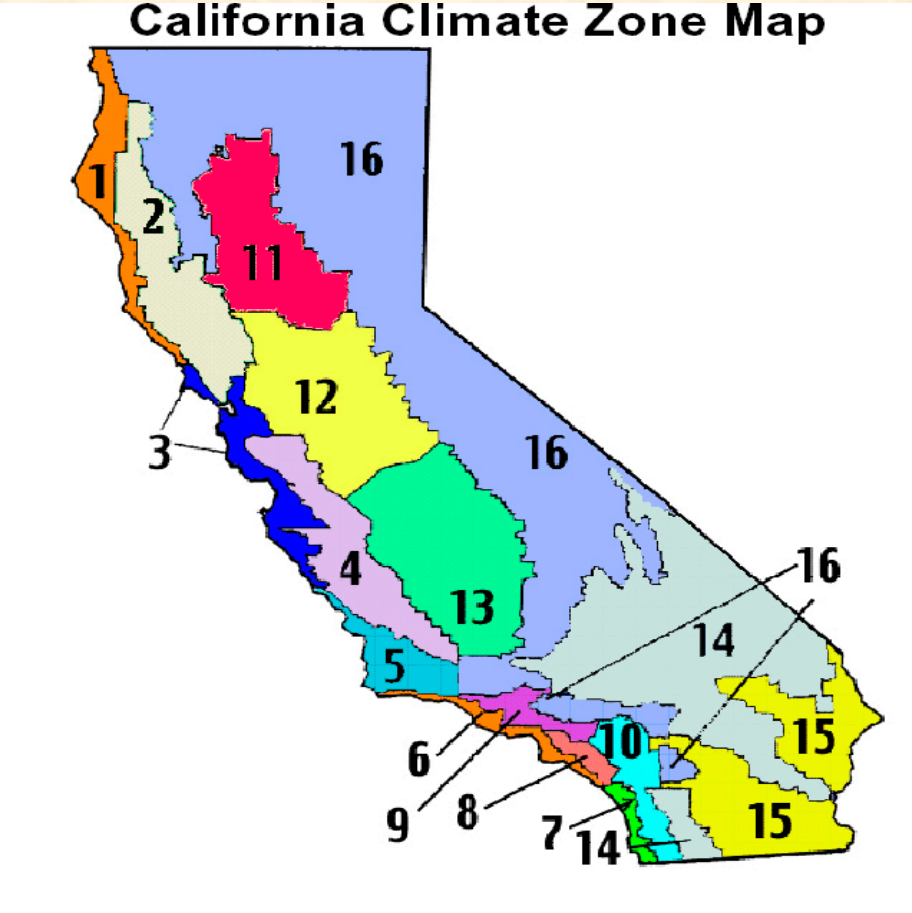
1) Energy efficiency & Demand Response
2) Renewable generation & Storage
3) Cleanest conventional sources

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

Title 24
2019
Standards

Life Cycle Costing

Standards measures must be cost effective

1. Using Life Cycle Costing Methodology (LCC)
   i. Discounted cash flows for costs and benefits
   ii. Accounts for maintenance costs/benefits
   iii. Appropriate discount rates and life of measures -

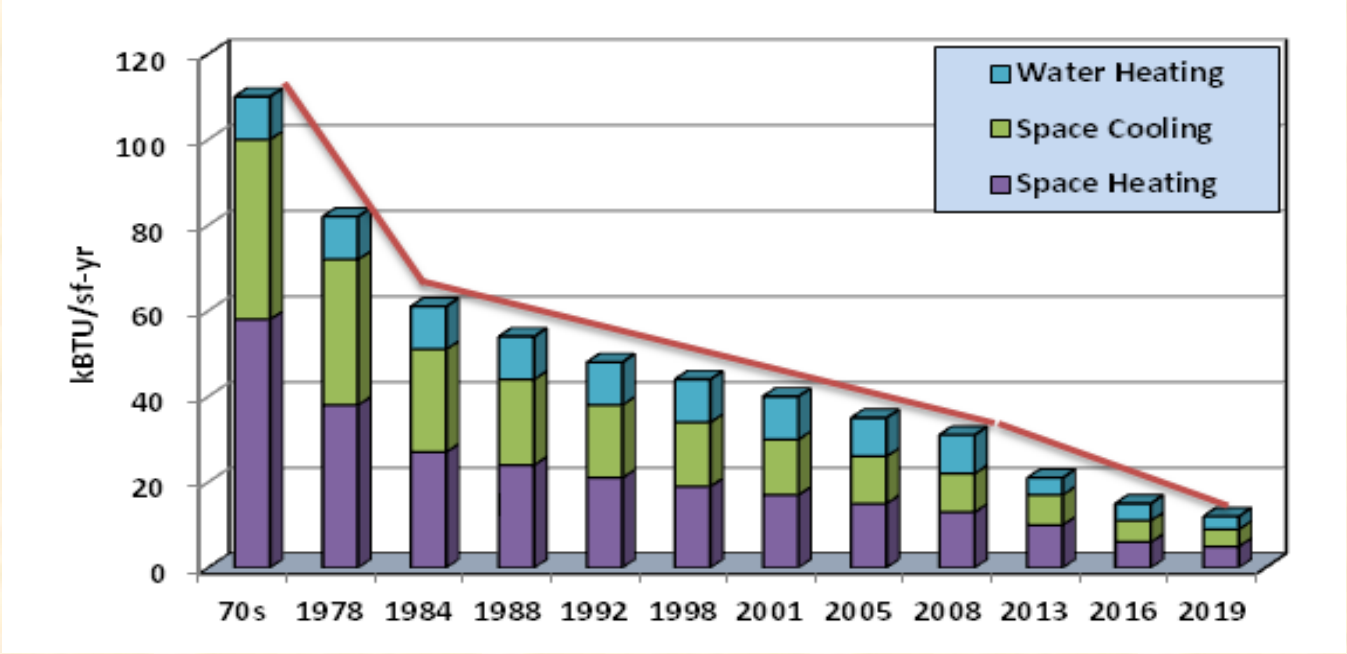
   30 years for residential measures
   15 years for nonresidential measures

