

<b>DOCKETED</b>	
<b>Docket Number:</b>	24-BSTD-01
<b>Project Title:</b>	2025 Energy Code Rulemaking
<b>TN #:</b>	261207
<b>Document Title:</b>	Public Comments and Responses to the Proposed Revision to 2025 Energy Code, Title 24, Parts 1 and 6
<b>Description:</b>	Collected public comments and responses to the proposed revision to the 2025 Energy Code, Title 24, Parts 1 and 6.
<b>Filer:</b>	Michael Shewmaker
<b>Organization:</b>	California Energy Commission
<b>Submitter Role:</b>	Commission Staff
<b>Submission Date:</b>	1/22/2025 9:35:13 AM
<b>Docketed Date:</b>	1/22/2025

## **Introduction**

This workbook includes comments received to 24-BSTD-01 <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-BSTD-01> during three comment periods of the 2025 Energy Code rulemaking; as well as during Lead Commissioner Hearings during the 45 day comment period, and at the September 11, 2024 business meeting; with Staff's response to those comments.

Please reach out to Payam Bozorgchami at [Payam.Bozorgchami@energy.ca.gov](mailto:Payam.Bozorgchami@energy.ca.gov) with any questions.

[45 Day Comment Period](#)

[June 2024 15-day Comment Period](#)

[August 2024 15-day Comment Period](#)

[Lead Commissioner Hearings](#)

[September 11 2024 Business Meeting](#)

Comment Number	Commenter	Comment(s)	The Commission's Response to Comment	Date of Comment	Phase of Comment	Link to Comment
255349.001	Jeff Wagner	Sections of the Building Energy Efficiency Standards (BESS) 140.4(j) and 170.2(H) reference limitations of air-cooled chillers to 300 tons, with exceptions. With the influx of renewable energy generation that peaks between the hours of 0900 and 1800 is great progress for the state's energy transition but also creates challenges when the generation drops off and the demand remains high. Two primary solutions include shifting the time-of-use consumption to middle-of-day, and/or shift the energy storage for use in later evening.	Background remarks - no response needed.	3/29/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255349&amp;DocumentContentId=91072">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255349&amp;DocumentContentId=91072</a>
255349.002	Jeff Wagner	This proposition will focus on the shifting use to middle-of-day while significantly decreasing our state's water consumption. Expanding the use of air-cooled chillers provide a few benefits; - Air-cooled equipment energy penalty is often not as high as initially thought with California's relatively mild climate where the dry bulb (air-cooled) and wet bulb (watercooled equipment) temperatures often approach one another. - Air-cooled equipment may incorporate adiabatic / evaporative-cooled media to mitigate the 'design day' high dry bulb challenges. - Air-cooled equipment continues to increase its efficiency through greater heat exchanger surface areas. - Air-cooled equipment will save the state millions and millions, or billions or more, water consumption, annually. - The capital cost of an air-cooled system is less expensive than water-cooled. - Legionella is a concern with water-cooled equipment.	Staff disagrees with the comment, and no changes have been made.  The 300 ton limit on air cooled chillers was established in previous code cycles with input from stakeholders. The Code Readiness team researched pathways to increase the allowed capacity for the 2025 code cycle. Unfortunately, even high efficiency air cooled chillers exceeding 300 tons were unable to achieve efficiency equivalence to a minimum efficiency water-cooled chiller due to their high energy penalty.  Staff notes that air-cooled chillers in excess of 300 tons may be installed through the performance compliance path.  Staff understands the concerns related to Legionella, and notes that proper maintenance of water-cooled chillers decreases the risk.	3/29/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255349&amp;DocumentContentId=91072">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255349&amp;DocumentContentId=91072</a>
255349.003	Jeff Wagner	I would offer the following suggestions for incorporation into the upcoming code cycles; - Increase the air-cooled chiller limitation to 1000 tons, while keeping the exceptions. - Exclude any air-cooled equipment that uses adiabatic and/or evaporative-assist media pads. - Exclude any heat recovery equipment, including air-cooled heat recovery chillers, or air-water-water heat pumps	Thank you for your comment. As noted by the commenter, this proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.	3/29/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255349&amp;DocumentContentId=91072">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255349&amp;DocumentContentId=91072</a>
255397.001	Steve Means	Please make sure that all versions of all performance software always include a "Project Notes" input box. Such input box should be limited to no less than 1000 characters, and must appear in Certificate of Compliance Output. The location of its appearance can be either be immediately after the TDV / EDR results table(s) [toward the front of the Certificate of Compliance], or just before the signature blocks [at the end of the reported data]. This freely editable input should be reported regardless of the scope of the Certificate of Compliance (e.g. Envelope only, Mechanical only, etc.). This is perhaps the only way for energy consultants to directly communicate with plancheckers at the building permit application stage, and can go a long way towards eliminating unstudied / unnecessary plancheck comments. Thank you.	Comment acknowledged, no change made. This comment pertains to compliance software functions, and is out of scope of this rulemaking. Staff notes that a notes section, also known as a narrative or additional remarks on the LMCC and NRCC performance reports, is currently available from all approved compliance software.	3/30/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255397&amp;DocumentContentId=91216">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255397&amp;DocumentContentId=91216</a>

255501.001	Rae Korsboe	I would like to respectfully request CEC remove the proposed heat pump baselines in 140.4(a)3. The restrictions on design do not have enough justification and supportive evidence proving it will be a positive change overall. There is no mention of the negative impacts it could have, which are just as important to analyze. The cost analysis needs to be examined and compared to other studies and sources of information for accuracy and consistency among projects.	Thank you for your comment. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.	4/4/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253</a>
255501.002	Rae Korsboe	These changes have significant impacts on schools and offices that could change their operation and how they manage the building. This may include additional controls operations or having someone trained/capable of maintaining the building. VRF will entail lengths of refrigerant piping being run through the building that may not have been required before. The size limits of VRF and FC systems will require larger projects to have a substantial number of VRFs and FCs through the building. Not all buildings can have all that equipment in the plenum or on the roof. This introduces space restrictions that may not be occur with other systems.	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	4/4/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253</a>
255501.003	Rae Korsboe	The proposed restrictions limit the design of projects in ways that shuts down further development of solutions for these applications. With such limiting rules, unique and new solutions to future design will be impacted. Less problem-based solutions will be installed, and this could leave building owners with a less-than-ideal solution to their problems. The additional cost and intricacy of energy/performance modeling will deter many clients from finding other solutions.	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	4/4/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253</a>



255501.004	Rae Korsboe	The allowable solutions provided are often not the cheapest solution. VRF is expensive and often requires more engineering than other solutions. The breakdown of costs by the CEC does not include enough data. One of the references used was The Red Car Analytics (2019). The only Red Car Analytics analysis from 2019 still available on the RCA site is Economic Analysis of Scenarios with DOAS. In this document, they find that first-cost is lower for RTUs than VRF systems. Energy savings are minimal in comparison to the initial cost (especially for larger buildings), and building owners may not be able to afford the larger upfront cost.	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.  Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.	4/4/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253</a>
255501.005	Rae Korsboe	Some of the values used in the proposed changes do not seem entirely realistic. The cost of \$0.50/sf for a VRF sounds unreasonably low. The values and costs in the analysis need to be further evaluated. With the report being recently posted, the community doesn't have enough time to do their own cost analysis or see if it is viable for their applications. These solutions are not capable of taking all factors into account for every job. For example, in the coastal areas, a DOAS would not be as beneficial as an economizer. A DOAS would reduce the amount of outdoor air provided to occupied areas. This adds extra equipment and complexity when an economizer would work better.	Thank you for your comment. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.	4/4/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253</a>
255501.006	Rae Korsboe	The timeline of when supporting documents were submitted does not allow enough time for public review, especially on such a substantial change to office and school design. The changes proposed in the heat pump baseline are limiting and need further analyses for cost, benefit, and the potential negative impacts of implementing such a significant change. Thank you in advance for your time and attention on this matter.	Thank you for your comment. Staff published the analysis in accordance with the regulatory guidelines, which included a series of pre-rulemaking workshops, lead commissioner hearings, and provided one 45-day and two 15-day public comment periods on these proposals, in addition to the September business meeting. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback.	4/4/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255501&amp;DocumentContentId=91253</a>
255533.001	Ebele Boda	The proposed changes significantly restrict compliance options for HVAC systems in schools and offices. The presentations given July 27, 2023 and August 24, 2023 did provide enough detail and justification for such drastic changes that would have outstanding impacts in the design of school and office HVAC systems. The report posted on March 28, 2024 was provided so late in the process which limits the ability for stakeholders affected by the proposed change to adequately participate in the public review process and does not provide enough time to address serious flaws found in the supporting analysis and proposal. While the proposed changes may be well intended, the aforementioned flaws, the quite late posting of the report, and the severe impact on stakeholders without opportunity for detailed review lends me to request that the proposed heat pump baseline language be removed.	Thank you for your comment. Staff published the analysis in accordance with the regulatory guidelines, which included a series of pre-rulemaking workshops, lead commissioner hearings, and provided one 45-day and two 15-day public comment periods on these proposals, in addition to the September business meeting. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback.	4/5/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255533&amp;DocumentContentId=91276">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255533&amp;DocumentContentId=91276</a>
255570.001	Anyamarie Goeders	While I understand the intent to electrify the HVAC industry, homogenous and expensive HVAC systems are not the answer.	Background remarks - no response needed.	4/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255570&amp;DocumentContentId=91371">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255570&amp;DocumentContentId=91371</a>

255570.002	Anyamarie Goeders	<p>I do not believe that the cost analysis presented in the CEC's reports are accurate and well justified. I think the report greatly underestimates the cost of air to water heat pumps, dedicated outdoor air units, and four pipe fan coils. The costs of these systems do not align with costs that are on the market today and defy common sense. Additionally, requiring in-depth cost and performance analysis to utilize other types of systems is very costly and can make it unaffordable for people to purchase any new HVAC system. This in turn reduces flexibility and affordable options for designers, contractors, building owners, occupants, operators, and manufacturers.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	4/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255570&amp;DocumentContentId=91371">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255570&amp;DocumentContentId=91371</a>
255570.003	Anyamarie Goeders	<p>Not only are FPFC, DOAS, and AWHP systems costly, the principle of having only these systems make up a significant portion of our HVAC systems lowers the possibility for competitiveness and innovation. With these new measures, we are limiting the market and restricting the various designs that are not only more cost effective, but also more efficient, easier to install and operate.</p>	<p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	4/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255570&amp;DocumentContentId=91371">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255570&amp;DocumentContentId=91371</a>
255570.004	Anyamarie Goeders	<p>For those reasons, I think that new requirements in 140.4(a)3 should be removed until further analysis and public review takes place. I believe that these measures are too severe to enact without more input from all the stakeholders that will be greatly impacted. Therefore, I urge the CEC to remove the proposed heat pump baseline.</p>	<p>Thank you for your comment. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	4/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255570&amp;DocumentContentId=91371">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255570&amp;DocumentContentId=91371</a>
255578.001	Jeff Kuitert	<p>We urge the CEC to remove the proposed heat pump baselines in 140.4(a)3.</p> <p>The proposed changes significantly and unduly restrict compliance options for HVAC systems in offices and schools. The CEC's workshop presentations on July 27, 2023 and August 24, 2023 did not provide sufficient detail and justification for a measure that would have profound impacts to typical practice for office and school HVAC systems. The Heat Pump Baseline Report that was posted to the docket on March 28, 2024 along with the 45-day language was provided extremely late in the process. This significantly limits the opportunity for affected stakeholders to adequately participate in the public review process, and does not provide sufficient time to address serious flaws in the supporting analysis and proposal. For such a radical and restrictive change to Title 24, the CEC should have provided a comprehensive report many months ago documenting the detailed assumptions and calculations that support their analysis, as well as considerations of negative impacts to designers; contractors; building owners, occupants, and operators; and equipment manufacturers.</p>	<p>Thank you for your comment. Staff published the analysis in accordance with the regulatory guidelines, which included a series of pre-rulemaking workshops, lead commissioner hearings, and provided one 45-day and two 15-day public comment periods on these proposals, in addition to the September business meeting. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback.</p>	4/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255578&amp;DocumentContentId=91405">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255578&amp;DocumentContentId=91405</a>

255578.002	Jeff Kuitert	<p>FPFC + DOAS + AWHP is a very uncommon HVAC system type and extremely unlikely to have lower first costs than baseline system types for offices and schools. The CEC's report ostensibly shows higher first costs for reported components of the FPFC system in Table 41 and higher maintenance costs in Table 42, but yet the cost effectiveness summary for large offices in Table 44 reports FPFCs to have lower costs than VAV. That conclusion defies common sense and suggests major errors in the analysis and assumptions for justifying this measure. For example, an AWHP is likely 5X more expensive than a boiler, plus the cost of the supplemental electric boiler as backup to the AWHP, the FPFC terminals are listed as 3X more expensive than VAV boxes, and FPFC requires an extra chilled water pipe distribution loop that isn't needed for VAV. It is not clear whether the analysis includes costs in the proposed case for the mandated heat recovery as well as VAV boxes at each zone for the DOAS system to meet mandatory occupied-standby and DCV requirements. This system will increase greatly first costs, require complexity that many schools will not be able to manage (e.g., building automation systems, chilled and hot water systems), and significantly increase maintenance costs. There is also no size limitation; VRF or air-to-air HPs may be much more appropriate for small school buildings but would not be prescriptively allowed by this proposal.</p> <p>For small and medium office buildings, VRF + DOAS is a viable all-electric HVAC system type, however, the first costs assumptions appear to be flawed. For example, the VRF costs are assumed at \$0.5/sf. For a realistic average of 800 sf/zone, this assumption sets VRF installed costs at \$400 per fan coil, which is impossibly low.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	4/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255578&amp;DocumentContentId=91405">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255578&amp;DocumentContentId=91405</a>
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255578.003	Jeff Kuitert	<p>On the energy side, though the VRF energy models in EnergyPlus (developed in conjunction with a VRF manufacturer) may show good energy performance, numerous studies have shown that AHRI ratings of VRF equipment are overstated (PG&amp;E, Guidehouse, and DOE). In particular, the VRF ASRAC working group found that AHRI efficiencies were roughly 2X higher than measured performance. Other comparison studies have shown code-compliant VAV reheat to have lower energy performance than VRF in Bay Area climates, contradicting the findings in the CEC analysis. The CEC report does not provide detail on what assumptions were made for modeling the VAV baselines to fully review the energy analysis (e.g., are the VAV minimum airflows set to ventilation as prescriptively required?).</p> <p>In coastal California climates, the mild weather conditions are ideal for air economizing. Accordingly, decades of Title 24 updates have increasingly made economizer requirements more stringent. Yet, each of the prescriptive baselines mandate that ventilation is provided via DOAS, which effectively eliminates air economizers and reduces the overall outdoor air provided to occupied zones. This change will reduce indoor air quality compared to systems with economizers.</p> <p>Though the performance compliance pathway may be used for alternative HVAC systems, the additional cost and complexity of performance modeling is prohibitive for many projects, particularly as there is no size limitation with this measure.</p> <p>The proposal is excessively prescriptive, unnecessarily constrains designers, and effectively eliminates many design options that may be better for certain circumstances. While the CEC's proposed changes may be well intended, there appear to be serious flaws in the analysis, there continue to be gaps in the supporting documentation, and the resulting constraints on industry are too severe to enact without more stakeholder engagement and opportunity for detailed review. The late posting of the Heat Pump Baseline Report with the 45-day language does not provide impacted stakeholders sufficient time to review and comment and for CEC to address significant errors in the</p>	<p>Thank you for your comment. The Department of Energy's Appliance Standards and Rulemaking Federal Advisory Committee reviewed and updated VRF test procedures to be more representative of actual energy performance. The updated test procedure was published by AHRI as AHRI 1230-2021. The effective date of the new test procedure is January 1, 2024 (10 CFR 431.96). Updated VRF standards went into effect January 1, 2024 (10 CFR 431.97(g)(2)).</p> <p>The loss of airside economizer benefits are offset by large reductions in fan energy with zonal, low-static fans, and with the elimination of reheat. DOAS systems ensure that indoor air quality requirements are met, often through direct airflow monitoring.</p> <p>Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process. Further, Staff published the analysis in accordance with the regulatory guidelines, which included a series of pre-rulemaking workshops, lead commissioner hearings, and provided one 45-day and two 15-day public comment periods on these proposals, in addition to the September business meeting.</p>	4/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255578&amp;DocumentContentId=91405">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255578&amp;DocumentContentId=91405</a>
255598.001	Justin Yurasek	Propose adding an exception to 140.4(e).1 so that economizers are NOT required for units over 33,000 Btu/hr when exclusively serving "normally unoccupied" rooms such as mechanical rooms, electrical rooms, storage rooms, etc.	Comment acknowledged, no change made. Suggestion is out of scope of this rulemaking. Staff encourages the commenter to submit data justifying the proposed exception in a future code update.	4/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255598&amp;DocumentContentId=91416">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255598&amp;DocumentContentId=91416</a>
255602.001	Nami Suzuki	We urge the CEC to remove the proposed heat pump baselines in 140.4(a)3. The new change to require offices to use VRF + DOAS is more expensive, less efficient, and could make buildings more likely to be flammable than a double duct VAV system. It seems like if we want to design offices the way that we have been doing so far with VAV's, it will require an energy model to prove that it is more efficient than the required VRF + DOAS system which is not an good use of time or money. The VRF system would require refrigerant to be flowing throughout the building and the new refrigerant, R32 is known to be flammable which could result in buildings to be more likely to be a safety hazard. For these reasons, I urge the CEC to remove the proposed heat pump baseline.	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p> <p>Regarding the comment re flammability of A2L refrigerants, Staff notes that the safety standards governing refrigerant use in air conditioning equipment in the US, ANSI/ASHRAE Standard 15 and UL 60335-2-40, have been updated to allow use of A2L refrigerants. These updated standards have been adopted both for ICC 2024 (including IBC, IMC and IFC changes) and for the California Building Code. Further, Staff notes that new air-conditioning equipment installed in California is subject to the California's Air Resources Board's Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End-Uses, which requires use of low GWP refrigerants as of January 1, 2025, and January 1, 2026 for VRF.</p>	4/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255602&amp;DocumentContentId=91420">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255602&amp;DocumentContentId=91420</a>

255623.001	William Hadinger	As a licensed engineer and the Chief Engineer for our company, we urge the CEC to remove the proposed new requirements in 140.4(a)3 for multizone school and office systems. The proposed changes significantly and unduly restrict compliance options for HVAC systems in offices and schools. FPFC + DOAS + AWP is a very uncommon HVAC system type and extremely unlikely to have lower lifecycle costs than other system types for offices and schools, such as VAV reheat or VVT.	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255623&amp;DocumentContentId=91442">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255623&amp;DocumentContentId=91442</a>
255623.002	William Hadinger	Forcing more buildings to go VRF and DOAS is troubling for several reasons. On the energy side, numerous studies have shown that AHRI ratings of VRF equipment are overstated (PG&E, Guidehouse, and DOE). In particular, the VRF ASRAC working group found that AHRI efficiencies were roughly 2X higher than measured performance. Other comparison studies have shown code-compliant VAV reheat to have lower energy performance than VRF in Bay Area climates. In coastal California climates, the mild weather conditions are ideal for air economizing. Accordingly, decades of Title 24 updates have increasingly made economizer requirements more stringent. Yet, each of the prescriptive baselines mandate that ventilation is provided via DOAS, which effectively eliminates air economizers and reduces the overall outdoor air provided to occupied zones. This change will reduce indoor air quality compared to systems with economizers.	Thank you for your comment. The Department of Energy's Appliance Standards and Rulemaking Federal Advisory Committee reviewed and updated VRF test procedures to be more representative of actual energy performance. The updated test procedure was published by AHRI as AHRI 1230-2021. The effective date of the new test procedure is January 1, 2024 (10 CFR 431.96). Updated VRF standards went into effect January 1, 2024 (10 CFR 431.97(g)(2)).  The loss of airside economizer benefits are offset by large reductions in fan energy with zonal, low-static fans, and with the elimination of reheat. DOAS systems ensure that indoor air quality requirements are met, often through direct airflow monitoring.	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255623&amp;DocumentContentId=91442">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255623&amp;DocumentContentId=91442</a>
255623.003	William Hadinger	Increased global warming from VRF is another issue. Most VRF uses R-410A, which has a global warming potential (GWP) of 2,090. Senate Bill 1206 bans the sale of refrigerants greater than 1,500 GWP starting 1/1/2030. Packaged rooftop units also typically use R-410A but they have several options for new refrigerants like R454B (GWP = 467) and R-32 (GWP=675). But R-454B and R-32 are not viable options for VRF because they are A2L (flammable) refrigerants which is highly problematic for VRF given the volumes of refrigerant that can enter occupied spaces. There are no viable low GWP and low ODP options for VRF at this time. Not only is VRF stuck with higher GWP/ODP refrigerants, but VRF has much higher refrigerant volumes and much higher refrigerant leakage rates than packaged rooftops. The higher volumes are unavoidable because refrigerant must be piped throughout the building to every zone. Per ASHRAE Standard 228, VRF will typically leak 10% of its mass charge per year, compared to 6% for rooftop units. Higher GWP + Higher Volume + Higher Leakage Rates = MUCH more global warming.	Comment acknowledged, no change made. Staff notes that the safety standards governing refrigerant use in air conditioning equipment in the US, ANSI/ASHRAE Standard 15 and UL 60335-2-40, have been updated to allow use of A2L refrigerants. These updated standards have been adopted both for ICC 2024 (including IBC, IMC and IFC changes) and for the California Building Code. Further, Staff notes that new air-conditioning equipment installed in California is subject to the California's Air Resources Board's Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End-Uses, which requires use of low GWP refrigerants as of January 1, 2025, and January 1, 2026 for VRF. Further, new air-conditioning equipment installed in California is subject to the California's Air Resources Board's Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End-Uses, which requires use of low GWP refrigerants as of January 1, 2025, and January 1, 2026 for VRF.	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255623&amp;DocumentContentId=91442">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255623&amp;DocumentContentId=91442</a>
255623.004	William Hadinger	If the CEC is looking for a way to ban gas heating, this is not the way. A far less restrictive way to ban gas heating would be to simply replace all of 140.4(a)3 with the following: The heating system serving offices and schools shall be an electric heat pump. Acceptable options include VRF heat pumps and air-source heat pumps.	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.  Staff notes that the Energy Code preserves fuel choice and the ability to use all federally covered products.	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255623&amp;DocumentContentId=91442">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255623&amp;DocumentContentId=91442</a>

255624.001	Adam Davis	<p>We urge the CEC to remove the proposed heat pump baselines in 140.4(a)3. The proposed changes significantly and unduly restrict compliance options for HVAC systems in offices and schools. The CEC's workshop presentations on July 27, 2023 and August 24, 2023 did not provide sufficient detail and justification for a measure that would have profound impacts to typical practice for office and school HVAC systems. The Heat Pump Baseline Report that was posted to the docket on March 28, 2024 along with the 45-day language was provided extremely late in the process. This significantly limits the opportunity for affected stakeholders to adequately participate in the public review process, and does not provide sufficient time to address serious flaws in the supporting analysis and proposal. For such a radical and restrictive change to Title 24, the CEC should have provided a comprehensive report many months ago documenting the detailed assumptions and calculations that support their analysis, as well as considerations of negative impacts to designers; contractors; building owners, occupants, and operators; and equipment manufacturers.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p> <p>Staff also notes that the analysis was published in accordance with the regulatory guidelines, which included a series of pre-rulemaking workshops, lead commissioner hearings, and provided one 45-day and two 15-day public comment periods on these proposals, in addition to the September business meeting.</p>	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443</a>
255624.002	Adam Davis	<p>FPFC + DOAS + AWHP is a very uncommon HVAC system type and extremely unlikely to have lower first costs than baseline system types for offices and schools. The CEC's report ostensibly shows higher first costs for reported components of the FPFC system in Table 41 and higher maintenance costs in Table 42, but yet the cost effectiveness summary for large offices in Table 44 reports FPFCs to have lower costs than VAV. That conclusion defies common sense and suggests major errors in the analysis and assumptions for justifying this measure. For example, an AWHP is likely 5X more expensive than a boiler, plus the cost of the supplemental electric boiler as backup to the AWHP, the FPFC terminals are listed as 3X more expensive than VAV boxes, and FPFC requires an extra chilled water pipe distribution loop that isn't needed for VAV. It is not clear whether the analysis includes costs in the proposed case for heat recovery and VAV boxes at each zone for the DOAS system to meet mandatory occupied-standby and DCV requirements. This system will increase greatly first costs, require complexity that many schools will not be able to manage (e.g., building automation systems, chilled and hot water systems), and significantly increase maintenance costs. There is also no size limitation; VRF or air-to-air HPs may be much more appropriate for small school buildings but would not be prescriptively allowed by this proposal.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443</a>
255624.003	Adam Davis	<p>For small and medium office buildings, VRF + DOAS is a viable all-electric HVAC system type, however, the first costs assumptions appear to be flawed. For example, the VRF costs are assumed at \$0.5/sf. For a realistic average of 800 sf/zone, this assumption sets VRF installed costs at \$400 per fan coil, which is impossibly low.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443</a>
255624.004	Adam Davis	<p>On the energy side, though the VRF energy models in EnergyPlus (developed in conjunction with a VRF manufacturer) may show good energy performance, numerous studies have shown that AHRI ratings of VRF equipment are overstated (PG&amp;E, Guidehouse, and DOE). In particular, the VRF ASRAC working group found that AHRI efficiencies were roughly 2X higher than measured performance. Other comparison studies have shown code-compliant VAV reheat to have lower energy performance than VRF in Bay Area climates, contradicting the findings in the CEC analysis. The CEC report does not provide detail on what assumptions were made for modeling the VAV baselines to fully review the energy analysis (e.g., are the VAV minimum airflows set to ventilation as prescriptively required?).</p>	<p>Thank you for your comment. The Department of Energy's Appliance Standards and Rulemaking Federal Advisory Committee reviewed and updated VRF test procedures to be more representative of actual energy performance. The updated test procedure was published by AHRI as AHRI 1230-2021. The effective date of the new test procedure is January 1, 2024 (10 CFR 431.96). Updated VRF standards went into effect January 1, 2024 (10 CFR 431.97(g)(2)).</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443</a>



255624.005	Adam Davis	In coastal California climates, the mild weather conditions are ideal for air economizing. Accordingly, decades of Title 24 updates have increasingly made economizer requirements more stringent. Yet, each of the prescriptive baselines mandate that ventilation is provided via DOAS, which effectively eliminates air economizers and reduces the overall outdoor air provided to occupied zones. This change will reduce indoor air quality compared to systems with economizers.	Thank you for your comment. The loss of airside economizer benefits are offset by large reductions in fan energy with zonal, low-static fans, and with the elimination of reheat. DOAS systems ensure that indoor air quality requirements are met, often through direct airflow monitoring.	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443</a>
255624.006	Adam Davis	Though the performance compliance pathway may be used for alternative HVAC systems, the additional cost and complexity of performance modeling is prohibitive for many projects, particularly as there is no size limitation with this measure.	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.  Staff notes that we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443</a>
255624.007	Adam Davis	While the CEC's proposed changes may be well intended, there appear to be serious flaws in the analysis, there continue to be gaps in the supporting documentation, and the resulting constraints on industry are too severe to enact without more stakeholder engagement and opportunity for detailed review. The late posting of the Heat Pump Baseline Report with the 45-day language does not provide impacted stakeholders sufficient time to review and comment and for CEC to address significant errors in the analysis and shortcomings in the proposed language. Therefore we respectfully request that the CEC remove the proposed heat pump baseline language.	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.  Staff also notes that the analysis was published in accordance with the regulatory guidelines, which included a series of pre-rulemaking workshops, lead commissioner hearings, and provided one 45-day and two 15-day public comment periods on these proposals, in addition to the September business meeting.	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255624&amp;DocumentContentId=91443</a>
255629.001	Elise Kiland	Comment is the same as 255624-1 through 255624-7	Please see responses to TN#255624-1 through -7.	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255629&amp;DocumentContentId=91450">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255629&amp;DocumentContentId=91450</a>
255632.001	Craig Ristow	We urge the CEC to remove the proposed new requirements in 140.4(a)3 for multizone school and office systems. The proposed changes significantly and unduly restrict compliance options for HVAC systems in offices and schools. FPFC + DOAS + AWHP is a very uncommon HVAC system type and extremely unlikely to have lower lifecycle costs than other system types for offices and schools, such as VAV reheat or VVT.	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255632&amp;DocumentContentId=91454">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255632&amp;DocumentContentId=91454</a>

255632.002	Craig Ristow	<p>Forcing more buildings to go VRF and DOAS is troubling for several reasons. On the energy side, numerous studies have shown that AHRI ratings of VRF equipment are overstated (PG&amp;E, Guidehouse, and DOE). In particular, the VRF ASRAC working group found that AHRI efficiencies were roughly 2X higher than measured performance. Other comparison studies have shown code-compliant VAV reheat to have lower energy performance than VRF in Bay Area climates. In coastal California climates, the mild weather conditions are ideal for air economizing. Accordingly, decades of Title 24 updates have increasingly made economizer requirements more stringent. Yet, each of the prescriptive baselines mandate that ventilation is provided via DOAS, which effectively eliminates air economizers and reduces the overall outdoor air provided to occupied zones. This change will reduce indoor air quality compared to systems with economizers. Increased global warming from VRF is another issue. Most VRF uses R410A, which has a global warming potential (GWP) of 2,090. Senate Bill 1206 bans the sale of refrigerants greater than 1,500 GWP starting 1/1/2030. Packaged rooftop units also typically use R-410A but they have several options for new refrigerants like R-454B (GWP = 467) and R-32 (GWP=675). But R-454B and R-32 are not viable options for VRF because they are A2L (flammable) refrigerants which is highly problematic for VRF given the volumes of refrigerant that can enter occupied spaces. There are no viable low GWP and low ODP options for VRF at this time. Not only is VRF stuck with higher GWP/ODP refrigerants, but VRF has much higher refrigerant volumes and much higher refrigerant leakage rates than packaged rooftops. The higher volumes are unavoidable because refrigerant must be piped throughout the building to every zone. Per ASHRAE Standard 228, VRF will typically leak 10% of its mass charge per year, compared to 6% for rooftop units. Higher GWP + Higher Volume + Higher Leakage Rates = MUCH more global warming.</p>	<p>Thank you for your comment. The Department of Energy's Appliance Standards and Rulemaking Federal Advisory Committee reviewed and updated VRF test procedures to be more representative of actual energy performance. The updated test procedure was published by AHRI as AHRI 1230-2021. The effective date of the new test procedure is January 1, 2024 (10 CFR 431.96). Updated VRF standards went into effect January 1, 2024 (10 CFR 431.97(g)(2)).</p> <p>The loss of airside economizer benefits are offset by large reductions in fan energy with zonal, low-static fans, and with the elimination of reheat. DOAS systems ensure that indoor air quality requirements are met, often through direct airflow monitoring.</p> <p>Staff notes that the safety standards governing refrigerant use in air conditioning equipment in the US, ANSI/ASHRAE Standard 15 and UL 60335-2-40, have been updated to allow use of A2L refrigerants. These updated standards have been adopted both for ICC 2024 (including IBC, IMC and IFC changes) and for the California Building Code. Further, Staff notes that new air-conditioning equipment installed in California is subject to the California's Air Resources Board's Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End-Uses, which requires use of low GWP refrigerants as of January 1, 2025, and January 1, 2026 for VRF.</p>	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255632&amp;DocumentContentId=91454">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255632&amp;DocumentContentId=91454</a>
255632.003	Craig Ristow	<p>If the CEC is looking for a way to ban gas heating, this is not the way. A far less restrictive way to ban gas heating would be to simply replace all of 140.4(a)3 with the following: "The heating system serving offices and schools shall be an electric heat pump. Acceptable options include VRF heat pumps and air-source heat pumps."</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p> <p>Staff notes that the Energy Code preserves fuel choice and the ability to use all federally covered products.</p>	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255632&amp;DocumentContentId=91454">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255632&amp;DocumentContentId=91454</a>
255635.001	Sarah Sullivan	<p>Comment is the same as 255624-001 through 255624-7</p>	<p>Please see responses to TN#255624-1 through -7.</p>	4/11/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255635&amp;DocumentContentId=91460">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255635&amp;DocumentContentId=91460</a>



