

Meeting Notes

Posted June 2023



Notes from 2025 Title 24, Part 6 Code Cycle Utility-Sponsored Stakeholder Meeting for:

Pools, Nonresidential Space Heating, and Commercial Kitchens

Meeting Information

Meeting Date: 5/18/2023

Meeting Time: 9:30 am – 12:00 pm

Meeting Host: California Statewide Utility Codes and Standards Enhancement Team

Meeting Agenda

Time	Topic	Presenter
9:30 AM	Welcome and Introduction	Nikki Westfall, Energy Solutions Javier Perez, PG&E Mark Alatorre, PG&E
SOLAR POOL and SPA HEATING		
9:50 AM	Solar Pool and Spa Heating	Helen Davis, Energy Solutions and Sean Steffensen, Energy Solutions
HVAC SPACE HEATING		
10:20 AM	Allow Electric Resistance Heat	Bryan Boyce, Energy Solutions, Jeff Stein, Taylor Engineering, and Shaojie Wang, Energy Solutions
10:50 AM	All Electric Hydronics	
COMMERCIAL KITCHENS		
11:20 AM	Demand Control Kitchen Ventilation (DCKV)	Russell Hedrick, Frontier Energy and Edward Ruan, Frontier Energy
11:50 AM	Conclusion / Wrap-Up	Cosimina Panetti, Energy Solutions
12:00 PM	Adjourn	

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Meeting Participants (available upon request by emailing info@title24stakeholders.com)

Action Items from Meeting

The Statewide CASE TEAM followed up on all questions or comments that required a response and were not discussed during the meeting.

Key Points from Meeting

The proposal for Solar Pool and Spa Heating is important because:

- More efficient pool, spa, or pool and spa heating options reduce greenhouse gas emissions.
- Aligns code language with the latest Department of Energy (DOE) consumer pool heater final rules.

The proposal for HVAC Space Heating is important because:

- Limiting hot water supply temperatures in new construction and retrofits is an electric readiness measure which reduces the costs of future boiler to heat pump retrofits
- All-electric reach codes are pushing designers to pursue all-electric space heating designs, but if current code requirements are followed, then a relatively inefficient system would result. Our requirements for heat recovery and thermal energy storage improve system efficiency.
- Electric resistance heating will likely be an important component of building electrification, but it is currently prescriptively banned in Title 24. Our proposal would a pathway to using ER heating in zones with minimal space heating loads.

The proposal for Commercial Kitchens, Demand Control Kitchen Ventilation is important because:

- Implementation of DCKV systems optimize commercial kitchen efficiency by reducing the fan energy during periods of low activity. As a result of reduced fan energy, facilities also benefit from energy savings due to less conditioning for replacement makeup air.
- DCKV improves the comfort of the kitchen space by reducing the noise levels of the exhaust hood system.

Stakeholder Feedback Impacting Proposals

CASE Teams rely on feedback from stakeholders to create the best proposals possible. Since Round 1, stakeholder input has impacted this proposal in these ways:

Solar Pool and Spa Heating

- Since the February 1 stakeholder meeting, the code language has been heavily modified based on stakeholder comments and the U.S. Department of Energy (DOE) consumer pool heater standard pre-published final rule.
- The proposal started with a larger scope but will not include pool insulation and variable-speed requirements in this code cycle.
- Code language cleanup is included to align with DOE consumer pool heater, dedicated-purpose pool pumps, and portable electric spa rulemakings, and California's Appliance Efficiency Regulations on replacement dedicated-purpose pool pump motors.

HVAC Space Heating

- **Limited Hot Water Supply Temperature:** Clarified the maximum temperature for the water entering the zone; that the zone must be designed for 130 degrees or higher.
- **Condenser Heat Recovery:**
 - Broadened condenser heat recovery scope to encompass all large buildings pursuing all-electric (previously only hydronic systems but stakeholders said it may push people from one system to another to avoid the requirement).
 - Moved language from 140.4(k) to a new proposed subsection 140.4®
 - Added new sub-section to explicitly require heat recovery for service water heating when capacity trigger is met.
 - Regarding thresholds for heat recovery, replaced all placeholder capacity trigger values with values based on modeling.
- **Electric Resistance Heating:** Clarified that 140.3 prescriptive envelope is required if project is an addition / alteration.
- **The proposal has a statewide impact;** about 30% of CA is already under a local all-electric reach code.
- The measures are cost-effective on a per-unit basis.

