



TITLE 24, PART 6

2028 CODE CYCLE

2028 Title 24 Energy Code Update

Multifamily and Single Family Topics

California Statewide Utility Codes & Standards Enhancement (CASE)
Team

January 8th 2025

The event will begin shortly.



A STATEWIDE UTILITY PROGRAM

Agenda

Objectives and Meeting Guidelines

Welcome from the CEC and PG&E

2028 Title 24 Website Resources and
Current Measures

Single Family Measure Ideas

Multifamily Measure Ideas

Conclusion and Questions



Objectives

- Build involvement in the California Energy Code update process
- Introduce the CASE Team early measure ideas & offer opportunity for participation and clarifying questions
- Connect early in the cycle



Public involvement is an important part of California Energy Commission proceedings. The Commission promotes an open process that enables those who are interested to have an opportunity to stay informed, have a voice, and influence the outcome of proceedings.”

–CEC

Stakeholder Questions

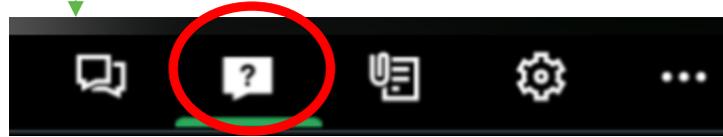
- We want to hear from you! If questions can't be answered today, CASE Authors will follow up with stakeholders separately **within 5 business days**
- Please limit to quick, clarifying questions; more in-depth questions or discussions will be directed to be answered offline

How to submit a question (2 ways):

- Add to 'Question' box.
- Email info@title24stakeholders.com

Go to Webinar Dashboard and Features

- Chat



- Questions

- Handouts

- Polls

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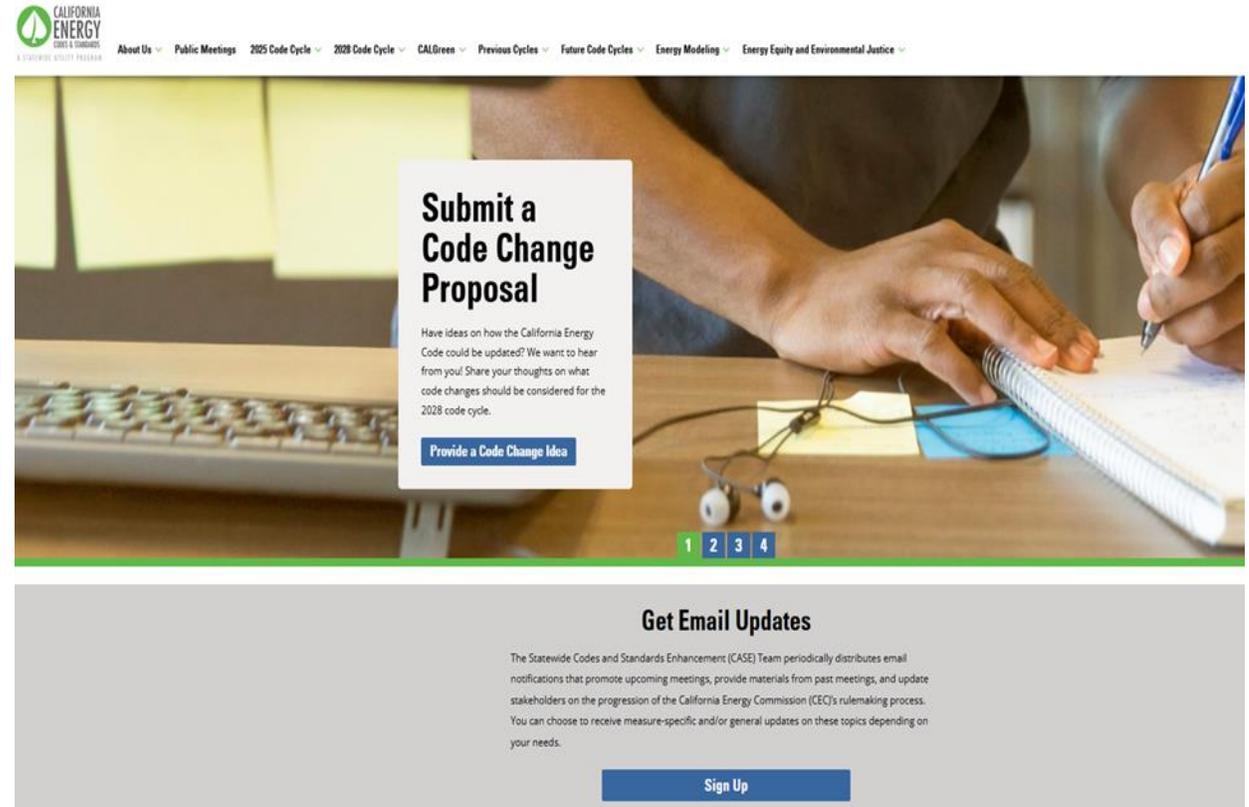