255648.001	Aaron Wintersmith	I urge the CEC to remove the proposed heat pump baselines in 140.4(a)3. The proposed changes significantly and unduly restrict compliance options for HVAC systems in offices and schools. In addition The CEC’s workshop presentations to date have not provide sufficient detail and justification for a measure that would have profound impacts to typical practice for office and school HVAC systems. The Heat Pump Baseline Report that was posted to the docket on March 28, 2024 along with the 45-day language was provided extremely late in the process. This significantly limits the opportunity for affected stakeholders to adequately participate in the public review process, and does not provide sufficient time to address serious flaws in the supporting analysis and proposal. For such a radical and restrictive change to Title 24, the CEC must provide a timely and comprehensive report documenting the detailed assumptions and calculations that support their analysis, as well as considerations of negative impacts to designers; contractors; building owners, occupants, and operators; and equipment manufacturers.	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.  Staff also notes that the analysis was published in accordance with the regulatory guidelines, which included a series of pre-rulemaking workshops, lead commissioner hearings, and provided one 45-day and two 15-day public comment periods on these proposals, in addition to the September business meeting.	4/12/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255648&amp;DocumentContentId=91475">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255648&amp;DocumentContentId=91475</a>
255648.002	Aaron Wintersmith	While the CEC’s proposed changes may be well intended, there appear to be serious flaws in the analysis, there continue to be gaps in the supporting documentation, and the resulting constraints on industry are too severe to enact without more stakeholder engagement and opportunity for detailed review. The late posting of the Heat Pump Baseline Report with the 45-day language does not provide impacted stakeholders sufficient time to review and comment and for CEC to address significant errors in the analysis and shortcomings in the proposed language. Therefore we respectively request that the CEC remove the proposed heat pump baseline language.	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.  Staff also notes that the analysis was published in accordance with the regulatory guidelines, which included a series of pre-rulemaking workshops, lead commissioner hearings, and provided one 45-day and two 15-day public comment periods on these proposals, in addition to the September business meeting.	4/12/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255648&amp;DocumentContentId=91475">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255648&amp;DocumentContentId=91475</a>
255649.001	Craig Silvey	The proposed requirements for school and office multizone systems 140.4(a)3 seem way to specific and limiting and it is questionable how these are the most energy efficient or cost-effective solutions.	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.  Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.	4/12/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255649&amp;DocumentContentId=91476">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255649&amp;DocumentContentId=91476</a>

255649.002	Craig Silvey	For schools, how would the cost of providing individual economizers for every classroom fan coil be more efficient than a single, central economizer at a central AHU such as in a VAV system? What about the maintenance burden of distributed systems as opposed to centralized? What if the owner can't afford the cost of a CHW system and instead prefers DX? What if the owner had a geothermal loop and wanted a water-to-water heat pump in lieu of air-to-water?	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	4/12/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255649&amp;DocumentContentId=91476">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255649&amp;DocumentContentId=91476</a>
255649.003	Craig Silvey	For offices, similar concerns of pigeon-holing designers to fan coils in lieu of centralized systems, and air-to-water vs water-to-water HP options. As for DCV, isn't that covered in the mandatory requirements? Does a requirement for airside heat recovery payback considering offices have low minimum ventilation requirements as compared to say a laboratory building? Thank your for your consideration.	<p>Thank you for your comment. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	4/12/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255649&amp;DocumentContentId=91476">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255649&amp;DocumentContentId=91476</a>
255661.001	Shawn Mullins	<p>Owens Corning is a global leader in building materials, systems and solutions, including insulation. Our products are largely a result of our applied building science and sustainability efforts which drive our innovation and our global operations. Owens Corning product specifications and operational activities are specifically undertaken with a measurable awareness towards natural resources stewardship as an integral part of our self-imposed sustainability journey. Thus, it is with long-term resource sustainability, durability, occupant comfort and energy efficiency, that we provide the following perspectives.</p> <p>We continue to remain engaged in the code development process and for this cycle we have been pleased to see some movement to enhance the overall efficiency, durability and resiliency of California's housing stock, while also maintaining options for compliance.</p>	<p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	4/12/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255661&amp;DocumentContentId=91487">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255661&amp;DocumentContentId=91487</a>
255661.002	Shawn Mullins	<p>Specifically, we reassert perspectives for additional consideration:</p> <p>1. Exception 2 to Section 150.0(a)1:</p> <p>a. We applaud the Commission's inclusion of this language in the Express Terms. As we noted in our previous comments, this is a necessary correction to the 2022 code language which perhaps unintentionally, limited builder choice in how they meet the performance benchmarks of the code.</p> <p>b. We see no reason for this revised language not to make it through the regulatory process and into the final code language – since it is an option available to builders, there is zero regulatory financial impact. There also is no negative compliance impact currently written.</p>	<p>Thank you for your comment of support.</p>	4/12/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255661&amp;DocumentContentId=91487">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255661&amp;DocumentContentId=91487</a>

255661.003	Shawn Mullins	<p>2. Fallacy of Mechanical Trade-offs and Need for Bifurcated Energy Design Ratings (EDR):</p> <p>a. We concur with previous comments submitted by the North American Insulation Manufacturers Association, American Chemistry Council and Polyisocyanurate Insulation Manufacturers Association, wherein:</p> <p>i. Mechanical trade-offs against the building envelope are detrimental to California’s long-term efficiency and carbon reduction goals;</p> <p>ii. High-performance mechanical systems should be a complimentary efficiency building block vs. a competitive barrier to building efficiency targets;</p> <p>iii. Further solidifying this approach via more distinct EDR pillars is the clearest and most effective way to secure the State’s efficiency gains while also providing the market the most flexible compliance paths within the current regulatory environment</p>	Thank you for your comment.	4/12/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255661&amp;DocumentContentId=91487">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255661&amp;DocumentContentId=91487</a>
255661.004	Shawn Mullins	We at Owens Corning recognize the delicate balance and market realities our customers and their customers must deal with when it comes to code compliance and housing affordability. Maintaining flexibility in building and energy codes, where appropriate, is a critical component to maintaining a healthy and sustainable housing and construction industry.	Thank you for your comment.	4/12/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255661&amp;DocumentContentId=91487">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255661&amp;DocumentContentId=91487</a>
255665.001	Western Roof Consulting, Inc.	<p>Current code does not make a distinction between new coating and re-coat. Need to make a definitive distinction between the two.</p> <p>Currently municipalities are allowing contractors to simply coat anything and everything. [Existing roofs of a nonresidential or hotel/motel building being replaced, recovered or recoated, as defined in Section 100.1(b) and Title 24, Part 2, Chapter 2, shall meet the requirements of Section 110.8(i). Roofs with more than 50 percent of the roof area or more than 2,000 square feet of roof]</p>	Comment acknowledged, no change made. Staff notes that according to Section 1512.3 of Part 2, Volume 1 of the California Building Code, there are no restrictions on applying a liquid coating as long as the requirements outlined in Section 110.8 of the Energy Code, are met.	4/12/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255665&amp;DocumentContentId=91494">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255665&amp;DocumentContentId=91494</a>
255719.001	NEBB ATTCP	The National Environmental Balancing Bureau (NEBB) Affirms its support for the upcoming 2025 Code cycle changes to Title 24 Parts 1 and 6 and specifically the change directly affecting ATTCPs under Section 10-103.1 and .2.	Thank you for your comment of support.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255719&amp;DocumentContentId=91549">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255719&amp;DocumentContentId=91549</a>
255723.001	Gina Griffiths Rodda	Whereas there are many simplification measures and clean up we applaud, Gabel Energy would like to submit the following concerns and suggestions to be considered for final 2025 language.	Introductory remarks - no response needed.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.002	Gina Griffiths Rodda	<p>Definitions, Subchapter 1:</p> <p>1. Recoat: There is a need for a definition to support the intent for roofing “recoat” and the exceptions associated with a recoat roofing project. Many are confusing a recover with a recoat, hence not supporting the roof insulation requirements required for low-sloped roofing projects. We suggest something along the lines of: “When a new layer is applied to the outer surface of the existing roofing material for renewal or maintenance, and the existing roofing material is not being replaced and recovered (see Roof Recover and Roof Replacement).”</p>	Staff disagrees with the comment, and no changes have been made. The term "roof recover" is defined by the California Building Code (Title 24, Part 2). Staff will clarify the meaning of the term in the compliance manuals and outreach materials.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.003	Gina Griffiths Rodda	<p>Definitions, Subchapter 1:</p> <p>2. Nonresidential Building Occupancy Types:</p> <p>a. Using the word “occupancy” is misleading since these building types are not supported with the Building Code Occupancy categories and can be confusing to the industry. We suggest “occupancy” be removed.</p>	Staff agrees with the comment, and changes have been made. Specifically, the term was updated to "Nonresidential building types" from "Nonresidential building occupancy types."	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>

255723.004	Gina Griffiths Rodda	<p>Definitions, Subchapter 1:</p> <p>2. Nonresidential Building Occupancy Types:</p> <p>b. When determining if a building is subject to the PV and Battery Storage requirements of the Energy Code, we rely on these definitions to support how the requirements apply. Within this definition it supports that any building that has a "Nonresidential Function Area" (which is a separate definition) more than 10% of the floor area, then the building is no longer considered a Nonresidential Building Type, which in essence means they are not subject to the PV and Battery Storage requirements of the Energy Code. We do not feel this is the intent of this definition. We suggest this be revised to say:</p> <p>"NONRESIDENTIAL BUILDING OCCUPANCY TYPES are building types in which a minimum of 90 percent of the building floor area functions as one of the following, which do not qualify as any other Building Occupancy Types more specifically defined in Section 100.1, and which do not have a combined total of more than 10 percent of the area functioning of any Nonresidential Function Areas Building Type listed below specifically defined in Section 100.1:</p>	Staff agrees with the comment, and changes have been made. Specifically, the introductory language in the definition of "Nonresidential building types" has been removed.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.005	Gina Griffiths Rodda	<p>Definitions, Subchapter 1:</p> <p>2. Nonresidential Building Occupancy Types:</p> <p>c. Furthermore, the addition of "80% of the building floor area" is complicating how we determine the "Building Type" when in the stem of the definition "90%" is used. We suggest the introduction of the "80%" be removed.</p>	Staff agrees with the comment, and changes have been made. Specifically, the introductory language in the definition of "Nonresidential building types" has been removed.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.006	Gina Griffiths Rodda	<p>Definitions, Subchapter 1:</p> <p>2. Nonresidential Building Occupancy Types:</p> <p>d. There seems to be a redundant building type, of which we suggest only one be used to support clear understanding of when a building is "Sports and Recreation" that will then require PV and Battery Storage. We suggest "Gymnasium Building" be removed, since it is already supported in the new "Sports and Recreation Building" definition.</p>	Staff disagrees with the comment, and no changes have been made. Staff notes that Gymnasium Building can be a separate building that has fitness equipment only. While Sports and Recreation Building can include a gymnasium and other sports activities.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.007	Gina Griffiths Rodda	<p>Definitions, Subchapter 1:</p> <p>2. Nonresidential Building Occupancy Types:</p> <p>e. We applaud the new Building Types added to this definition supporting the new building types added in §140.10, and request "Warehouse" also be included to support when PV and Battery Storage would apply to that building type.</p>	Staff agrees with the comment, and changes have been made. Specifically a definition for "Warehouse building" was added.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.008	Gina Griffiths Rodda	<p>Definitions, Subchapter 1:</p> <p>3. Executive Director: We have been asked by many people who IS the Executive Director, and many believe this is the Authority having Jurisdiction, which we know is not the intent. We suggest the definition in Title Part 12 be introduced to the definitions of Title 24 Part 6.</p>	Staff agrees with the comment, and changes have been made. Specifically, a definition for "Executive Director" was added.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.009	Gina Griffiths Rodda	<p>Nonresidential Subchapters</p> <p>1. §120.7(d) Fenestration: Please consider adding a "fire-rated" and "skylight" fenestration exception to this very aggressive U-factor. New Mandatory Nonresidential U-factor of 0.47: This will cause issues when trying to build nonresidential buildings that have fire-rated window requirements because it will limit the ability to consider alternate window products in fire areas. In our experience, it is just not possible to meet these new mandatory U-factors with fire-rated windows nor for skylights.</p>	Staff agrees with the comment, and changes have been made. Specifically, exceptions have been added where mandatory maximum U-factor requirements for fenestration products exist within the Energy Code.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>

255723.01	Gina Griffiths Rodda	<p>Nonresidential Subchapters</p> <p>2. §120.7(e): Nonresidential Vestibules: We are going to state the same thing we did in our last two docketed letters. PLEASE reconsider this mandatory requirement!</p> <p>Planning typically dictates the look of a project and is approved many months or even years before a project goes in for a building permit. This means projects that will be subject to this mandatory requirement might already be going through planning approval now, before the code is enforced or even adopted. Redesigning to include a vestibule may add many months and substantial cost to a project that has already been approved by planning. What happens if planning does not agree with the look associated with a vestibule? How can that be mitigated?</p> <p>Additionally, there is also no code language guidance on how this is to be considered for additions and alterations to existing buildings, or even first-time buildouts of tenant improvement buildings. What is the trigger for this requirement? Replacing storefront? Changing lighting at the entry?</p> <p>Having this as a mandatory requirement, with no ability to use the performance approach for flexibility, seems short sighted because not all project scopes can be considered when adopting these requirements.</p>	Staff agrees with the comment, and changes have been made. Specifically, an exception was added for projects that have already submitted building plans to the local building department prior to the 2025 Energy Code's effective date.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.011	Gina Griffiths Rodda	<p>Nonresidential Subchapters</p> <p>3. ASHRAE Guidelines 36 – Comment applies to all ASHRAE Guideline 36 references in 2025 Energy Code: By not including the requirements within the Energy Code, you are forcing people to buy this guideline which will reduce the enforceability of these new requirements. Please consider including guidance on how these requirements are to be enforced if the requirements are not included within the Energy Code.</p>	Comment acknowledged, no change made. The Guideline 36 text is available in its entirety on ASHRAE's website: <a href="https://ashrae.iwrapper.com/ASHRAE_PREVIEW_ONLY_STANDARDS/GL_36_2021">https://ashrae.iwrapper.com/ASHRAE_PREVIEW_ONLY_STANDARDS/GL_36_2021</a>	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.012	Gina Griffiths Rodda	<p>Nonresidential Subchapters</p> <p>4. §140.4(s)2: Suggest the bullets be reconsidered, this could be interpreted as 0.30% and nor 30%</p>	Staff agrees with the comment, and changes have been made. Specifically, the bullet points in Section 140.4(s)2 were changed to letters (i.e. A or B).	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.013	Gina Griffiths Rodda	<p>Nonresidential Subchapters</p> <p>5. §140.10 PV and Battery Storage:</p> <p>a. SARA §140.10(a)2C: We suggest this sentence structure be reconsidered, since it can be confusing to understand the intent with the current structure. We suggest the following:</p> <p>Roof area that is otherwise not available due to compliance:</p> <ul style="list-style-type: none"> <li>☐ With other state building code requirements or</li> <li>☐ Is a local building code requirements if local building code requirements are confirmed by the Executive Director</li> </ul>	Staff agrees with the comment, and changes have been made. Two have been added to address state and local codes as follows: Roof area that is otherwise not available due to compliance with: <ul style="list-style-type: none"> <li>i. Other state building code requirements, or</li> <li>ii. With local building code requirements if the local building code requirements are confirmed by the Executive Director</li> </ul>	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.014	Gina Griffiths Rodda	<p>Nonresidential Subchapters</p> <p>5. §140.10 PV and Battery Storage:</p> <p>b. Exception 5 to §140.10(a): There is no definition for “individual HVAC system” in the Energy Code and suggest this be revised to “individual HVAC system”.</p>	Staff agrees with the comment, and changes have been made. Specifically, "individual" has been removed from Exception 5 to Section 140.10(a)ii. The current language is: The tenant space is served by an HVAC system that does not serve other tenant spaces in the building.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.015	Gina Griffiths Rodda	<p>Single-family Subchapters</p> <p>1. 150.0(q) Fenestration 0.40 U-factor: Please consider adding a “fire-rated” and “skylight” fenestration exception to this very aggressive U-factor. We have expressed our concern regarding this mandatory U-factor in all previous docketed letters.</p>	Staff agrees with the comment, and changes have been made. Specifically, exceptions have been added where mandatory maximum U-factor requirements for fenestration products exist within the Energy Code.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>

255723.016	Gina Griffiths Rodda	Multifamily Subchapters 1. §160.3(b)7 and 8: Replace "CF2R" with either NRCI/LMCI or Certificate of Installation.	Staff agrees with the comment, and changes have been made. Specifically, "CF2R" was changed to " <b>Certificate of Installation</b> " in Sections 160.3(b)7 and 8.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255723.017	Gina Griffiths Rodda	Multifamily Subchapters 2. §160.4(e)4 Insulation Quality Verification: We don't see how it is viable to require a ECC Rater to verify pipe insulation, due to how many visits would be require throughout the construction of a multifamily and achieve compliance. How will we mitigate when the ECC rater is not brought out on site until the end of the project, and they were not able to inspect the entire length of the hot water piping? Does this apply to low-rise and high-rise multifamily buildings?	Staff agrees with the comment, and changes have been made. Specifically, Staff has moved the pipe insulation verification requirement to Section 170.2(d)2 in order to provide more flexibility to use the performance compliance path and make adjustments if pipe insulation verification is not possible.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255723&amp;DocumentContentId=91553</a>
255730.001	Christopher Tindall	Please update the language in the Alternative Calculation Manual related to Wall Construction: Standard Design to remove the following sentence: 'The standard design construction is based on JA4 Table 4.3.3.'  JA4 Table 4.3.3 is U-Factors of Metal Framed Walls. This sentence requires all walls in the standard model to be metal framed, regardless of the wall type used in the proposed model. This results in a significant energy penalty when the proposed model uses any wall types other than metal framed walls (i.e., light mass, heavy mass, wood framed, and metal building walls). The developers of CBECC have confirmed the compliance software introduces an intended penalty due to this requirement in the ACM.  The sentence above also appears to conflict with the intent of the 2025 BEES Section 140.1 PERFORMANCE APPROACH (Part B) which states 'The source energy budget is determined by applying the mandatory and prescriptive requirements of the standard design to the proposed design building.' With the current ACM, walls that comply using a prescriptive compliance approach will not comply using a performance compliance approach. The ACM applies requirements that are more restrictive than mandatory and prescriptive code requirements.  The standard model wall types should match the wall types used in the proposed model with code compliant U-Factors based on that wall type. The standard model should not default all wall types to metal framed walls.	Comment acknowledged, no change made. This comment requests a change to the Alternative Calculation Reference Manual, and is out of scope of this rulemaking. Staff notes that when multiple options for a building feature are allowed by the Energy Code, the standard design is based on a single option, which is described in the ACM Reference Manual.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255730&amp;DocumentContentId=91561">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255730&amp;DocumentContentId=91561</a>
255732.001	Laurens Vanveld (Western Allied Mechanical)	I recently found there is a proposal in place to change the language of the California Energy Code for the prescriptive system requirements for offices and schools.  As I understand it the proposed prescriptive requirements would be for VRF plus a DOAS (dedicated outside air system), or a 4-pipe fan coil system plus DOAS with air to water heat pumps providing CHW and HHW for the units for offices, or for heating only systems. The third option appears to rule out conventional rooftop package heat pump units with economizers which again pushes into a much more expensive customized system with the heat recovery.  The prescriptive requirement for Schools would be 4-pipe fan coil units plus a DOAS system.	Introductory remarks - no response needed.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563</a>



255732.002	Laurens Vanveld (Western Allied Mechanical)	We have found through extensive experience designing, installing, and servicing systems for commercial buildings that these proposed systems will typically be much more expensive and often less efficient than some other options. In our experience VRF systems, can be quite problematic with respect to reliability and refrigerant leaks. With these systems currently in a state of refrigerant transition this is an even greater problem since now a refrigerant leak can result in leaking flammable refrigerant directly into the space. The likelihood of leaks increases greatly when you have refrigerant piping extending all through the building. Refrigerant circuits in package units is much more limited and factory built. When leaks do occur, they are	<p>Comment acknowledged, no change made.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p> <p>Staff notes that the safety standards governing refrigerant use in air conditioning equipment in the US, ANSI/ASHRAE Standard 15 and UL 60335-2-40, have been updated to allow use of A2L refrigerants. These updated standards have been adopted both for ICC 2024 (including IBC, IMC and IFC changes) and for the California Building Code. Further, Staff notes that new air-conditioning equipment installed in California is subject to the California's Air Resources Board's Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End-Uses, which requires use of low GWP refrigerants as of January 1, 2025, and January 1, 2026 for VRF.</p>	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563</a>
255732.003	Laurens Vanveld (Western Allied Mechanical)	Four pipe fan coil systems will also cost significantly more than traditional VAV reheat systems. They also now double the amount of piping and components that can leak water inside the building. While serious water leaks are not a very common occurrence, even small leaks can create significant damage inside a building and also create health hazards through mold growth.	Thank you for your comment. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process. Staff expects that proper maintenance and regular inspections can minimize the risk of water damage and mold growth.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563</a>
255732.004	Laurens Vanveld (Western Allied Mechanical)	None of these proposed prescriptively allowed systems allow for the use of an economizer which in most of the state would have huge energy savings. The economizers also provide other benefits in terms of indoor air quality (IAQ) and health for occupants inside the building.	Thank you for your comment. Staff notes that the loss of airside economizer benefits are offset by large reductions in fan energy with zonal, low-static fans, and with the elimination of reheat. DOAS systems ensure that indoor air quality requirements are met, often through direct airflow monitoring.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563</a>
255732.005	Laurens Vanveld (Western Allied Mechanical)	I would strongly ask that this proposal be abandoned and instead a review of other system types should be done that can provide better performance from an energy standpoint overall and maintain the benefits of an outdoor air economizer. A VAVRH system with an OSA economizer provides a good balance of performance, efficiency, and cost effectiveness in a system that is well understood, reliable, and serviceable. The next code cycle would be a time to provide a better option to these current proposed DOAS systems.	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563</a>
255732.006	Laurens Vanveld (Western Allied Mechanical)	We at Western Allied have endeavored to provide better, more efficient, reliable, and lower first cost systems for our client for many years. With the rapid change in progress now moving away fossil fuels, we are constantly innovating and working to optimize the performance and cost effectiveness of our system designs.	Introductory remarks - no response needed.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563</a>

255732.007	Laurens Vanveld (Western Allied Mechanical)	I would suggest that a clearly better option than these proposed systems would be a DFDDVAV (Dual Fan Dual Duct VAV) system. We have designed several DDVAV systems recently that are very efficient systems when economizers, variable speed fans, and good turndown on cooling are provided. I firmly believe that a DDVAV system will be more efficient than the VRF or 4PFC plus DOAS systems proposed in this measure. The exclusion of economizer systems from these options is a very poor decision. We reset DSPsp down to a typical minimum of 0.1" w.g. and typically see systems operating at that level for many hours of operation on 100% OSA for cooling. We can also then lockout cooling refrigeration below about 60 F and we can lock out all heating above about 70 F. We know that this system can be installed at a lower cost than VRF on buildings as small as 20,000 sqft or less. When zones are somewhat bigger particularly on smaller buildings SZVAV rooftop package heat pump units are a far more cost-effective system than VRF or 4PFC. Similarly for some applications a VVT system with packaged rooftop heat pumps can also be a very good option at a much lower cost than the VRF or 4PFC systems proposed.	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.  Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.	4/16/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255732&amp;DocumentContentId=91563</a>
4/17/2600	CalCERTS, Inc.	CalCERTS resubmits comments previously docketed under the Express Terms docket, 22-BSTD-01, submitted at TN# 253604. These comments were initially submitted following an informal meeting with CEC Staff on 12/22/2023 to discuss concerns with the Express Terms. CEC Staff identified that the changes could not be incorporated into the 45-day language since the language had already been submitted for review; but, would review for changes at the 45-day language stage. See attached filing.	Staff agrees with the comment, and changes have been made. Specifically, Staff is aware of the pre-rulemaking comments referred to by the commentor and agrees that these comments were not received in time to be incorporated into the 45-day language. The proposed changes are a reasonable compromise to allow staff access to the information in the data registry in a timely manner and have incorporated substantively similar changes into the 15-Day Express Terms.	4/18/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255778&amp;DocumentContentId=91624">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255778&amp;DocumentContentId=91624</a>
4/17/2600	CalCERTS, Inc.	In addition to comments submitted on Shadow Audits and Data Retention, CalCERTS requests a language change to the Challenge Exam requirement in 10-103.3(d)(1)(B). This change is requested to help better reflect the application and intent of Challenge Exams. Most Challenge Exams are requested by Raters who are currently working as active, certified, and reviewed HERS Raters who received work housed in a HERS Registry that is not their usual Registry. The requests for Challenge Exams are usually time-sensitive. It makes sense for the HERS Provider to subject a HERS Rater to a competency exam to ensure the Provider wants to take responsibility for that Rater; however, the requirements for the Challenge Exam as written are too restrictive. There is no benefit to mandating an "in person" exam, which would require travel costs and time/resource costs, with no apparent benefit. A live proctored exam or software proctored exam is sufficient and matches the criteria for the initial certification exam. The Challenge Exam should not be more restrictive than the base certification requirements, the requirement to be in person should be removed. (See suggested redline below)	Staff agrees with the comment, and changes have been made. Specifically, Staff has reviewed the recommended changes to Section 10-103.3(d)1B and agrees to allow the challenge exam to be proctored either in-person or remotely and have incorporated substantively similar changes into the 15-Day Express Terms.	4/18/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255778&amp;DocumentContentId=91624">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255778&amp;DocumentContentId=91624</a>



255781.001	Hassan Fawaz	<p>Per Mandatory multifamily new construction requirement 160(c).1, raise mass walls shall have an assembly U-factor to not exceed 0.269. This is a feasible requirement with current multifamily design in regard to dwelling units over shorter garage spaces.</p> <p>However, what may need to be re-evaluated is the mandatory requirement for raised mass floors for alterations. Altered mass floors for multifamily builds per 180.2(a).3. B. Shall have an assembly U-factor no more than 0.111.</p> <p>It is best for both new construction and altered mass floors for multifamily to have the same U-factor of 0.269. Otherwise, the current altered measure may cause issues for multifamily dwelling units and garage parking to stay within mandatory height requirements per local jurisdictions and avoid possible confusion in the code.</p>	<p>Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff did not modify requirements in Section 180.2(a)3B in the 2025 code update. Staff will revisit this topic in the next code update.</p>	4/18/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255781&amp;DocumentContentId=91628">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255781&amp;DocumentContentId=91628</a>
255784.001	Kurt Hurley	<p>[1] On proposed 120.6(k) Commercial Kitchen Electric Readiness coordinate electric load capacity + electric service panel space requirements with the CALGreen EV Capable Space requirements at CGBSC 4.106.4.2.1 for intra-code consistency</p>	<p>Staff agrees with the comment, and changes have been made to clarify that the requirement is for the electric service panel serving the kitchen, and not necessarily the main service panel. This clarification is relevant for installations where there is a subpanel serving the kitchen.</p> <p>Staff reviewed CALGreen (Title 24, Part 11) for an opportunity for alignment, but the requirements were very different. Staff thinks the code language with the clarification edits to 'panel' is sufficiently clear for users.</p>	4/18/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255784&amp;DocumentContentId=91633">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255784&amp;DocumentContentId=91633</a>
255784.002	Kurt Hurley	<p>[2] On JA12 BESS Compliance Cycling Capacity consider a (partial) exception for single family designs incorporating high thermal mass internal wall assemblies (e.g. increasing to a 12 Btu/hr-sf wall assembly from the prescriptive massed exterior wall of 7 Btu/hr-sf of Table 150.1-A) to achieve similar electric grid-friendly and load curtailment benefits. Increasing interior wall thermal storage / mass allows Single Family structures to coast thru heating and cooling extremes events with reduced active space conditioning. Consider also that electric appliance lifetimes of 12-15yrs compare unfavorable with that of 70yrs+ for interior wall assemblies. The City of Berkeley would be open to collaboration on software modeling of adding massed thermal storage internal wall assemblies to a CEC prototype structure to quantify electric grid benefits and to establish a (prescriptive) baseline.</p>	<p>Comment acknowledged, no change made. For single family buildings, a battery energy storage system (BESS) is a compliance option and not a prescriptive requirement nor part of the standard design under the performance compliance path. As a result, the proposed exception for thermal mass walls is not necessary or appropriate. Thermal mass should be modeled as a separate compliance option and Staff welcome assistance in development of such a compliance option.</p>	4/18/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255784&amp;DocumentContentId=91633">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255784&amp;DocumentContentId=91633</a>
255784.003	Kurt Hurley	<p>[3] Add a mandatory requirement in Section 160 for new Multifamily buildings over 3 stories to require an exterior finish minimum Aged Solar Reflectance e.g. CZ16 and other extreme CDD driven regions of CA to diminish exterior heat gains to building and reduce the building's air conditioning/cooling peak load contribution.</p>	<p>Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.</p>	4/18/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255784&amp;DocumentContentId=91633">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255784&amp;DocumentContentId=91633</a>
255787.001	Lance Brown	<p>We urge the CEC to remove the proposed new requirements in 140.4(a)3 for multizone school and office systems. The proposed changes significantly and unduly restrict compliance options for HVAC systems in offices and schools. FPFC + DOAS + AWHP is a very uncommon HVAC system type and extremely unlikely to have lower lifecycle costs than other system types for offices and schools, such as VAV reheat or VVT.</p>	<p>Thank you for your comment. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	4/18/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255787&amp;DocumentContentId=91636">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255787&amp;DocumentContentId=91636</a>

255787.002	Lance Brown	Forcing more buildings to go VRF and DOAS is troubling for several reasons. On the energy side, numerous studies have shown that AHRI ratings of VRF equipment are overstated (PG&E, Guidehouse, and DOE). In particular, the VRF ASRAC working group found that AHRI efficiencies were roughly 2X higher than measured performance. Other comparison studies have shown code-compliant VAV reheat to have lower energy performance than VRF in Bay Area climates. In coastal California climates, the mild weather conditions are ideal for air economizing. Accordingly, decades of Title 24 updates have increasingly made economizer requirements more stringent. Yet, each of the prescriptive baselines mandate that ventilation is provided via DOAS, which effectively eliminates air economizers and reduces the overall outdoor air provided to occupied zones. This change will reduce indoor air quality compared to systems with economizers. Increased global warming from VRF is another issue. Most VRF uses R410A, which has a global warming potential (GWP) of 2,090. Senate Bill 1206 bans the sale of refrigerants greater than 1,500 GWP starting 1/1/2030. Packaged rooftop units also typically use R-410A but they have several options for new refrigerants like R-454B (GWP = 467) and R-32 (GWP=675). But R-454B and R-32 are not viable options for VRF because they are A2L (flammable) refrigerants which is highly problematic for VRF given the volumes of refrigerant that can enter occupied spaces. There are no viable low GWP and low ODP options for VRF at this time. Not only is VRF stuck with higher GWP/ODP refrigerants, but VRF has much higher refrigerant volumes and much higher refrigerant leakage rates than packaged rooftops. The higher volumes are unavoidable because refrigerant must be piped throughout the building to every zone. Per ASHRAE Standard 228, VRF will typically leak 10% of its mass charge per year, compared to 6% for rooftop units. Higher GWP + Higher Volume + Higher Leakage Rates = MUCH more global warming.	Thank you for your comment. VRF test procedures were updated by the ASRAC and adopted by AHRI as AHRI 1230-2021. Effective date is January 1, 2024.  Updated VRF standards went into effect January 1, 2024: Each variable refrigerant flow air conditioner or heat pump (except air-cooled systems with cooling capacity less than 65,000 Btu/h) manufactured on or after January 1, 2024, must meet the applicable minimum energy efficiency standard level(s) set forth in table 16 to this paragraph (f)(2.). This test procedure better reflect energy performance of VRF systems.  Staff notes that the safety standards governing refrigerant use in air conditioning equipment in the US, ANSI/ASHRAE Standard 15 and UL 60335-2-40, have been updated to allow use of A2L refrigerants. These updated standards have been adopted both for ICC 2024 (including IBC, IMC and IFC changes) and for the California Building Code. Further, Staff notes that new air-conditioning equipment installed in California is subject to the California's Air Resources Board's Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End-Uses, which requires use of low GWP refrigerants as of January 1, 2025, and January 1, 2026 for VRF.	4/18/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255787&amp;DocumentContentId=91636">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255787&amp;DocumentContentId=91636</a>
255787.003	Lance Brown	If the CEC is looking for a way to ban gas heating, this is not the way. A far less restrictive way to ban gas heating would be to simply replace all of 140.4(a)3 with the following: •The heating system serving offices and schools shall be an electric heat pump. Acceptable options include VRF heat pumps and air-source heat pumps. •	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.  Staff notes that the Energy Code preserves fuel choice and the ability to use all federally covered products.	4/18/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255787&amp;DocumentContentId=91636">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255787&amp;DocumentContentId=91636</a>
255922.001	Philip Piceno (Wolf Den Energy)	Hello, I went to a CalCerts meeting on the 45 Day Language changes that are coming to the upcoming 2025 Energy Code. I think there is a lot of good things that will help out honest HERS or ECC Raters. But there are a couple things that concern me.	Thank you for your comments. Staff will respond to your itemized comments/concerns below.	4/25/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255922&amp;DocumentContentId=91771">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255922&amp;DocumentContentId=91771</a>
255922.002	Philip Piceno (Wolf Den Energy)	1. Verified Refrigerant Charge The majority of heat pumps being installed in my area are Do-It-Yourself pre-charged units. These units cannot do the Verified Refrigerant Charge as easily. Could there be more detail on this matter? Like telling us if pre-charged units will be exempt from this rule. It would save a lot of money and waste if they didn't have to be verified.	Comment acknowledged, no change made. Per Exception 1 to Section 150.1(c)7A, packaged systems where the manufacturer has verified the correct system refrigerant charge prior to shipment from the factory are not required to have the refrigerant charge confirmed through field verification and diagnostic testing.	4/25/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255922&amp;DocumentContentId=91771">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255922&amp;DocumentContentId=91771</a>
255922.003	Philip Piceno (Wolf Den Energy)	2. QA While I agree that more QA should happen to root out bad raters, the new rules for sampling seem excessive. Some jobs will need almost 40% QA. All the raters will have to pay for this with our annual fees. It just seems like that is too much.	Thank you for your comment. See response to TN# 256030.	4/25/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255922&amp;DocumentContentId=91771">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255922&amp;DocumentContentId=91771</a>