2. Time Dependent Valuation (TDV)
   i. Value of gas and electricity changes depending on the season and the time of day
   ii. 8,760 TDV multipliers for each hour of the year
   iii. Favors measures that save energy during high demand periods

Zero Net Energy Standards

- Achieve additional energy savings from building components regulated under Title-24 to reach ZNE goals
- Integrate onsite generation into building Standards to accomplish ZNE

Impacts of Building Standards on Home Energy Use



Title 24
2019
Standards

2019 Standards Process

We are very early in the process, the pre-rulemaking is set to begin soon

2019 STANDARDS UPDATE SCHEDULE	
DATE	**MILESTONES**
February 2016-July 2016	Measures Identified and approval
August 2016 to June 2017	Stakeholder meeting/workshop & final staff workshop
April, 2017	CASE Reports submitted to the CEC
December 1, 2017	45-day Language Hearings
March 1, 2018	Adoption of 2019 Standards at Business Meeting
June1, 2018 to November 2018	Staff work on Software, Compliance Manuals, Electronic Documents Available to Industry
November 1, 2018	Approval of the Manuals
January 1, 2019	Software, Compliance Manuals, Electronic Documents Available to Industry
January 1, 2020	Effective Date

Pre-Rulemaking Schedule

Date	Topics
April 20, 2017	PV and ZNE (Treat it like a CASE workshop)
May 23, 2017	PV and ZNE continuation showing the final EDR values for Efficiency and one for PV + Efficiency
June 1, 2017	• Residential Envelope Measures o Residential High Performance Walls o Residential High Performance Attics o Residential High Performance Windows and Doors o Residential Quality Insulation Installation (QII)) • Residential Water Heating Measures o Residential Compact Hot Water Distribution Design o Residential Drain Water Heater Recovery)
June 6, 2017	• Indoor Air Quality Measures o Residential Indoor Air Quality o Nonresidential Indoor Air Quality • Laboratory Measures o Induction Exhaust Fans o High Efficiency Fume Hoods • Warehouse Topics o Hybrid Condensers o Loading Dock Seals • Residential HVAC Measure o Residential Quality HVAC

Pre-Rulemaking Schedule

Date	Topics
June 20, 2017	• Nonresidential HVAC o Water Side Economizer o Fan System Power o Exhaust Air Energy Recovery o Equipment Efficiency o Transfer Air for Exhaust Air Makeup o Demand Control Ventilation for Classrooms o Occupant Sensor Ventilation o Cooling Tower Minimum Efficiency o Fault Detection Diagnostics (FDD) for Built-up Systems)
June 22, 2017:	• Nonresidential Lighting Measures o Indoor Lighting Sources o Indoor Lighting Controls o Lighting Alterations o Advanced Daylighting Design o Outdoor Lighting Source o Outdoor Lighting Controls
June 29, 2017	Hospital Measures; Demand Response (Clean Up); ATTCP Requirements
July 13, 2017	TBD

2019 Standards Process

1. Update the TDV values to reflect the current NG and Electricity costs
2. Update the Life Cycle Costing (LCC) assumption based on TDV and other parameters
3. Using the updated TDVs, evaluate cost effectiveness of additional envelope measures for the extreme cooling climate zones; possible measures include additional roof deck insulation for high performance attics and improving the wall U-factors
4. Using the updated TDVs, determine the cost effectiveness and size of PV systems for each climate zone.

KEY WEB-LINK

2019 Title 24 Utility-Sponsored Stakeholder
http://title24stakeholders.com/

Building Energy Efficiency Program
http://www.energy.ca.gov/title24/

Comments to be submitted to
https://efiling.energy.ca.gov/EComment/EComment.aspx?docketnumber=17-BSTD-01.

Standards Contact Information – Energy Commission

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Questions?