Participate In the Process

Stakeholder engagement is encouraged throughout the code cycle:

- ✓ Submit a code change proposal before March 31, 2025
- ✓ Share knowledge and data
- ✓ Attend our utility-sponsored stakeholder meetings
- ✓ Participate in CASE surveys
- ✓ Review CASE Reports
- ✓ Submit comments

info@title24stakeholders.com



The screenshot shows the California Energy Code & Standards website. At the top, there is a navigation menu with links: About Us, Public Meetings, 2025 Code Cycle, 2028 Code Cycle, CALGreen, Previous Cycles, Future Code Cycles, Energy Modeling, and Energy Equity and Environmental Justice. The main content area features a large image of a person's hands writing in a notebook. Overlaid on this image is a white box with the heading 'Submit a Code Change Proposal'. Below the heading, the text reads: 'Have ideas on how the California Energy Code could be updated? We want to hear from you! Share your thoughts on what code changes should be considered for the 2028 code cycle.' At the bottom of this box is a blue button labeled 'Provide a Code Change Idea'. Below the image is a section titled 'Get Email Updates'. The text in this section states: 'The Statewide Codes and Standards Enhancement (CASE) Team periodically distributes email notifications that promote upcoming meetings, provide materials from past meetings, and update stakeholders on the progression of the California Energy Commission (CEC)'s rulemaking process. You can choose to receive measure-specific and/or general updates on these topics depending on your needs.' At the bottom of this section is a blue button labeled 'Sign Up'.

Sign up for our listserv at [Title24stakeholders.com](https://www.title24stakeholders.com)

COMING SOON to
title24stakeholders.com

Easy access to what
measure ideas have
already been submitted

New Measure Ideas

The following are energy saving measure ideas under consideration for the 2028 Energy Code cycle proposed by the Statewide CASE Team and other stakeholders. We welcome your new measure ideas. Submit your new measure ideas through our [online form](#). Check back to follow the progress of these proposals.

Proposals are listed by Building Type (Nonresidential (NR), Multifamily (MF), Single Family (SF)), System Type, and Measure Description. Click on the column heading **Building Type(s)** to sort the list by building type. Contact info@Title24Stakeholders.com if you have any questions.

Code Proposal under consideration	Building Type(s) ▼	System Type(s)	Measure Description
Blower Door Test & Reduced Infiltration	SF	Envelope	Introduce airtightness requirements for single family new construction. Mandatory or prescriptive blower door testing with 3 ACH50 target.
Heat Pump Water Heater (HPWH) Location/Limit Resistance Water Heating	SF	Domestic hot water	Prescriptively allow for HPWHs located outside or in external closets for small units or units without an attached garage. Remove or restrict the current exception that allows electric resistance point of use systems for homes 500 sqft or less.
Heat recovery ventilators (HREVs) or energy recovery ventilators (ERVs)	SF	HVAC	HERVs in single-family homes within the prescriptive path in climate zones where cost effective.
ECM Circulator Pump with Controls	NR, MF	Domestic hot water	This measure would prescriptively require circulator pumps to utilize internal or external controls to reduce energy use at the pump and/or water heater. Requirements could vary based on building size, application, water heating plant types, and distribution system designs.
Elevators	NR, MF	Other	2025 cycle measure for regenerative drive for traction elevators with distances at and above 3 landings. Consider measures from other jurisdictions such as lightweighting elevator cabs and counterweights and requiring elevator electronics to go into deep standby when not in use.
Escalators and Moving Walkways	NR, MF	Other	Add to existing escalator and moving walkway requirements to have VFD start and stop operation. Add a regenerative drive option

Poll

Where are you attending from?

CEC Introduction

- Authority and Process
- Drivers and Themes
- Contacts

Payam Bozorgchami

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California Energy Commission's Authority & Process

Public Resources Code

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

- Warren Alquist Act Signed into law in 1974
- Mandates updates Building Efficiency Standards and requires the building departments to enforce them through the permit process

WARREN-ALQUIST ACT

Warren-Alquist
State Energy Resources
Conservation and
Development Act

Public Resources Code
Section 25000 et seq.