255922.004	Philip Piceno (Wolf Den Energy)	3. Exemplary Raters I love this rule. It benefits the raters that are doing their job right. Thank you for all your hard work and for helping California be more energy efficient, Philip Piceno Wolf Den Energy	Thank you for your comment of support.	4/25/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=255922&amp;DocumentContentId=91771">https://efiling.energy.ca.gov/GetDocument.aspx?tn=255922&amp;DocumentContentId=91771</a>
256016.001	Gina Griffiths Rodda, Rosemary Howley (Gabel Energy)	Multifamily Subchapters 1. §160.2(c)8A: The Class 1 air description does not match what is supported in §120.1(g)1 (see below) and needs to be corrected to match. §120.1(g)1:	Staff agrees with the comment, and changes have been made. Specifically, Section 160.2(c)8A was revised as follows: "Significant" was changed to " <b>low</b> ", and "offensive" was changed to " <b>in</b> offensive". The current language is: Class 1 air is air with low contaminant concentration, low sensory-irritation intensity or inoffensive odor.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773</a>
256016.002	Gina Griffiths Rodda, Rosemary Howley (Gabel Energy)	2. 160.5(b)4B: After the proposed 2025 changes, the highlighted text below became hard to understand: To make sense grammatically, change the highlighted text from: "... load that greater than 0.5 watts per square foot shall provide with multi-level lighting ..." To: "... load greater than 0.5 watts per square foot shall be provided with multi-level lighting ..."	Staff agrees with the comment, and the suggested grammatical corrections have been made to Section 160.5(b)4B. The current language is: The general lighting of any space with a size of 100 square feet or larger and with a connected lighting load greater than 0.5 watts per square foot shall be provided with multilevel lighting controls.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773</a>
256016.003	Gina Griffiths Rodda, Rosemary Howley (Gabel Energy)	3. 160.9(a) General Requirements Section 160.9(a) talks about electric-ready requirements in 160.9(a) through (e), but they actually go to 160.9(f). Change the circled "(e)" below to "(f)"	Staff agrees with the comment, and changes have been made. Specifically, the electric ready requirements are listed as 160.9( <b>b</b> ) through 160.9( <b>f</b> ).	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773</a>
256016.004	Gina Griffiths Rodda, Rosemary Howley (Gabel Energy)	4. 170.2(e)1: "Item i" needs to be changed to "Item A"	Staff agrees with the comment, and changes have been made. Specifically, "Item i" was changed to "Item <b>A</b> " in Section 170.2(e)1.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773</a>
256016.005	Gina Griffiths Rodda, Rosemary Howley (Gabel Energy)	5. 170.2(e)2Biii: Text refers to Section 170.2(e)1Aii, but there is no such section number. Should this refer to Section 170.2(e)2Bii or something else? "e. The lighting control for the furniture mounted luminaire complies with all other applicable requirements in Section 170.2(e)1Aii."	Staff agrees with the comment, and changes have been made. Specifically, "Section 170.2(e)1Aii" was changed to "Section 170.2(e) <b>2B</b> " in Section 170.2(e)2Biii.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773</a>
256016.006	Gina Griffiths Rodda, Rosemary Howley (Gabel Energy)	6. 170.2(e)2Bvi: Text refers to Section 170.2(e)1Aii, but there is no such section number. Should this refer to Section 170.2(e)2Bii or something else? "Only lighting wattage directly controlled in accordance with Section 170.2(e)1Aii shall be used to reduce the installed watts as allowed by Section 170.2(e)1Aii for calculating the Adjusted Indoor Lighting Power. If only a portion of the wattage in a luminaire is controlled in accordance to Section 170.2(e)1Aii, then only that portion of controlled wattage may be reduced in calculating Adjusted Indoor Lighting Power."	Staff agrees with the comment, and changes have been made. Specifically, "Section 170.2(e)1Aii" was changed to "Section 170.2(e) <b>2B</b> " in Section 170.2(e)2Bvi.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773</a>
256016.007	Gina Griffiths Rodda, Rosemary Howley (Gabel Energy)	7. 180.2(b)1Cii Exception 1: U-factor should not be included in the exception	Staff agrees with the comment, and changes have been made. Specifically, "U-factor" was removed from Exception 1 to Section 180.2(b)1Cii.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773</a>

256016.008	Gina Griffiths Rodda, Rosemary Howley (Gabel Energy)	<p>Single-family and Nonresidential Mandatory U-factor</p> <p>We have expressed a few times now our concern about not allowing any flexibility for fenestration U-factors when considering fire rated requirements, and WUI. Here are a few code sections supporting the requirements for fire-rated windows, glass doors and skylights.</p> <p>Fire Code per NFPA 80</p> <p>When skylight is an exit passageway (Fire Code)</p> <p>Per Building Code</p> <p>WUI per Building Code</p>	Staff agrees with the comment, and changes have been made. Specifically, exceptions have been added where mandatory maximum U-factor requirements for fenestration products exist within the Energy Code.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256016&amp;DocumentContentId=91773</a>
256025.001	Ryan Lamb	Comment is the same as 255623-001 through 255623-4	Please see responses to comment TN#255623.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256025&amp;DocumentContentId=91785">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256025&amp;DocumentContentId=91785</a>
256030.001	Meagan McFadden (CalCERTS, Inc.)	<p>In the proposed 45-day language for the Field Verification and Diagnostic Testing Program, CEC staff have significantly increased the requirements for Quality Assurance (QA) inspections of homes that pass compliance via sampling. The seemingly simple addition to the requirements has added a huge QA burden on the Providers without any benefit to homebuyers or Raters.</p> <p>In the past, HERS Providers were required to do QA and report on associated lots. This was part of the annual requirements and Providers had discretion on what lots and where to conduct the QA. Providers could collect this data in conjunction with other scheduled QAs on Raters for cost-effectiveness.</p> <p>In the new proposed language, Providers are faced with very restrictive requirements and are mandated to impede production builders and the construction of residential developments if these requirements are not met. As written, it appears as though the CEC is leveraging Providers to disincentivize and hamper sampling.</p>	Comment acknowledged, changes have been made. Specifically, Section 10-103.3(d)5C, which defines quality assurance requirements for developments that use sampling, has been restructured. These changes should alleviate any issues regarding the amount of quality assurance performed by the ECC-Provider.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792</a>

256030.002	Meagan McFadden (CalCERTS, Inc.)	<p>As important, the language in the proposed regulations concerning sample groups more than quadruples the existing QA mandate on residential new construction projects with ZERO intent or purpose for those QAs to improve Rater performance.<sup>1</sup> Without modifications, the proposed language will result in the CEC having an unenforceable QA mandate.</p> <p>The QA rules require Providers to do QA on every seventh sample group<sup>2</sup>. If the Provider cannot get into QA an associated lot in the seventh sample group there are consequences to the Builder, which would ostensibly make them have to forfeit sampling and convert to 100% testing or be locked out of the Registry as conflicted data. (10-103.3(d)5(C)(i)(f)(ii)). On residential projects for production Builders, there is no way to pivot to 100% testing at that juncture of the project, for either the Builder or the Rater. Having the data deemed conflicted would shut the project down entirely. (10-103.3(b)(1)(B)) According to the Initial Statement of Reason this mandate is intended to incentivize cooperation by Builders. However, it comes at the significant risk of impeding housing for thousands of California homebuyers.<sup>3</sup> CalCERTS has not had issues with superintendents providing access for QAs and is unaware of this perceived impediment.</p>	<p>Comment acknowledged, changes have been made. Specifically, Section 10-103.3(d)5C, which defines quality assurance requirements for developments that use sampling, has been restructured. These changes should alleviate any issues regarding the amount of quality assurance performed by the ECC-Provider. Staff clarifies that the proposed requirements do not force any builder to implement 100% coverage for FV&amp;DT by Raters. However, Staff notes that the builder is responsible for self-testing of 100% of all installations using the same FV&amp;DT procedures as the Raters under the sampling requirements. Sampling only applies to the Rater, not the builder.</p>	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792</a>
256030.003	Meagan McFadden (CalCERTS, Inc.)	<p>It is untenable for Providers to have qualified staff to get to every seventh sample group throughout the state of California at a time convenient for the Builder. More than 30% of all residential production projects in California use sampling. The majority of these projects exceed seven sample groups. Sample groups can be, and sometimes are, as small as two lots. This new language would require Providers to have large numbers of QA staff geographically dispersed that can move quickly to not impede the Builders' schedules. The CEC did not conduct a cost analysis on these requirements or justify the specificity of the requirements.<sup>4</sup> This is a huge amount of QA not targeting the skills or qualifications of any Rater. It's just expensive data gathering to be paid for by whom? Homebuyers? As written, this mandate more than quadruples the QA requirements of the Providers for existing new construction residential projects.</p>	<p>Comment acknowledged, changes have been made. Specifically, Section 10-103.3(d)5C has been restructured. These changes should alleviate any issues regarding the amount of quality assurance performed by the ECC-Provider.</p>	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792</a>
256030.004	Meagan McFadden (CalCERTS, Inc.)	<p>It is also unclear whether an associated lot and a tested lot are both required, per 10-103.3(d)5(C)(i)(f)(i), regardless of whether the Rater who performed the tested lot has already been successfully reviewed. The two provisions 10-103.3(d)5(C)(i) and 10-103.3(d)5(C)(i)(f)(i) need to be better clarified. Raters who work with sampling will be reviewed numerous times within a calendar year, regardless of Exemplary status and regardless of the QA findings of those QAs.<sup>5</sup> This mandate will impact residential production builders. It is a colossal waste of money since the Raters are being repeatedly reviewed for no additional purpose.</p>	<p>Comment acknowledged, changes have been made. Specifically, Section 10-103.3(d)5C has been restructured. These changes should alleviate any issues regarding the amount of quality assurance performed by the ECC-Provider.</p>	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792</a>
256030.005	Meagan McFadden (CalCERTS, Inc.)	<p>The regulations are unclear as to what happens in the event the QA inspection determines the associated lot does not comply with T-24. If the home had been tested by a Rater there would be repercussions to the Rater for an inaccurate rating. Associated lots are not inspected. What is a Provider supposed to do if the QA indicates a compliance issue? Is this information also considered Conflicted Data even if given access? Is the project locked? If so, the impacts are catastrophic for the project with no fault to anyone. Or - is it simply reported with no other impacts? If so, it is a very expensive requirement with no documented benefit to ratepayers. Clarifications are needed in the regulations on what to do if the QA reveals a failure.</p>	<p>Comment acknowledged, changes have been made. Specifically, Section 10-103.3(d)5C has been restructured. These changes should alleviate any issues regarding the amount of quality assurance performed by the ECC-Provider.</p>	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792</a>

256030.006	Meagan McFadden (CalCERTS, Inc.)	<p>There needs to be a more reasonable mandate to collect qualitative information on associated lots; requirements that do not impede residential new construction and do not impose new and excessive QA costs to homebuyers. As a recommendation, CalCERTS suggests the CEC staff adopt a more flexible requirement that Providers conduct QA inspections on a certain percentage of associated lots registered, similar to the existing rules. 6 Or, when there is a QA on a tested lot for a Rater, require a QA on a sampled lot in conjunction with the tested lot.7 This way the CEC can continue to collect data on sampling without unjustified costs or impediments.</p> <p>Importantly, the CEC needs to be transparent on the use and purpose of QA data on associated lots. This data is not used to oversee Raters. It only functions to assess the efficacy of sampling. To date, CalCERTS is unaware of any instance where our QA data on associated homes has been used for analysis. Although expensive to gather and compile, CalCERTS is unaware of how the data has ever been used to help review the objectives of the code. If Providers are going to be required to gather the data and pass those costs to homebuyers, there needs to be assurances the costs are justified.8</p>	Comment acknowledged, changes have been made. Specifically, Section 10-103.3(d)5C has been restructured. These changes should alleviate any issues regarding the amount of quality assurance performed by the ECC-Provider.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256030&amp;DocumentContentId=91792</a>
256031.001	Gina Griffiths Rodda (Gabel Energy)	<p>Per the Draft 2025 Nonresidential HVAC Performance System Map, the new zonal HVAC system requirements of §140.4(a)3E only apply to office and school buildings.</p> <p>These are the definitions of these building types:</p> <p>Please remove “financial institution” from the Office Mapping table since this is NOT supported in 140.4(a)3E.</p>	Comment acknowledged, no change made. This comment pertains to nonresidential system mapping in the ACM, which is out of scope of this rulemaking. Staff will review and address the proposed edit in the upcoming ACM rulemaking.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256031&amp;DocumentContentId=91791">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256031&amp;DocumentContentId=91791</a>
256037.001	Christopher McHugh	<p>Per Title 24, Part 6 Sections 100.0(h) &amp; 120.2(i) Fault Detection Diagnostic System Declaration List. 2016 Siemens has 3 certification numbers listed. Is it possible to send a copy of these certifications to the email use in this request? SIPOL0 for POL224.00 SIPOL5 for POL224.05 SIPOL10 for POL648.10/RTU Also, for CEC 2025 Energy Code Will these product need to be retested to meet 2025 Energy Code? We did not see any additional requirements needed for further testing. Please clarify</p>	Comment acknowledged, no change made. Staff believes this comment was intended for CertifiedtoCEC or the Energy Code Hotline. Staff notes that there are no paper or electronic certifications issued by the CEC. To be listed with the CEC, a product has to be reviewed and certified by Staff. Products only require retesting when changes to the code change the way a product is used. For FDD, there have been no changes that affect the operation of FDD for this code cycle and therefore FDD products do not require retesting, or recertification.	4/26/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256037&amp;DocumentContentId=91798">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256037&amp;DocumentContentId=91798</a>

256111.001	Beth Braddy (Trane Technologies)	<p>Thank you for the opportunity to comment on the recently published 45-day express terms for Title 24-2025. It is clear that a tremendous amount of work has gone into the updates for the energy code. However, we still have questions regarding the Commission’s definition of dual-fuel heat pumps and how they apply to this code.</p> <p>Trane Technologies is a world leader in creating comfortable, sustainable, and efficient environments and leading our industry in sustainability practices. Through our strategic brands Trane and Thermo King, and our portfolio of environmentally responsible products and services, we bring efficient and sustainable climate solutions to buildings, homes and transportation. Our bold 2030 Sustainability Commitments are central to our business strategy and include a pledge to reduce our customers’ carbon emissions by one gigaton (2% of the world’s annual emissions) and to bring our own operations to carbon neutral. Our ambitious greenhouse gas (GHG) emissions reduction targets which have been verified by the Science Based Targets Initiative (SBTi) challenge us to lead by example, collaborate with our customers to drive sustainable innovation and create opportunity for all in our workplace and our communities.</p> <p>As a global HVAC manufacturer, Trane Technologies has a strong track record demonstrating a commitment to the electrification of buildings as the organization works to achieve a sustainable future. We are at the forefront of setting new standards to improve the health and well being of the indoor environment across communities. Furthermore, Trane Technologies shares with the California Energy Commission a commitment to bringing efficient and sustainable climate innovations to the built environment to help achieve sensible long-term clean energy goals with updates to the 2025 energy code.</p>	Thank you for your comment.	5/1/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256111&amp;DocumentContentId=91890">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256111&amp;DocumentContentId=91890</a>
256111.002	Beth Braddy (Trane Technologies)	<p>Dual-Fuel Heat Pumps (Section 141.0) In Section 141.0 regarding additions, alterations and repairs to existing buildings, Table 141.0- E-1 specifies new or replacement single zone air conditioner or heat pump requirements. We seek clarification from the CEC on the definition of Single Zone Heat Pump (SZHP) and Single Zone Heat Pump + Economizer (SZHP1). Is a dual-fuel heat pump considered equivalent to a SZHP or SZHP1? It is our understanding that a dual-fuel heat pump would indeed fall into the same product category as a SZHP or SZHP1 due to the primary heat source of a dual-fuel heat pump being the heat pump with gas heat as the auxiliary heat source.</p> <p>The inclusion of dual-fuel heat pumps under the product category of heat pumps in retrofit opportunities would benefit the state of California in climate zones inclusive of the high desert and other zones with lower ambient temperatures. Dual-fuel heat pumps would provide these climate zones with the option to take advantage of heat pump technology for a larger portion of their heating bin hours where they would otherwise only be able to utilize high efficiency gas fired units for heat.</p>	Staff agrees with the comment, and changes have been made. Specifically, Table 141.0-E-1 has been revised. SZAC1 may be a Dual Fuel Heat Pump + Variable Speed Fan + Economizer in accordance with Section 140.4(e).	5/1/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256111&amp;DocumentContentId=91890">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256111&amp;DocumentContentId=91890</a>



256122.002	Nancy Larocca Hedley	<p>Hi - I am writing about the 2025 Energy Code from the perspective of an Environmental Quality Commissioner with the City of Menlo Park, as a mother, and as a concerned earth advocate.</p> <p>The 2025 Energy Code as written does a lot to move away from gas. Thank you! And there is one HUGE missed opportunity in the code as it is currently written. I strongly encourage you to require two-way heat pumps when A/Cs are being replaced. This is one of the most important regulations we can put in place to electrify existing homes and buildings.</p> <p>I strongly encourage you to include this clause because without state leadership each individual municipality is left to construct regulations of their own. This creates a patchwork of varying rules which are difficult for contractors and homeowners to navigate, and challenging for cities to defend against lawsuits that are funded by fossil fuel-funded organizations.</p> <p>Thank you for hearing my concerns and please do reinstate language to require expired AC units to be replaced with heat pumps.</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/2/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256122&amp;DocumentContentId=91911">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256122&amp;DocumentContentId=91911</a>
256172.001	CA Utility CASE Team and Compliance Improvement Team	<p>Remove mention of "three habitable stories or fewer" in Exception 4 to Section 170.2(a)3a(ii) (Remark #5). Table 170.2-A was updated to show unification across multifamily buildings of all heights, removing RSHGC requirements for buildings with four or more habitable stories in Climate Zones 1, 3, 5, and 16. The corresponding code language is not updated for alignment.</p>	<p>Staff agrees with the comment, and changes have been made. Specifically, "that are three habitable stories or fewer" has been removed from Exception 4 to Section 170.2(a)3A(ii).</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.002	CA Utility CASE Team and Compliance Improvement Team	<p>Add language to ensure that load calculations are completed, and systems sized appropriately.</p> <p>a. Require load calculation be submitted to the enforcement agency (Remark #7). While load calculations are already required by Part 6 and 11, they are not required to be submitted, and thus often not requested by jurisdictions. Adding explicit requirements for submittal of load calculations is essential to achieving full savings for the new design measures.</p>	<p>Comment acknowledged, no changes have been made. Staff has reviewed the suggested edits regarding the documentation of load calculations and propose to incorporate changes in the compliance documents to accomplish the same goal.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.003	CA Utility CASE Team and Compliance Improvement Team	<p>b. Include sizing limits for load calculations for alterations (Remark #12). The new limits on sizing proposed by the CASE Team were intended to apply to both additions and alterations. These limits are included in the 45- Day Express Terms for additions only and this suggested language change extends them for alterations.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Language for system capacity requirements and infiltration assumptions related to load calculations has already been included in sections 150.2(a)1E and 150.2(a)2D for additions only. These requirements have been intentionally left out of sections related to single-family residential alterations because the increased stringency and costs associated with these changes would likely lead to higher levels of noncompliance with the Energy Code.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>