Commercial Kitchens, Demand Control Kitchen Ventilation (DCKV)

- The main change is moving the DCKV from code section 140.9 to 120; the language remains the same but removes the options, which remain in 140.
- Proposal moved from being a prescriptive measure to a mandatory requirement; note that it was often already considered ‘mandatory’ by local jurisdictions.
- Changed what constitutes a ‘facility’. The language won’t change from what it is now; if you’re exhausting under 5,000 cfm total (including all hoods), it doesn't apply to you.
- Clarified code language to better define “kitchen / facility”; and clarified that the requirement is for “all hoods” under one system (the whole restaurant facility for example, not just one room).
- Made language consistent how lineups are designed for specific kitchens; ASHRAE research and Fundamentals Handbook shows that heat gain for appliance lines does not vary for fuel type. The exhaust plume can help ventilation by keeping the heat trane in the exhaust stack. Thresholds won’t change for different fuel types.

MEETING NOTES

During the meeting, questions and comments were submitted in three distinct formats which are provided in these meeting notes in these [hyperlinked for quick access] sections:

1. **In-Meeting Questions / Comments:** Questions and comments submitted verbally during the meeting via the ‘raise hand’ function in GoTo Webinar, where participants were unmuted to speak, or in some cases, comments submitted in writing were

discussed verbally during the meeting (in which case the person that commented may not be identified in these notes).

2. **Questions / Comments Submitted Via GoTo Webinar:** See this section for questions and comments submitted in written format via the GoTo Webinar question pane.
3. **Mentimeter Polls & Responses:** This section includes public comments and questions, including screen shots of the polls that were conducted during the meeting, and responses to those polls.

Due to time limitations, not all written questions and comments were discussed during the meeting but all have responses available in these meeting notes.

In-Meeting Questions / Comments

Solar Pool and Spa Heating

1. **Stakeholder comment provided during Mentimeter poll that asked: “*What are your concerns with proposed code language*”: Low Temperature performance on heat pumps should be the MOST important value as that is when heat is most needed in the pools. It is also the most difficult performance metric to improve.”**
 - a. CASE Team Response (Helen Davis): The low temperature performance could be represented in different ways, we will continue to discuss how to capture this within the limitations of the DOE pre-published final rule on consumer pool heaters. A low temperature COP of 4.0 was originally presented during the round 1 stakeholder meeting in February 2023, but since DOE’s recent final rule includes a preamble language stating that representations shall be limited to only the “High Air Temperature-Mid Humidity” rating condition, we are suggesting the removal of the the low temperature COP proposal.
2. **Stakeholder comment provided during Mentimeter poll that asked: “*What are your concerns with proposed code language*”: That old gas heaters can be replaced without permitting.**
 - a. CASE Team Response (Helen Davis): The permitting requirements are based on the jurisdiction. The way this measure is proposed, a homeowner could replace an existing gas heater with a new gas heater. Per Section 100.0(a)2, a building permit is required to be filed. Assuming these pools serve a building covered in 100.0(a)1, any pool requirements of the Energy Code would then be triggered.
3. **Stakeholder comment provided during Mentimeter poll that asked: “*What are your concerns with proposed code language*”: Heating a pool/spa is limited to 10 degrees?**
 - a. CASE team response (Helen Davis): The intent of the 10F temperature rise was to prescribe a sizing equation for heat pump pool heaters that was most representative of available models on the MAEDbS database. Sizing provision in JA15.3 does allow

reliance on manufacturer's specifications, so a different temperature rise may get invoked depending on the approach taken by the installer.

HVAC Space Heating

- 1. Comment via GoTo Webinar by Meg Waltner: Why did you limit condenser heat recovery to buildings with electric heat?**
 - a. CASE Team Response (Bryan Boyce): We initially looked at local reach codes and sought to build on those. We've since broadened past hydronic and are trying to get into gas systems so we aren't picking winners and losers for heating systems.

- 2. Comment via GoTo Webinar by Meg Waltner. Following up on my previous question, it seems like the service water reheat provision should apply regardless of gas vs electric heat.**
 - a. CASE Team Response (Bryan Boyce): We're looking into that right now.

- 3. Question via GoTo Webinar by Jon McHugh: Thermal storage is not shifting to different times of year but primary use of stored heat is primarily for heat up during the next morning. Is that right?**
 - a. CASE Team Response (Bryan Boyce and Jeff Stein): Generally this is right, but there's no limit to the duration of storage. It will likely be operating on a diurnal or weekly basis. We're talking about a diurnal storage system.
 - b. CASE Team Response (Jeff Stein) added: We're looking at diurnal storage; the heat recovery benefit has been part of the analysis, the modeling analysis only recognizes diurnal heat recovery.