CALIFORNIA
ENERGY COMMISSION
Gavin Newsom, Governor

2022 EDITION
JANUARY 2022
CEC-140-2022-001

2028 Energy Code Drivers and Themes

State Goals

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

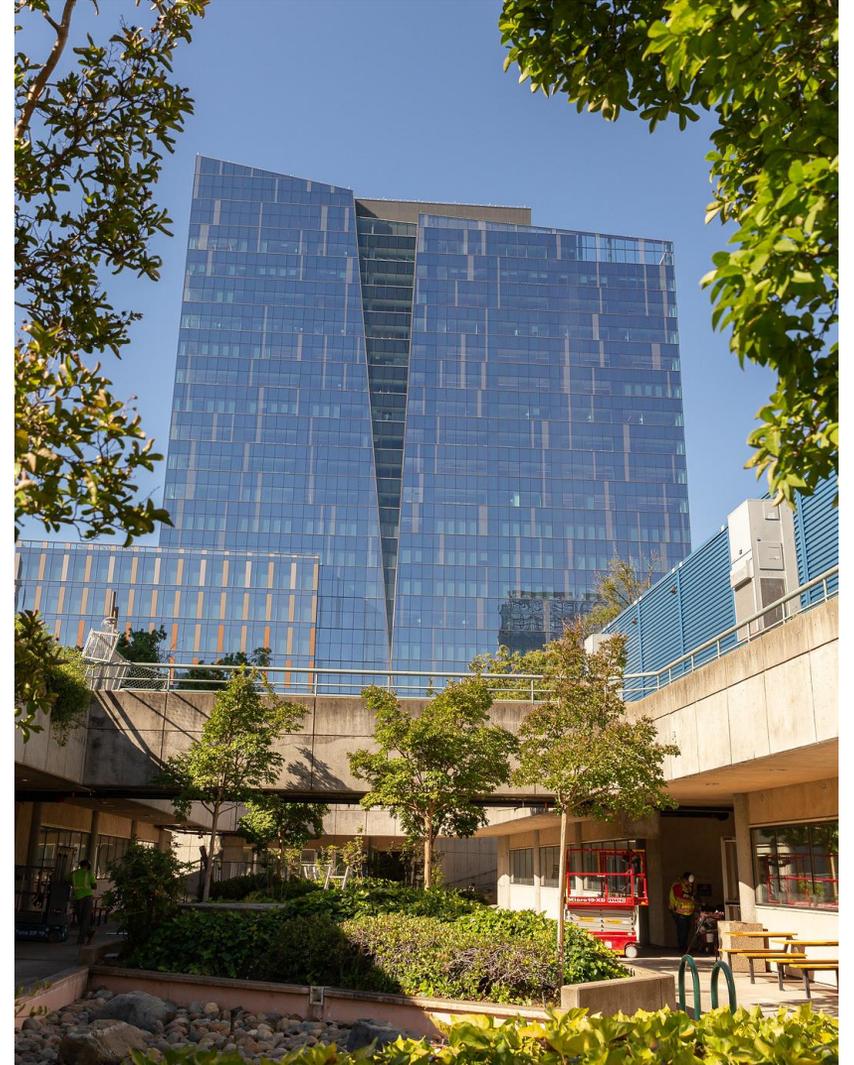
2028 Energy Code Areas of Interest

- Continue to encourage efficient building decarbonization where possible
- Promote demand flexibility
- Covered process loads
- Additions, alterations, and smaller homes (e.g., ADUs)
- Interagency coordination
- Equity



2028 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
- **Sara Sultan** – Residential Envelope
- **Michael Shewmaker** - Supervisor, Standards Development Unit
- **Gypsy Achong** – Branch Manager, Building Standards
- **Email Convention at the Energy Commission:**
firstname.lastname@energy.ca.gov



PG&E Introduction

- Statewide Utility Codes and Standards Team
- Project Schedule & Milestones

Kelly Cunningham, PG&E
Kelly.Cunningham@pge.com

Amy Discher, SCE
Amy.Discher@sce.com

Jeremy Reeve, SDG&E
JMReeve@sdge.com



Statewide Utility Codes and Standards Team

Actively supports the California Energy Commission in developing proposed changes to the Energy Code (Title 24, Part 6) to achieve significant statewide energy use reductions through the development of code change proposals for the 2028 cycle that are:

Feasible | **Cost effective** | **Enforceable**



How Utility Team Supports the 2028 Code Cycle

General priorities:

- Support CEC in achieving statewide policy goals
- Cost-effective energy savings (kWh, kW, Therms)
- GHG emissions reductions