256172.004	CA Utility CASE Team and Compliance Improvement Team	Change pipe insulation verification requirements from mandatory to prescriptive (Remark #15). The Compliance Improvement Team has expressed concern that, as a new verification measure, the verification requirement could be unknown/overlooked and the walls and ceilings closed up without verification. ECC Raters may be pressured to perjure in these situations to avoid having to open up the walls and ceilings for verification. If changed to prescriptive, there is more flexibility to use the performance approach and make late adjustments to overcome the energy penalty from not doing pipe insulation verification.	Staff agrees with the comment, and changes have been made. Specifically, Staff has moved the pipe insulation verification requirement to Section 170.2(d)2 in order to provide more flexibility to use the performance compliance path and make adjustments if pipe insulation verification is not possible.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.005	CA Utility CASE Team and Compliance Improvement Team	Add a note to Section 110.3(c)7B3v about dangers of ventilation across pressure boundaries (Remark #18). While too late in the code cycle to make a substantive change to the code language, adding a note may prevent inadvertent back drafting as a result of this ventilation requirement.	Staff agrees with the comment, and changes have been made. Specifically, the following note was added to the end of Section 110.3(c)7: Ducting only the inlet or the exhaust across the pressure boundary could interfere with balanced ventilation systems. This should be considered when specifying HPWH location and ventilation method.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.006	CA Utility CASE Team and Compliance Improvement Team	Remove "distribution" in describing application of Appendix M pipe sizing requirements (Remark #31). Appendix M pipe sizing applies to the water heater and storage tank pipe sizing in addition to distribution pipe sizing. Energy savings and cost-effectiveness justification for this measure in the CASE Report include all hot water piping.	Staff agrees with the proposed suggestion and changes have been made. Specifically, "distribution" has been removed from Section 170.2(d)2C, which now states: All hot water piping shall be sized in accordance with the California Plumbing Code Appendix M.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.007	CA Utility CASE Team and Compliance Improvement Team	Language revisions related to ducts in conditioned space to not exclude new cathedral ceiling prescriptive option (Remarks #35 & #36). Language added to the 45-Day Express Terms in Section 150.1(c)9B and 150.0(m)1Bii excludes cathedral ceilings because they don't have attics. Suggested language revisions clarify that cathedral ceilings may comply prescriptively.	Staff agrees with the proposed suggestion and changes have been made. Specifically, "Option C Roof Deck Insulation for Cathedral Ceilings" was added to Table 150.1-A. Staff will also incorporate changes in the compliance documents to provide additional guidance.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.008	CA Utility CASE Team and Compliance Improvement Team	Revise 160.2-E the same way 150.0-E has been marked up (Remark #45). The option for demand-controlled kitchen ventilation was removed for alignment with ASHRAE for single-family homes and should also be revised for multifamily dwellings.	Staff agrees with the comment, and changes have been made. Specifically, Staff has revised Table 160.2-E to align with changes made in Table 150.0-E.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.009	CA Utility CASE Team and Compliance Improvement Team	Revise Table 150.1A to present cathedral ceilings as an alternative under Option C (Remark #50). Proposed 45-Day table revisions present cathedral ceilings as a separate option. Suggested language revisions clarify this as well as when radiant barriers are required for cathedral ceilings.	Staff agrees with the proposed suggestion and changes have been made. Specifically, "Option C Roof Deck Insulation for Cathedral Ceilings" was added to Table 150.1-A. Staff will also incorporate changes in the compliance documents to provide additional guidance.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.01	CA Utility CASE Team and Compliance Improvement Team	Concerns with applying the existing building exception for pools and spa heating to all building types (Remarks #32 and #33). Allowing all existing buildings to be exempted from the pool heating requirements will result in a significant loss of potential energy savings. We further document this loss in savings and environmental benefits in our remarks. We believe alternative exception language options exist that address stakeholder concerns. We acknowledge that this decision has been made for the 2025 code cycle and request that CEC consider our recommendations for the 2028 code cycle.	Staff does not agree with the comment, and no changes have been made. Additional analysis and stakeholder engagement is needed to adequately address the proposal. Staff notes that this measure has been proposed for the 2025 CALGreen Code, Title 24, Part 11.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.011	CA Utility CASE Team and Compliance Improvement Team	Add Mechanical Acceptance Test to Nonresidential Appendices 7.5.6.1, 7.5.4.1, and 7.5.15.1 (Remarks #28, #29, and #30). Section 140.4 of the code adds a requirement that controller logic must be based on a sequence of operation from ASHRAE Guideline 36. These proposed changes to the requirements in the Nonresidential Appendix will ensure alignment with acceptance testing requirements.	Comment acknowledged, no changes made. While there may eventually be benefit to requiring ATTs to verify compliance with Guideline 36 or the exceptions, there is insufficient time to setup the necessary documentation to allow ATTs to perform this type of check on a project site. Staff may consider this issue for the 2028 code cycle.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.012	CA Utility CASE Team and Compliance Improvement Team	<p>Clarify scope of new mandatory vestibule requirement.</p> <p>a. Add Exception 8 to Section 141.0(a) (Remark #47). Stakeholders noted that the new requirement for vestibules was not clear in terms of scope for additions. This change provides clarification that vestibules are not required in additions unless the addition includes a public entrance door.</p> <p>b. Add Exception 5 to Section 141.0(b) (Remark #48). Stakeholders noted that the new requirement for vestibules was not clear in terms of scope for alterations. This change provides clarification that vestibules are not required for alterations.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Section 120.7(e) specifically states that the requirement is for public entrances "in newly constructed buildings."</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.013	CA Utility CASE Team and Compliance Improvement Team	<p>Improve clarity to lighting Section 130.1(b).</p> <p>a. Replace "multilevel lighting controls" with "dimmable lighting" (Remark #22). Changes to this section over the past several code cycles have inadvertently changed the original intent of the requirement. This modification clarifies the requirement that the light source has to be dimmable and have at least one control that makes use of dimmability.</p> <p>b. Delete Exception 1 (Remark #23). Stakeholder input has indicated that this exception is confusing, and an updated cost analysis indicates that the dimmer in this condition is cost-effective.</p> <p>c. Delete Exception 5 (Remark #24). This exception for classrooms no longer has the installed savings benefit and the lifecycle cost benefit no longer applies for LED systems.</p>	<p>Summary remarks - responses provided to detailed comments.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.014	CA Utility CASE Team and Compliance Improvement Team	<p>Improve clarity to daylighting Section 130.1(d).</p> <p>a. Correct typographical error to Section 130.1(d)2Biii exception (Remark #25). This change replaces the word "luminaire" with the word "segment" for clarity of the entire sentence.</p> <p>b. Replace allowable language in Section 130.1(d)2Ci (Remark #26). This change puts the requirement into code-appropriate mandatory language and clarifies minimum requirements for lighting that is not required to be dimmable.</p> <p>c. Clarify requirement in Section 130.1(d)2F (Remark #27). This change provides clarity that light levels are permitted to be temporarily increased only if the controller is a dimmer.</p>	<p>Summary remarks - responses provided to detailed comments.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.015	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 1:  C. Fenestration alterations other than repair shall meet the requirements <u>of Items i and ii</u> below:  <b>Note:</b> Glass replaced in an existing sash and frame or sashes replaced in an existing frame are considered repairs. In these cases, Section 180.2(b) requires that the replacement be at least equivalent to the original in performance.</p> <p>i. <del>All added and replacement Fenestration products installed to replace existing fenestration products of the same total area</del> shall meet either a or b:  a. The maximum U-factor, RSHGC and VT requirements of Table 180.2-B, or  b. The area-weighted U-factor and RSHGC of Table 170.2-A.</p> <p><del>Exception 1 to Section 180.2(b)1Ci: In an alteration, where 150 square feet or less of the entire building's vertical fenestration is replaced, RSHGC and VT requirements of Table 180.2-B shall not apply.</del></p> <p>ii. Alterations that add <u>vertical</u> fenestration and skylight area shall meet the total fenestration area requirements of Section 170.2(a)3, <del>and the U-factor, RSHGC and VT requirements of Table 180.2-B.</del></p> <p><del>Exception 1 to Section 180.2(b)1Cii: Alterations that add vertical fenestration area of up to 50 square feet shall not be required to meet the total fenestration area requirements of Sections 170.2(a)3, nor the U-factor, RSHGC and VT requirements of Table 180.2-B, for the added vertical fenestration.</del></p> <p><del>Exception 2 to Section 180.2(b)1C: In an alteration, where 150 square feet or less of the entire building's vertical fenestration is replaced, RSHGC and VT requirements of Table 180.2-B shall not apply to the replaced vertical fenestration.</del></p> <p><del>Exception 3 to Section 180.2(b)1C: Alterations that add or replace skylight area of up to 50 square feet shall not be required to meet the total fenestration area requirements of Sections 170.2(a)3, nor the U-factor, SHGC and VT requirements of Table 180.2-B.</del></p> <p><del>Exception 2 to Section 180.2(b)1Cii: Alterations that add up to 16 square feet of new skylight area per dwelling unit with a maximum U-factor of 0.55 and a maximum RSHGC of 0.30 shall not be required to meet the total fenestration area requirements of Section</del></p>	<p>Comment acknowledged, some changes have been made to improve clarity and readability. Specifically, Staff added "of Items i and ii" to the introductory text, replaced "fenestration products" with "fenestration," clarified that Section 180.2(b)Cii refers to "vertical fenestration", corrected reference to Section 170.2(a)3.</p> <p>Exception 1 to Section 180.2(b)1Ci only applies to altered fenestration that is replacing existing fenestration. It is not intended to apply to new fenestration that is being added as part of an alteration. The performance path may be used where challenges exist with new fenestration in meeting the proposed requirements of Table 180.2-B.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
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256172.016	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 2:</p> <p>C. Fenestration alterations other than repair shall meet the requirements of Items i and ii below:</p> <p>Note: Glass replaced in an existing sash and frame or sashes replaced in an existing frame are considered repairs. In these cases, Section 180.2(b) requires that the replacement be at least equivalent to the original in performance.</p> <p>i. All added and replacement Fenestration products installed to replace existing fenestration products of the same total area shall meet either a or b:</p> <p>a. The maximum U-factor, RSHGC and VT requirements of Table 180.2-B, or</p> <p>b. The area-weighted U-factor and RSHGC of Table 170.2-A.</p> <p>Exception 1 to Section 180.2(b)1Ci: In an alteration, where 150 square feet or less of the entire building's vertical fenestration is replaced, RSHGC and VT requirements of Table 180.2-B shall not apply.</p> <p>ii. Alterations that add vertical fenestration and skylight area shall meet the total fenestration area requirements of Section 170.2(a)3. and the U-factor, RSHGC and VT requirements of Table 180.2-B.</p> <p>Exception 1 to Section 180.2(b)1Cii: Alterations that add vertical fenestration area of up to 50 square feet shall not be required to meet the total fenestration area requirements of Sections 170.2(a)3, nor the U-factor, RSHGC and VT requirements of Table 180.2-B, for the added vertical fenestration.</p> <p>Exception 2 to Section 180.2(b)1C: In an alteration, where 150 square feet or less of the entire building's vertical fenestration is replaced, RSHGC and VT requirements of Table 180.2-B shall not apply to the replaced vertical fenestration.</p> <p>Exception 3 to Section 180.2(b)1C: Alterations that add or replace skylight area of up to 50 square feet shall not be required to meet the total fenestration area requirements of Sections 170.2(a)3, nor the U-factor, SHGC and VT requirements of Table 180.2-B.</p> <p>Exception 2 to Section 180.2(b)1Cii: Alterations that add up to 16 square feet of new skylight area per dwelling unit with a maximum U-factor of 0.55 and a maximum RSHGC of 0.30 shall not be required to meet the total fenestration area requirements of Section</p>	<p>Comment acknowledged, some changes have been made to improve clarity and readability. Specifically, Staff added "of Items i and ii" to the introductory text, replaced "fenestration products" with "fenestration," clarified that Section 180.2(b)Cii refers to "vertical fenestration", corrected reference to Section 170.2(a)3.</p> <p>Exception 1 to Section 180.2(b)1Ci only applies to altered fenestration that is replacing existing fenestration. It is not intended to apply to new fenestration that is being added as part of an alteration. The performance path may be used where challenges exist with new fenestration in meeting the proposed requirements of Table 180.2-B.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.017	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 3:</p> <p><u>Exception to Section 160.2(b)2C: Multifamily buildings with three or fewer habitable stories in Climate Zone 6, 7, 6 are not required to comply with Section 160.2(b)2C.</u></p> <p>Justification:</p> <p>This exception was added because the measure was not cost-effective in CZ 6 for multifamil buildings with three or fewer habitable stories. It was cost-effective in CZ 7.</p>	<p>Staff agrees with the comment, and changes have been made. Specifically, Exception to Section 160.2(b)2C is limited to multifamily buildings with three or fewer habitable stories in Climate Zone 6.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.018	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 4:</p> <p>See Appendix for table mark-up</p> <p>Justification:</p> <p>Option B Steep-Sloped-Thermal Emittance: TE values in CZ10,11,13,15 should be updated from 0.75 to 0.8. This change was found cost-effective in the CZs listed.</p>	<p>Thank you for your comment.</p> <p>Staff kept the thermal emittance values in Table 170.2-A to avoid market confusion, and to maintain a path for installation of asphaltic roofing products in California.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.019	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 5: Exception 4 to Section 170.2(a)3Aii: Fenestration in dwelling units of buildings <del>that are three habitable stories or fewer</del> in Climate Zones 1, 3, 5 and 16 is not required to comply with the RSHGC requirements. [Table is okay, the exception code language needs to be updated to align with the Table.]</p> <p>Justification: The CASE report proposed unification of SHGC requirements across low-rise and high-rise multifamily buildings and proposed "no requirement" in CZs 1,3,5, and 16, regardless of number of stories, after showing that higher SHGCs are beneficial in these CZs.</p>	Staff agrees with the comment, and changes have been made. Specifically, "that are three habitable stories or fewer" has been removed from Exception 4 to Section 170.2(a)3Aii.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.02	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 6: See Appendix for table mark-up</p> <p>Justification: CASE Team did not find the measure cost-effective in CZ 15 and hence did not propose in that CZ for alterations.</p>	Staff agrees with the comment, and changes have been made. Specifically, the U-factor for "All Other Windows and Glazed Doors" in Table 180.2-B has been reverted to 0.30 in climate zone 15.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.021	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 7: <u>Load calculations must be submitted along with the Certificate of Compliance for approval by the enforcement agency. These must include the following information: design city, indoor and outdoor design temperatures, winter heating loads for each zone/system, Sensible and latent summer cooling loads for each zone/system, load calculation software name and version. If load calculations use custom calculations based on the resources above, the report must also show all detailed algorithms, inputs and outputs.</u></p> <p>Justification: Load calculations are critical to all of the savings for the Design measures. While they are already required by Part 6 and 11, they are not required to be submitted, and they are thus often not reviewed or verified by jurisdictions and are often not completed. Adding explicit requirements for submittal of load calculations is essential to achieving full savings for these measures.</p>	Comment acknowledged, no change made. Staff has reviewed the suggested edits regarding the documentation of load calculations and propose to incorporate changes in the compliance documents to accomplish the same goal.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.022	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 8: Heat Pump Heating Capacity: <del>There is no limit on the minimum capacity.</del></p> <p>Justification: This language about no limit on the minimum capacity contradicts the language that follows.</p>	Staff agrees with the comment, and changes have been made. Specifically, "There is no limit on the minimum capacity" has been deleted from Section 150.0(h)5Biii.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.023	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 9: <u>In addition to the requirements in Section 150.0(i)1A, thermostats controlling heat pumps with electric resistance supplementary heat or gas furnace supplementary heat shall.</u></p> <p>Justification: This correct a typo in the section reference regarding thermostats.</p>	Staff agrees with the comment, and changes have been made. Specifically, the reference to Section 150.0(i)1 has been corrected in Section 150.0(i)2.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.024	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 10:  <del>Multispeed or variable speed compressor systems, or single speed compressor systems that utilize the performance compliance approach, shall</del> <u>that</u> incorporate controls that vary <u>fan speed with respect to the number of zones calling as certified by the installer may</u> demonstrate compliance...</p> <p>Justification:  Suggest wording change for correct grammar and to indicate that integrated controls are not required.</p>	Staff agrees with the comment, and changes have been made. Specifically, "that" has been added to Exception 1 to Section 150.0(m)13C.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.025	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 11:  <u>Note: When an addition is served by an existing HVAC system, Load Calculations per Section 150.0(h)1 shall include the entire area served by the HVAC system.</u></p> <p>Justification:  Add the suggested language following Exception 6 to clarify load calculation requirements for additions.</p>	Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Changes will be made to the 2025 compliance manuals in response to this comment.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.026	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 12:  <u>Altered Space-Conditioning System Load Calculations and System Capacity: Altered space-conditioning systems shall comply with all applicable requirements specified in 150.2(a)1E.</u></p> <p>Justification:  The new limits on sizing were intended to apply to both additions and alterations. These limits are included in the 45-day language for additions only and this suggested language change extends them for alterations.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Language for system capacity requirements and infiltration assumptions related to load calculations has already been included in sections 150.2(a)1E and 150.2(a)2D for additions only. These requirements have been intentionally left out of sections related to single-family residential alterations because the increased stringency and costs associated with these changes would likely lead to higher levels of noncompliance with the Energy Code.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.027	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 13:  <u>Exception 1 to Section 160.3(b)1: Block loads (the total load for all rooms combined that are served by the central equipment) may be used for the purpose of system sizing for additions.</u></p> <p>Justification:  Exception to allow block loads was intended to apply to multifamily additions as well as single family, but the 45 day language only includes it for single family. Suggest including this for consistency across single family and multifamily.</p>	Staff agrees with the comment, and changes have been made. Specifically, Exception 1 to Section 160.3(b)1 has been added as follows: Block loads, the total load for all rooms combined that are served by the central equipment, may be used for the purpose of system sizing for additions.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.028	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 14:  "The outdoor design temperatures for heating shall be no lower than <u>the 99.0 percent Heating Dry Bulb or</u> the Heating Winter Median of Extremes values."</p> <p>Justification:  The CASE Team recommends reverting to the prior language of Heating Winter Median of Extremes to not introduce confusion about which temperature represents the allowable minimum.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Staff believes both values should be included to account for all sources used to obtain outdoor design conditions, some of which may only contain one of options of the 99.0 percent Heating Dry Bulb value or the Heating Winter Median of Extremes value.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.029	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 15:</p> <p><del>SECTION 160.4(e)4. Insulation Quality Verification. Insulation for hot water piping and plumbing appurtenances shall be field verified as specified in Residential Reference Appendix RA3.6.3.</del></p> <p><b>SECTION 170.2(d)3 Water Heating Systems. Insulation Quality Verification. Insulation for hot water piping and plumbing appurtenances shall be field verified as specified in Residential Reference Appendix RA3.6.3.</b></p> <p>Justification: The Starewide CASE Team proposes changing verification from mandatory to prescriptive, following discussion with Compliance Improvement Team. As a new verification measure, there is high likelihood that the verification requirement could be unknown/overlooked and the walls and ceilings closed up without verification. ECC Raters may be pressured to perjure in these situations to avoid having to open up the walls and ceilings for verification. If changed to prescriptive, there is more flexibility to use the performance approach and make late adjustments to overcome the energy penalty from not doing pipe insulation verification.</p>	Staff agrees with the comment, and changes have been made. Specifically, Staff has moved the pipe insulation verification requirement to Section 170.2(d)2 in order to provide more flexibility to use the performance compliance path and make adjustments if pipe insulation verification is not possible.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.03	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 16:</p> <p>i. Framed Walls Extension. Extensions of existing wood-framed <del>and metal-framed</del> walls may retain the dimensions of the existing walls and shall install cavity insulation of R-15 in a 2x4 framing and R-21 in a 2x6 framing.</p> <p>Justification: Mandatory measures also impact additions and alterations. Exceptions in this chapter do not include metal framing in the current language, though extension of metal-framed walls also have issue in matching thickness where continuous insulation in otherwise required on the new portion of wall.</p>	Thank you for your comment. Staff has rolled back the mandatory minimum requirement for metal framed U-factor, so this edit is no longer necessary.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.031	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Comment 17:</p> <p>See appendix of docketed comments for markup.</p> <p>Justification: Section 150.0(0)1C covers single family detached dwellings and townhouses. It does not include vertically-attached single-family dwelling units such as duplexes and triplexes. Proposed changes by the CASE team adds this and rearrange the section for conciseness.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, single-family vertically-attached dwelling units have been included in Section 150.0(o)1C.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.032	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 18: If the inlet and outlet ducts both terminate within the same pressure boundary, airflow from the termination points shall be diverted away from each other; or</p> <p><u>NOTE: Ducting only the inlet or exhaust across the pressure boundary could interfere with balanced ventilation systems. This should be considered when specifying HPWH location and ventilation method.</u></p> <p>Justification: Stakeholders expressed concern about allowing HPWH ventilation to move air from inside the pressure boundary of a building to outside the pressure boundary. The CASE team proposes adding a non-regulatory note following 110.3(c)7B3v and providing additional guidance in the Compliance Manuals on this issue.</p> <p>See appendix of docketed comments for more detail.</p>	Staff agrees with the comment, and changes have been made. Specifically, the following note was added to the end of Section 110.3(c)7: Ducting only the inlet or the exhaust across the pressure boundary could interfere with balanced ventilation systems. This should be considered when specifying HPWH location and ventilation method.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.033	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Comment 19: <u>Permanent openings shall consist of a single layer of fixed flat slat louvers or grilles, with a total minimum NFA the larger of 125 square inches plus 25 square inches per kBtu per hour of compressor capacity, or the minimum provided by the manufacturer for this method. The permanent openings shall be fully louvered doors or two openings, one located within 12 inches from the enclosure top and one located within 12 inches from the enclosure bottom, one in the upper half of the enclosure and one in the bottom half of the enclosure. The top of the upper opening must be 12 inches or less from the enclosure top and the bottom of the lower vent must be 12 inches or less from the enclosure bottom;</u> or</p> <p>Justification: Stakeholders have indicated to the CASE team that the language locating the two permanent openings is not clear. One potential interpretation is that the entirety of the upper opening must be above 1 foot from the enclosure top and that the entirety of the lower opening must be below 1 foot from the enclosure bottom. Such an install would be difficult and may impact performance.</p>	Staff agrees with the comment, and changes have been made. Staff has reorganized the language in Section 110.3(c)7.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.034	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 20: Installed using a method certified by the manufacturer to <u>meet the provide at least the same performance as the other</u> ventilation <del>requirements of methods in</del> 110.3(c)7B.</p> <p>Justification: There is concern that the current language allows for a loophole to ignore the requirements of the previous sections. It should be made clear that the design must provide the same or better performance as the other ventilation methods.</p>	Staff agrees with the comment, and changes have been made. Staff has reorganized the language in Section 110.3(c)7, and clarified that Installed using a method provided by the manufacturer shall meet or exceed the level of performance provided by the ventilation requirements of Section 110.3(c)7B2 through Section 110.3(c)7B4.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>



256172.035	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 21: SECTION 180.1 – ADDITIONS Additions to existing multifamily buildings shall meet the applicable requirements of Sections 110.0 through 110.9; Sections 160.0, 160.1, and 160.2(c) and (d); Sections 160.3, <del>160.5</del> through 160.7; and either Section 180.1(a) or 180.1(b).</p> <p>SECTION 180.2(b)3A Hot Water Systems Pipe insulation. For newly installed piping and existing accessible piping, the insulation requirements of Section 160.4(<del>fe</del>) shall be met.</p> <p>Justification: These requirements only apply to new construction and the language had not been updated in Section 180.1 Additions, which still require meeting Section 160.4. Also, Section 180.2(b)3A is referencing section 160.4(f), which now is 160.4(e).</p>	<p>Staff agrees with part of the comment, and disagrees with part of the comment. Some changes have been made.</p> <p>Staff disagrees that the reference to Section 160.4 should be removed. Section 160.4 has many existing requirements that are applicable to additions. Staff agrees with the proposed suggestion to correct the reference to Section 160.4(e).</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.036	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 22: <del>(b) Multilevel lighting controls. The general lighting of any space with a size of 100 square feet or larger and with a connected lighting load greater than 0.5 watts per square foot shall provide with multilevel lighting controls. The multilevel lighting controls shall provide and enable continuous dimming from 100 percent to 10 percent or lower of lighting power.</del> <del>(b) Dimmable lighting. The general lighting of any enclosed space with floor area of 100 square feet or larger and with a connected lighting load that exceeds 0.5 watts per square foot shall be continuously dimmable between 10 percent and 100 percent of full power.</del> <u>General lighting shall be controlled by at least one of the following controls:</u> <u>i. manual dimming controls,</u> <u>ii. partial-OFF occupant sensing controls , or</u> <u>iii. continuous dimming automatic daylighting controls</u></p> <p>Justification: See Appendix A for more information.</p>	<p>Staff disagrees with the comment, minor grammatical changes have been made to improve readability.</p> <p>Staff proposes to keep the section title “multiple lighting controls”, so as to convey to code users that there are no significant changes to Section 130.1(b).</p> <p>Further, Section 130.1(b) specifies that multilevel level lighting controls shall enable continuous dimming. Including other lighting controls such as occupant sensing controls and daylighting controls in this section may cause confusion for code users.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.037	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 23: <del>Exception 1 to Section 130.1(b): An indoor space that has only one luminaire.</del></p> <p>Justification: The comment from a compliance expert is that this exception is confusing to people. Additionally, the wattage threshold for where this applies is cost-effective for manual dimmers that reduce average power draw by 10%. Since the threshold general lighting power density is 0.5 W/sf and the threshold room size is 100 square feet, the single luminaire exception would apply to luminaires that are greater or equal to 50 Watts. In new construction, the cost of a dimmer is \$30 and a light switch is around \$5 for an incremental cost of \$25. The cost of installation is the same, LED products come as dimmable as default feature. Conservatively estimating 2,000 operating hours per year at an average Nonresidential 30 year LSC cost of \$5.64/kWh. The 30 year discount cost of operating 50 Watts is: PV\$ = 50 Watts x 0.001 kW/W x 2,000 hours/yr x PV\$5.64 = \$563. If we double the incremental cost to \$50 to account for switches being replaced at least once during the 30 year period, as long as the manual dimmer saves at least 10% of the energy, the dimmer is cost-effective.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Staff expects the savings to be lower and the costs to be higher for this case, and does not expect removal of the exception to be cost effective.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.038	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 24:  <del>Exception 5 to Section 130.1(b): Classrooms with a connected general lighting load of 0.6 watts per square foot or less shall have a minimum of one control step between 30 and 70 percent of full rated power.</del></p> <p>Justification:  Typical classroom sizes are around 1,000 sf and thus this is for up to 600 watts of general lighting power. Back in 2013 when this exception was created general lighting LPD was 1.2 W/sf or twice the threshold for using this exception. In 2025, the classroom maximum LPD is 0.60 W/sf or equal to the threshold for using the exception. In 2013 a manufacturer with an efficient static fluorescent luminaire asked for the exception in return for the lower installed wattage. This exception no longer has the installed savings benefit and the lifecycle cost benefit no longer holds for LED systems. Additionally the florescent systems this was designed to benefit are now outlawed due to mercury content. In the extreme case that the classroom is lit with HID which is not able to be dimmed The CASE team contacted an electrical engineer at DSA and found they were supportive of removing the school exception. This EE from the Division of the State Architect indicated that they had reached out during 2019 and 2022 T-24 development to indicate that they recommended this exception be removed. They characterized this exceptions as an excuse for "business as usual" for some designers to continue to design two level switching systems in classrooms even though it increases first costs and operating costs. The non-classroom spaces in schools still are required to use dimming.</p>	<p>Staff agrees with the comment and changes have been made.</p> <p>Staff determined that Exception 5 should be deleted as it is now technically feasible for classroom to be installed with the same controls as required by Section 130.1(b) for other building functional areas.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.039	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 25:  <u>Exception to Section 130.1(d)2Biii:</u>  <u>Where a luminaire contains a factory assembled housing and light source as an integral unit in segments longer than 8 feet, the luminaire segment is allowed to be controlled according to the type of the daylight zone in which the segment is primarily located.</u></p> <p>Justification:  This suggestion fixes a typo. The first half of the sentence is meaningless if the term luminaire is not changed to segment.</p>	<p>Staff agrees with the comment, and changes have been made. Specifically, Staff has added "segment" in Exception to Section 130.1(d)2Biii to clarify that the luminaire segment is allowed to be controlled according to the type of the daylight zone in which the segment is primarily located.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.04	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 26: Section 130.1(d)2Ci: <del>For spaces where the installation of multilevel lighting controls is under Section 130.1(b), allow the multilevel lighting controls to adjust the light level with continuous dimming. For spaces where Section 130.1(b) requires general lighting to be continuous dimming, with a daylighting control having a minimum of 10 steps and reducing power by at least 90 percent of full power per NA 7.6.1.4. Otherwise, daylighting controls shall have at least one step between 30 percent and 70 percent of full power in addition to off in response to daylight availability in the daylit zone.</del></p> <p>Justification: The 45 day language was originally written in non-mandatory language as follows: “allow the multi-level controls to adjust light the light level with continuous dimming.” The term “allow” can be interpreted as an optional or voluntary capability. Additionally Section 130.1(b) is structured to require dimming in most cases but allow multi-level switching in its exceptions. The changes indicate in mandatory language when dimming is required and the minimum requirements for lighting that is not required to be dimmable.</p>	Staff disagrees with the comment, and no changes have been made. Both suggestions are out of scope of this rulemaking.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.041	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 27: Section 130.1(d)2F: <del>In spaces where manual controls are required, the manual controls shall be capable of turning off or decrease light levels below the light level set by the daylighting controls. Manual dimming controls shall be permitted to temporarily increase electric lighting light levels above the light level set by the daylight responsive controls if the controls are configured to reset electric lighting controls back to the Section 130.1(d)3 defaults after electric lighting have been turned off or reduced by a manual control, occupancy sensor or timeclock.</del></p> <p>Justification: Provide clarification that overriding beyond automatic daylighting control light level should only be allowed if the control is a dimmer and not a simple on/off switch that can only turn the light full on.</p>	Thank you for your comment. Staff has determined that the second sentence of Section 130.1(d)2F allowing manual controls to temporarily increase light levels above the light level set the daylight responsive controls could reduce energy efficiency. Staff proposes to delete the second sentence of Section 130.1(d)2F.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.042	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 28:  NA7.5.6 Supply Fan Variable Flow Controls  NA7.5.6.1 Construction Inspection  Prior to Functional Testing, verify and document the following:  (a) Supply fan includes device(s) for modulating airflow, such as variable speed drive or electrically commutated motor.  (b) For multiple zone systems:  1. Discharge static pressure sensors are either factory calibrated or field-calibrated.  2. The static pressure location, setpoint, and reset control meets the requirements of §140.4(c)2A and §140.4(c)2B.  3. <u>Setpoint reset control logic originates from a programming library that has been certified to the Energy Commission as specified by Section 140.4(r).</u></p> <p>Justification:  Need to add a Mechanical Acceptance Test corresponding to the new requirements in 140.4 for an ATT to confirm that a certified programming library is used.</p>	Thank you for your comment. Currently, this requirement is not appropriate for acceptance testing since no programming libraries have yet been certified at the Energy Commission. Requiring this as an acceptance test will be assessed in future code cycles.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.043	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 29:  NA7.5.4 Air Economizer Controls and Exhaust Air Heat Recovery  NA7.5.4.1 Construction Inspection  Prior to Functional Testing, verify and document the following:  .....  (m) <u>Economizer control logic originates from a programming library that has been certified to the Energy Commission as specified by Section 140.4(r).</u></p> <p>Justification:  Need to add a Mechanical Acceptance Test corresponding to the new requirements in 140.4 for an ATT to confirm that a certified programming library is used.</p>	Thank you for your comment. Currently, this requirement is not appropriate for acceptance testing since no programming libraries have yet been certified at the Energy Commission. Requiring this as an acceptance test will be assessed in future code cycles.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.044	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 30:  NA7.5.15 Supply Air Temperature Reset Controls  The following acceptance tests apply to supply air temperature reset controls.  NA7.5.15.1 Construction Inspection  Prior to functional testing, verify and document the following:  (a) Supply air temperature reset controls are installed as specified by the requirements of the Section 140.4(f).  (b) <u>Supply air temperature reset control logic originates from a programming library that has been certified to the Energy Commission as specified by Section 140.4(r).</u>  (c) All system air temperature sensors are factory or field calibrated within 2% of a calibrated reference temperature sensor. Attach a copy of the calibration certificate or field verification results.  (d) Document current supply air temperature.</p> <p>Justification:  Need to add a Mechanical Acceptance Test corresponding to the new requirements in 140.4 for an ATT to confirm that a certified programming library is used.</p>	Thank you for your comment. Currently, this requirement is not appropriate for acceptance testing since no programming libraries have yet been certified at the Energy Commission. Requiring this as an acceptance test will be assessed in future code cycles.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.045	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 31: C. All hot water <del>distribution</del> piping shall be sized in accordance with the California Plumbing Code Appendix M.</p> <p>Justification: Appendix M pipe sizing applies to the hot water piping at the heating plant (water heater and storage tanks), not just distribution piping. The measure energy savings and cost effectiveness was calculated with Appendix M pipe sizing for both mechanical room and distribution system.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, "distribution" has been removed from Section 170.2(d)2C, which now states: All hot water piping shall be sized in accordance with the California Plumbing Code Appendix M.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.046	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 32: 110.4@exception 2</p> <p>Justification: With this change, the CEC has expanded an exception for pools with existing pool heaters from allowing the exception only for single family buildings, to allowing the exception for all building types. This change results in a significant loss of potential energy savings. The Statewide CASE team has provided a detailed description for why the expansion of the exception is too broad in the Appendix to the T24 45-day comment letter.</p>	Staff does not agree with the comment, and no changes have been made. Additional analysis and stakeholder engagement is needed to adequately address the proposal. Staff notes that this measure has been proposed for the 2025 CALGreen Code, Title 24, Part 11.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.047	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 33: 110.4@exception 2</p> <p>Justification: CEC has expanded the exception of the pools with existing pool heaters to all buildings from the previous single family buildings.</p> <p>The Initial Study and Proposed Negative Declaration for the 2025 Building Energy Efficiency Standards (TN 255315-7) provides the CEC estimate for Residential Natural Gas Impacts for pool heating measure. The impact is shown as 1.26 million therms per year of natural gas. The 2025 CASE Report Swimming Pool and Spa Heating (TN 255319-4) Table 41 on page 84 shows an additional 2.8 million therms of savings per year. The savings accrue from existing pools without a heating system. Since these savings come from pool that are within the scope of the CEC proposal the savings should be added into the total savings for the proposal to net 4.1 million therms per year.</p>	Staff does not agree with the comment, and no changes have been made. Additional analysis and stakeholder engagement is needed to adequately address the proposal. Staff notes that this measure has been proposed for the 2025 CALGreen Code, Title 24, Part 11.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.048	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 34: "Roof and ceiling insulation shall be installed <del>in a ventilated attic</del> with an R-value equal to or greater than that shown in TABLE 10.1-A meeting options ii or iii below."</p> <p>Justification: Introductory language in Section 1A needs to be edited to cover the addition of cathedral ceilings under Option C for roof insulation.</p>	Staff agrees with the comment, and changes have been made. Specifically, "in a ventilated attic" has been removed from Section 150.1(c)1A.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.049	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 35: Duct and air handlers located in conditioned space. Duct systems and air handlers of HVAC systems shall be located <u>entirely</u> in conditioned <u>space and inside the building thermal envelope, not in an unvented attic</u> <del>space below the ceiling separating the occupiable space from the attic</del>, and confirmed by field verification and diagnostic testing to meet the criterion of Reference Residential Appendix Section RA3.1.4.3.8.</p> <p>Justification: New 150.1(C)1A Option C allowing for cathedral ceilings references 150.1(c)9B. 45-Day Language added to Section 150.1(c)9B. will not apply to cathedral ceilings because they don't have attics. Proposed language resolves this and is more direct.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, Staff added Exception 2 to Section 150.0(m)1Bi.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.05	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 36: ii. Ducts do not require insulation when the duct system is located entirely in conditioned space <u>and inside the building thermal envelope, not in an unvented attic, below the ceiling separating the occupiable space from the attic</u> as confirmed through field verification and diagnostic testing in accordance with the requirements of Reference Residential Appendix RA3.1.4.3.8.</p> <p>Justification: 45-Day Language added to 150.0(m)1Bii. will not apply to cathedral ceilings because they don't have attics.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, Staff added Exception 2 to Section 150.0(m)1Bi.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.051	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 37: Exception 23 to Section 150.1(c)3A: <del>In Climate Zones 2, 4, and 6 through 15,</del> For each dwelling unit up to 16 square feet of new skylight area with a maximum U-factor of <del>0.55</del> 0.40 and a maximum SHGC of 0.30. <u>In Climate Zones 1, 3, 5, and 16 there is no SHGC requirement.</u></p> <p>Justification: Unclear requirement in Exception 3 to Section 150.1(c)3A. As currently written, it's unclear if the 16 square feet and U-factor requirements apply to all Climate Zones.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Staff clarifies that this exception establishes a more stringent requirement (maximum U-factor of 0.40 and maximum SHGC of 0.30) for 16 Sqft of skylight area.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.052	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 38:</p> <p><b>Exception 1 to Section 150.2(b)1B:</b> Replacement of vertical fenestration, <u>excluding glazed doors</u>, no greater than <del>75</del><u>16</u> square feet with a U-factor no greater than 0.40 <del>in Climate Zones 1-16.</del></p> <p><b>Exception 2 to Section 150.2(b)1B:</b> Replacement of glazed doors no greater than 75 square feet with a U-factor no greater than 0.40.</p> <p>Exception 23 to Section 150.2(b)1B: Replaced skylights must meet a U-factor no greater than <del>0.55</del>0.40, and a SHGC value no greater than 0.30.</p> <p><b>Exception 34 to Section 150.2(b)1B:</b> Replacement of vertical fenestration shall have a maximum SHGC value no greater than 0.23 in Climate Zone 15.</p> <p>Justification: Express terms adopted proposed change from 75 to 16ft<sup>2</sup>, while 45-Day reverted back to 2022 language. If the 75ft<sup>2</sup> is meant to provide an exception for glass sliding door, can such be specifically pointed out in language rather than keeping the maximum square footage at 75?</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>In the interest of simplicity, Staff decided to retain Exception 1 to Section 150.2(b)1B. The 75-square-foot limit allows for the alteration of a single sliding glass door without affecting the building's aesthetics. Staff was concerned that having separate exceptions for glazed doors and other vertical fenestration could lead to situations where windows are replaced without requiring a permit.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.053	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 39:</p> <p><del>iii Exception 1 to Section 150.2(b)1Aii:</del> <u>Additions/alterations that adds fenestration area of shall have a Maximum SHGC value of 0.23 in Climate Zone 15.</u></p> <p>Justification: 150.2(a)1Aii covers requirements for fenestration area, not performance. Suggest adding a new modification item under 150.2(b)1A. This should also be added as a modification to 150.2(b)1B to additions 700 ft<sup>2</sup> or less. 150.2(b)1Aii should read (a) and not (b) if kept as is.</p>	<p>Comment acknowledged, some changes have been made to improve clarity and readability. Specifically, in Section 150.2(a)1A "Exception to Section 150.2(b)1Aii" was removed, and minor grammatical changes were made, with adopted language as follows: Alterations that add fenestration area shall have a Maximum SHGC value of 0.23 in Climate Zone 15.</p> <p>Staff also acknowledge the exception should have been extended to additions 700 square feet or less and staff will evaluate options for addressing this after the regulations are published.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.054	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 40:</p> <p><del>Exception 1 to Section 150.2(b)1A: Alterations that add fenestration area of up to 75 square feet shall not be required to meet the total fenestration area and west facing fenestration area requirements of Sections 150.1(c)3B and C.</del> <u>Alterations that adds fenestration area of shall have a Maximum SHGC value of 0.23 in Climate Zone 15</u></p> <p>Justification: 150.2(b)1A covers requirements for fenestration area, not performance. Suggest adding a new modification item under 150.2(b)1A.</p>	<p>Staff agrees with the comment, and changes have been made. Specifically, Exception 1 to Section 150.2(b)1A states: Alterations that increases fenestration area shall have a Maximum SHGC value of 0.23 in Climate Zone 15.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>



