DOCKETED	
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Project Title:	2025 Energy Code Pre-Rulemaking
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Document Title:	Presentation - September 28, 2023 - 2025 Pre-Rulemaking Staff Workshop
Description:	Presentation from September 28, 2023, 2025 Energy Code staff pre-rulemaking workshop on single-family peak cooling.
Filer:	Javier Perez
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	9/29/2023 11:19:37 AM
Docketed Date:	9/29/2023

Good morning and thank you for joining us.

The workshop will begin shortly.

Housekeeping Rules

Public Comments

Zoom App/Online

- Click “raise hand”

Telephone

- Press *9 to raise hand
- Press *6 to Mute/Unmute

When called upon

- CEC will open your line
- Unmute on your end
- Spell name and state affiliation, if any
- 2 minutes or less per speaker, 1 speaker per entity

Today's Agenda

	Topics	Presenter
1	Introduction	Javier Perez
2	Peak Cooling	Javier Perez
3	Adjourn	

Workshop Recordings

For recordings of previous workshops, visit:
https://www.energy.ca.gov/events/past-events

2025 Energy Code – Pre-Rulemaking

Energy Code Authority, Drivers and Themes, Metrics, and Timeline

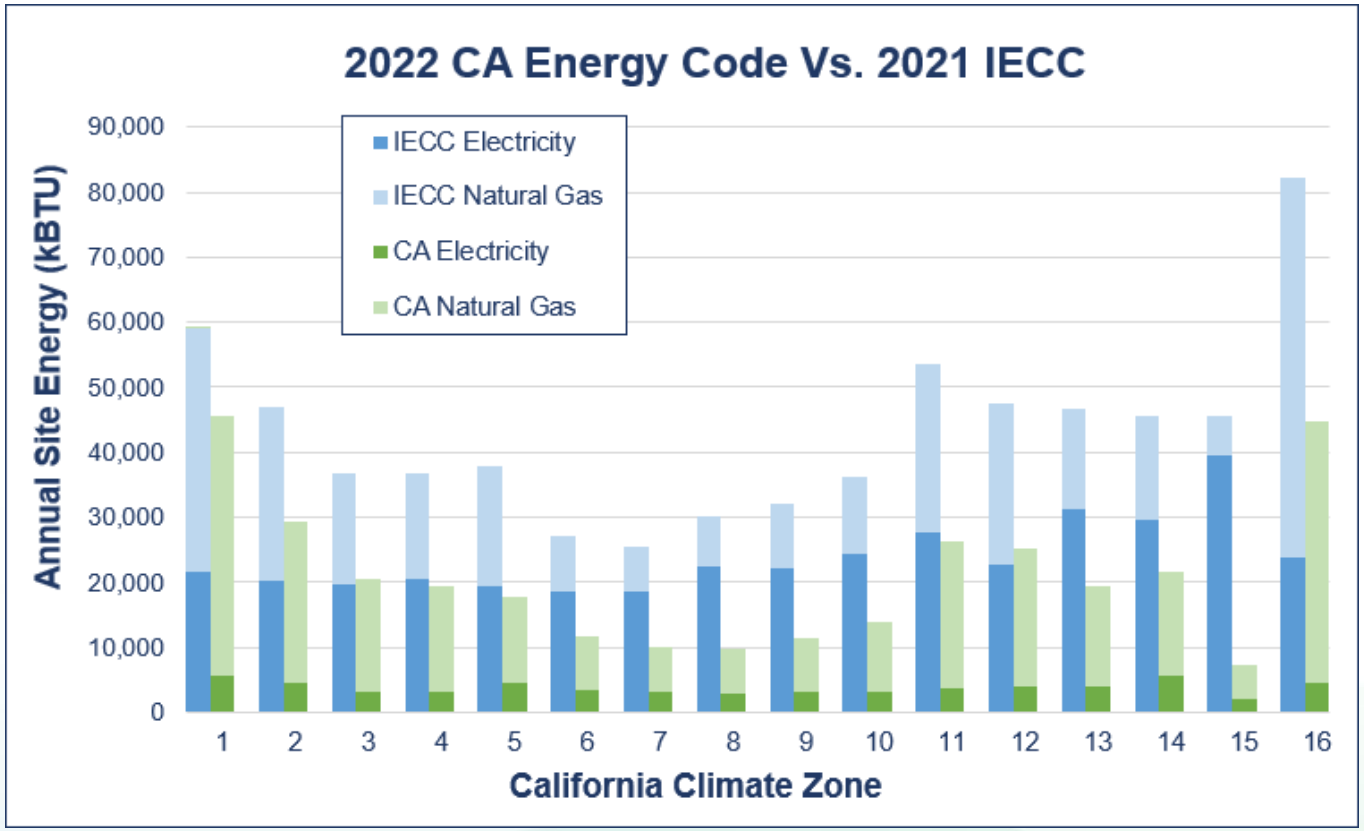
Javier Perez, Project Manager – 2025 Energy Code