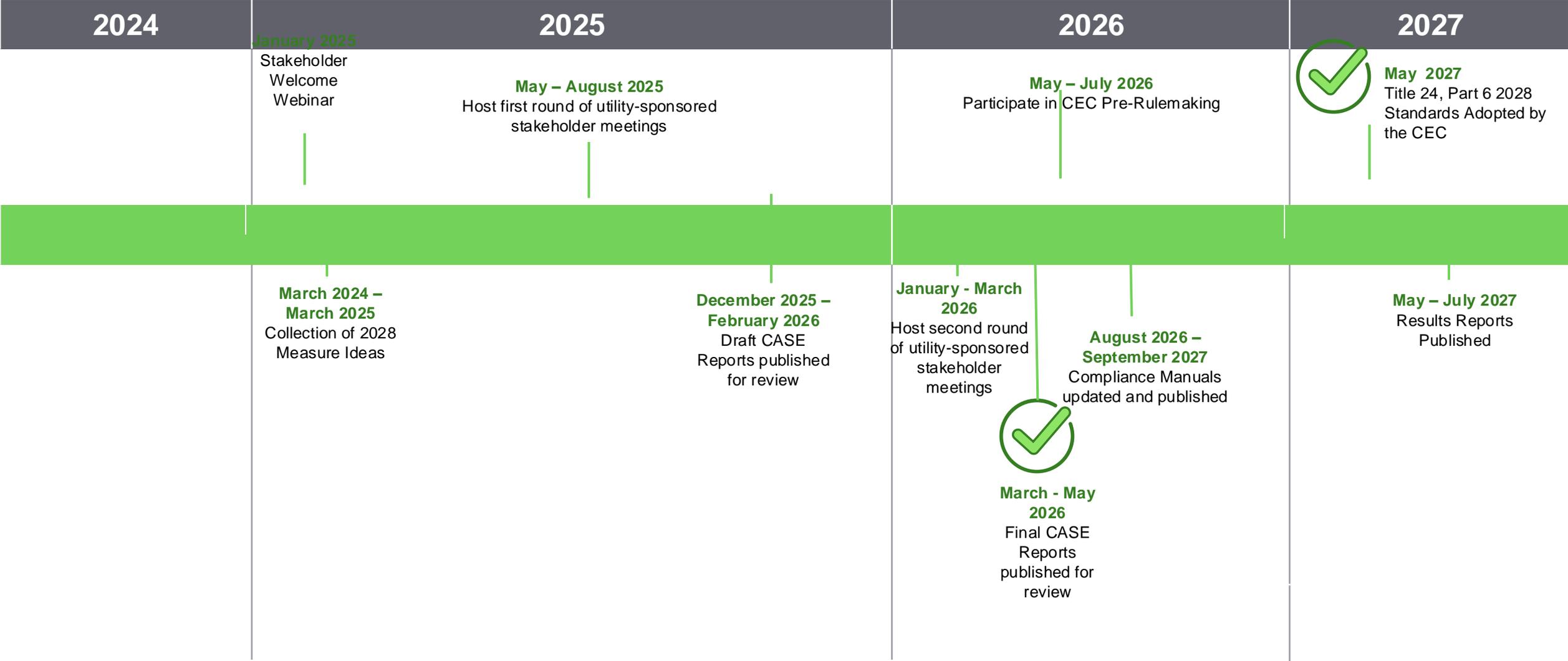
Options for utility team support:

- Develop Code Change Proposals (CASE Reports)
- Provide data for proposals CEC develops
- Collaborate with other stakeholders who are developing proposals
- Support software development

Maximize number of cost-effective code changes for each cycle that will allow the state to achieve long-term policy goals