256172.055	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 41:  <b>ASHRAE STANDARD 62.2</b> is the American Society of Heating, Refrigerating and Air-Conditioning Engineers document titled "<del>Ventilation and Acceptable Indoor Air Quality in Low-rise Residential Buildings, 2019 (ANSI/ASHRAE Standard 62.2-2019 including ANSI/ASHRAE Addenda v and published in the 2020)</del> "<u>Ventilation and Acceptable Indoor Air Quality in Residential Buildings, 2022 (ANSI/ASHRAE Standard 62.2-2022)</u>".</p> <p>Justification:  Reference to 2022 ASHRAE 62.2 was updated in the standards, but not in the Reference Appendix. (left it as 62.2-2019). Also the name of 62.2 is incorrect in the Reference Appendix, because it says "Low-rise Residential Buildings", implying high-rise residential is outside of the scope, instead of just "Residential Buildings".</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, Staff has updated language in Reference Joint Appendix JA1 to align with the referenced ASHRAE 62.2-2022 version.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.056	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 42:  JA1: AIR LEAKAGE is a measure of how much <del>outside</del> air comes into a home or building through a manufactured fenestration or <del>exterior</del> door products  RA2.2 Table RA2-5 Measure Title: Building Envelope Air Leakage <del>and Dwelling Unit Compartmentalization</del>  RA2.2 Table RA2-5 Description: Compliance credit can be taken for reduced building envelope air leakage <del>in single-family homes</del>. Field verification and diagnostic testing is required.  <del>All</del> <del>M</del> multifamily dwelling units are required to have <del>compartmentalization (dwelling unit enclosure leakage)</del> verified <del>when supply or exhaust ventilation systems are installed</del>.  Table NA1-1 - Summary of Measures Requiring Field Verification and Diagnostic Testing...[6th row] <del>Building Envelope Dwelling Unit Enclosure Air Leakage (Compartmentalization)</del>  NA2.3 Field Verification and Diagnostic Testing of Multifamily Dwelling Unit Enclosures <del>(Compartmentalization)</del>  NA2.3.1 Purpose and Scope. The purpose of this test procedure is to measure <del>multifamily dwelling unit compartmentalization</del>: the air leakage rate through a dwelling unit enclosure.</p> <p>Justification:  Several areas of the Reference Appendix should be updated to reflect that "air leakage testing" covers compartmentalization (not just whole-building testing). Update definition of "air leakage" in JA1 to strike through that air must come from exterior. In the table with the measure description in RA2 and NA2.3, the CEC should update the name of and the description for the measure "Building Envelope Air Leakage" to a) rename the section "Building Envelope Air Leakage and Dwelling Unit Compartmentalization" to indicate that this section covers compartmentalization for multifamily units, b) state that the compartmentalization test is required in all multifamily units, and c) show that compliance credit for reduced building air leakage can only be earned in single-family homes. We did not recommend these changes in the CASE report, due to an oversight (focusing on the</p>	Staff agrees with the comment, and changes have been made. Staff added a new definition of COMPARTMENTALIZATION in Section 100.1b and Reference Joint Appendix JA1 and has revised language in Section 160.2(b)2Aivb, NA2.3, NA2.3.1, RA2.2 Table 2-1, and NA1-1 to clarify compartmentalization requirements in multifamily dwelling units.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.057	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 43: Systems verified under this procedure are not eligible for use of the sampling procedures described in NA1.6, <del>with the exception of NA2.3, Field Verification and Diagnostic Testing of Multifamily Dwelling Unit Enclosures, for which ATTs may use sampling.</del></p> <p>Justification: In 160.2(b)2Aivb2, CEC has added new language in Express terms and 45-day language to allow Certified Acceptance Test Technician (ATT) to perform compartmentalization in multifamily buildings with four or more habitable stories. However, NA 1.9.1 states Certified Acceptance Test Technician (ATT) are not eligible to use sampling procedures for field verification and diagnostics. For buildings with large number of dwelling units, this restriction makes testing by ATTs impractical (time consuming and expensive), thus making the addition to section 160.2(b)2Aivb2 unusable. The CASE team proposes to allow ATTs to use sampling similar to ECC-Raters.</p>	Staff disagrees with the comment, and no changes have been made. The sampling requirements are exclusively for working with ECC-Raters. For a space or installation to be placed in a sample-group, the installer/builder must perform the testing required by the Energy Code upon completion of work. Then the installation/space may be placed in a sample-group. The ECC-Rater may then test one member of that sample-group, performing the same test as required by the Energy Code. Allowing ATTs to perform sampling as if they were Raters would create no time or cost savings. Staff will consider modification to the sampling process for future rulemakings.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.058	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 44: <del>HF. Dwelling unit enclosure air leakage. When performance compliance requires a building enclosure leakage rate that is lower than the standard design, the building enclosure shall be field-verified in accordance with the procedures specified in Reference Residential Appendix RA3.8.</del></p> <p>Justification: This allows energy savings credit in the performance path for lower dwelling unit enclosure leakage rate in multifamily buildings. The CASE team proposes to remove 170.1(b)2F. It's not possible to determine the fraction of leakage from the exterior vs interior, without complicated blower testing. And our energy modeling found little savings in most climate zones from compartmentalization that is tighter than the mandatory requirement.</p>	Comment acknowledged, no change made. Staff notes that performance compliance credit is only available when blower door testing is completed per Reference Appendices, RA 3.8.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.059	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 45: Enclosed Kitchen <del>or Nonenclosed Kitchen</del> Other kitchen exhaust fans, including downdraft: 300 cfm (150 L/s) <del>or a capacity of 5 ACH. Nonenclosed Kitchen Other kitchen exhaust fans, including downdraft: 300 cfm (150 L/s)</del></p> <p>Justification: The CEC, in consultation with the CASE Team, decided to remove the option for demand-controlled kitchen-room level (5ACH) ventilation, to align with an ASHRAE 62.2 proposal. The option for demand-controlled range hoods and downdraft fans, and for continuous kitchen-room level (5ACH) ventilation would remain intact. The CEC removed the option for demand-controlled room-level (kitchen 5ACH) ventilation for single family homes in Table 150.0-E, but did not remove that for multifamily homes in Table 160.2-E. Table 160.2-E should be marked up the same way as Table 150.0-E</p>	Staff agrees with the comment, and changes have been made. Specifically, Staff revised language in Table 160.2-E to align with requirements in Table 150.0-E.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.06	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 46: Last row of Table 140.3-B under Fenestration - Vertical: <u>Glazed Doors Fenestration</u> (Max WWR%)</p> <p>Justification: The formatting in 45-Day Language is different from published version of 2022 T24, Part 6. This might be a resulting typo, but we are pointing it out in case the new format is intended to be used.</p>	Staff agrees with the comment, and changes have been made to the 15-day code language. Specifically, in the last row of Table 140.3-B under Fenestration - Vertical: "Glazed Doors" was changed to "Fenestration".	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.061	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 47: <u>Exception 8 to Section 141.0(a): The requirements of Section 120.7(e) shall not apply to additions that do not include a public entrance door.</u></p> <p>Justification: Clarification of scope for additions for a new mandatory provision.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Section 120.7(e) specifically states that the requirement is for public entrances "in newly constructed buildings."</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.062	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 48: <u>Exception 5 to Section 141.0(b): The requirements of Section 120.7(e) shall not apply to alterations.</u></p> <p>Justification: Clarification of scope for alterations for a new mandatory provision.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Section 120.7(e) specifically states that the requirement is for public entrances "in newly constructed buildings."</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.063	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 49: See appendix of docketed comment letter for markup.</p> <p>Justification: "Three habitable" should be sticken to show it applies to all multifamily buildings.</p>	Thank you for your comment. This language has already been struck in the 45-Day Express Terms.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.064	CA Utility CASE Team and Compliance Improvement Team	<p>Substantive Remark 50: See appendix of docketed comment letter for markup.</p> <p>Justification: The proposed prescriptive path for cathedral ceiling is an alternative under Option C. Proposed table revisions present cathedral ceilings as a separate option and whether any radiant barrier requirement exists is not clear.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, "Option C Roof Deck Insulation for Cathedral Ceilings" was added to Table 150.1-A. Staff will also incorporate changes in the compliance documents to provide additional guidance.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.065	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 1: <u>SIMULTANEOUS MECHANICAL HEAT RECOVERY is an operation mode of equipment that uses the vapor-compression cycle whereby both the cooling and heating effect are used serve the building's space conditioning and/or process loads.</u></p> <p>Justification: Add definition to 100.1 to support new "simultaneous mechanical heat recovery" requirements of 140.4(s)</p>	Staff agrees with the comment, and changes have been made. Specifically, a definition for "SIMULTANEOUS MECHANICAL HEAT RECOVERY" has been added as follows: is the simultaneous utilization of heat rejected from mechanical cooling for space heating or water heating.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.066	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 2:  <b>(f) Central Heat Pump Water Heater Ready.</b> <del>Central w</del>Water heating systems using gas or propane to serve multiple dwelling units shall include the following:</p> <p>Justification:  This change aligns with other similar requirements language in the energy code, such as in Section 170.2(d)2 and improves consistency and clarity.</p>	Staff disagrees with the comment, and no changes have been made. Staff will consider this non-substantive edit in the next code update.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.067	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 3:  <del>BTU per hour</del> <u>Btu/hr</u></p> <p>Justification:  This change aligns with other similar language in the energy code (multiple definitions use Btu/hr), and this modification would improve code language clarity. Note these changes are found in JA15 but in the 45-Day Language Reference Appendices incorrectly lists these sections as JA14.x (instead of JA15.x)</p>	Staff disagrees with the comment, and no changes have been made. Staff will consider this non-substantive edit in the next code update.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.068	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 4:  See Appendix B of docketed comments for markup.</p> <p>Justification:  Ensure clarity that the only requirement is for conductivity controls, even though cooling towers typically control to multiple properties, which are largely covered by the list of parameters. The intent of the language is for the controls to be programmed to not allow blowdown until at least one of the parameters meets the threshold value identified. Additionally, CaCO23 is a typo. Based on the IECC requirement that these are based on, both alkalinity parameters are using CaCO3.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.069	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 5:  <del>JA14.X</del> <u>JA15.X</u></p> <p>Justification:  The Title is JA15, but all the subheadings are JA14. The change is needed since multiple references in the code reference JA15, and the requirements are not legible as written.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, subheadings in Reference Joint Appendix JA15 have been corrected to JA15.x.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.07	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 6:  <del>JA14.2 Electric Ready Requirements</del>  <u>JA15.2 Definitions</u>  <u>Reserved</u>  <u>JA15.3 Electric Ready Requirements</u></p> <p>Justification:  JA15.2 should be reserved for future edits in order to maintain clear and consistent numbering with other JA sections and future proof the JA. Even though definitions are not currently required, future addition of definitions will result in inconsistency with the structure of other JAs if JA15.2 is removed.</p>	Staff disagrees with the comment, and no changes have been made. Staff will consider this non-substantive edit in the next code update.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.071	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 7:  <u>Joint Appendix JA15 provides sizing requirements, for electric ready infrastructure installed with gas or propane water heating systems to meet the requirement for electric readiness specified in Title 24, Part 6, Section 160.9(e) f</u>.</p> <p>Justification:  The code section was updated to 160.9(f). This reference was not updated and no longer works</p>	Staff agrees with the comment, and changes have been made. Specifically, the reference to Section 160.9(f) was corrected in Reference Joint Appendix JA15.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.072	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 8:  The electrical service capacity shall have <u>no less than</u> 800 connected amps. <del>For</del></p> <p>Justification:  Corrected for grammar and clarity.</p>	Staff agrees with the comment, and changes have been made to clarify that the requirement is for the electric service panel serving the kitchen, and not necessarily the main service panel. This clarification is relevant for installations where there is a subpanel serving the kitchen.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.073	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 9:  <del>Space shall be reserved for future installation of central heat pump water heaters. The space reserved shall meet the following requirements:</del></p> <p>Justification:  When read together with the code language that references this JA section, the language is redundant. No other requirements (i.e. ventilation, condensate) have this additional language, which negatively affects code language consistency.</p>	Staff disagrees with the comment, and no changes have been made. Staff will consider this non-substantive edit in the next code update.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.074	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 10:  <del>Space shall be reserved for future installation of hot water storage tanks. The space reserved shall meet the following requirements:</del></p> <p>Justification:  When read together with the code language that references this JA section, the language is redundant. No other requirements (i.e. ventilation, condensate) have this additional language, which negatively affects code language consistency.</p>	Staff reviewed CALGreen (Title 24, Part 11) for an opportunity for alignment, but the requirements were very different. Staff thinks the code language with the clarification edits to 'panel' is sufficiently clear for users.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.075	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 11:  If the input capacity of the gas <u>or propane</u> water heating system is less than 200,000 Btu per hour...</p> <p>Justification:  This change improves language clarity since the code language intends to apply to gas or propane water heating systems.</p>	Staff disagrees with the comment, and no changes have been made. Staff will consider this non-substantive edit in the next code update.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.076	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 12:</p> <p>A. Occupied Minimum Exhaust Airflow. When occupant sensing controls sense occupants in the space, the minimum exhaust and makeup airflow rates shall <del>not exceed be</del> the greater of:</p> <p>i. <del>Not to exceed</del> 1.0 cfm/ft2 (equivalent to 6 air changes per hour for a 10-foot high ceiling), or</p> <p>B. Unoccupied Minimum Exhaust Airflow. Within 20 minutes of no occupancy being detected by any occupant sensors covering the space, the minimum exhaust and makeup airflow rates shall <del>not exceed be</del> the greater of:</p> <p>i. <del>Not to exceed</del> 0.67 cfm/ft2 (equivalent to 4 air changes per hours for a 10-foot high ceiling), or</p> <p>Justification: Per the CASE Report, this should say “the minimum shall not exceed 1 cfm/ft2, or the regulated...” The minimum must be allowed to be less than 1 cfm/ft2. Many labs currently use minimums that are less than 6 ACH occupied and less than 4 ACH unoccupied. If you leave it as "be" then you are requiring these labs to raise their minimums and waste energy.</p>	Staff agrees with the comment, and changes have been made. Specifically the term "User-defined airflow" has been added. This edit also allows labs to identify flow rates less than the maximum 1.0 cfm/ft2 and 0.67 cfm/ft2.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.077	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 13:</p> <p>a. In situations where airflow <del>would be is</del> field verified to be at least 350 cfm/ton, there is no maximum capacity limit.</p> <p>b. In situations where airflow <del>would NOT be is NOT</del> field verified to be at least 350 cfm/ton, the system capacities shall be no larger than indicated in Table 150.2-A for heating and Table 150.2-B for cooling.</p> <p>Justification: The 45 day language uses the phrase 'would be' which is not definitive, mandatory language. We suggest changing this to 'is' and 'is not'.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.078	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 14:</p> <p><del>AHRI 1250 is the Air-Conditioning, Heating, And Refrigeration Institute document titled "2020 Standard for Performance Rating of Walk-in Coolers and Freezers," 2020 (AHRI Standard 1250-2020).</del></p> <p>Justification: AHRI 1250 is a standard that is referenced, and thus should be defined.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.079	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 15:</p> <p>Table 120.6-A-2: water <del>state static</del> pressure (replace all references of "state" to "static")</p> <p>Justification: Grammar / spelling correction, "static pressure" was incorrectly written out as "state pressure" in the table.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.08	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 16:  <u>If the <del>gas water heating system has an</del> input capacity of the gas or propane water heating system is less than 200,000 Btu per hour, the minimum space reserved for the heat pump shall be 2.0 square feet per 10,000 <del>Btu per hour-Btu/hr</del> input of the gas or propane water heating system, and the minimum linear dimension of the space reserved shall be 48 <del>linear</del> inches.</u></p> <p>Justification:  The existing system water heater types that the code applies to are gas or propane and should be stated first. The second instance of the word linear is redundant and can be deleted. These edits are needed for consistency with other sections of JA15.</p>	Staff disagrees with the comment, and no changes have been made. Staff will consider this non-substantive edit in the next code update.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.081	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 17:  <u>If the <del>gas water heating system has an</del> input capacity of the gas or propane water heating system is greater than or equal to 200,000 Btu per hour, the minimum space reserved for the heat pump shall be 3.6 square feet per 10,000 <del>Btu per hour-Btu/hr</del> input of the gas or propane water heating system, and the minimum linear dimension of the space reserved shall be 84 <del>linear</del> inches.</u></p> <p>Justification:  The existing system water heater types that the code applies to are gas or propane and should be stated first. The second instance of the word linear is redundant and can be deleted. These edits are needed for consistency with other sections of JA15.</p>	Staff disagrees with the comment, and no changes have been made. Staff will consider this non-substantive edit in the next code update.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.082	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 18:  <b><u>JA1514.2.2 Storage Tank Space Requirements</u></b></p> <p>Justification:  The proposed language is more clear since the tank space requirements apply to storage AND temperature maintenance tanks.</p>	Staff disagrees with the comment, and no changes have been made. Staff will consider this non-substantive edit in the next code update.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.083	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 19:  <u>0.17 inches water column</u></p> <p>Justification:  The change is needed for clarity as inch is not an appropriate unit for static pressure.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, Reference Joint Appendix JA15.2.3 now uses "0.17 inches water column."	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.084	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 20:  (d) <del>Domestic Hot Water Systems</del><del>Water-heating systems</del>. Water-heating systems shall meet the applicable requirements of either 1, <del>or 2, 3 or 4</del> below:  .....  2. <b><u>Central Systems</u></b>. For systems serving multiple dwelling units, the water-heating system shall meet the applicable requirement of A through FE, or shall meet the performance compliance requirements of Section 170.1:</p> <p>Justification:  The description of requirement is not aligned with new section numbering.</p>	Staff agrees with the comment, and changes have been made. Specifically, the references to the applicable requirements in Section 170.2(d) have been corrected.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>



256172.085	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 21:  <u>D. The central system shall have a recirculation system with mechanical or digital thermostatic master mixing valve on each distribution supply and return loop, and meet the requirements specified in the Residential Reference Appendix RA4.4.2919. .</u></p> <p>Justification:  The incorrect RA section was referenced.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, the reference to Joint Reference Appendix RA4.4.19 has been corrected in Section 170.2(d)2D.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.086	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 22:  <u>(a) General Requirements. Multifamily buildings shall comply with the applicable requirements of subsection 160.9. The building electrical system shall be sized to meet the future electric requirements of the electric ready equipment specified in sections 160.9(ab) through (ef).</u></p> <p>Justification:  This change is needed to make sure the correct code sections are referenced.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, the references to Sections 160.9(b) through (f) have been corrected in Section 160.9(a).	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.087	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 23:  <u>(e) Individual Heat Pump Water Heater Ready. Systems using gas or propane water heaters to serve individual dwelling units shall include the following components and shall meet the requirements of Section 160.9(f):</u></p> <p>Justification:  Due to other structural changes to Section 160.9, this reference is no longer required and now references the wrong language.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, the language "and shall meet the requirements of Section 160.9(f)" has been removed from the introductory text of Section 160.9(e).	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.088	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 24:  <u>i. Fully louvered doors with fixed louvers consisting of a single layer of fixed flat slats; or</u>  <u>ii. Two permanent fixed openings, located within 12 inches from the enclosure top and bottom;</u></p> <p>Justification:  In coordination with the HPWH ventilation measure per James Haile's meeting with CEC</p>	Staff agrees with the proposed suggestion and changes have been made. Section 160.9(3) has been restructured.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.089	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 25:  <u>B. Ventilation. Consumer integrated HPWHs shall meet one of the ventilation requirements below. Minimum volume and opening size requirements shall be the sum of all HPWHs installed within the same space. Compressor capacity shall be determined using AHRI 540 Table 4 reference conditions for refrigeration with the "High" rating test point.</u></p> <p>Justification:  This corrects a typo where there is a missing period after "Ventilation" making the subsection name/heading part of the sentence.</p>	Staff agrees with the comment, and changes have been made. A period has been added after the section heading "Ventilation." in Section 110.3(c)7B.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.09	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 26:  iv. If only the HPWH inlet or outlet is ducted, installation space shall include permanent openings <u>which</u> consist of a single layer of fixed flat slat louvers or grilles in the bottom half of the room, and/or a door undercut. With a ducted inlet, the minimum NFA shall be equal to the cross-sectional area of the duct. With a ducted exhaust, the minimum NFA shall be the larger of 20 square inches or the minimum NFA provided by the manufacturer for this method; and</p> <p>Justification:  This corrects a typo in the first sentence of this subsection, the correct grammar would be "which consist" or "consisting".</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.091	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 27:  (d) Commercial boilers  1. Combustion air positive shut-off shall be provided on all newly installed boilers as follows:  A. All boilers with an input capacity of 2.5 MMBtu/h (2,500,000 Btu/h) and above, in which the boiler is designed to operate with a nonpositive vent static pressure.  B. All boilers where one stack serves two or more boilers with a total combined input capacity per stack of 2.5 MMBtu/h (2,500,000 Btu/h).  2. Boiler combustion air fans with motors 10 horsepower or larger shall meet one of the following for newly installed boilers:  A. <del>A</del>The fan motor shall be driven by a variable speed drive, or  B. The fan motor shall include controls that limit the fan motor demand to no more than 30 percent of the total design wattage at 50 percent of design air volume.  SECTION 160.4(e)3A. Pipe <u>and appurtenance</u> insulation exposed to weather shall be protected by a cover suitable for outdoor service. The cover shall be water retardant and provide shielding from solar radiation that can cause degradation of the material. <u>Appurtenance insulation covers shall be removable and re-installable.</u>  Adhesive tape shall not be used to provide this protection.  <del>(ef) Pipe Insulation for piping and tanks</del>  2. 2. Insulation Thickness. <u>All</u> Piping for multifamily domestic hot water systems shall be insulated to meet the <u>insulation thickness</u> requirements <u>specified in</u> <del>of</del> Table 160.4-A.</p> <p>Justification:  These are corrections of formatting, grammar and spelling.  SECTION 160.4(e)2B Equation 160.4-A is not being displayed correctly  SECTION 160.4(e)3A spelling error.  SECTION 160.4(e)2 Font size on 2 is small.</p>	Staff agrees with the proposed suggestion and changes have been made. Specifically, Staff has clarified in Section 160.4(e)1E that "Insulation on the piping and domestic hot water system appurtenances shall be continuous."	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.092	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 28:  Main electrical service panel shall be sized to accommodate at least two additional 2-pole 50-amp breakers.</p> <p>Justification:  Additional text for clarity</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.093	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 29:  <b>EXCEPTION 1 to Section 120.6(k):</b> healthcare facilities.  <b>EXCEPTION 2 to Section 120.6(k):</b> commercial kitchens with all-electric designs.</p> <p>Justification:  Additional exception for kitchens already designed to be all-electric as requested by Compliance Improvement Team (Gina Rodda).</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.094	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 30:  Weigh-in Procedure Last sentence: The HVAC Installer shall certify on the Certificate of Installation that the manufacturer's specifications for these procedures have been met. This shall be verified <b>either</b> through on-site observation using procedures in RA 3.2.3.2.</p> <p>Justification:  Language clean-up to clarify that RA3.2.3.2 is the only option.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.095	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 31:  JA 6.1 and RA 3.4.2</p> <p>Justification:  These sections should be removed from the appendices, as the option to use FID as an alternative to charge verification has been removed from Part 6. These sections are long, have been unused, and this will be a useful cleanup.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.096	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 32:  (b) Wall insulation. Opaque portions of above grade walls separating conditioned spaces from unconditioned spaces or ambient air shall meet the following applicable requirements:</p> <ol style="list-style-type: none"> <li>1. Metal building—The area-weighted average U-factor of the wall assembly shall not exceed 0.113.</li> <li>2. Metal framed—The area-weighted average U-factor of the wall assembly shall not exceed <del>0.1510</del> <u>0.148</u>.</li> <li>3. Wood framed and others— <ol style="list-style-type: none"> <li>A. Nominal 2x4 inch framing shall have an area-weighted average U-factor of the wall assembly not exceeding <del>0.1020</del> <u>0.095</u>.</li> <li>B. Nominal 2x6 inch framing shall have an area-weighted average U-factor of the wall assembly not exceeding <del>0.0710</del> <u>0.069</u>.</li> <li>C. Other wall assemblies shall have an area-weighted average U-factor of the wall assembly not exceeding 0.102.</li> </ol> </li> </ol> <p>Justification:  Some of the zeros before the decimal points in the updated values were mistakenly stricken in the draft languag</p>	Thank you for your comment. The preceding zeros are already in place.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.097	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 33:  The installer shall certify on the Certificate of Installation that the control configuration has been tested in accordance with the testing procedure found in the <del>CF2R</del> <u>Certificate of Installation</u></p> <p>Justification:  There are no CF2Rs for multifamily buildings. I suggest changing this to “The installer shall certify that the control configuration has been tested in accordance with the testing procedure found on the Certificate of Installation”</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.098	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 34: A solar water-heating system meeting the installation criteria specified in Reference Residential Appendix RA4 and with a minimum solar savings fraction of either i or ii below: <b>ia.</b> A minimum solar savings fraction of 0.20 in Climate Zones 1 through 9 or a minimum solar savings fraction of 0.35 in Climate Zones 10 through 16; or <b>iiB.</b> A minimum solar savings fraction of 0.15 in Climate Zones 1 through 9 or a minimum solar savings fraction of 0.30 in Climate Zones 10 through 16. In addition, a drain water heat recovery system that is field verified as specified in the Reference Appendix RA3.6.9.</p> <p>Justification: The sub-section numbering under Section 170.2(d)2Bii seems to be an incorrect structure. Should start with "a." (i.e. a., b. etc.) Should be 170.2(d)2Biia</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.099	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 35: Footnote requirements to TABLE 170.2-A:</p> <ol style="list-style-type: none"> <li>1. Install the specified R-value with an air space present between the roofing and the roof deck. Such as standard installation of concrete or clay tile.</li> <li>2. R-values shown for below roof deck insulation are for wood-frame construction with insulation installed between the framing members. Alternatives including insulation above rafters or above roof deck shall comply with the performance standards.</li> <li>3. Assembly U-factors for exterior framed walls can be met with cavity insulation alone or with continuous insulation alone, or with both cavity and continuous insulation that results in an assembly U-factor equal to or less than the U-factor shown. Use Reference Joint Appendices JA4 Table 4.3.1, 4.3.1(a), or Table 4.3.4 to determine alternative insulation products to be less than or equal to the required maximum U-factor.</li> <li>4. Mass wall has a heat capacity greater than or equal to 7.0 Btu/h-ft<sup>2</sup>.</li> <li>5. Product must be certified to meet the North American Fenestration Standard/Specification for an Architectural Window (AW).</li> <li>6. Glazed doors must meet the fenestration requirements.</li> <li>7. <u>Requirements apply to doors included in the Curtainwall/Storefront construction assembly.</u></li> <li>8. <u>If using F-factor to comply, use Reference Joint Appendices JA4, Table 4.4.7 to determine alternate depth and R-value to be less than or equal to the required maximum F- factor.</u></li> </ol>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.1	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 36: Section 100.1(b): The new definition for "Programming Library" is under Lighting Definitions and should not be. Move definition after "PROCESS SPACE" and before "PROPOSED DESIGN BUILDING" and use all CAPS.</p> <p>Justification: Newly added definition for "Programming Library" was misplaced under Lighting Definitions.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.101	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 37: Exception 1 to Section 140.4(r)3: Non-programmable (configurable-only) controllers for zone terminal units shall follow applicable ASHRAE Guideline 36 zone sequences referenced in <del>JA15 Table 15.3-1</del> JA18 Table JA18.4-1 but are not subject to programming library requirement in Section 140.4(r)3.</p> <p>Justification: The JA reference was to the incorrect section.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.102	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 38: Joint Appendix JA1: APPENDIX JA1 – Definitions: <u>ASHRAE GUIDELINE 36 is the American Society of Heating, Refrigerating and Air-Conditioning Engineers document titled "High-Performance Sequences of Operation for HVAC Systems". 2021 (ASHRAE Guideline 36-2021).</u> <u>PROGRAMMING LIBRARY is a collection of programming logic used for controlling HVAC equipment with direct digital control systems.</u></p> <p>Justification: New terms added in new JA18 needed to be defined. Definitions added here, which match the new definitions in Section 100.1(b).</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.103	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 39: JA.18.1 <u>Purpose and Scope</u> <u>Title 24, Part 6, Section 140.4(r) requires that HVAC control systems with DDC use programming originating from a certified programming library based on control sequences of operation described in ASHRAE Guideline 36-<del>2023</del>2021. This section describes the requirements of the Guideline 36 programming library.</u></p> <p>Justification: The publication year of the standard was incorrect. To be consistent with the numbering convention throughout the appendices, there should not be a period between JA and 18 (this change should occur throughout the entire JA18 appendix).</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.104	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 40:  <u>JA.18.2 Certification Submittal Requirements</u>  Each company wishing to certify that their Guideline 36 programming library conforms to the <u>Guideline 36 library requirements of Title 24, Part 6, may do so in a written declaration. This requires that a letter be sent to the California Energy Commission declaring that the Guideline 36 library is complete and conforms to the requirements listed in <del>JA15.3</del>JA18.3.</u> The declaration at the end of this section shall be used to submit to the California Energy Commission.</p> <p>Justification:  The reference was incorrect.  To be consistent with the numbering convention throughout the appendices, there should not be a period between JA and 18 (this change should occur throughout the entire JA18 appendix).</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.105	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 41:  <u>JA.18.4 Programming Library Requirements</u>  The programming library to be certified shall include complete control logic for all sections from ASHRAE Guideline 36 listed in Table <del>JA15.3-1</del>JA18.4-1, and shall meet the minimum <u>validation requirements listed.</u>  <u>Table <del>JA15.3-1</del>JA18.4-1 Required Guideline 36 Logic for Certified Programming Library</u></p> <p>Justification:  The table number referenced the incorrect section.  To be consistent with the numbering convention throughout the appendices, there should not be a period between JA and 18 (this change should occur throughout the entire JA18 appendix).</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.106	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 42:  Refer to submitted comment for changes.</p> <p>Justification:  Update incorrect table number.  Put building relief, return fan control, and fan/filter/pressure alarms criteria on separate lines for clarity</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>