- 4. Question via GoTo Webinar by Jon McHugh: Fire water storage tank are these typically larger than the tank needed for thermal storage? Are there temperature limits for water using for fire fighting and is this compatible with the temperatures that are stored?**
 - a. CASE Team Response (Jeff Stein): Yes, they're compatible. The condenser water storage tanks operate between 40-80 degrees (similar to a potable system). The temp is compatible. In terms of sizing, I'm not completely sure what drives the sizing. We've used it to buy down the cost; if it's a fire water storage tank you've paid for the system already. This has been part of the cost analysis for the cases where it's required; not all buildings require fire water storage.

- 5. Question via GoTo Webinar by Ted Tiffany: Are you planning to define the amount of thermal storage to the 300 ton chiller limitation or enhance that to include the heat recovery language for the 300 ton limitations?**
 - a. CASE Team Response (Bryan Boyce): Our approach to addressing the 300 ton limit is to editorially clarify that it is meant to limit 300 tons of cooling-only air source chillers.

We are looking at that 300 ton limit in a separate CASE report and intend to adjust the language to be clear it's for cooling equipment only.

6. Question via GoTo Webinar by Ted Tiffany: Have you solved the equations in CBECC for sharing heat recovery between heating & cooling simulation to the separate DHW calculations?

- a. CASE Team Response (Bryan Boyce): This CASE Report looks at a combination of EnergyPlus with CBECC rulesets and prototypes along with spreadsheet analysis. The team is focused on staying within the EnergyPlus since that's native to CBECC.

7. Question via GoTo Webinar by (Eric Shadd): How many firms have designed the TIER system in CA?

- a. CASE Team Response (Jeff Stein): I'm sorry, I don't know what other firms are doing that.

Commercial Kitchens, Demand Control Kitchen Ventilation (DCKV)

1. Verbal question asked by Jeff Stein: Did you include the cost of an energy recovery system in the analysis?

- a. CASE Team Response (Russel Hedrick): This issue was raised when we moved DCKV from 140 to 120 (making it mandatory). The issue of cost on the remaining items are relevant but will need to follow-up. If savings are available from previous analysis, we'd like access. The results shown do not show the interactive effects of DCKV plus one of the remaining three options.

Wrap-Up

- All Draft CASE Reports will be posted May through June at title24stakeholders.com
- Meeting adjourned at 12:00 PM

Questions / Comments Submitted Via GoTo Webinar

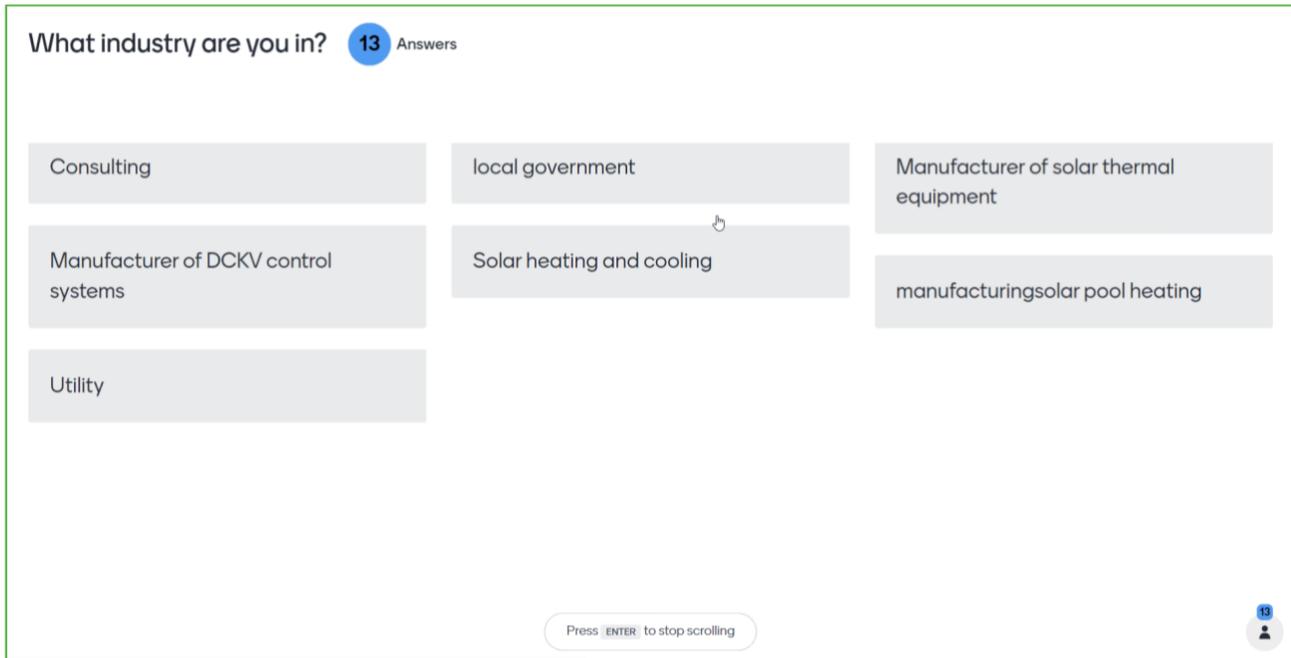
The questions and comments below are provided as-submitted in the GoTo Webinar Question pane. Responses provided by CASE Team support team. In addition, some of these questions were verbally discussed during the meeting and are captured in the In-Meeting Questions / Comments section above.