September 28, 2023

California Energy Commission's Authority and Process

California's Warren Alquist Act Signed into law in 1974

- Reduction of wasteful, uneconomic, inefficient, or unnecessary consumption of energy as it relates to buildings
- Residential Chart Details:
  - Blue bars: Site energy of a single-family building built to 2021 International Energy Conservation Code (IECC)
  - Green bars: Site energy of a single-family building built to 2022 California Energy Code
- For more on how the 2022 Energy Code compares to federal standards, see our 2022 Impact Analysis at: https://www.energy.ca.gov/publications/2023/impact-analysis-2022-update-california-energy-code



2025 Energy Code Drivers and Themes

State Goals

- Increase building energy efficiency cost-effectively
- Contribute to the state's GHG reduction goals

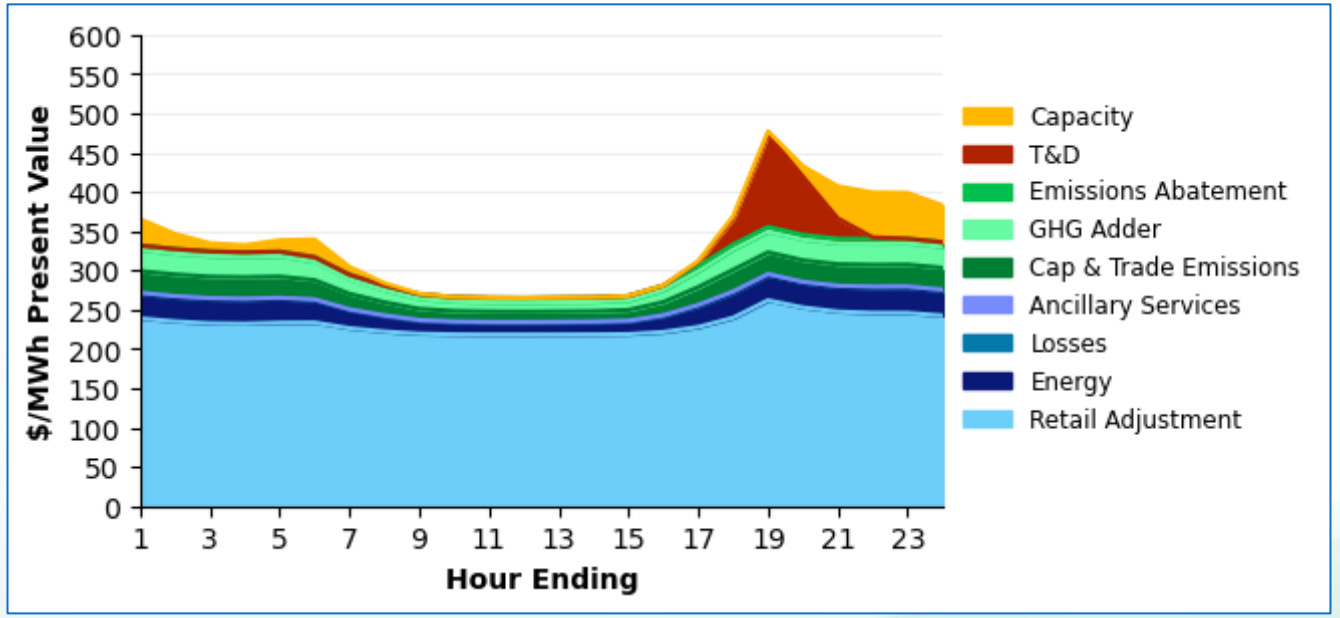
2025 Energy Code Strategies

- Heat pump baselines
- Promote demand flexibility, Solar PV generation and energy storage
- Covered process loads
- Equity & affordable new housing program integration
- Additions, alterations, and smaller homes (e.g., ADUs)
- Electric vehicle readiness support
- Interagency coordination

Long-Term System Cost

Long-term System Cost (LSC) Hourly factors are used to convert predicted site energy use to long-term dollar costs to CA's energy system.