256172.107	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 43: JA.18.5 Declaration Consistent with the requirements of Title 24, Part 6, Sections 100.0(h) <del>and 120.2(i)</del>, companies wishing to certify to the California Energy Commission shall execute a declaration under penalty of perjury attesting that all information provided is true, complete, accurate, and in compliance with the applicable provisions of Part 6. Companies may fulfill this requirement by providing the information, signing the declaration below and submitting to the California Energy Commission as as specified by the instructions in JA18.6.</p> <p>Justification: Reference to "120.2(i)" is irrelevant and should be revised to "140.4(r)</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.108	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 44: JA.18.5: first Table heading: Company, <del>Model Name and Number of all devices being certified</del> <b>Product Line, and Version Number of all libraries being certified</b> Revise column headings to: Company, Product Line, Guideline 36 Version, and Library Version.</p> <p>Justification: Revise table and table heading to adequately capture libraries being certified.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.109	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 45: JA.18.5: Table <del>Manufacturer</del> <b>Company Responsible for Library Development</b> (if different from Certifying Company)</p> <p>Justification: Revise table heading to allow any company to certify library.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.111	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 46: JA.18.5: Declaration: Reference Section 140.4(r) instead of Section 120.2(i). I declare under penalty of perjury under the laws of the State of California that: (1) All the information in this statement is true, complete, accurate, and in compliance with all applicable provisions of <del>Section 120.2(i)</del> 140.4(r) of Title 24, Part 6 of the California Code of Regulations.</p> <p>Justification: The declaration referenced the incorrect section.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.111	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 47: <del>Appendix JA6 – HVAC System Fault Detection and Diagnostic Technology</del> <del>Appendix JA18 – Guideline 36 Programm+ing Library Requirements</del></p> <p>Justification: Incorrect footer.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.112	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 48:  Note: the compartmentalization boundary area is the <b>total dwelling unit enclosure area including its walls, ceilings, and floors shared with exterior spaces or adjacent spaces in the building (neighboring units, corridors, elevator shafts, etc.).</b> <del>the interior surface areas of the dwelling unit enclosure walls between dwelling units, exterior walls, ceiling, and floor</del></p> <p>Justification:  The original language could be interpreted to include ceilings and floors within a dwelling unit (potentially double counting them). The proposed revision makes it less ambiguous.</p>	<p>Staff agrees with the proposed suggestion and changes have been made.</p> <p>Staff deleted the note on compartmentalization in Reference Appendices, Residential Appendix RA 3.8 and Nonresidential Appendix NA 2.3 as we added a new definition for COMPARTMENTALIZATION in Joint Appendix JA1.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.113	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 49:  (b) Pool and spa systems. Pool and spa systems available to multiple tenants or to the public shall comply with the applicable requirements of Section 110.4. Pool and spa systems installed for exclusive use by a single tenant shall comply with the applicable requirements of Section 150.0(p). <u>Pool and spa systems installed for public use shall comply with Section 150.0(p)2, Section 150.0(p)3, and Section 150.0(p)4.</u></p> <p>Justification:  Correct a typo in the proposed language by the CEC</p>	<p>Staff agrees with the proposed suggestion and changes have been made.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.114	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 50:  <u>Exception 3 to Section 110.4(c): A pool and/or spa that is heated solely by a solar <del>spool</del> heating system without any backup heater.</u></p> <p>Justification:  There is a typo in this exception s/b pool. Is spool. The intent otherwise is the same as before.</p>	<p>Staff agrees with the comment, and changes have been made.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.115	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 51:  <u>Exception 5 to Section 110.4(c): Heating systems which are used exclusively for permanent spa applications where there is inadequate solar access <del>roof area to meet the requirements of section 110.4(c)1</del> for a solar pool heating system to be installed.</u></p> <p>Justification:  CEC needs to provide specific solar access threshold rather than "adequate" threshold for clarity and to aid enforceability of building standard. Use the existing framework in JA11.4 to calculate solar access roof area. There is also a need to clarify that the exception applies to an evaluation of the roof space only and that no area on the ground surrounding the pool is expected to participate in the solar access determination.</p>	<p>Staff agrees with the comment, and changes have been made.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.116	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 52:  <u>A heat pump pool heater (HPPH) shall be sized using the HPPH manufacturer's specifications.</u>  <u>For indoor pools, the HPPH shall be sized per the ASHRAE Handbook, Equipment Volume, Applications Volume and Fundamentals Volume.</u>  <u>The following sizing provisions shall be applicable if the HPPH manufacturer's specifications do not include information on HPPH sizing for an outdoor pool: _</u></p> <p>Justification:  Add an alternative calculation method based on the ASHRAE applications Handbook for indoor pools. Text for the indoor pool HPPH sizing modeled after 150.0(h)1. space conditioning equipment.</p>	Comment acknowledged, no change made. Additional stakeholder engagement is needed to adequately address the proposal. Staff will revisit this topic in the next code update.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.117	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 53:  <u>32. Covers. Outdoor pools and/or spa with heating equipment that uses electricity or natural gas shall be installed with a pool cover. A cover for outdoor pools and/or outdoor spas that have a heat pump or gas heater.; and</u></p> <p>Justification:  The existing requirement only applies to outdoor pools that have a heat pump or gas heater, a heater that uses utility energy. The CEC has proposed that pool covers be required for any outdoor pool with pool heating equipment. This would include pools with solar heating equipment that are specifically exempted from other requirements in the CEC's proposal. Some solar systems may be sized to adequately heat the pool without use of a pool cover as a convenience to the owner. No utility energy savings would be gained for a pool with only a solar pool heating system that would now be required to have a cover. Also there is no exception for new vs. existing pools for this expansion in scope so there may be difficulty in meeting requirement on the existing pools.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.118	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 54:  Section 150(p)1.A</p> <p>Justification:  The US DOE set standards for dedicated-purpose pool pump motors on November 27, 2023. The CEC should examine requirements for pool pumps and pool pump motors for alignment with the federal standards.</p>	Comment acknowledged, no changes made. Section 150.0(p) references the federal appliance standard for dedicated-purpose pool pumps.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.119	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 55: See Appendix B of docketed comments for markup</p> <p>Justification: Section references when moving from ASHRAE 62.2-2019 to 62.2-2022 need correction.</p> <p>In 150.0(o) ASHRAE 62.2-2019 Section 6.5.2 is a requirement for duct blaster testing. In 62.2-2022, this requirement has moved to Section 6.1.3. Section 6.7 is the filtration requirements (requires MERV 11). Title 24 Part 6 has its own filtration requirements (MERV 13) in Section 150.0(m)12.</p> <p>In 150.0(o)1D: Strike through since exception is added earlier.</p> <p>In 160.2(b)2A: See explanation above for the change of 6.5.2 to 6.1.3, and the addition of 6.7. Also exempt Section 4.2, because that specifies the ventilation system type, and 160.2(b)2Aivb covers that and is slightly different from the 62.2 Section 4.2 requirements. Note that 62.2 Section 4.2 is still applicable to single family units, so no need to exempt 4.2 in T24 P6 Section 150.0(o).</p> <p>In 160.2(b)2Aiii: Strike through since exception is added earlier.</p> <p>In 150.2(b)1Mib, 160.2(b)2Avif, 180.2(b)5Bib,150.0(o)1Gvi, 150.0(o)1I and 160.2(b)2Aviii: This is referring to the same requirement in 62.2-2022 as was referred to in 62.2-2019, but the sound requirement for fans has moved from Section 7.2 to Section 7.3 in the 2022 version of 62.2.</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>References to Sections 150.2(b)1Mib, 160.2(b)2Avif, Exception to Section 150.0(o), Exception to Section 160.2(b)2: ASHRAE 62.2-2022 have been updated.</p> <p>No changes were made to Sections 150.0(o)1D and 160.2(b)2Aiii, which state that air filtration shall conform to the respective Energy Code requirements, and that compliance with ASHRAE 62.2 Sections 6.7 and 6.7.1 shall not be required. The current language maintains clarity and consistency within the Energy Code.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.12	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 56: See Appendix B of docketed comments for markup.</p> <p>Justification: Table entry is potentially confusing. At first blush, it implies that HRV/ERV IAQ systems are required for Prescriptive compliance, and only upon reading the referenced section (150.1(c)15) is it apparent that it's really only that FID equipped HRV/ERVs are required when they're used to provide ventilation to satisfy 150.0(o). Adding a foot note to clarify HRV/ERV systems are not required in all CZs. To correct a typo: moving footnote 16 relevant to Table 150.1-A from Table 170.2-K. This footnote is about allowing supplemental heating that uses gas less than the specified thermal capacity so belongs in Table 150.1-A.</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Staff added language in Section 150.1(c)15 and in Table 170.2-K to clarify that fault indicator displays (FID) are required if HRV/ERV systems are installed. No changes were made in Table 150.1-A.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.121	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 57: See Appendix B of docketed comments for markup.</p> <p>Justification: Table 170.2-K and footnotes need updates for consistency with other changes (balanced or supply ventilation, HRV/ERV FID). To correct a typo: moving footnote 2 from Table 170.2-K to 150.1-A. This footnote is about allowing supplemental heating that uses gas less than the specified thermal capacity.</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Staff added language in Section 150.1(c)15 and in Table 170.2-K to clarify that fault indicator displays (FID) are required if HRV/ERV systems are installed. No changes were made in Table 150.1-A.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.122	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 58: Section 130.1(d) See Appendix B of docketed comments for markup.</p> <p>Justification: See Appendix B for more information.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>The proposed changes is out of scope of this rulemaking.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.123	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 59: <del>Automatic Daylighting</del> <u>Daylight Responsive Automatic Daylighting</u> Controls</p> <p>Justification: In Section 130.1(d) the term “automatic daylighting controls” has been changed to “daylight responsive controls.” The rationale is to better match the nomenclatures of ASHRAE 90.1 and IECC. However, ASHRAE 90.1 does not have a requirement for demand responsive controls – they have a credit for “load management systems” which do respond to a utility demand response signal. We have a concern that the term “daylight responsive controls” may be confused with Title 24’s pre-existing term “demand responsive controls” (see Section 110.12). Our primary recommendation is to revert “automatic daylighting controls”. If the term “daylight responsive controls” is going to be used, we recommend that the term be “daylight responsive lighting controls” to differentiate these controls from the controls that modify the transmittance of chromogenic glazing in response to daylight as described in item i of Exception 4 to Section 150.1(c)3A “i. The lower -rated labeled U-factor and SHGC shall be used with automatic controls to modulate the amount of solar gain and light into the space transmitted in multiple steps in response to daylight levels or solar intensity;...”</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>The term “daylight responsive controls” is used in Section 130.1(d) to discuss daylight and controls. IECC also uses this term. The term “demand responsive controls” relates to load management. Staff anticipates that code users will understand that these two terms are different.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.124	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 60: Section 100.1</p> <p>Justification: If the term "daylight responsive controls" is to be used to describe photocontrols for the control of electric lighting, the definitions section needs to be updated.</p> <p>Currently, in <b>Section 100.1 Definitions and Rules of Construction</b>, there are definitions for daylight control which should be updated with the exact terminology to reflect whatever term is going to be used in Section 130.1(d) for: <b>Automatic Daylight Control</b> adjusts the luminous flux of the electric lighting system in either a series of steps or by continuous dimming in response to available daylight. This kind of control uses one or more photosensors to detect changes in daylight illumination and then automatically adjusts the electric lighting levels in response. <b>Daylight Continuous Dimming Controls</b> are a continuous dimming controls that vary the luminous flux in response to available daylight.</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Staff agrees that the term "daylight responsive control" should be used in the definition of the term "automatic daylight control" and changes have been made.</p> <p>Staff disagrees with the comment related to daylight continuous dimming controls. This term is used in Sections 140.6 and 170.2, and is being retained for consistency.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.125	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 61: Reference Appendices NA 7.6.1</p> <p>Justification: If the term "daylight responsive controls" is to be used to describe photocontrols for the control of electric lighting, all the instances in the Reference Appendices NA7.6.1 need to be updated according to reflect the change in the standard.</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>The term in Reference Appendices, Nonresidential Appendix NA7.6.1 will be updated to "daylight responsive controls" in order to align with the term used in Section 130.1(d).</p> <p>The term "daylight responsive controls" is proposed to replace "automatic daylighting controls".</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.126	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 62: Add the following new item D to 130.1(d)2 and renumber the subsequent items. <u>D. Daylit zones are considered to be controlled independently if they are controlled by separate automatic daylight controls or with a multiple zone automatic daylight control with separate settings for different zones.</u></p> <p>Justification: This clarification would address the ongoing questions Title 24 receives.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Staff clarifies that Section 130.1(d) is not intended to disallow "daylit zones to be controlled independently whether it is achieved by controlling with separate automatic daylight controls or by controlling with a multiple zone automatic controls" for meeting Section 130.1(d).</p> <p>Staff may consider providing additional information in the compliance manual to address any potential confusion.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.127	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 63: (e) Vestibules. <i>Public entrances</i> in buildings....</p> <p>Justification: Italicize defined term (T24, Part 2, Chapter 2)</p>	<p>Comment acknowledged, no change made. In alignment with ADA accessibility standards, Staff avoid using italics to emphasize defined terms.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.128	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 64: The installation of one or more revolving doors in the building entrance shall not eliminate the requirement that a vestibule be provided on any <del>main</del> <i>public entrance</i> doors adjacent to revolving doors.</p> <p>Justification: Use and italicize defined term (T24, Part 2, Chapter 2)</p>	<p>Staff agrees with the comment, and changes have been made.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.129	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 65: Exception 1 to Section 150.1(c)3A: New dwelling units with a conditioned floor area of 500 square feet or less in Climate Zones 5 <del>through 10 and Climate Zone 15</del> may comply with a maximum U-factor of 0.30.</p> <p>Justification: Exception 1 to Section 150.1(c)3A is redundant and should only apply to Climate Zone 5. Also note a type-of in the word "or" (it shows as "orf" after the word 'feet').</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.13	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 66: In 160.2(b)2B: At a minimum, systems with heat or energy recovery serving a single dwelling unit shall have a fan efficacy of <math>\leq 1.0</math> W/cfm as confirmed by <u>ECC-Rater or ATT</u> field verification in accordance with Reference Appendix RA3.7.4.4 or NA2.2.4.1.5 as applicable.</p> <p>In 160.3(b)5K: Duct system sealing and leakage testing. When space-conditioning systems utilize forced air duct systems to supply conditioned air to an individual dwelling unit, the ducts shall be sealed, as confirmed through <u>ECC-Rater or ATT</u> field verification and diagnostic testing, in accordance with all applicable procedures specified in Reference Residential Appendix RA3.1</p> <p>Justification: ECC-Rater or ATT terminology should be consistent with other field verification requirements.</p>	<p>Comment acknowledged, no changes made.</p> <p>The referenced sections refer to the FV&amp;DT procedures in both cases. The FV&amp;DT procedures, outlined in the Reference Appendices, Residential Appendix RA and Nonresidential Appendix NA of the Energy Code define FV&amp;DT roles.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.131	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 67: In Section 120.6(c)4. CO concentration at all sensors is maintained at <del><math>\leq</math></del> 25 ppm or less at all times.</p> <p>In Section 150.0(m)12Biib: Vface = air filter face velocity <del><math>\leq</math></del> 150, ft/min.</p> <p>Justification: There are a few places where the British pound symbol (£) seems to be used instead of the less than or equal to symbol (<math>\leq</math>). Here are a few locations, but the CASE team recommend the Energy Commission do a search for £ to see if there are others.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.132	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 68: Multifamily building central ventilation ducts <del>in multifamily buildings with four or more habitable stories</del> <u>subject to Section 160.2(b)2C</u> shall be leak tested in accordance with NA7.18.3.</p> <p>Justification: This language needs to be updated to expand the scope of the central ventilation acceptance test to multifamily buildings with three or fewer habitable stories.</p>	Staff agrees with the comment, and changes have been made.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>



256172.133	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 69: Modified 5/1/24</p> <p><b>A. Luminaire efficacy.</b> All installed luminaires and light sources shall meet the requirements in Table 150.0-A and comply with Reference Joint Appendix JA8, <del>and shall be certified and marked as required by JA8</del>. <u>Compliant luminaires or light sources shall be marked by the manufacturer "JA8-20xx" or for elevated temperature products "JA8-20xx-E."</u></p> <p><u>The "20xx" portion of the marking shall be refers to the version of JA8 requirements that the product complies. Products complying with 2016, 2019, 2022, and 2025 versions of JA8 shall be deemed compliant.</u></p> <p>Justification: See Appendix B for justification and additional explanation.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>The suggested addition to Section 150.0(k)1A duplicates language already in Section JA8.5 of Reference Appendices, Joint Appendix JA8. The suggested text "Products complying with 2016, 2019, 2022" is not appropriate for the Energy Code.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.134	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 70:</p> <p>D. Light sources in enclosed or recessed luminaires. Lamps and other separable light sources in enclosed or recessed luminaires shall be in compliance with the JA8 elevated temperature requirements. <u>Compliant elevated temperature luminaires or light sources shall be marked "JA8-20xx-E."</u> <u>The "20xx" portion of the marking shall be refers to the version of JA8 requirements that the product complies. Products complying with 2016, 2019, 2022, and 2025 versions of JA8 shall be deemed compliant.</u></p> <p>Justification: Modify 150.0(k)1D as follows to simplify and clarify compliance without having to send the code user to Reference Appendix JA8. See the justification provided for the recommendation made to 150.0(k)1A if one would prefer to have the marking detail covered in JA8 instead of the text of the standard. A significant portion of residential luminaires are recessed or enclosed. This includes light engines in recessed cans, and decorative luminaires with lamps inside of enclosed fixtures.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>The suggested addition to Section 150.0(k)1A duplicates language already in Section JA8.5 of Reference Appendices, Joint Appendix JA8. The suggested text "Products complying with 2016, 2019, 2022" is not appropriate for the Energy Code.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.135	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 71:</p> <p><u>7. Partial-OFF occupant sensing controls. Partial-OFF occupant sensing controls are required to control lighting in the following spaces when they are sensed as unoccupied but the building is scheduled as occupied: in specified stairwells and common area corridors, parking garages, parking areas, and loading and unloading areas.</u></p> <p><u>A. In corridors and stairwells, lighting shall be controlled by occupant sensing controls that separately reduce the lighting power in each space by at least 50 percent when the space is unoccupied. The occupant sensing controls shall be capable of automatically turning the lighting fully ON only in the separately controlled space and shall be automatically activated from all designed paths of egress. Lighting in stairwells and common area corridors that provide access to guestrooms of hotel/motels shall meet requirements of this section instead of complying with Section 130.1(c)1.</u></p> <p><u>B. In parking garages, parking areas and loading and unloading areas, general lighting shall be controlled by occupant sensing controls that meet the requirements below instead of complying with Section 130.1(c)1:</u></p> <p><u>i. The occupant sensing controls shall uniformly reduce lighting power in the control zone to between 20 percent and 50 percent of full power and with at least one control step; and.</u></p> <p><u>ii. No more than 500 watts of rated lighting power shall be controlled together as a single zone; and.</u></p> <p><u>iii. The occupant sensing controls shall be capable of automatically turning the lighting fully ON only in the separately controlled space, and shall be automatically activated from all designed paths of egress.</u></p> <p><u>Interior areas of parking garages are under the classification of indoor lighting and shall comply with Section 130.1(c)7B. Parking areas on the roof of a parking structure are under the classification of outdoor hardscape and shall comply with Section 130.2.</u></p> <p>Justification: Recommendation to restore part of 130.1(c)7 as follows and delete the corresponding language from Section 130.1(c)6. This does not change the requirements only makes it</p>	Staff disagrees with the comment, and no changes have been made. The proposed code language is more concise.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.136	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 72:</p> <p><b>1. Building cooling and heating loads.</b> <del>Room-by-room Building</del> heating and cooling loads shall be determined using a method based on any one of the following:</p> <p>Justification: This suggested language addition resolves confusion introduced from new Exception 1. The exception allows block loads for additions. This raised the question about whether block loads are specifically not allowed for other cases. The recommended edit clarifies this. Also see substantive item #13 for related edits to 160.3(b)1.</p>	Staff disagrees with the comment, and no changes have been made.  The referenced methodologies specified already specify the load calculation methodology.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.137	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantial Remark 73:          "Outdoor design conditions shall be selected from <del>one of the following:</del>  <del>i. Reference Joint Appendix JA2, which is based on data from the ASHRAE Climatic Data for Region X; or</del>  <del>ii. The ASHRAE Handbook, Equipment Volume, Applications Volume and Fundamentals Volume; or</del>  <del>iii. The SMACNA Residential Comfort System Installation Standards Manual; or</del>  <del>iv. The ACCA Manual J."</del></p> <p>Justification:          Suggest removing the proposed modification as ii and iii do not have design conditions listed in them and ACCA Manual J has a much shorter list of CA cities than JA2.</p>	<p>Staff agrees with the proposed suggestion and changes have been made.</p> <p>Staff has removed the reference to the SMACNA Residential Comfort System Installation Standards Manual. Staff has also changed "The ASHRAE Handbook, Equipment Volume, Applications Volume and Fundamentals Volume" to say "The ASHRAE Handbook Fundamentals Volume" to account for the relevant climactic data in these documents. The ACCA manual J reference will remain in the language because it contains relevant climactic data.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.138	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 74:          Section 150.0(h)5B          No change recommended.</p> <p>Justification:          The CASE Team is providing feedback on a comment raised at Lead Commissioner Workshop regarding sizing requirements and whether they are in conflict with ENERGY STAR, particularly the prohibition on undersizing heat pump heating which can lead to oversized cooling. The CASE Team does not think there are conflicts, see the Appendix for further details.</p>	<p>Comment acknowledged, no change made</p> <p>Staff reviewed Energy Star requirements, and were unable to find a conflict between the requirements of Energy Star and the 2025 Energy Code.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.139	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 75:  <u>160.4(e)1B Insulation on the piping and <del>domestic hot water system</del> appurtenances shall be continuous.</u></p> <p><u>Section 100.1(b) DOMESTIC HOT WATER SYSTEM APPURTENANCE are all elements that are in series in a domestic hot water distribution system, including fittings (elbows, tees, flanges, etc.), pumps, valves (isolation, mixing, balancing, check, etc.), <del>pipe supports and hangers</del>, strainers, hose bibs, coil u-bends, meters, sensors, heat exchangers and air separators.</u></p> <p>Justification:          Language markup to SECTION 160.4(e)1B. is intended to make lookup easier in SECTION 100.1 since this is the first time DHW system appurtenance is mentioned in section 160.4(e). It's difficult to locate it in section 100.1, if looking for a term that begins with A instead of D.</p> <p>Pipe hangers and supports are not installed inline with piping, which is the CPC definition for plumbing appurtenance. There is already language in 160.4(e)C that calls out pipe supports, hangers, and pipe clamps and that rigid insulation shall be installed inside of the clamp or hanger so this definition revision doesn't omit them from the code measure.</p>	<p>Staff agrees with the proposed suggestion and changes have been made.</p>	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256172.14	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 76: Existing building envelope wall where at least 25% or more of the wall area is being altered must comply with Section 140.3(a)9. Where the building is tested in accordance with the procedures for whole building air leakage in <a href="#">NA5.1</a> <a href="#">NA2.4</a> and the tested leakage rate exceeds 0.4 cfm/ft<sup>2</sup> of building shell at 75 pa. A Visual Inspection and Diagnostic Evaluation shall be done in accordance with <a href="#">NA5.7</a> <a href="#">NA2.4.7</a> and all observed leaks shall be sealed where such sealing can be made without destruction of existing building components.</p> <p>Justification: There is no NA2.4 or NA2.4.7</p>	Staff agrees with the comment, and changes have been made. Specifically, in Section 141.0(b)2Q references to Reference Appendices, Nonresidential Appendix NA2.4 and NA 2.4.7 have been updated to NA 5.1 and NA 5.7 respectively.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.141	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 77: Appendix JA17 – Qualification Requirements for <del>Heat/Energy Recovery</del> Ventilation System (HRV/ERV) Fault Indicator Displays (FIDs) JA17.1 Introduction Joint Appendix JA17 provides the technical specifications for fault indication display devices (FIDs) that provide visual and/or audible indications that HRV/ERV systems, <a href="#">and balanced or supply-only systems that require an FID according to 150.0(o)1Civ or 160.2(b)2Axia</a>, maintain their rated airflow and fan efficacy for the life of the equipment.</p> <p>Justification: The FID requirements in JA17 apply to HRV/ERVs, as well as balanced or supply-only systems that are required under the exceptions within 150.0(o)1Civ or 160.2(b)2Axia</p>	Staff agrees with the comment, and changes have been made.  Staff acknowledges the FID requirements in Reference Joint Appendix JA17 apply to HRV/ERVs, as well as balanced or supply-only systems that are required under the exceptions within 150.0(o)1Civa1 or 160.2(b)2Axia1.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.142	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 78: <a href="#">140.4(r)3 The programming library shall be certified by to the Energy Commission as meeting the requirements of JA18.</a> 160.3(a)2Hviii. The FDD system shall be certified <del>by</del> to the Energy Commission as meeting the requirements of Sections 160.3(a)2Hi through 160.3(a)2Hvii in accordance with Section 110.0 and JA6.3.</p> <p>Justification: Make correction so language is referencing defined terms.</p>	Staff agrees with the comment, and the recommended edits have been made to the language. Specifically, the adopted language of Section 140.4(r)3 is: The programming library shall be certified to the Energy Commission as meeting the requirements of Reference Joint Appendix JA18.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>
256172.143	CA Utility CASE Team and Compliance Improvement Team	<p>Non-substantive Remark 79: No markup recommendations. Update table to address ambiguity on how many allowances can be used for each Primary Function Area.</p> <p>Justification: Table 140.6-C is confusing because there are multiple rows with the same Primary Function Area and it is not clear how many credits are available for each Primary Function Area. This can be resolved with 2 steps: add a footnote to Table 140.6-C that clarifies multiple Additional Allowances can be used in same Primary Function Area. Example: Aging Eye/Low vision Dining area can use both Decorative/Display (0.3 W/sqft) and Tunable white/dim to warm (0.1 W/sqft). Next, be consistent in the contents of the Primary Function Area and Allowed LPD for General Lighting columns. Some rows repeat Primary Function Area, some have "NA", and some rows repeat general lighting LPD. .</p>	Thank you for your comments. 1. The additional lighting power allowances in Table 140.6-C are not exclusive of each other and can be used for the qualified lighting systems for the applicable lighting applications in the table-listed functional areas.  The correction to the "NA" entries described below should resolve the confusion about multiple rows with the same Primary Function Area and their credits (LPD values).  2. Staff thanks the commenter for noting that some rows repeat Primary Function Area, some have "NA", and some rows repeat general lighting LPD. Staff will correct the appropriate lighting LPD values in Table 140.6-C.	5/3/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256172&amp;DocumentContentId=91953</a>

256186.001	California Building Industry Association (CBIA)	<p>For Reference The CEC proposes adding the Part 1 Administrative Code provisions for On-Site Audits &amp; Sampling.</p> <p>10-103.3(d)(5)(C)(i)(f) f. Onsite audits shall be performed for every seventh sample group used in a single residential development. i. The ECC-Provider shall perform the onsite audit at an untested home in the same sample-group being tested and a tested home. ii. If the ECC-Provider is refused access to the development, all sample-groups for the development will be considered conflicted data (Section 10-103.3(b)1B).</p> <p>The Problem This change represents major logistical challenges that we believe are unintended by the Commission. Specifically, if access to a site by a HERS provider doing a Quality Assurance inspection is denied or obstructed, the project's compliance status is jeopardized. This puts an immense and, in many cases, unworkable scheduling and coordination burden on homebuilders and the HERS Providers. Under such circumstances, the only alternatives are:</p> <ul style="list-style-type: none"> <li>• moving to 100% testing — an impractical and cost-prohibitive solution at that stage of the project, or</li> <li>• locking the project registries related to the project, which poses significant operational disruptions.</li> </ul> <p>Both alternatives are unworkable in the field. They would result in extensive delays and enormous costs, destroying the housing affordability associated with production-style development.</p> <p>Furthermore, the value and utility of the QA inspections under this new regulation are</p>	<p>Comment acknowledged, changes have been made. Specifically, Section 10-103.3(d)5C, which defines quality assurance requirements for developments that use sampling, has been restructured. These changes should alleviate any issues regarding the amount of quality assurance performed by the ECC-Provider. Staff clarifies that the proposed requirements do not force any builder to implement 100% coverage for FV&amp;DT by Raters. However, Staff notes that the builder is responsible for self-testing of 100% of all installations using the same FV&amp;DT procedures as the Raters under the sampling requirements. Sampling only applies to the Rater, not the builder.</p>	5/4/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256186&amp;DocumentContentId=91971">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256186&amp;DocumentContentId=91971</a>
256186.002	California Building Industry Association (CBIA)	<p>Suggestion Given these concerns and the lateness of the proceeding, we urge the CEC to delete this proposed language to better align with the practical realities of residential construction and ensure a more effective and feasible compliance process.</p>	<p>Comment acknowledged, changes have been made. Specifically, Section 10-103.3(d)5C has been restructured.</p>	5/4/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256186&amp;DocumentContentId=91971">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256186&amp;DocumentContentId=91971</a>
256186.003	California Building Industry Association (CBIA)	<p>CBIA also concurs with the comments and suggestions submitted by CalCERTS HERS Provider in their April 26, 2024, filing with the Commission.</p>	<p>Thank you - Staff will address this comment, along with the other comments received on similar issues regarding these requirements. See response to TN# 256030.</p>	5/4/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256186&amp;DocumentContentId=91971">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256186&amp;DocumentContentId=91971</a>

256187.001	Robert Alan Hogue	<p>Require 2-way valves for new AC units</p> <p>I am a retired mechanical engineer and an active volunteer for the Citizen's Climate Lobby, the Peninsula Interfaith Climate Action team, and the Earth Care team at Valley Presbyterian Church in Portola Valley, CA.</p> <p>Heat pumps used for heating homes and buildings simply run an A/C unit in reverse. The same equipment is used, but the fluid flows in the other direction. If a 2-way valve is added to the flow circuit, both space heating and cooling can be done with the same equipment. Relatively little cost is added to the A/C unit by including the 2-way valve.</p> <p>A requirement by the building code to add the valve to all new A/C units will enable most homes and buildings to heat their space with the A/C system in the winter months. The same ducting in the building used for A/C can then be used for heating. Electric heat pumps are vastly superior in energy efficiency to natural gas furnace heating systems. Home and building owners can easily and cost effectively convert from natural gas to electricity and reduce their carbon emissions significantly.</p> <p>I urge the CEC to add the requirement of 2-way valves in new A/C units to the 2025 state building code. It's truly a "no-brainer". Rob Hogue</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/4/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256187&amp;DocumentContentId=91970">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256187&amp;DocumentContentId=91970</a>
256191.001	Taylor Engineers	<p>We support the judicious use of heat pumps in Title 24 Part 6 to help address California's need for decarbonization in the built environment, where it can be demonstrated to be cost effective, reduce energy use, and provide designers with effective compliance pathways. However, we are deeply concerned with the proposed heat pump baselines in 140.4(a)3 as written. The proposed changes significantly and unduly restrict prescriptive compliance options for HVAC systems in offices and schools. The narrowly defined baselines effectively exclude most multi-zone HVAC systems that are used in practice today and many all-electric systems that may provide better efficiency and lifecycle cost. The CEC's workshop presentations on July 27, 2023 and August 24, 2023 did not provide sufficient detail and justification for a measure that would have profound impacts to typical design practice for office and school HVAC systems. The Nonresidential HVAC Heat Pump Baseline Measures Report that was posted to the docket on March 28, 2024 along with the 45-day language was provided extremely late in the process. This significantly limits the opportunity for affected stakeholders to adequately participate in the public review process, and does not provide sufficient time to address serious flaws in the supporting analysis and proposal. The proposal as written will have significant negative impacts to designers; contractors; building owners, occupants, and operators; and equipment manufacturers. Below we describe some of the issues and concerns with the current proposal and the analysis described in the Heat Pump Baseline Report.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff published the analysis in accordance with the regulatory guidelines, which included a series of pre-rulemaking workshops, lead commissioner hearings, and provided one 45-day and two 15-day public comment periods on these proposals, in addition to the September business meeting.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.002	Taylor Engineers	<p>First Costs and Maintenance Costs</p> <p>There are clear and significant errors in the first cost and maintenance cost analyses that were used to evaluate the cost effectiveness of the proposed requirements. With these concerns taken into consideration, along with issues with the energy analysis, we believe that the heat pump baselines in 140.4(a)3 will not be cost effective to justify the proposed changes:</p>	<p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>

256191.003	Taylor Engineers	<p>FPFC + DOAS + AWHP is a very uncommon HVAC system type and extremely unlikely to have lower first costs than the baseline system types for large offices and schools. Can you reference a single instance where such a system has ever been designed and built – we have not ever seen one. It is astounding that the CEC would propose requiring an HVAC system type that the industry itself has not identified and built. The Heat Pump Baseline Report ostensibly shows higher first costs for most of the reported components of the FPFC system in Table 41, and higher maintenance costs in Table 42, but yet the cost effectiveness summary for large offices in Table 44 reports the proposed system type to have lower overall first costs and maintenance costs than the VAV baseline. That conclusion defies common sense and indicates major errors in the analysis and assumptions for justifying this measure. The baseline and proposed HP systems are comparable between the large office and large school prototypes, but yet the proposed HP systems for large schools have significantly higher first costs and maintenance costs in Table 45. Some examples of why the FPFC systems have unquestionably higher first costs:</p> <ul style="list-style-type: none"> <li>o An AWHP is roughly 5 times more expensive than a boiler, plus the cost of the supplemental electric boiler. The incremental electrical infrastructure costs associated with the heat pump and electric boiler would also be significant but do not appear to be included in the analysis.</li> <li>o The FPFC terminals are listed as 3 times more expensive than VAV boxes.</li> <li>o The FPFC requires an extra chilled water pipe distribution loop that may have been inadvertently omitted as it is not listed in Table 41, and which isn't needed for VAV.</li> <li>o FPFCs will require condensate pumps throughout.</li> <li>o It is also not clear whether the analysis includes costs in the proposed case for heat recovery and VAV boxes at each zone for the DOAS system to meet mandatory occupied-standby and DCV requirements, as well as oversizing the DOAS system to 0.3 cfm/ft2 per exception 6 to 140.4(e)1.</li> </ul> <p>Table 41 also does not provide costs for gas boilers and PVAVs to be able to judge whether</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.004	Taylor Engineers	<p>For small and medium office buildings, VRF + DOAS is a viable all-electric HVAC system type, however, the first cost assumptions also appear to be flawed. For example, the VRF costs are assumed at \$0.50/ft2 in Table 41. For a realistic average of 800 ft2/zone, this assumption sets VRF installed costs at \$400 per fan coil, which is impossibly low. Further, the cost of VRF systems is expected to increase as new refrigerant restrictions go into effect on January 1, 2026, which is the same effective date as the 2025 version of the building energy standard. The cost analysis must consider the increased VRF system costs associated with the mildly flammable A2L refrigerants.</p>	<p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.005	Taylor Engineers	<p>For schools, DCV is a mandatory requirement in densely occupied spaces like classrooms. DCV requires that VAV terminals are provided to each zone, even for DOAS, in order to effectively maintain CO2 concentrations. Designers often overlook this detail and it is unclear whether the added cost is included in the schools analysis.</p>	<p>Thank you for your comment. Controls for DCV were included in the cost estimates.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>