Question Asked	Response	Responder
Kudos for deferring to manufacturer's specs!	Thank you for your comment.	Cosimina Panetti
Pool only - gas heater used sparingly as intermittent/on demand heat source; special occasions	Thank you for your input.	Cosimina Panetti

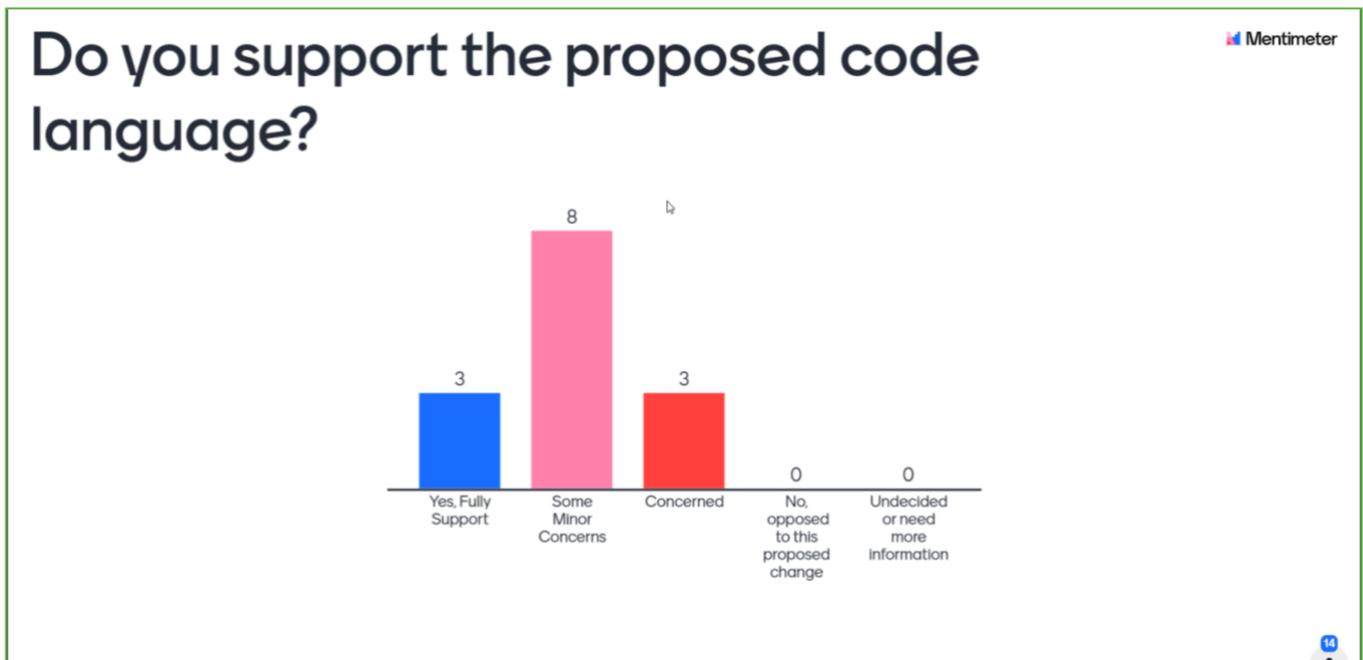
Question Asked	Response	Responder
Pool/spa combo - gas heater used predominantly to heat spa, but sized large enough to heat pool for special occasions	Thank you for your input.	Cosimina Panetti
How many firms have designed the TIER system in CA?	I don't know what other firms are doing that.	Jeff Stein
The constraints in the requirements may require a detailed look at the forecasted square footage. How is the impacted square footage being calculated now? -Eric Shadd	We're calculating the impacted floor area based on the estimated fraction of buildings that are located within jurisdictions with all-electric reach codes.	Bryan
low temperature performance should be the MOST important value for a heat pump!!!! that's when you need the most heat to make up for heat losses	Low temperature COP of 4.0 was considered, but based on the recently issued DOE final rule on consumer pool heaters, and DOE's preamble language stating that representations shall be limited to just one rating condition, we have removed the low temperature COP proposal.	Melissa Schellinger Gutierrez
What is the range of solar fractions that result from the solar pool heating code requirements?	Solar fraction was initially considered as a metric for this pool and spa measure. However, after discussions with key stakeholders in the solar pool heating industry, it was determined that due to variables (e.g., activity factor in pools), the solar fraction approach is inapplicable. The solar fraction approach was initially used for solar domestic water heaters with more consistent energy use patterns. Stakeholders have indicated to us in recent months that the collector area as a function of the pool surface area is appropriate in lieu of a solar fraction approach.	Aniruddh Roy and Melissa Schellinger Gutierrez
Thermal storage is not shifting to different times of year but primary use of stored heat is primarily for heat up during the next morning. Is that right?	See response to this question in the "In-Meeting Questions /Comments" section above.	
Fire water storage tank are these typically larger than the tank needed for thermal storage? Are there temperature limits for water using for fire fighting and is this compatible with the temperatures that are stored?	See response to this question in the "In-Meeting Questions /Comments" section above.	
Resistance electric does this have positive source energy savings at least versus gas?	Yes, the source energy savings are positive.	Eileen Eaton