Since the *time* that energy is used is as important as the *amount* of energy used, these factors are generated on an hourly basis for a representative year and created for each of CA's diverse climate zones.



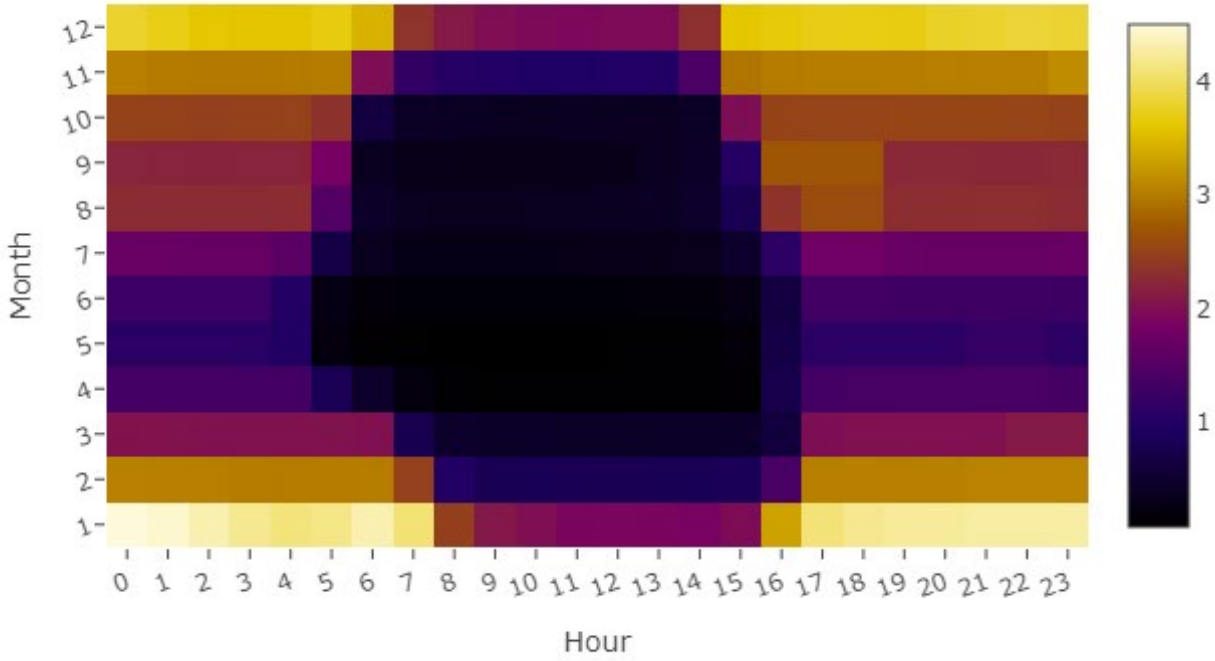
Sample LSC shape by component, average day, levelized 30-year residential, climate zone 12

Source Energy Metric

Long run marginal source energy is defined as the source energy of fossil fuels following the long-term effects of any associated changes in resource procurement.

Source Energy focuses specifically on the amount of fossil fuels that are combusted in association with demand-side energy consumption and assists in aligning our standards with the CA's environmental goals.