256191.006	Taylor Engineers	<p>The Heat Pump Baseline Report acknowledges the increased maintenance costs with FPFC compared to VAV reheat terminals but the difference in annual maintenance cost per unit is severely underestimated. MERV 13 air filters in 1" or 2" depths would require changeout 3 or 4 times per year to maintain filtration efficiency with electret filters and to prevent excessive pressure drop as filters become loaded. See this typical 1" MERV 13 filter, for example, which "lasts up to 3 months." Even at a very fast pace of 5 minutes per changeout, 4 times per year, and labor at \$100/hour, the labor cost for filter changeouts alone would be \$2000/yr. Adding on the additional cost of the filters, old filter disposal, and maintenance for terminal fans, extra control valves, and condensate pumps, the estimate in the analysis is low by at least an order of magnitude.</p>	<p>Thank you for your comment. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.007	Taylor Engineers	<p>Energy Analysis There are clear and significant errors in the energy analyses that were used to evaluate the cost effectiveness of the proposed requirements. With these concerns taken into consideration, along with issues with the cost analyses, we believe that the heat pump baselines in 140.4(a)3 will not be cost effective to justify the proposed changes:</p>	<p>Thank you for your comment. After several discussions between CEC staff and Taylor Engineering this comment has been addressed. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.008	Taylor Engineers	<p>Demand Controlled Ventilation: The proposed option in Section 140.4(a)3.A.iii requires DCV in all zones. DCV is already a mandatory requirement in densely occupied spaces, where it has been repeatedly demonstrated in past code cycles to provide cost effective energy savings. Expanding this requirement to all other spaces (i.e. spaces with lower occupant densities) will add costs without any associated energy savings. DCV allows ventilation rates to be lowered to the area-based ventilation rate of 0.15 cfm/ft2 when CO2 concentrations are low, but that is typically also the maximum design ventilation rate for low density spaces like offices. In other words, there is no opportunity to reduce ventilation rates with DCV. We understand that this requirement was added based on a misunderstanding of DCV requirements. This requirement must be deleted.</p>	<p>Staff agrees with this comment, and changes have been made. The analysis has been modified to reflect the adjustment of DCV in offices and schools.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.009	Taylor Engineers	<p>Airside heat recovery: The proposed option in Section 140.4(a)3.A.iii seems to require airside heat recovery everywhere. The existing prescriptive requirements in 140.4(q) already require heat recovery in all climates and system configurations where it could be shown to be cost effective. It is very unlikely that airside heat recovery is cost effective in the milder climates and at lower outdoor air fractions. Nevertheless, if the new analyses show heat recovery to be effective in all climates and all outdoor air fractions, those changes should be made to 140.4(q), not just to this one baseline system. Regardless, the language in the requirement is unclear and needs to be fixed if it is maintained.</p>	<p>Thank you for your comment. The cost effectiveness analysis is only applicable to the baseline system analyzed.</p> <p>CEC Staff agrees that air side economizing saves significant energy in mild climates for air-based HVAC systems. The analysis with prototype buildings shows that the associated cooling energy consumption or LSC is relatively minor compared to other end uses. In a VAV or PVAV system, it's fairly easy and inexpensive to add an air-side economizer. In a DOAS application, the associated cost with increased unit size and ductwork becomes significant. An economizer was not cost effective in the proposed design DOAS system.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>



256191.01	Taylor Engineers	<p>VRF efficiency ratings are unrealistically high: Third party testing of VRF equipment have shown that AHRI rated efficiencies are overstated, up to a factor of 2 higher than measured EER values in lab testing. The VRF system efficiency in heat recovery was also found to be significantly worse than commonly understood. Even in real life installations, the measured energy performance of actual VRF systems has been well below expected performance based on AHRI ratings (for example: the ASHRAE Headquarters).</p>	<p>Thank you for your comment. The Department of Energy's Appliance Standards and Rulemaking Federal Advisory Committee reviewed and updated VRF test procedures to be more representative of actual energy performance. The updated test procedure was published by AHRI as AHRI 1230-2021. The effective date of the new test procedure is January 1, 2024 (10 CFR 431.96). Updated VRF standards went into effect Jan 1, 2024 (10 CFR 431.97(g)(2)).</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.011	Taylor Engineers	<p>Unrealistic Title 24 modeling rules. The prescribed modeling rules in the ACM Manual are unrealistic and are not representative of typical building operations, where the differences will show biases against certain system configurations.</p> <ul style="list-style-type: none"> <li>o The CBECC internal load profiles are unrealistically high and monolithic. This favors fixed fan speed systems like VRF/DOAS and does not accurately reflect the energy efficiency potential of VAV systems. With realistic load profiles, VAV reheat has much lower total fan energy than DOAS, as illustrated in this analysis. ASHRAE RP-1515 was a long term study of many office buildings with thousands of zones. When the VAV zone minimums were reduced from 30% to 10-15% almost all of the zones spent almost all their time at the new zone minimums, meaning that real zone loads are rarely more than 10-15% of their design values. It is also not clear whether the energy analysis correctly defined VAV zone minimums according to prescriptive requirements.</li> <li>o CBECC does not model DCV or occupied-standby (OS) controls because the prescribed occupancy schedules are almost always at near design occupancy. Both of these are major energy saving measures, particularly with low office occupancies that are typical today and both are commonly installed in VAV systems. By contrast, VRF/DOAS systems are not typically installed with mandatory OS controls because of the need for VAV terminals throughout.</li> <li>o Not only does VRF/DOAS have higher annual cooling energy in most CA climates (due to the lack of an air economizer), it also has higher peak cooling energy because every zone is provided with its maximum ventilation every hour. With VAVR there will generally always be some ventilation diversity, DCV zones and OS zones that are not fully occupied, that allows for lower peak ventilation rates.</li> <li>o Most energy models of VAV systems do not accurately model zone minimum flow rates, which are now required to be no higher than minimum ventilation (typically about 10% of zone maximums). Most models use minimums of 20% (per the out-of-date 2019 version of Title 24) or higher.</li> </ul>	<p>Thank you for your comment. The concerns about the modeling rules in the ACM Manual and CBECC load profiles are acknowledged.</p> <p>Studies like ASHRAE RP-1515 show that VAV systems can save significant energy when properly adjusted. Although CBECC doesn't currently model certain energy-saving controls due to standardized occupancy schedules, these features can be added to specific projects to reflect their true benefits. Additionally, while VRF/DOAS systems may use more cooling energy in some climates, their overall efficiency can vary based on the project.</p> <p>The main goal of these rules is to provide a consistent evaluation framework, which can be tailored to capture the true performance of various HVAC systems accurately.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>

256191.012	Taylor Engineers	<p>Reduced Indoor Air Quality with DOAS</p> <p>In coastal California climates, the mild weather conditions are ideal for air economizing. Accordingly, decades of Title 24 updates have increasingly made economizer requirements more stringent. Yet, the main prescriptive baselines mandate that ventilation is provided via DOAS, which effectively eliminates air economizers and reduces the overall outdoor air provided to occupied zones. This change will reduce indoor air quality compared to systems with economizers. This detailed analysis showed that air economizer systems average about 0.4 cfm/ft2 of outdoor air, which is far more than the 0.15 cfm/ft2 typically provided by DOAS. Most air economizer systems have the ability to provide at least 4 to 6 times as much outside air as DOAS. During the COVID pandemic, HVAC systems with economizers were able to provide additional outdoor air to reduce the risk of disease transmission, whereas DOAS systems could only provide minimum rates. Air economizer systems will have much greater flexibility to deal with future pandemics and to comply with ASHRAE Standard 241.</p>	<p>Thank you for your comment. DOAS systems of the scale required to meet the requirements include direct airflow measurement and are designed to deliver the required ventilation. Systems with economizers can provide increased ventilation under certain outdoor conditions. Staff disagrees that DOAS systems provide insufficient IAQ. The proposed baseline system assumes ventilation requirements are met.</p> <p>ASHRAE Standard 241 is meant to be implemented to control aerosol-based infections during pandemics. ASHRAE Standard 241 has not been adopted by California, and this Standard describes procedures other than increased ventilation for mitigating the risk of infectious disease spread. The proposed baseline delivers ventilation in compliance with Table 120.1-A in Title 24, Part 6-2025.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.013	Taylor Engineers	<p>Infeasible AWHP Efficiencies. The requirement for an AWHP with COP of 3.29 in 140.4(a)3.C effectively requires design hot water supply temperatures of close to 105F. There are no AWHPs available that can achieve that COP at the defined ambient and 130F supply temperatures.</p>	<p>Thank you for your comment. CEC Staff has made changes to reflect a wider range of operating efficiencies for AWHP.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.014	Taylor Engineers	<p>Contradictory Electric Resistance Requirements. The AWHP requirement in 140.4(a)3.C requires that 50% of the design heating capacity be provided by an electric resistance heater. This is directly incompatible with the existing prohibition of electric resistance heating in 140.4(g). Exception 2 to Section 140.4(g) allows electric resistance heating as a supplement where the heat pump provides a minimum of 75% of the design heating load. If the cost effectiveness analysis correctly evaluates a code-compliant system, the increase in AWHP capacity from 50 to 75% will significantly increase first costs. Please ensure that the analysis is updated accordingly.</p>	<p>Thank you for your comment. CEC Staff edited Exception 7 to Section 140.4(g) to allow for electric resistance heating based on climate zones. The electric resistance accounts for 10% of the operating hours, and the increased cost related to the increased electric resistance was included in the cost effectiveness analysis.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.015	Taylor Engineers	<p>Required DOAS Oversizing. Each DOAS system in the baselines must be oversized to 0.3 cfm/ft2 as required by Exception 6 to 140.4(e)1. It is not clear if this was considered in energy or cost analysis.</p>	<p>Thank you for your comment. CEC staff acknowledges the comment on DOAS system sizing and edits have been made. Energy and cost of the system was factored into the analysis.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.016	Taylor Engineers	<p>VRF Refrigerant Issues. Most VRF systems today use refrigerant R-410A which has a global warming potential (GWP) of around 2000. New EPA regulations will limit VRF systems installed after January 1, 2026 to use refrigerants with a GWPP&lt;700. These regulations will generally require manufacturers to shift VRF products to use A2L refrigerants like R-32 and R-454B, which in turn will effectively reduce the size of VRF systems because of more stringent volume restrictions for mildly flammable refrigerants. Manufacturers are still racing to develop new product lines that can comply with the new restrictions, but this shift is expected to increase costs for VRF systems based on the new products and the smaller system sizes. The cost effectiveness analysis for VRF systems must consider the expected increases in first costs given that the effective date for the refrigerant restrictions directly coincide with the effective date of Title 24-2025.</p>	<p>Thank you for your comment. The effects on equipment prices for transitioning to A2L refrigerants in VRF systems have not yet been announced by equipment manufacturers. There is no evidence that ASHRAE Standard 15 compliance costs will significantly increase the price of VRF equipment. Staff based the cost effectiveness analysis on currently available information, and anticipate that the industry will find solutions to allow their products to remain competitively priced.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>

256191.017	Taylor Engineers	Refrigerant leaks with VRF. VRF systems generally require long, field-constructed refrigerant piping runs that are notoriously prone to slow leaks, despite passing pressure testing during start up. Because of the long piping runs, many of which are concealed, it is very difficult to find and repair these leaks so many owners are forced to simply recharge their systems periodically. It does not appear that the analysis has considered the cost and emissions impacts of these leaks.	Thank you for your comment. Staff acknowledges concerns about refrigerant leaks in VRF systems. Staff notes that modern VRF technology has significantly improved in terms of leak prevention and detection. ASHRAE 15 and CARB's requirements in installation practices (brazing), materials, and leak detection technologies are expected to reduce leakage from VRF systems.	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.018	Taylor Engineers	VRF Expected Useful Life. Table 42 shows VRF with an expected EUL of 20 years, which is very unrealistic. The EUL of VRF is very widely listed at 10 to 15 years through dozens of online sources. Our experiences match the shorter end of that time frame.	Thank you for your comment. EUL data is from ASHRAE's Service Life and Maintenance Cost Database.	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.019	Taylor Engineers	The indoor fans section in 140.4(a)3.D requires that indoor fans turn off when there is no demand for heating or cooling in the space. For ducted fan coils, most designers integrate ventilation air with the fan coils, so that the fan coils can handle tempering of the outdoor air and the downstream ductwork and diffusers can support both temperature control and ventilation. This requirement would add cost by requiring tempering within the DOAS unit and additional duct distribution and diffusers that are dedicated to the DOAS system. It is also not clear that fan coils can meet the 0.35 W/cfm fan power limit and overcome the pressure drop associated with mandatory MERV-13 air filters. As the energy analysis appears to have assumed costs based on simplified \$/cfm rules-of-thumb, rather than actual equipment selections, it does not appear that these cost impacts have been considered.	Thank you for your comment. The cost associated with additional duct distribution and diffusers dedicated to the DOAS system is included so ventilation air is delivered to the space when the indoor unit fan is disabled during the deadband. The inclusion of heat recovery essentially eliminates the need for ducting ventilation air to the fan coil unit to temper it.	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.02	Taylor Engineers	The DOAS section in 140.4(a)3.E requires that hydronic coils in the DOAS unit be connected to the AWHP heating loop. Though this may be desirable in some cases, there are certainly cases where it would be preferable to provide DX heating in the DOAS unit instead. It will make the DOAS system more expensive in most cases, and it could very well be less efficient depending on the amount of heat recovery you are getting out of the AWHP. Hydronic heat pumps are less efficient than DX heat pump RTUs even without accounting for distribution losses and pump energy, so forcing hydronic is not only unnecessary, it is likely more energy intensive in many applications. There are also situations where you may have a DOAS unit far away from the rest of your hydronic system, so running piping a long distance would be worse than simply using a packaged heat pump. As the energy analysis appears to have assumed costs based on simplified \$/cfm rules-of-thumb, rather than actual equipment selections, it does not appear that these cost impacts have been considered.	Thank you for your comment. CEC Staff has reviewed the suggestion and changes have been made. Specifically, Section 140.4(a)3Ei has been added to specify DOAS requirements for hydronic heating or cooling systems, and Section 140.4(a)3Eii specifies requirements for other system types.	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>

256191.021	Taylor Engineers	Energy Equivalence Among Prescriptive Options. A key issue with the proposal is the expectation that each option within a prescriptive requirement must be energy equivalent. This expectation appears to have driven the development of the option 140.4(a)3.A.iii with extra requirements in an attempt to provide energy equivalence, that achieve additional stringency above the current code. That is not a statutory requirement in the Warren-Alquist Act and, in fact, there are precedents from recent code cycles where a single prescriptive option was evaluated to be cost effective, and other options were added for flexibility without any further energy analysis or modeling. For example, consider the lab exhaust requirements in 140.9(c)3 that were added in the 2019 cycle. The fan power limit in 140.9(c)3B was demonstrated to be cost effective, but no energy analysis or cost effectiveness evaluations were done for option 140.9(c)3D. Neither of the alternative options in 140.9(c)3C and 140.9(c)3D were capable of being modeled in CBECC. The HP Baseline Report states on page 44 that “alternative compliance option models need to perform at least as well as the heat pump baseline systems”, but yet Tables 31 and 32 show that the alternative options are not merely energy equivalent but significantly exceed the performance of the heat pump baseline. Though we aspire to continually advance the code and increase stringency, the proposed baselines are too constraining and should be refocused to allow for a wider range of heat pump solutions.	Staff agrees with the comment, and changes have been made. Specifically, Staff has established a lower target for prescriptive options.	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.022	Taylor Engineers	Though the performance approach remains an alternative compliance pathway that provides greater flexibility than the proposed heat pump baselines, that adds cost and schedule impacts for many projects that could otherwise comply prescriptively. There are widespread concerns among the design community about limitations and bugs within the CBECC compliance software, and acknowledgment that the compliance results are not a good indicator of proposed system energy performance. Other promising heat pump solutions for large multizone systems, like dual fan dual duct (DFDD) served by air-to-air heat pumps, and variable volume and variable temperature (VVT) with air-to-air heat pumps cannot be modeled in CBECC, and perhaps not even in EnergyPlus. We are concerned that narrowly defining prescriptive baselines that are not used in current practice, and that are likely to be less efficient and more expensive to build and operate, will simply force most projects to use the performance approach. It is unlikely that such a shift will actually deliver better energy efficiency results.	Thank you for your comment. The CBECC modeling capabilities are under continuous maintenance, and additional features are added based on requests from users. Staff is committed to adding systems to the prescriptive options in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.023	Taylor Engineers	Schools vs. Offices. There is no reason to have separate requirements for School and Office buildings as many HVAC system types are often appropriate for both building types. VRF has historically been a viable solution for some School requirements.	Staff agrees with the comment, and changes have been made. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.024	Taylor Engineers	Other Cleanup. Delete hydronic recirculating statement from 140.4(a)3iii due to invalid reference to 140.4(a)3F. There is no 140.4(a)3F. Reword simultaneous cooling and heating clause: As written, this clause appears to only allow AWHPs to provide cooling if there is also a heating load present.	Thank you for your comment. CEC staff acknowledges the invalid reference and changes have been made. Specifically, Section 140.4(a)3F has been added.	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>

256191.025	Taylor Engineers	<p>If the heat pump baselines in 140.4(a)3 are found to be cost effective despite the many concerns noted above, we respectfully request that the CEC consider revising the language to allow more design flexibility while still encouraging the use of heat pumps. There are many heat pump solutions that can provide superior cost effectiveness and energy efficiency compared to the proposed VRF and FPFC systems.</p> <p>Below is one suggested revision:  3. Multizone zone space-conditioning system types. Multizone space conditioning systems in office buildings and school buildings not covered by Section 140.4(a)2 shall utilize heating supplied by an air source heat pump. Ventilation systems shall include DCV in all zones with design occupant density greater than or equal to 25 people per 1,000 square feet (40 square feet or less per person). All air systems designed to operate to the criteria listed in either Table 140.4-J or Table 140.4-K shall include an exhaust air heat recovery in compliance with Section 140.4(q). A hydronic recirculated-air heating system complying with Section 140.4(a)3F shall be used in climate zone 16.</p> <p>A. If VRF is included, the indoor unit fans shall have an energy consumption at design airflow of not greater than 0.35 W/cfm and shall have not less than three speeds.  B. If DOAS is included, it shall comply with Section 140.4(p), shall be equipped with a heat recovery system in compliance with Section 140.4(q), and shall have a maximum fan energy consumption at design airflow of 0.77 W/cfm.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback.</p> <p>Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>
256191.026	Taylor Engineers	<p>Below is another suggested revision that addresses many of our primary concerns and minimizes the amount of change from the current proposal:  3. Multizone zone space-conditioning system types. Multizone space conditioning systems in office buildings and school buildings not covered by Section 140.4(a)2 shall meet the following requirements:</p> <p>A. Use a space conditioning system complying with one of the following requirements:  i. The space conditioning system shall be a variable refrigerant flow (VRF) heat pump system with a dedicated outdoor air system (DOAS) providing ventilation.  ii. The space conditioning system shall be a four-pipe fan coil (FPFC) system with a DOAS providing ventilation. The FPFC hot water coils shall be supplied by an air-to-water heat pump (AWHP) space-heating hot water loop.  iii. The space conditioning system shall utilize heating supplied by an air source heat pump.  B. Ventilation systems shall include DCV in all zones with design occupant density greater than or equal to 25 people per 1,000 square feet (40 square feet or less per person). All air systems designed to operate to the criteria listed in either Table 140.4-J or Table 140.4-K shall include an exhaust air heat recovery in compliance with Section 140.4(q). A hydronic recirculated-air heating system complying with Section 140.4(a)3F shall be used in climate zone 16.  C. If VRF is included, VRF indoor unit fans shall have an energy consumption at design airflow of not greater than 0.35 W/cfm and shall have not less than three speeds.  D. If DOAS is included, it shall comply with Section 140.4(p), shall be equipped with a heat recovery system in compliance with Section 140.4(q), and shall have a maximum fan energy consumption at design airflow of 0.77 W/cfm.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback.</p> <p>Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256191&amp;DocumentContentId=91976</a>

256199.001	Abe Mazliach	<p>California must pick up the pace to achieve Governor Gavin Newsom’s 6 million heat pumps goal by 2030. At the current pace of heat pump adoption, the state is behind. Yet, it’s still achievable if Governor Newsom and the California Energy Commission update the 2025 building code to convert central air conditioners (AC) to heat pumps. Upgrading homes with efficient heat pumps (which cools and filters air) helps protect vulnerable populations from extreme heat events and poor air quality during wildfire season. This policy would nearly double the current adoption rate and bring the state nearly to its heat pump goal. Upgrading existing homes with highly efficient heat pump systems is a low-cost intervention that protects against gas price volatility, reduces fossil fuel dependency, improves air quality and public health, avoids the need for future gas furnace replacement, and reduces energy bills for many households and businesses.</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State’s long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256199&amp;DocumentContentId=91984">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256199&amp;DocumentContentId=91984</a>
256200.001	CalCERTS, Inc.	<p>[Redline language addition to Data Recording: 10-103.3(d)(9)(B)(iii)(c)]  <u>B. Data Recording for Quality Assurance Actions.</u>  <u>i. An ECC-Provider shall record all Quality Assurance and disciplinary actions taken against each ECC-Rater and ECC-Rater Company.</u>  <u>ii. The ECC-Provider shall maintain a database tracking system indicating the certificate status of all certified ECC-Raters and ECC-Rater Companies and all Quality Assurance or disciplinary actions taken against each ECC-Rater and ECC-Rater Company.</u>  <u>iii. Quality Assurance Data regarding ECC-Raters and ECC-Rater Companies shall include all of the 2 following</u>  <u>a. Name, business address, and contact information for each certified ECC-Rater, ECC-Rater Company, or applicant.</u>  <u>b. Current status of certification, limited to one of the following: Application-inReview, In-training, Certified, Under Notice of Violation, on Probation, on Suspension, Decertified, Certification Dormant (no data registration activity in one year).</u>  <u>c. Current ECC Provider pricing assigned to the ECC-Rater or ECC Rater Company for the costs and services for Field Verification and Diagnostic Testing registration including any Quality Assurance fees.</u></p>	<p>Comment acknowledged. Staff had several follow-up questions for the commenter that were clarified in TN# 256426. See response to TN# 256426.</p>	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256200&amp;DocumentContentId=91985">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256200&amp;DocumentContentId=91985</a>

256200.002	CalCERTS, Inc.	<p>[Redline language addition Data Reporting: 10-103.3(d)(11)(G)(iii)(e)]  <u>G. Annual Reporting Requirements Regarding ECC-Rater Companies.</u>  i. <u>Beginning in 2027, an ECC-Provider shall submit an ECCRater Company Annual Report to the Commission by June first of each year.</u>  ii. <u>The data used as the basis for the ECC-Rater Company Annual Report shall include submitted reports from all ECCRater Companies (Section 10-103.3(f)2H) and all ECC-Raters filing as an independent (Section 10-103.3(e)2G).</u>  iii. <u>The ECC-Provider shall ensure that the ECC-Rater Company Annual Report includes all of the following:</u>  a. <u>The compliance status of the principal licensure requirements (Section 10-103.3(f)1B) are met for each ECC-Rater Company and the certification status of ECC- Rater filing as independent (Section 10-103.3(e)1A).</u>  b. <u>The number of all types of certificate status (Section 10- 103.3(e)1A) for all ECC-Raters employed by each ECC-Rater Company.</u>  c. <u>Whether the total number of field verifications and diagnostic tests registered by each ECC-Rater Company and ECC-Rater filing as an independent is accurate as compared to the ECC-Provider data registry.</u>  d. <u>An aggregation of the total and average costs of services for each type of field verifications and diagnostic tests reported by all ECC-Rater Companies and ECC-Rater filing as an independent without any associated identification. The ECC-Provider shall summarize the cost of services data by local jurisdiction and climate zone independently. All aggregations shall consist of at least three reports of either ECC-Rater Company (Section 10-103.3(f)2H) or ECC-Rater (Section 10-103.3(e)2G) filing as independent. All unaggregated results shall be included in a "other" category if consisting of at least three ECC-Rater Companies or ECC-Rater filing as independent. The ECC-Provider shall include the total number of reports for ECC-Rater Companies and ECCRaters filing as an independent that were not possible to aggregate or are otherwise not included in the report.</u>  e. <u>ECC Provider pricing assigned to the ECC-Rater Company for the costs and services for Field Verification and Diagnostic Testing registration.</u></p>	Comment acknowledged. Staff had several follow-up questions for the commenter that were clarified in TN# 256426. See response to TN# 256426.	5/6/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256200&amp;DocumentContentId=91985">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256200&amp;DocumentContentId=91985</a>
256211.001	Olga Mandrussow	Please reinstate your original provision focusing on replacing AC systems with two way heat pump ACs. California won't be able to comply with Governor Newsom's heat pump targets, OR our 2030 Climate Targets.	Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256211&amp;DocumentContentId=92002">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256211&amp;DocumentContentId=92002</a>
256212.001	Olga Mandrussow	Please reinstate your original provision encouraging households to install two-way heat pumps when their AC units reach the end of their lives	Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256212&amp;DocumentContentId=92001">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256212&amp;DocumentContentId=92001</a>



256224.001	Gary Klein and Nick Brown	<p>Definitions section, p. 185</p> <p>Neither of the terms “Split-refrigerant HPWH” nor “Split hydronic HPWH” are used in the sections. Recommend removal of these definitions (strikethrough shown and highlighted) or adding text to reserve their use in the future. Also recommend indenting “multi-pass WH” and “single-pass WH” since they are types of HPWHs.</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Staff disagrees with the comment regarding the removal of terms. While these terms are not currently referenced in the Energy Code, these terms clarify differences between heat pump water heating systems.</p> <p>Staff agrees with the comment regarding formatting and indentation, and changes have been made.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008</a>
256224.002	Gary Klein and Nick Brown	<p>Section 110.3, p. 201</p> <p>We increased space needed for HPWH installations in enclosed rooms to allow for high draw patterns. See justification at end of document. We increased the ventilation multiplier to allow for high draw pattern and larger compressor HPWHs. See justification at end of document. Also, please review numbering of 1-7. Provision 7.iv allows for manufacturer instructions to govern, while provision 1 requires the greater of 250 cuft per kbtu or manufacturer guidance. These need to be made consistent.</p>	<p>Comment acknowledged, no change made.</p> <p>Staff agrees that a HPWH with a larger compressor would require more ventilation than specified. Staff disagrees with the suggested edits. See response to TN# 256540.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008</a>
256224.003	Gary Klein and Nick Brown	<p>Section 160.9, p, 586-589</p> <p>To provide for the HP-ready situation, we recommend that the airflow be capable of supporting the installation of 16,000 BTU/hour HPWH. Such a HPWH would have essentially the same heat rate as a 4,500-watt 240VAC electric resistance element, which is typical of virtually all residential electric resistance water heaters sold in the US market. The advantage of this is that the time to heat a given amount of hot water will be very similar between the HPWH and the resistance tank.</p> <p>Using 75 square inches per kBTU of capacity, the ventilation for 16 kBTU/hr needs to be 1,200 square inches, split equally between high and low. Since the kBTU of the future HPWH is unknown at the time of construction, it makes sense to provide for an amount of free vent area corresponding to a large HPWH compressor. The airflow for a 16kBTU/hr compressor leads to larger capped ducts of 12” diameter rather than 8” diameter. Language in C.iii can be deleted, as ducts are not likely to be installed at the time of HPWH-ready, so they don’t really need to be here. When the future system is installed, then this provision will become applicable and should be added to the requirements for that section of this code.</p> <p>We are proposing to eliminate the minimum volume of enclosed space requirement. When making the building retrofit ready, the provisions should focus on ensuring access to the warm air “fuel”.</p>	<p>Comment acknowledged, no change made.</p> <p>Staff agrees that a HPWH with a larger compressor would require more ventilation than specified. Staff disagrees with the suggested edits. See response to TN# 256540.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008</a>



256224.004	Gary Klein and Nick Brown	<p>Section 170.2, p. 632-634  Provision 1.B Exception 2 allows 120V HPWHs for units up to 1 bedroom, assuming a certain HPWH capacity of about 4,000 BTU/hr and likely a 900 watt resistance element. Based on the requirements for first hour rating in the California Plumbing Code (see Table 501.1(2) below), a 120VAC HPWH could be suitable for a much larger number of bedrooms. We find that Rheem's 50-gallon shared circuit 120V HPWH is capable of providing hot water for a 2 bedroom 2.5 bath home per UPC/CPC plumbing code requirement of 49 gallons first hour rating and 51 gallons and 55 gallons first hour ratings of their 120V dedicated and shared circuit models respectively. 5 120V 80-gallon shared circuit model has first hour rating of 72 gallons, sufficient to meet UPC/CPC requirements for 4 bed 2.5 bath or 3 bed 3 bath residences (see excerpt from Rheem's catalog below). At present, the capabilities of the 120VAC HPWHs are similar among different manufacturers.</p> <p>Suggest including reference to the UPC/CPC Table 501.1(2) in the building energy code and so that these requirements can be used rather than the 1 bedroom maximum currently in the language.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>All water heaters meet the California Plumbing Code's first hour rating requirement. Staff is concerned that 120V heat pump water heater (HPWH) will have a higher probability of runout events. In the future when field studies of 120V HPWHs are available, Staff will consider modifying this exception for larger dwellings. Staff notes that 120V HPWH can be used under the performance compliance path.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008</a>
256224.005	Gary Klein and Nick Brown	<p>Regarding the single-pass requirement in section 2Ai, work by Redwood Energy, AEA, ForStrategy Consulting, and Small Planet Supply/Waterdrop has proven the merit of multiple integrated HPWHs in series to provide central water heating for multifamily buildings. These are multi-pass and should be provided for by the code, not prohibited as the current language does. Recommend removing requirement to be single-pass.</p> <p>In 2Avi, we revised language to be clearer with same meaning.</p>	<p>Comment acknowledged, no change made. Staff agrees that a prescriptive option for multipass systems would be useful. However, additional analysis is needed. Staff will revisit this topic in the next code update.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008</a>

256224.006	Gary Klein and Nick Brown	<p>Justifications 110.3(c)7B1</p> <p>We calculate that the minimum space volume that has been proposed is insufficient; and the space required without access to external air likely needs to be significantly above 250 cubic feet per kBtu/hr in order for the HPWH to operate primarily in heat pump mode, rather than resistance mode. This is based on Larsen and Gantley's report "Laboratory Testng of Heat Pump Water Heater Performance: Impact of Airflow and Space Configurations" sponsored by PG&amp;E, December 2023. The circled data point for the AO Smith unit with high draw patern (85 gallons per day) shows COP of 2.5 at 1,000 cubic feet with a 4,000 btu/hr heat pump. Any enclosed space reduces the COP. The higher the draw pattern in an enclosed space, the lower the COP in heat pump mode, until eventually, the hybrid HPWHs switch to resistance mode with a COP of 1. A key reason for the lower efficiency is that as the intake air for the heat pump gets colder, it is harder to extract energy from the air. Hence, we propose the 250 cubic feet per kbtu/hr minimum requirement to allow for high draw patterns in enclosed spaces. Note that this allows for installation in one-car garages for typical hybrid HPWHs and in two-car garages for 12kbtu/hr HPWHs, without added ventilation in either of these two spaces.</p> <p>An unintended consequence of enclosed spaces is to limit the amount of hot water that can be made in heat pump mode. This is due to two factors: how much energy can get into the room via conduction only and how many hours the HPWH can operate in heat pump mode inside this room.</p> <p>Again, referencing the Larsen/Gantley report, for every 2 hours the HPWH runs in heat pump mode, the room takes at least one hour to recover the heat that has been extracted. And this was based on the space surrounding the enclosed room always being warmer, so heat could flow inwards via conduction, implying that this only works when the HPWH is installed inside a conditioned envelope. This means that the heat pump can only run 16 hours out of every day.</p>	<p>Comment acknowledged, no change made.</p> <p>Staff agrees that a HPWH with a larger compressor would require more ventilation than specified. Staff disagrees with the suggested edits. See response to TN# 256540.</p>	5/7/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008</a></p>
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256224.007	Gary Klein and Nick Brown	<p>7B4 Ventilation: The Larsen/Gantley report recommended a minimum of 150 square inches of net free area for both high and low grilles (or a full-louvered door with the same net free area). We are also recommending a simpler approach to determining the air flow than is currently proposed.</p> <p>The market for unitary HPWHs has begun to change, making units with larger compressors available. Rheem has a dedicated circuit 120VAC model with a 12,000 BTU/hr compressor. LG is now offering a 240VAC model with a 10,000 BTU/hr compressor. Using 75 square inches per kBTU results in 300 square inches for a 4kBTU HPWH, 750 square inches for a 10kBTU HPWH and 900 square inches for a 12 kBTU HPWH.</p> <p>This unrestricted access to ventilation also allows for higher draw patterns in heat pump mode, without causing hot water shortfalls.</p> <p>Since it doesn't make sense to restrict access of the HPWHs to their fuel, warm air, we are recommending that the building energy standard use the Larsen/Gantley findings for air flow as the basis for the minimum code.</p>	<p>Comment acknowledged, no change made.</p> <p>Staff agrees that a HPWH with a larger compressor would require more ventilation than specified. Staff disagrees with the suggested edits. See response to TN# 256540.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256224&amp;DocumentContentId=92008</a>
256225.001	CA Utility CASE Team and Compliance Improvement Team	<p>The Statewide CASE Team strongly supports the CEC's strategy of using Title 24, Part 6 to encourage decarbonization of the built environment in California. At a high level, we support adding prescriptive requirements to Title 24, Part 6 that nonresidential multizone heating, ventilation, and air conditioning (HVAC) systems be served with heat pumps as proposed in Section 140.3(a)3. However, we do have some concerns about the requirements in the 45-Day Express Terms. Namely:</p> <ol style="list-style-type: none"> <li>1. The proposed language in Section 140.4(a)3 excessively limits the prescriptive options available for multizone HVAC systems in offices and schools</li> <li>2. Certain requirements such as dedicated controlled ventilation (DCV) and exhaust air heat recovery (EAHR) would add cost and complexity to the building automation system while providing minimal energy savings. Statewide CASE Team Statewide Comments on Multizone Heat Pump Baseline Requirements in 45-Day Express Terms</li> <li>3. Alternative options that are currently available through the performance approach are not accurate and do not provide sufficient design flexibility, so the compliance software should be enhanced to enable designers to use additional systems than those available in the prescriptive list.</li> </ol> <p>We provide additional context for each issue in the following sections. In addition, we propose marked-up code language and a rationale for each mark-up that will address each issue.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p> <p>Staff is committed to adding systems to the prescriptive options in advance of the effective date of the 2025 Energy Code through the Executive Director approval path. Staff will also be exploring expanding available systems in the compliance software.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>