2028 Cycle – Tentative Project Schedule & Milestones

Statewide CASE Team Milestones

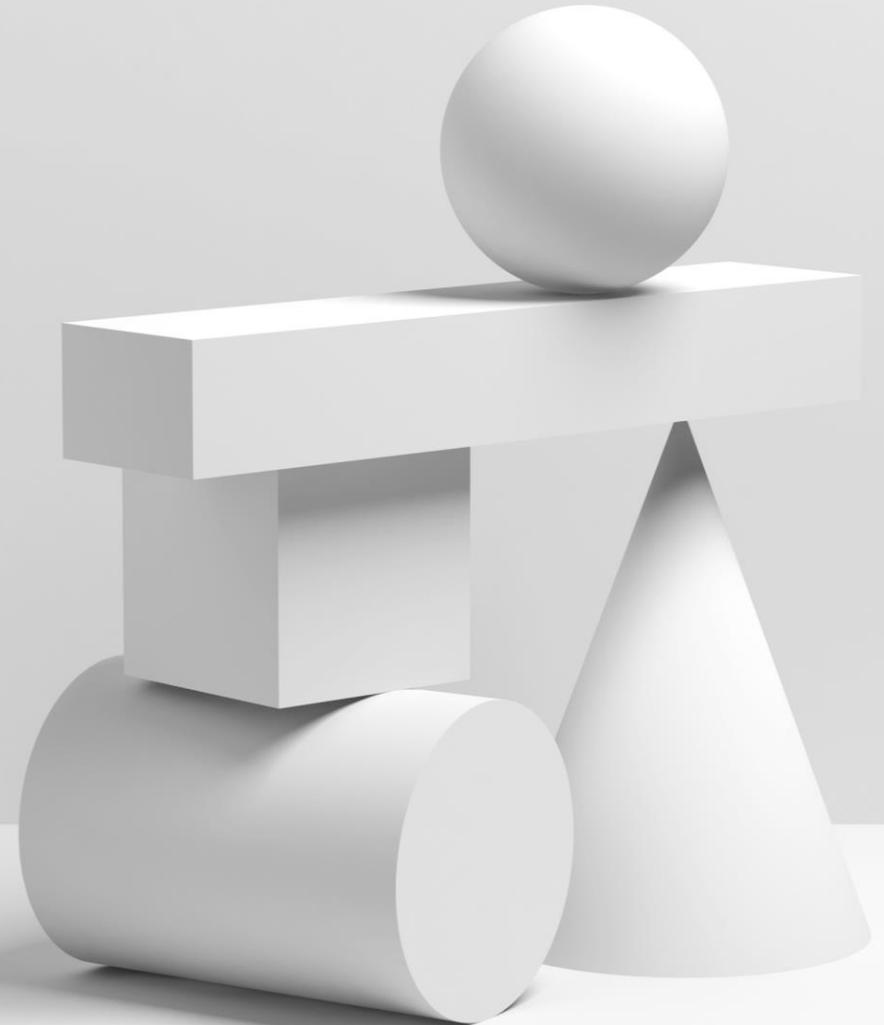


Welcome to the 2028 T24 Code Cycle – January 8th, 2025

Timeline subject to change. Updated 1/8/2025

Items to Balance

- **Energy savings** and **GHG emissions**
- Load management to support **grid reliability**
- Distribution of proposals across **building types** and **system types**
- Impacts on those who work to **comply** with the code
- Enabling savings to **persist** over time
- Energy **equity**
- Interaction with CALGreen and local reach codes
- Support statewide policies to improve energy performance of the **entire building sector**





2028 T24 Website Resources

- Proposal Identification
- Current Measures

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- Audio:
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Poll

Choose all that apply

Which benefits or impacts would you like to see most reflected in this code cycle?

Environmental and Social Justice (ESJ)

Approach

- Integrate equity as a key consideration throughout code development process
- Ensure accountability and transparency in our processes, objectives, and outcomes
- Develop trusting and sustainable partnerships with Community Based Organizations (CBOs) to inform this work
 - *Procedural Equity*
- Analyze how code change proposals could affect disproportionately impacted populations
 - *Distributional Equity*

Resources

- [2025 T24 ESJ Action Plan](#)
- [2025 T24 ESJ Summary Report](#)
- [2028 T24 ESJ Action Plan \(Coming Soon\)](#)

Codes and Standards Enhancement (CASE) Initiative

2025 California Energy Code

Environmental and Social Justice Engagement Action Plan





Single Family Measures

- Proposed Measure Descriptions
- Data Needs

Simon Pallin
Single Family Lead
spallin@frontierenergy.com

Proposed Measure: Single Family – Domestic Hot Water

Measure Name	Measure Description
HPWH Location/Limit Resistance Water Heating	Prescriptively allow for HPWHs located outside or in external closets for small units or units without an attached garage. Remove or restrict the current exception that allows electric resistance point of use systems for homes 500 sqft or less.

Data Needs:

- 1. # of projects using the electric resistance exception.
- 2. Distribution of HPWH location in new Single Family projects.

Contact Info:

Alea German (agerman@frontierenergy.com, cc info@title24stakeholders.com)

Proposed Measure: Single Family – Envelope

Measure Name	Measure Description
Blower Door Test & Reduced Infiltration	Introduction of airtightness requirements for single family new construction. Mandatory or prescriptive blower door testing with 3 ACH50 target.

Data Needs:

1. Model energy savings in single family home with target ACH50 using a software other than CBECC-Res (e.g., EnergyPlus) until potential software issues are addressed with software team.

Contact Info:

Simon Pallin (spallin@frontierenergy.com, cc info@title24stakeholders.com)

Proposed Measure: Single Family, Multifamily, Nonresidential – Envelope

Measure Name	Measure Description
Remove or Limit Envelope Trade-Offs	Limit the performance-based tradeoffs between envelope requirements and mechanical equipment efficiencies to prioritize envelope integrity. Maintain flexibility in tradeoffs across envelope measures. One approach is to require compliance with an overall envelope performance metric (similar to UA) calculated within the software.

Data Needs:

1. Percentage of projects that are currently trading off prescriptive envelope with mechanical efficiency

Contact Info:

Bob Hendron (bhendron@frontierenergy.com, cc info@title24stakeholders.com)

Proposed Measure: Single Family and Multifamily – Air-to-Water Heat Pump Compliance Pathways and Requirements

Measure Name	Measure Description
Air to Water Heat Pump (AWHP) Compliance Pathways and Requirements	<p>This measure will achieve two things for residential AWHP systems:</p> <p>(1) Clarify and update the compliance path, making it clear which existing HVAC requirements apply (for example, controls and insulation requirements), update forms, and improve software.</p> <p>(2) Institute basic essential mandatory requirements for residential AWHPs to ensure adequate performance.</p> <p>New requirements considered include system sizing (considering sizing of the AWHP, tanks, and indoor delivery relative to each other, as well as considerations when DHW load is also served by the same AWHP), pump sizing and efficacy, and glycol concentration limits.</p>

Data Needs:

1. Further research and data collection to better estimate energy savings from specific requirements. (Modeling study of component sizing and lab study of glycol concentration impacts are planned, as well as a detailed evaluation of a major manufacturer unit at two laboratory houses.)
2. Additional market forecast and incremental cost data.