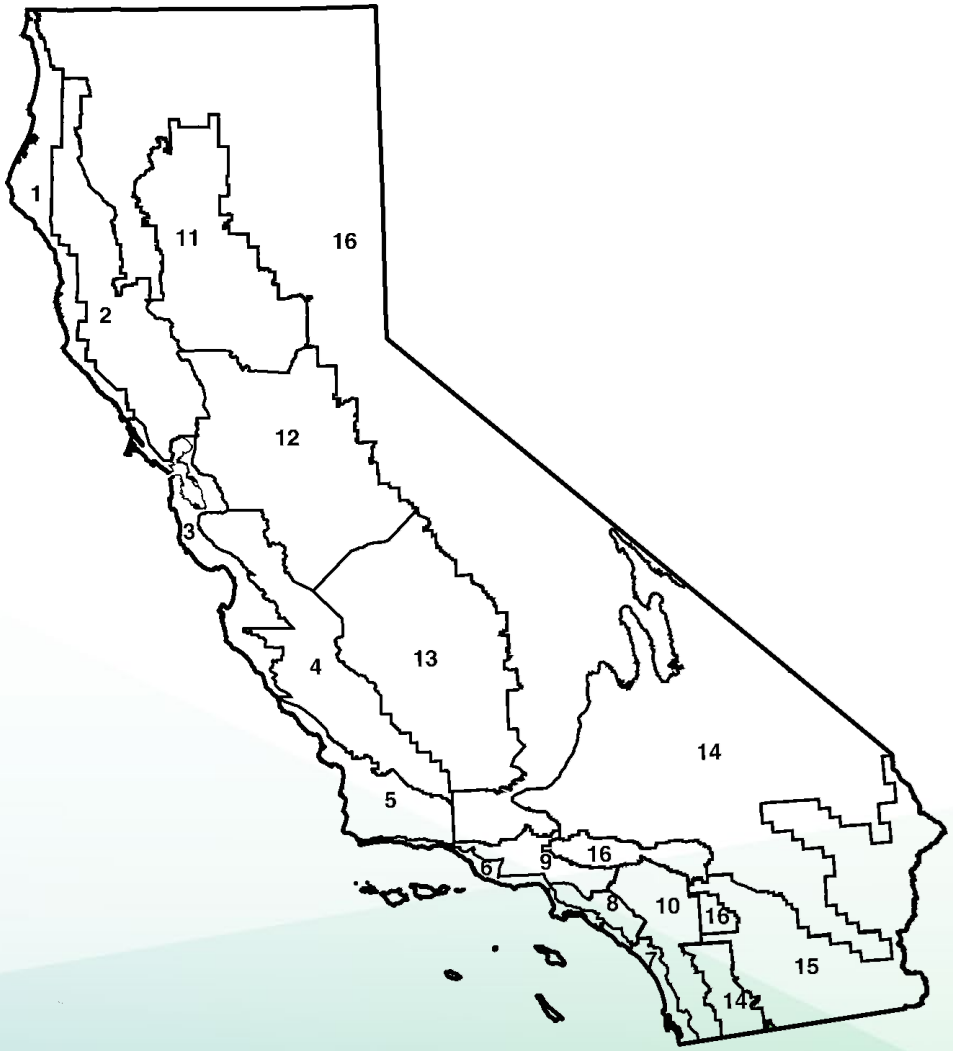
5-Month Average of electricity long run marginal source energy for 2025 Energy Code



California Climate Zones

California has 16 climate zones

- Climate Zones allow software to more accurately simulate variances weather, and as a result, energy consumption of buildings
- A measure's cost effectiveness can vary as a result of weather differences
- Energy Code requirements vary by climate zone as a result



More on 2025 Energy Accounting Metrics

For more on the 2025 Energy Code metrics:

- July 18th, 2022, workshop page, including slides and recording
  - https://www.energy.ca.gov/event/workshop/2022-07/staff-workshop-energy-accounting-2025-building-energy-efficiency-standards
- November 10th, 2022, workshop page, including slides and recording
  - https://www.energy.ca.gov/event/workshop/2022-11/final-staff-workshop-energy-accounting-2025-building-energy-efficiency

2025 Energy Code Work To Date

Milestones	Timelines
Codes & Standards Enhancement (CASE) Team Requested & Received 2025 Measure Proposal Ideas	June 2021 – May 2022
CEC Updated Weather Data, LSC, and Source Energy Metrics	March - November 2022
CASE Team Held Welcome Webinars on 2025 Measures & Work To Come	October 2022
CASE Team Held Stakeholder Workshops on 2025 Proposals	January – May 2023
Energy Commission Worked Feverishly on 2025 Heat Pump and PV System Measures	November 2022 - Now
CASE Team Published Draft Measure Proposal Reports* + Comment Period	May – July 2023

*To view CASE team draft measure proposal reports, and upcoming final reports, visit https://title24stakeholders.com/2025-cycle-case-reports/