Question Asked	Response	Responder
ON Simultaneous, if you had Zero SHW in any building over 300 ton must have HRChiller even though there is no SHW?	The requirement is driven by how the space heating & SHW loads add up. If SHW is zero but there is still sufficient space heating per the equation, then HR chiller is still triggered.	Bryan Boyce and Jeff Stein
Why did you limit condenser heat recovery to buildings with electric heat?	We're analyzing options to include gas boiler systems in the 140.4(r) language, assuming this pencils out, it will be in the final report	Bryan Boyce
Following up on my previous question, it seems like the service water reheat provision should apply regardless of gas vs electric heat.	We agree, and almost certainly will be the case in the final report. This is actively being worked on.	Bryan Boyce
Is the state planning on training solar installers and repair technicians?	Please contact the California Energy Commission at title24@energy.ca.gov for a response. Thank you.	
Average residential gas heating is 150-200 hours annually.	Thank you for your input. If you could share some additional data confirming that usage pattern relative to the RASS 2019 findings, that would be much appreciated by our team. The RASS 2019 data suggests that most homeowners significantly limit their pool heater use after the initial shock utility bill.	CASE Team member
Are you planning to define the amount of thermal storage to the 300 ton chiller limitation or enhance that to include the heat recovery language for the 300 ton limitations?	See response to this question in the "In-Meeting Questions /Comments" section above.	
Have you solved the equations in CBECC for sharing heat recovery between heating & cooling simulation to the separate DHW calculations?	See response to this question in the "In-Meeting Questions /Comments" section above.	
I'm impressed by the electric resistance capital cost savings. Would it be possible to combine electric resistance systems with a control system that allowed all excess capacity to be delivered into discretionary EV shared power charging so the transformer is fully utilized all work hours of the day?	Interesting idea but this requirement would be outside of the scope of this CASE report and arguably Title 24 as a whole.	Bryan Boyce and Jeff Stein

Mentimeter Polls & Responses



Solar Pool and Spa Heating



What are your concerns with the proposed code language?

6 Answers



Heating a pool/spa is limited to 10 degrees?

New construction with existing gas utilities. Heating only for permanent inground spas.

Low Temperature performance on heat pumps should be the MOST important value as that is when heat is most needed in the pools. It is also the most difficult performance metric to improve

Apply the mandatory requirements (plumbing) to commercial pools w/o any changes seems concerning.

It makes NO sense to eliminate the low temperature performance requirement

That old gas heaters can be replaced without permitting

5

Are there other barriers or concerns we need to address?

5 Answers



Pool builder education

Rack-mounted systems should be considered; there are many installed in CA

Enforcement of pool cover requirements

California Electricity prices are excessive and make the heat pumps harder to adopt. There should be energy rebates on legal installations to help adoption.

Heat pump pool heaters and flow rates

4

What changes to the proposal would you suggest to improve cost-effectiveness for pool owners or help solar thermal system installers?

3 Answers

Mentimeter

use Solar PV and heat pumps instead

A combination of solar and heat pump should be allowed. If 60% can't fit, but 25% can fit why not combo with a heat pump?

Reduce the minimum to 50% of surface area for more implementation.

Commercial Kitchens, Demand Control Kitchen Ventilation (DCKV)

Do you agree with the prototypes used for the statewide impact assumptions?

Mentimeter