Contact Info:

James Haile (Email jhaile@frontierenergy.com and CC info@title24stakeholders.com)

Proposed Measure(s): Single Family and Multifamily – Heat Pumps That Work

Measure Name	Measure Description
Heat Pumps That Work	Identify the measures needed to attain the performance that was assumed when justifying the Heat Pump Prescriptive Baseline in 2025 (and a new one for 2028). This measure will make explicit the implicit assumptions that went into the baseline: proper sizing of heat pump and supplementary heating, effective controls for supplementary heating and defrost, and proper charge. As such, it will provide a package of mandatory measures to ensure that all the heat pumps installed in California will work effectively. It will also include new mandatory measures proposed for 2028, such as proper configuration for controls of supplementary heating (including dual fuel) and defrost. It could be expanded to also include other mandatory measures that have been included in T24 for some time.

Data Needs:

1. Data from existing mandatory measures are readily available.
2. Energy modeling to determine savings from new measures added to the bundle.
3. Field study of current controls configuration practices.

Contact Info:

Meghan Sylvia and Kristin Heinemeier (MSylvia@frontierenergy.com, kheinemeier@frontierenergy.com, cc info@title24stakeholders.com)

Other Proposals Under Consideration: Single Family Proposals

Measure Name	Measure Description
Additions/Alterations Clean-Up	Streamline the energy code requirements for additions and alterations to increase compliance.
DHW Distribution Efficiency	Prescriptive compact distribution & drainwater heat recovery in all CZs.
Heat Pump Continuous Fan Controls	Prohibit continuous operation of HVAC fans or allow distribution system upgrades as a tradeoff.
Heat Recovery	Prescriptive HRV in select CZs.
Sealed Attics	Prescriptive alternative path for sealed attics.
Heat Pump Backup Lockout Temp	Revisit requirements for lockout temp for heat pump backup heating.
Spa Insulation	Mandatory requirement for insulation in spas / hot tubs.

Poll

Choose all that apply

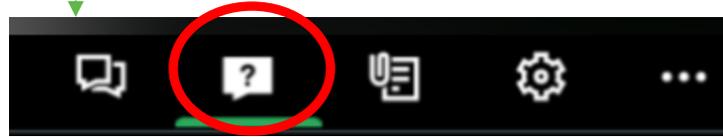
Based on what you've heard, which of the following single-family topics are you interested in engaging with our team on?

Subject Matter Leads Contact Information

Measure Topics	Name	Contact Information
Single Family Lighting	Meghan Sylvia	msylvia@frontierenergy.com
Single Family Envelope	Simon Pallin	spallin@frontierenergy.com
Single Family HVAC Performance	Meghan Sylvia Kristin Heinemeier	msylvia@frontierenergy.com kheinemeier@frontierenergy.com
Single Family Domestic Hot Water	James Haile	jhaile@frontierenergy.com
Single Family Other	Alea German	agerman@frontierenergy.com

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Multifamily Measures

- Proposed Measure Descriptions
- Data Needs

David Douglass-Jaimes

Multifamily Lead

DDouglass-Jaimes@TRCcompanies.com

Proposed Measure: Nonresidential and Multifamily – Domestic Hot Water

Measure Name	Measure Description
Electronically Commutated Motor (ECM) Circulator Pump with Controls	<p>Prescriptively require internal or external controls to reduce energy use at the pump and/or water heater, based on building size, plant type, distribution system design, etc.</p> <p>Potential optimization techniques include: pressure based variable speed control with thermal balancing valve(s), constant return temperature control, demand flow-based control, aquastat, and digital timeclocks.</p>

Data Needs:

1. More information on which controls strategies are best suited to which building types, nonresidential vs multifamily.

Contact Info:

Amin Delagah (adelagah@trccompanies.com, cc info@title24stakeholders.com)

Proposed Measure(s): Multifamily and Single Family – HVAC

Measure Name	Measure Description
Alterations: Kitchen Ventilation Requirements	Would require a mandatory requirement to provide kitchen ventilation in residential alterations that alter a "significant" portion of kitchen (definition TBD), AND where "significant" portion of envelope will be altered (definition TBD), thereby increasing risk of higher pollution unless ventilation is included. Continues "do no harm" philosophy of ensuring IAQ not worsened because of energy measures.