2025 Energy Code Work To Come

Milestones	Timelines
CEC Team Publishes Measure Proposal Reports for 2025 Heat Pump Baselines and Photovoltaic and Energy Storage System Requirements	October 2023
CEC Publishes 2025 Energy Code Draft Updates (Draft Express Terms)	October 2023
CEC Rulemaking for 2025 Energy Code	January 2024 – June 2024
2025 Energy Code Business Meeting Adoption	June 2024
Building Standards Commission Approval of 2025 Energy Code	December 2024
2025 Energy Code Effective Date	January 2026

2025 Energy Code Senior Staff Contacts

- **Javier Perez** – Project Manager
- **Payam Bozorgchami** – Technical Lead, Envelope, Additions and Alterations, ADUs
- **Haile Bucaneg** – Covered Process, Demand Response, Nonresidential and Residential ACM
- **Muhammad Saeed** – Solar Photovoltaic and Energy Storage Systems
- **Bach Tsan** – HVAC Systems, Refrigeration
- **Email Convention at the Energy Commission:** firstname.lastname@energy.ca.gov

2025 Energy Code – Pre-Rulemaking

Single-Family Peak Cooling

Javier Perez, Project Manager – 2025 Energy Code

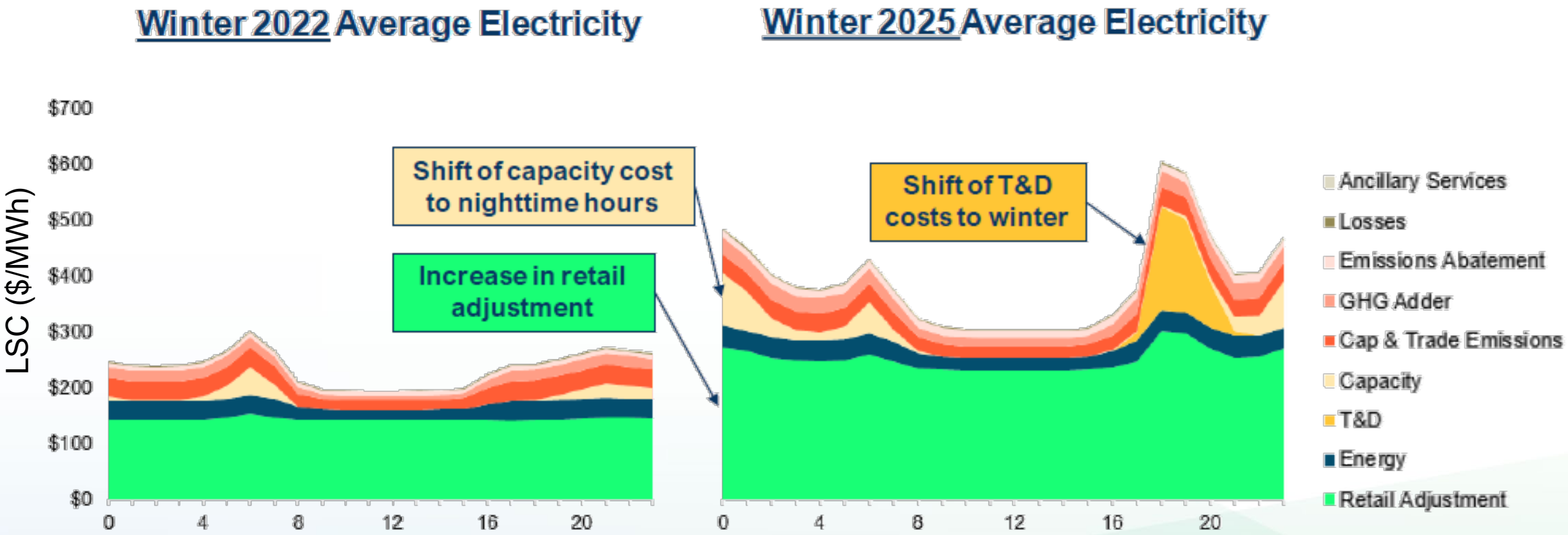
September 28, 2023

Peak Cooling Considerations

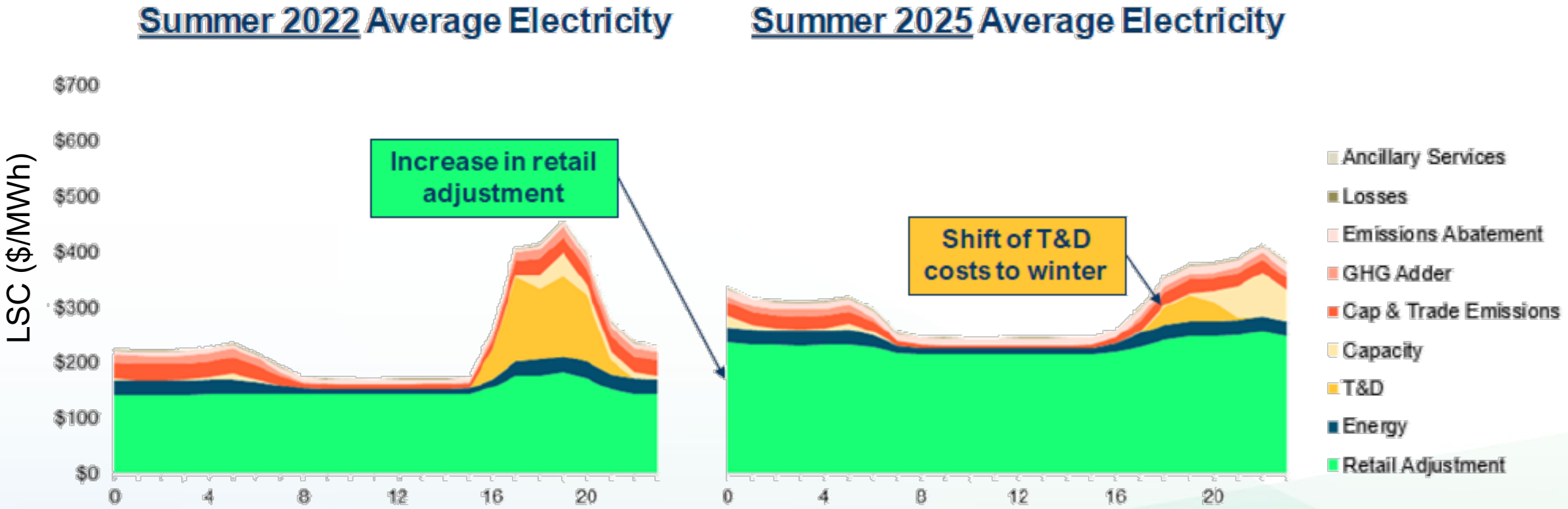
- **Intent:** Ensure that newly constructed buildings do not unnecessarily exacerbate challenges related to weather-driven peak events
- **Challenge:** Weather trends point towards higher frequency of peak events
- **Resiliency:** Higher demand on the grid during high temperature events leads to increased stress on the utility grid
- **Consumers:** Higher demand during peak times and time-of-use utility rates lead to higher costs to consumers

Peak cooling defined as *mechanical cooling during hours of 4pm - 9pm*

2025 Energy Code Winter Electricity Valuation



2025 Energy Code Summer Electricity Valuation



Shift in electricity value peaks to winter could allow energy tradeoffs that result in significantly higher summer peak cooling for some buildings

Strategy to Limit Peak Cooling

1. Isolate mechanical cooling loads that occur during peak demand times
   - Grid challenges and time-of-use rates occur generally between 4pm and 9pm
2. Identify buildings that can have high variances in mechanical cooling loads
   - Mechanical cooling loads found to increase significantly with varying efficiency tradeoffs
3. Identify climate zones where higher mechanical cooling demand exists
4. Determine performance target for buildings to be covered by limit

Building Types Covered: Single-Family

Peak cooling limit proposed to apply only to single-family buildings

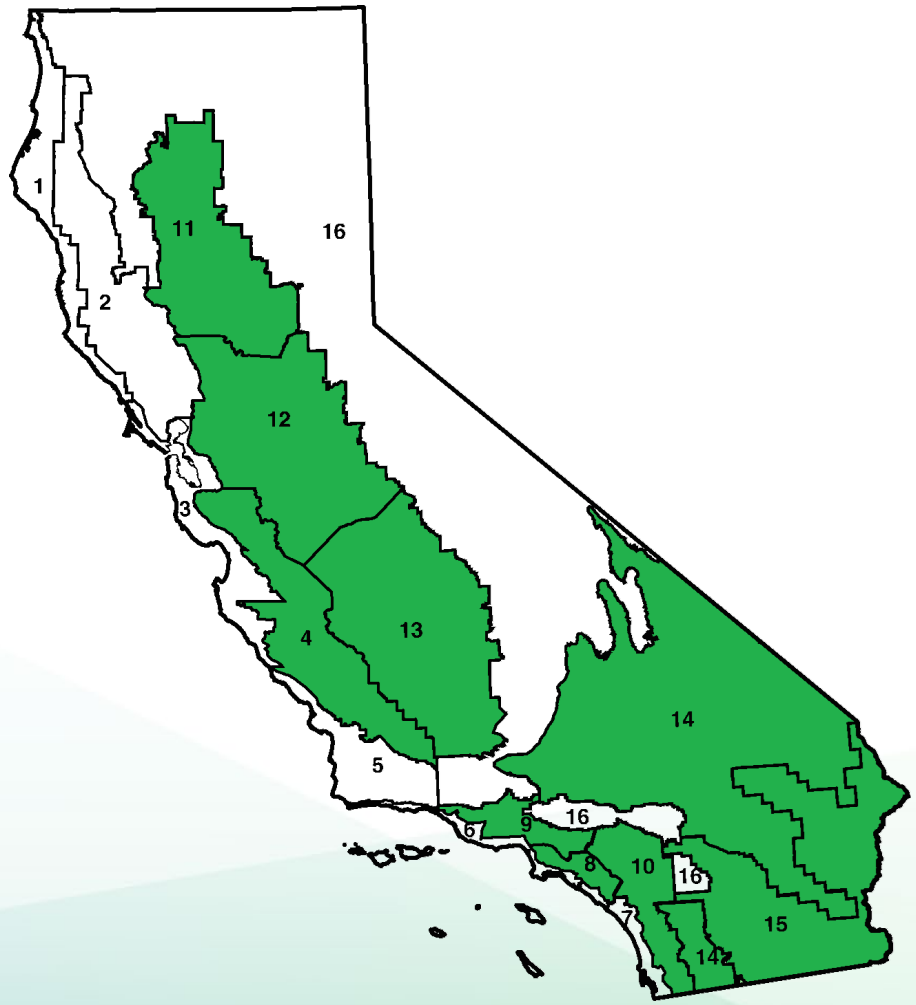
- CEC analyzed building compliance and effects of performance trade-offs
- Conclusions:
  - **Single-family analysis:** Trade-offs could lead to 4x increase in mechanical cooling site energy use
    - Pursuing limit on peak cooling for single-family buildings
  - **Multifamily and nonresidential building analysis:** Effects not fount to be as significant
    - Not pursuing peak cooling limit for multifamily and nonresidential buildings

Single-Family Peak Cooling Limit: Climate Zones

Limit peak cooling in climate zones (CZ) with higher demand

- Climate zones 4, and 8-15 have higher mechanical cooling loads
  - Proposing limit to apply to only these CZs
- Climate zones 1-3, 5-7, and 16, have minimal mechanical cooling

Climate Zone	2025 Standard Design Annual Peak Cooling kWh
1	0
2	0
3	0
4	86
5	0
6	16
7	49
8	249
9	231
10	351
11	576
12	123
13	676
14	433
15	1,330
16	48



Proposed Peak Cooling Limit

Buildings covered:

- Single-family buildings in climate zones 4 and 8 through 15

Limit set to:

- Proposed performance target to be set to resulting peak cooling of 2025 standard design building
- Software will produce standard design peak cooling (in kWh), and will produce peak cooling of proposed design building
- If peak cooling of proposed design is ≤ standard design, building complies

Next Steps

Software Updates

- 2025 CBECC-Res research version will be updated with peak cooling limit reflecting proposal
  - Updated version will be found at: http://www.bwilcox.com/BEES/cbecc2025.html
- Notice of Availability will be docketed when updated version is available
  - Docket can be found at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=22-BSTD-01
- 2025 Single-Family Residential ACM Reference Manual will be updated to reflect peak cooling limit

Questions?

Comments

- **Comments on Today's Workshop**
- **Due Date: October 12, 2023, by 5:00 PM**

- **Comments to be submitted to: https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=22-BSTD-01**

- Thank you for participating!

Thank you for participating in today's workshop!