Data Needs:

- 1. Interviews and plan reviews for common lay-outs (in SF and MF units) and "non-feasible scenarios" for adding ventilation
- 2. Cost estimates for adding ventilation in common scenarios
- 3. Data on use of windows when cooking in homes without ventilation (lit review)

Contact Info:

Tharanga Jayarathne (tjayarathne@trccompanies.com, cc info@title24stakeholders.com)

Proposed Measure: Nonresidential and Multifamily Lighting

Measure Name	Measure Description
Indoor Lighting Controls	<p>Revision to mandatory control requirements:</p> <ol style="list-style-type: none">1. Require adaptation compensation controls in the parking garage daylight adaptation zone2. Require occupant sensing controls in more space types3. Reduce occupant sensing control time delay to 15 minutes <p>Indoor controls code language cleanup:</p> <ol style="list-style-type: none">1. Require continuous dimming for daylight responsive controls2. Retain the alternative partial daylight test as the only method for daylight responsive controls acceptance testing3. Require daylight responsive control manual override to be timed or reset at the next on cycle

Data Needs:

1. Survey of ATTs' choice/use of partial daylighting test method.
2. Survey of common use of 15-minute vs. 20-minute occupant sensing time delay

Contact Info:

Yao-Jung Wen (ywen@energy-solution.com, cc info@title24stakeholders.com)

Proposed Measure(s): Multifamily and Nonresidential – HVAC

Measure Name	Description
Variable Refrigerant Flow (VRF) Indoor Fan Control	VRF fan coils typically have variable speed fans, but the fan speed is manually selected by the installer. Some VRF fan coils have controls that automatically modulate fan speed based on the cooling load. Requiring all VRF fan coils to automatically vary fan speed based on load will have huge fan energy savings.

Data Needs:

- 1. Understanding the current breakout between VRF indoor fans that are appropriately modulating speed vs. those that are set on a specific setting (e.g., high or auto)
- 2. Potential compliance costs for the relevant stakeholders (manufacturers, designers, installers)

Contact Info:

Bryan Boyce (bboyce@energy-solution.com, cc info@title24stakeholders.com)

Proposed Measure(s): Nonresidential, Multifamily, Single Family - Other

Measure Name	Description
Solar Pool Heating for Existing Buildings	Propose code change similar to the CALGreen solar pool and spa heating proposal for the 2025 code cycle that will require solar pool heating, a heat pump pool heater, or renewable energy and recovered heat to raise the baseline efficiency of pool heating process.

Contact Info:
Sean Steffensen (ssteffensen@energy-solution.com, cc info@title24stakeholders.com)

Proposed Measure(s): Multifamily and Nonresidential – Covered Process

Measure Name	Description
Elevators	2025 cycle measure of regenerative drive for traction elevators with distances at and above 3 landings. Consider measures from other jurisdictions such as lightweighting elevator cabs and counterweights and requiring elevator electronics to go into deep standby when not in use.

Data Needs:

1. Update to incremental costs and operational characteristics of the elevators since data was last gathered in 2023.

Contact Info:

Sean Steffensen (ssteffensen@energy-solution.com, cc info@title24stakeholders.com)

Other Proposals Under Consideration: Multifamily Proposals

Measure Name	Measure Description
Central Heat Pump Water Heater updates	<ul style="list-style-type: none">- Requirements related to electric resistance backup- Revisit requirements around Return to Primary system- Ventilation requirements for central systems
Compact Water Heating	Develop a combined heat loss metric for central DHW system distribution piping heat losses in multifamily
Expand JA13 to Multifamily	Expand JA13 HPWH capability requirements to multifamily; credit for thermal energy storage as a load management asset
Envelope updates	<ul style="list-style-type: none">- Envelope alteration alignment with SF and/or NR as appropriate- Update and streamlining wall insulation requirements; alignment with NR as appropriate; alignment in JA4
HVAC Performance Bundle	Expand 2025 single family heat pump updates to multifamily, with revisions as appropriate
	...and more to come...

Poll

Choose all that apply

Based on what you've heard, which Multifamily topics are you interested in engaging with our team on?

Subject Matter Leads Contact Information

Measure Topics	Name	Contact Information
Multifamily Domestic Hot Water (ECM Pump with Controls)	Amin Delagah	adelagah@trccompanies.com
Multifamily Indoor Air Quality (Kitchen ventilation in alterations)	Tharanga Jayarathne	tjayarathne@trccompanies.com
Multifamily – all other topics	David Douglass-Jaimes	ddouglass-jaimes@trccompanies.com



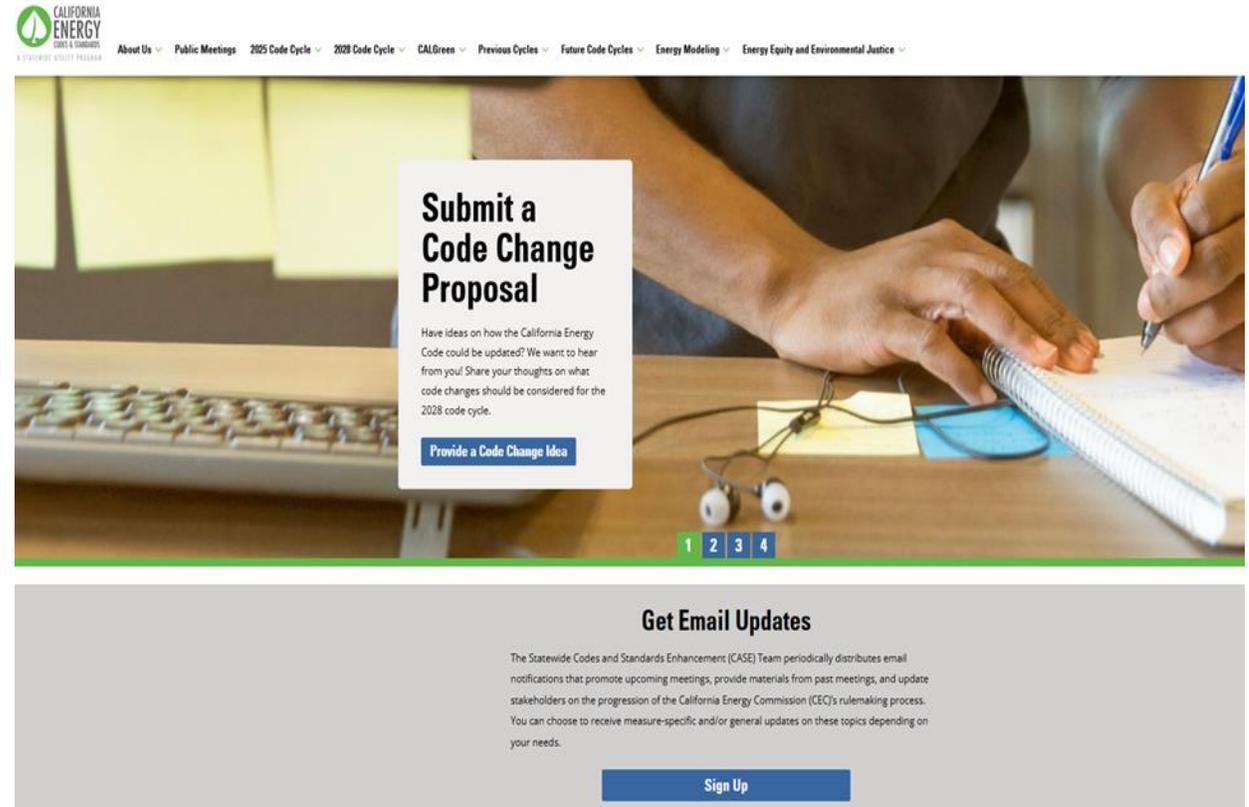
Conclusion

Participate In the Process

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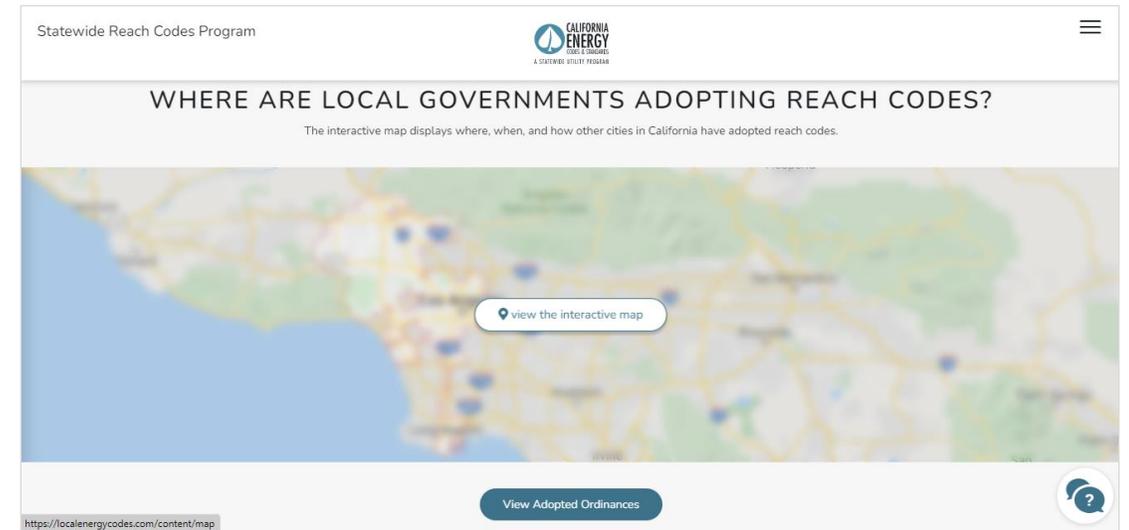


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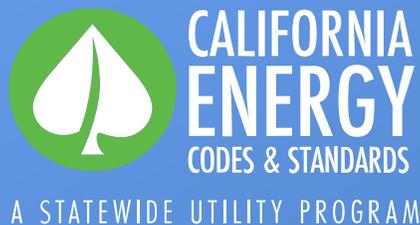
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2. Follow 'Title 24 Stakeholders' on [LinkedIn](#)
3. Visit [Energy Code Ace](#) for compliance support and the [Local Energy Codes](#) program for information on statewide reach code activity
4. Contact the CEC [Building Energy Efficiency Standards - Title 24](#)



Thank You



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Questions?

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David Douglass-Jaimes

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