256225.002	CA Utility CASE Team and Compliance Improvement Team	<p>Issue 1: Excessive Limits on Prescriptive Options The proposed language excessively limits the prescriptive options available to the designer.</p> <p>The Statewide CASE Team supports prescriptively requiring heat pumps for multizone systems. We strongly support converting the standard design for the entire HVAC system map in the ACM Reference Manual to be based on heat pumps.</p> <p>The proposed prescriptive pathway for compliance presents a highly constrained set of options. Title 24 Part 6 has the “standard design” baseline with a chosen system for a certain building type, but prescriptively many more system types are allowed. As the proposed prescriptive requirements become more stringent the prescriptive pathway to compliance becomes more constrained.</p> <p>Maintaining some degree of system flexibility is critical when enacting prescriptive multizone heat pump requirements. As buildings grow larger, the mechanical designer must choose from a larger variety of HVAC system choices. Fortunately, the market has rapidly matured with the growing demand for more electrification options. The amount of multizone heat pump system choices will grow steadily in the coming years. Limiting system choices<sup>1</sup> for the performance compliance path places more pressure on the compliance software to keep up with market innovation. We are concerned that in the short term an approach that is overly reliant on the performance approach to capture all the permutations of new heat pump systems could be a barrier to innovation.</p> <p>In our view, a robust and flexible prescriptive code that appeals to designers while eliminating the ability to install gas equipment is the most compelling approach for Californians to achieve all-electric outcomes in nonresidential new construction. Thus, we recommend that CEC staff and their consultant evaluate additional heat pump- based prescriptive pathways that provide cost effective operational energy cost and carbon performance.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, and will also be exploring expanding available systems in the compliance software.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
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256225.003	CA Utility CASE Team and Compliance Improvement Team	<p>Issue 2: Requirements for DCV and EAHR are Applied Too Broadly</p> <p>Energy efficiency measures such as DCV and EAHR are required too broadly in situations where there are minimal benefits.</p> <p>One issue with this measure is the requirement of "DCV in all zones" as proposed in Section 140.4(a)3Aiii. DCV should be required only in zones with peak occupancy rates that warrant the ability for the system to deliver air from large volumes to minimal volumes when the space is unoccupied. There is no benefit to requiring "DCV in all zones" in offices. Consider the values that are in Table 120.1-A– Minimum Ventilation Rates. For office spaces, the minimum occupant load density is 5 people per 1,000 sf (200 sf/person), the required minimum airflow per person is 15 cfm per person, and the area based minimum flowrate, <math>R_a</math>, is 0.15 cfm/sf. Even if the population density is doubled above the minimum to 10 people per 1,000 sf (100sf/person), ventilation required is <math>10 \text{ [people/1,000 sf]} \times 0.001 \text{ [1,000 sf/sf]} \times 15 \text{ [cfm/person]} = 0.15 \text{ cfm/sf}</math>. As noted in Section 120.1(d)4E: When the system is operating during hours of expected occupancy, the controls shall maintain system outdoor air ventilation rates no less than <math>R_a \times A_z</math> per Equation 120.1-F. In this example the added DCV control would not save any energy during occupied periods because the area rate is equal to the design outdoor airflow rate with the space fully occupied. Reduction of people in the space has no impact on the required amount of outside air. After hours, the currently required occupied standby controls would turn the ventilation completely off. It is not clear how the DCV requirement saves energy in offices.</p> <p>In Section 140.4(a)3Aiii (the mixed-air system with AWHP water loop), the following is specified regarding heat recovery: "All air systems shall be equipped with a heat recovery system in compliance with Section 140.4(q)." The requirements in Section 140.4(q) for heat recovery are contingent on minimum exhaust airflows that vary by climate zone and hours of operation and has a total of seven exceptions for different portions of this section. Is this reference intended to override the cost-effective threshold exhaust flowrates or the other exceptions? Calling out sections that are already required might give the impression</p>	Staff agrees with the comment, and changes have been made. Specifically, the requirement in Section 140.4(a)3iii that "Ventilation systems shall include DCV in all zones" has been deleted.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
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256225.004	CA Utility CASE Team and Compliance Improvement Team	<p>Issue 3: Compliance Software Does Not Offer Enough Design Alternatives</p> <p>The design alternatives in the compliance software are limited and prevent a fully accurate comparison across system options.</p> <p>The California Building Energy Code Compliance Software (CBECC) does not capture the full variability of HVAC system choices in the field. We also question the accuracy of modeling outputs for the capabilities that do exist in CBECC.</p> <p>We urge CEC to commit to helping speed up additions of further high efficiency HVAC measures, including dual fan dual duct (DFDD), variable volume and temperature (VVT), mechanical HR options, and thermal energy storage options. We also recommend that CEC update the underlying HVAC performance maps for all system options collectively. A comprehensive update of all systems would help ensure that any future comparisons are being made with similar methods and consistent technical performance data generation approaches.</p> <p>The value of energy modeling with a physics engine such as EnergyPlus is in determining how a set of HVAC system options compare thermodynamically. The current proposal leverages air source heat pumps (ASHP), but just focuses on the airto-refrigerant (i.e., VRF) and air-to-water categories. Air-to-air heat pumps (AAHP) should perform roughly on par with the other types of ASHPs if installed in accordance with other mandatory and prescriptive sections of Title 24 Part 6. We do not see any inherent reason to restrict them relative to VRFs and AWHPs. If CBECC is not finding that AAHPs perform similarly to AWHPs and VRFs, then it is our position that the CBECC rulesets, objects, and performance data should be investigated and potentially updated.</p> <p>Regarding our proposal to add an AAHP clause to the list of allowable system options, we are currently scoping a modeling effort that would use Title 24 CEC prototypes. In the meantime, we can share some external modeling data for systems modeled in EnergyPlus</p>	The CBECC modeling capabilities are under continuous maintenance, and additional features are added based on requests from users. Staff will be exploring expanding available systems in the compliance software	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256225.005	CA Utility CASE Team and Compliance Improvement Team	<p>Marked-up Code Language</p> <p>For the marked-up language, revisions to the 2022 code language that appear in the 45-Day Express Terms are delineated with additions in black underlining and deletions in black strikeouts. Our proposed revisions to the 45-Day Express Terms are delineated with additions in red underlining and deletions in red strikeouts.</p>	Introductory remarks - no response needed.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>

256225.006	CA Utility CASE Team and Compliance Improvement Team	<ul style="list-style-type: none"> <li>Combine the school and office lists: Prescriptively allowing schools to choose only four-pipe fan coil systems is extremely limiting for designers. Other heat pump options, including VRFs, should be available to designers of large schools. Of course, this does not preclude associating the standard design for the particular building types with whatever HVAC system choices that CEC's market and efficiency research has deemed appropriate, whether that be four pipe fan coils, VRFs, or otherwise.</li> </ul>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256225.007	CA Utility CASE Team and Compliance Improvement Team	Add another option at 140.4(a)3iv to allow air-to-air heat pumps: Only allowing AWHPs in mixed air systems is highly limiting and prevents innovative large multizone DX heat pump system options from entering the California market at scale.	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256225.008	CA Utility CASE Team and Compliance Improvement Team	Place specific HVAC system attributes and requirements in their own subsection: The proposal in the 45-day language begins with a list of building types (i.e., A – offices, B – schools) and then transitions to a list of system attributes and requirements (e.g., C – AWHP requirements, D – indoor fan requirements) in the same list. This may result in confusion. Our recommendation is to instead group allowable system types together in a list and then specific system requirements in a separate list.	Thank you for your comment. CEC Staff has reviewed the suggestion and changes have been made. Specifically, Section 140.4(a)3 has been restructured to improve readability, clarity and design flexibility.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256225.009	CA Utility CASE Team and Compliance Improvement Team	Change DCV and EAHR clauses to point to appropriate code sections: It is counterproductive to always require DCV in all zones and EAHR in all systems. Prior to being added to Title 24 Part 6, these technologies were analyzed indepth, and the resulting code requirements were crafted so that they are only required when the amount of energy savings is meaningful enough to justify their additional costs and complexity.	Staff agrees with the comment, and changes have been made. Specifically, the requirement in Section 140.4(a)3iii that "Ventilation systems shall include DCV in all zones" has been deleted.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256225.01	CA Utility CASE Team and Compliance Improvement Team	Delete hydronic recirculating statement from 140.4(a)3iii due to invalid reference to 140.4(a)3F: As written, there is no 140.4(a)3F, so this sentence should be deleted. If CEC intends to add this requirement for CZ16, then perhaps a similar statement could return.	Thank you for your comment. CEC staff acknowledges the invalid reference, and changes have been made.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256225.011	CA Utility CASE Team and Compliance Improvement Team	Convert AWHP 3.29 COP requirement to a reference to Table 110.2-N: Our interpretation of this requirement as well as the current state of the market is that this requirement would effectively limit hot water supply temperatures to 105 °F, give or take. AWHP technology is not currently capable of achieving COPs at this level at HWSTs in the 120-130 °F range. This requirement would be incredibly restrictive on hydronic designs. Instead of this, we recommend a reference to the COP efficiency requirements in Table 110.2-N, which is based on ASHRAE 90.1 and forms the basis of manufacturer design considerations.	Staff agrees with the comment, and changes have been made. Specifically, the requirement in Section 140.4(a)3Cii that specified a minimum rated heating COP for air-to-water heat pumps used to comply with the requirements of Section 140.4(a)3Aii, 140.4(a)3Aiii or 140.4(a)3B has been deleted.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>

256225.012	CA Utility CASE Team and Compliance Improvement Team	Reword simultaneous cooling and heating clause: As written, this clause appears to only allow AWHPs to provide cooling if there is also a heating load present. We appreciate the intent behind requiring simultaneous mechanical heat recovery when available based on the CASE analysis that led to 140.4(s), and hopefully the reworded statement will be clearer for designers.	Thank you for your comment. CEC Staff has reviewed the suggestion and changes have been made. Specifically, language has been added to Section 140.4(a)3Cii to clarify that if chilled water produced by an AWHP is used for space-cooling, then the heat recovery system shall comply with Section 140.4(s).	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256225.013	CA Utility CASE Team and Compliance Improvement Team	Refer to 140.4(g) to ensure electric resistance boiler is sized correctly: As written, the proposal does not comply with 140.4(g). In addition, there is no requirement that the electric resistance boiler serve as a second stage or backup unit, and if poorly controlled, then buildings may experience long runtime hours from the electric resistance boilers which defeats the purpose of having a heat pump baseline.	Thank you for your comment. CEC Staff has reviewed the suggestion and changes have been made. Specifically, Exception 7 to Section 140.4(g) has been added for supplemental electric resistance heating systems complying with Section 140.4(a)3C.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256225.014	CA Utility CASE Team and Compliance Improvement Team	Delete hydronic coil requirement for DOAS if the building has an AWHP: It is unclear how this requirement would improve the energy efficiency of the building. If the DOAS unit requires its own active mechanical conditioning, there are many situations when it is more appropriate for the designer to use a DX DOAS instead of one served by hydronic coils. If the AWHP/chiller is physically far from the DOAS unit, then pumping and thermal energy losses will occur.	Thank you for your comment. CEC Staff has reviewed the suggestion and changes have been made. Specifically, Section 140.4(a)3E(i) has been added to specify DOAS requirements for hydronic heating or cooling systems, and Section 140.4(a)3E(ii) specifies requirements for other system types.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256225.015	CA Utility CASE Team and Compliance Improvement Team	Loop storage volume per nominal heating ton: We think 8 gallons/ton is excessive in most cases. It is our understanding that this statement is informed by designer interviews and is included to limit AWHP short cycling, which is an important consideration. However, our recommendation would be to advise designers to follow manufacturer guidance or lower the limit to 6 gallons/ton, since the requirement may simply result in larger buffer tanks while providing limited benefits.	Thank you for your comment. Analysis used 8 gallon/ton storage to prevent short cycling of Air-to-Water Heat Pumps (AWHPs).	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256225.016	CA Utility CASE Team and Compliance Improvement Team	Encouraging designers to use zone cooling systems will reduce indoor air quality: In Title 24-2019, CEC introduced the requirement that all recirculated air pass through a filter with a MERV rating of not less than 13. The wisdom of this decision became clear during the pandemic, and ASHRAE now recommends MERV-13 filtration as the most energy-efficient way to reduce occupants' exposure to airborne viruses. <sup>2</sup>  However, as stated at Section 120.1(c)1A, fan coils that are non-ducted or have a duct length of less than ten feet are exempt because they cannot support MERV-13 filtration in many cases. Since the proposed language requires fan coils or a VRF system, occupants may be exposed to more infectious aerosols than with a central system. Further, designers who want to maintain a high level of filtration will need to add separate air-cleaning devices, which would increase energy consumption significantly.  Occupants will also forego the health benefits of airside economizing. While economizing provides easily measurable energy savings, its health benefits are often ignored. Economizing has similar health benefits to opening all the windows on a nice day. California's climate allows thousands of hours of economizer operation. Discouraging using systems that employ airside economizing will deprive Californians of the health benefits they would have otherwise received.	Thank you for your comment. The 2025 Energy Code includes minimum ventilation requirements to protect indoor air quality, while preserving designers' choice of central systems or ductless systems. Designers are permitted to use outside air rates in excess of the minimum. DOAS systems ensure that indoor air quality requirements are met, often through direct airflow monitoring.	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>



256225.017	CA Utility CASE Team and Compliance Improvement Team	<p>We encourage CEC to consider whether the requirement to shut off zone fans during periods of no heating or cooling is justified: The proposed language requires that VRF fans "...shall turn off when there is no demand for heating or cooling in the space." This leaves the designer with two options to supply outdoor air:</p> <ul style="list-style-type: none"> <li>o Provide a diffuser separate from the indoor unit, or</li> <li>o Increase the fan power of the DOAS to overcome the resistance from the stopped fans.</li> </ul> <p>The first option is the most energy efficient, but industry experts say it would likely result in poor mixing of the outdoor air. 3 The second option was studied in a Code Readiness report that concluded there are not enough energy savings to justify changing Exception 3 to Section 140.4(p)2, which allows outdoor air to be supplied through fan coils if "downstream fan power is no greater than 0.12 watts per cfm when space temperatures are within the thermostat deadband." 4</p> <p>While we do not take a position on this, we are aware that the industry favors supplying outdoor air through fan coils and wonder if there is value in adding this requirement for VRF fans. In addition, we note that the requirement does not apply to other types of fan coils and ask CEC to consider whether it should.</p>	<p>Thank you for your comment. The baseline for DOAS in the prescriptive requirements assumes that ventilation air is supplied directly to the space i.e. through a diffuser, avoiding the energy needed to overcome the fan coils. With this design, shutting off the VRF indoor fans when there is no heating or cooling makes sense.</p>	5/7/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256225&amp;DocumentContentId=92009</a>
256227.001	Linh Dan Do	<p>I am a mother of two young children and serve on the Planning Commission in Menlo Park.</p> <p>First, I appreciate that in the 2025 Energy Code, new efficiency rules will mean the vast majority of new homes and buildings are built with electric heat pumps rather than gas starting in 2026.</p> <p>However, there is a missed opportunity when it comes to cutting pollution from existing homes. Please reinstate a critical provision, which was included in a previous draft, that will encourage households statewide to install two-way heat pumps when replacing old air conditioning (AC) units.</p> <p>Comprehensively and swiftly transitioning away from burning fossil fuels is critical to helping to ensure equitable communities and a livable future for our children.</p> <p>Thank you for your leadership.</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256227&amp;DocumentContentId=92010">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256227&amp;DocumentContentId=92010</a>

256228.001	David Clark (Sierra Club)	<p>We strongly support critical advances to the Building Code in the 45-day language that further building decarbonization, including expanded heat pump baselines for new construction in residential and commercial buildings and provisions that strongly encourage replacement of single-zone packaged rooftop units used in commercial buildings with heat pumps. Taken together, these measures will help ensure emissionsfree heating and cooling in California's new buildings and begin to make in-roads into decarbonizing existing commercial buildings.</p> <p>However, with California behind in meeting its climate objectives, it is incumbent on the CEC to ensure the 2025 Building Code realizes its full potential in reducing fossil fuel dependency in buildings. We are therefore concerned that the 45-Day Language eliminates key provisions from the earlier draft that would accelerate heat pump deployment and their corresponding climate, air quality and public health benefits in existing homes. Notably, the current draft omits prescriptive requirements that would encourage households statewide to install two-way heat pumps when replacing old air conditioning (AC) units. Due to their similar installation requirements, replacing central AC units with a heat pump is a low-cost intervention that protects against gas price volatility, reduces fossil fuel dependency, improves air quality and public health, and avoids the need for future gas.</p> <p>Moreover, including AC to heat pump replacement provisions in the Building Code are necessary to lay the groundwork for successful implementation of Air District and California Air Resources Board (CARB) zero-emission appliance standards. Because heat pumps provide both heating and cooling, restoring proposed provisions that require heat pump installation at the time of AC replacement provide a zero-emission heating source that avoids the future need to install a heat pump at the time of furnace replacement. Accordingly, we ask that the CEC prescriptively require new and full replacement residential air conditioning systems installed in major alterations be heat pumps as part of the 2025 Building Code. At a minimum, the CEC should prescriptively require heat pumps when the A/C replacement also includes replacement of ductwork and commit to revisiting</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/8/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256228&amp;DocumentContentId=92013">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256228&amp;DocumentContentId=92013</a></p>
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256230.001	Robert Mayo	<p>I am a private individual residing in California.</p> <p>The climate crisis is urgent. A quick look at the news this week reveals extreme heat in Asia and historic floods in Brazil. I am concerned that the world I know is slipping away, and I do not like it.</p> <p>I commend the draft code, especially the provisions that encourage building electrification and the installation of heat pumps for space and water heating. I strongly urge the commission to keep these provisions.</p> <p>We must use every tool at our disposal. To strengthen the code further, please reinstate the mandatory provision to convert air conditioners to heat pumps at the time of their replacement.</p> <p>This is a low cost way to increase the use of heat pumps. In particular, this provision results in a heat pump being installed in much the same way as a replacement air conditioner. Because of this, it reduces any reluctance that consumers or contractors may have if they are not already familiar with heat pumps.</p> <p>Governor Newsom has a target of 6 million heat pumps by 2030. We are not on track for that target, nor are we on track to meeting our 2030 climate goals.</p> <p>Please act with urgency and do all you can. Please reinstate the language that would make an upgrade to a heat pump mandatory at the time an air conditioner is replaced.</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/8/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256230&amp;DocumentContentId=92015">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256230&amp;DocumentContentId=92015</a></p>
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256255.001	Tesla, Inc.	<p>Tesla thanks the California Energy Commission (CEC) for the opportunity to submit these comments regarding the CEC's proposed 2025 Building Energy Efficiency Standards. As a manufacturer and retailer of energy storage systems, Tesla has a keen interest in the inclusion of energy storage in the standards, recognizing the role that battery storage can play in effectively integrating and utilizing renewable resources like rooftop solar and reducing greenhouse gas emissions associated with the built environment.</p> <p>We further appreciate the challenge the CEC faces when incorporating energy storage into the building standard, which is, in certain key respects unlike other more traditional energy efficiency measures that builders deploy to meet the building performance standards. Specifically, unlike more conventional energy efficiency solutions, which are inherently greenhouse gas reducing, the degree to which storage reduces emissions fundamentally depends on how end-use customers choose to operate the system. For example, if a storage system is operated such that it charges from low-emissions intensity energy and discharges to meet onsite loads that would otherwise be served by using energy with a higher emissions intensity (and accounting for roundtrip efficiency losses), its net impact is to reduce emissions relative to the status quo. However, by the same token, if the system is operated such that it charges during periods when the emissions intensity of the energy being stored is high and is then discharged to meet onsite loads during times when the marginal emissions rate of the energy that would otherwise be used is low, the storage system will result in increased emissions relative to the emissions that would have occurred in its absence. Similarly, if a storage system were to be operated such that its capacity were held entirely in reserve to provide backup power in the event of an outage (and not considering that in the absence of a storage system a customer might deploy a conventional backup generator) it would fail to decrease emissions relative to the status quo or what could be achieved if the system were cycling as described above, and/or would lead to a modest increase in emissions to the degree some amount of charging would be needed to maintain its state of charge. Given these profoundly different emission impacts depending on how systems are operated, the CEC has, not unreasonably, developed a set</p>	<p>Thank you for your comments. As noted by the commenter, operational choices for battery systems have a significant impact on the emissions benefit of these systems. The requirements in Reference Joint Appendix JA12 aim to maximize the benefits of these systems.</p>	5/8/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040</a></p>
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256255.002	Tesla, Inc.	<p>Over the past several months, Tesla has worked collaboratively with CEC staff as part of a coalition to amend JA12, particularly as it applies to storage deployed in the residential context in an effort to strike a reasonable balance between ensuring that customers are able to use storage systems to provide backup power, while also ensuring that those systems are cycling in a manner that achieves emissions reductions necessary to support the inclusion of storage in the building standard. Tesla supports the proposed changes to JA12 pursuant to which a customer designates a certain amount of a storage system's energy capacity that will count towards the building performance requirements ("cycling 2 capacity") and which is required to abide by the various "control strategies" established by JA12, with the important allowance that customers may, on a time-limited basis, hold this cycling capacity in reserve to support the provision of backup power in the face of a potential grid outage. Importantly, to ensure customers don't simply leave this capacity in reserve indefinitely, the proposed regulations would require this cycling capacity to revert to a JA12-compliant cycling mode after 72 hours. This is an important and helpful change to JA12 recognizing the critical role that storage plays in providing backup power in the face of customer energy security and reliability concerns.</p> <p>However, despite this reasonable change to the JA12 requirements, Tesla believes that additional amendments are needed to ensure that these requirements don't unduly hamstring system operations in the face of real-world circumstances that will inevitably arise. As discussed above Tesla understands the CEC's motivation in establishing operational parameters governing how storage operates to the degree it is being deployed in lieu of other more conventional energy efficiency measures. However, the current language is overly restrictive. Several of the control strategies included in JA12 have very specific operational rules which if strictly obeyed will undermine the customer value proposition and/or require OEMs to develop bespoke functionality that only makes sense in the context of systems being deployed to meet JA12 requirements.</p>	Staff agrees with the proposed suggestion and changes have been made.	5/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040</a>
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256255.003	Tesla, Inc.	<p>Both the Basic Control and Time-of-Use Control Strategies include a requirement that the storage system only charge from onsite solar. However, one could easily envision strict adherence to this being problematic in a number of scenarios. If a customer has just discharged their battery to serve onsite loads such that the state of charge is fairly low and they subsequently receive a public safety power shut-off notice, or other warning indicating that the outage risk is high, limiting charging to solar-only could very well mean that the system isn't able to get to a full state of charge before an outage actually occurs. In such a scenario, the customer's ability to ride through the outage may be compromised. Or, if a customer's solar simply system isn't producing enough energy, because of cloud cover, smoke or other factors beyond their control, to allow them to charge their storage fully in a reasonable timeframe, adherence to the solar-only charging requirement could mean that their battery system will not have sufficient energy to allow them to avoid drawing power from the grid during peak times thus leaving them exposed to significantly higher energy costs if they are on time-of-use rates. Preventing a customer from drawing from the grid in these circumstances is at cross purposes with the desired goal of reducing greenhouse gas emissions to the degree that had this customer been allowed to charge from the grid, they would have been economically motivated to do so at off-peak times, which typically aligns with lower marginal emissions rates relative to energy drawn from the grid during peak periods. Yet another scenario where the ability to charge from the grid would be beneficial not only to advance customer interests but also state policy goals involves programs like the Emergency Load Reduction Program and the Demand Side Grid Support Program, two virtual power plant programs developed by the California Public Utilities Commission and the CEC, respectively. If solar production is low and grid charging is not allowed, the ability to maximally leverage storage resources in response to emergency events will be reduced, possibly significantly. To address these and other potential contingencies, Tesla recommends softening the language to "prioritize" rather than mandating solar-only charging throughout JA12. Such a prioritization is more consistent with how residential battery systems, like the Tesla Powerwall, typically operate when paired with solar; relying on solar to charge the system to the greatest extent possible, but allowing for some grid</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>The code language will be modified to allow grid charging during off-peak hours if solar generation is not available, and allow grid charging any time if severe weather, Public Safety Power Shutoff events, or demand response signal is anticipated.</p>	5/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040</a>
256255.004	Tesla, Inc.	<p>Tesla further recommends modifying the language in JA12 to more clearly state that customers may switch between the different JA12-compliant control strategies provided the amount of cycling capacity remains unchanged. In the absence of amendments to allow this, the current language could be interpreted as requiring a battery system to be set and conform to one, and only one, control strategy over its useful life. We don't believe this is the intent as JA12 also includes language at JA12.3.3(c) which requires systems be capable of remotely switching between control strategies, but Tesla feels it would be helpful to more explicitly indicate/confirm that switching between control strategies is allowed. To the degree the CEC treats each JA12 control strategy as the same in terms of the credit value accorded for a given amount of cycling capacity, there does not appear to be a reason to limit customers' ability to switch between them.</p>	<p>Thank you for your comment. Staff notes that the intent of the adopted Reference Joint Appendix JA12 language is to allow customers to switch between control strategies while maintaining consistent cycling capacity. Changes have been made to clarify the intent.</p>	5/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040</a>

256255.005	Tesla, Inc.	<p>In addition to these changes, Tesla also requests that the Advanced Demand Flexibility Control language be amended to recognize that OpenADR, the communication protocol that is required, by reference to section 110.12(a), to utilize this control strategy is not necessary to enable systems to effectively participate in demand response or other event-based programs. Proof positive of this is the fact that Tesla has enrolled and operated thousands of Powerwall systems in various event-based programs, including programs in California and does not currently use OpenADR to dispatch these systems. Dispatch of these systems has been achieved utilizing email and text messaging as the principle means by which program administrators, like the investor-owned utilities, notify Tesla of an event and allow us, as an aggregator, to then dispatch systems accordingly. While OpenADR is one means of communication to support event-based dispatch, it is not the only means and requiring it will create an unnecessary additional hurdle that will limit system eligibility.</p>	<p>Thank you for your comments. Staff clarifies that Section 110.12(a)1 lists two potential paths for compliance. Section 110.12(a)1B requires that demand responsive controls be certified as being capable of responding to a demand response signal from a certified OpenADR Virtual End Node. Staff recognizes that some systems are capable of responding to demand response signals sent by a third party aggregator that is a certified OpenADR Virtual End Node through a variety of communication paths including OEM apps, text messaging and phone calls. These systems are in compliance with Section 110.12(a)1B.</p>	5/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040</a>
256255.006	Tesla, Inc.	<p>Tesla offers redlines to the JA12 language consistent with these recommendations in the attachment appended to these comments.</p>	<p>Thank you for your comment. Staff met with the commenter and consensus was reached regard the proposed edits, and some changes have been made.</p>	5/8/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256255&amp;DocumentContentId=92040</a>
256259.001	County of Contra Costa (Jody London)	<p>The County of Contra Costa (Contra Costa County) thanks the California Energy Commission (CEC) for its work in developing the proposed 2025 Building Efficiency Standards. With nearly 25 percent of greenhouse gas (GHG) emissions in Contra Costa County coming from buildings, we recognize the significance and urgency around transitioning the building stock away from fossil fuels to achieve our emissions reduction targets both in our county and at the state level. In addition to meeting State and local climate action goals, there are many benefits of all-electric buildings. Building occupants experience cleaner air and improved health by eliminating emissions associated with fossil fuels as well as improved resilience against power outages, particularly when electric technologies are paired with battery storage. They also avoid the costs related to installation and/or maintenance of fossil fuel infrastructure. Contra Costa County is fully supportive of the proposed standards, which serve as an incremental step toward meeting these climate goals.</p> <p>In 2022, the Contra Costa County Board of Supervisors (BOS) adopted an ordinance requiring most new construction permitted by the County to be all-electric. Contra Costa County suspended enforcement of the all-electric ordinance in February 2024, in response to the U.S. Court of Appeals for the 9th Circuit decision overturning the lower court decision upholding the Berkeley Ordinance banning natural gas in new construction. As County staff work to identify alternative approaches for eliminating GHG emissions from our building stock, it has become apparent that the GHG emission reduction targets established in SB 32 and Executive Order B55-18 will require more action at the state level. While local ordinances and reach codes are critical to meeting GHG emission reduction targets from buildings in Contra Costa County, our reach is limited to our jurisdiction. The state must lead by example through increased funding and incentive programs, legislative mandates, and increasingly stringent building efficiency standards.</p>	<p>Introductory remarks - no response needed.</p>	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256259&amp;DocumentContentId=92045">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256259&amp;DocumentContentId=92045</a>

256259.002	County of Contra Costa (Jody London)	<p>Contra Costa County applauds the CEC for integrating several updates to the proposed 2025 Building Efficiency Standards that will help jurisdictions in California reduce GHG emissions and reach their climate action goals. These updates include:</p> <ul style="list-style-type: none"> <li>• Single-family Heat Pump Standards: Updating the existing prescriptive requirements for heat pump space heating and establishing heat pump water heaters as the prescriptive baseline in single-family buildings represents a significant advancement. These systems provide a method for reducing dependency on fossil fuels, and they offer substantial energy savings and better air quality for residents.</li> <li>• Thermal Insulation Requirements: The proposed requirements for insulation in singlefamily, multifamily, and nonresidential buildings are pivotal for decreasing energy needs in buildings throughout California. Enhancing thermal insulation helps in maintaining a consistent indoor temperature, thus lowering the reliance on heating and cooling systems. This not only reduces energy consumption but also contributes to a substantial decrease in utility bills for residents and businesses, promoting a sustainable and cost-effective building practice.</li> <li>• Solar-Ready Roofs for New Construction: The proposed updates to the standards around solar photovoltaics (PV) and battery storage across all building types will help to meet state and local climate goals by reducing reliance on non-renewable energy sources and reducing GHG emissions. This update aligns with local and state climate action policies and positions building owners to comply with increasingly stringent energy efficiency regulations.</li> </ul> <p>Contra Costa County is supportive of the CEC's proactive steps in revising the Building Efficiency Standards for 2025. These enhancements not only align with our local efforts but also bolster the broader objectives of California's climate action plans. We urge the CEC to continue its leadership in this area, pushing for robust standards that pave the way for a sustainable and environmentally responsible future.</p> <p>Should you have any questions about Contra Costa County's work on all-electric buildings</p>	Thank you for your comment of support.	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256259&amp;DocumentContentId=92045">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256259&amp;DocumentContentId=92045</a>
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256260.001	Cleaver-Brooks	<p>We urge the CEC to review and amend or remove the prescriptive HVAC types in Section 140</p> <p>Regarding the updates to Section 140.4(a)3 addressing multi-zone space conditioning systems for schools and offices, and prescribing four pipe fan coils supplied by an air to water heat pump space-heating hot water loop which complies with Section 140.4(a)3C: This infers that other methods for supplying hot water, for example gas-fired boilers, are not allowed. We take exception to this. While air to water heat pumps may be more efficient than gas-fired boilers, please consider that air to water heat pumps are also 5- 10 times more expensive than equivalent capacity gas-fired boilers. Air to water heat pumps also require additional backup sources, that should be designed for full capacity of design heat demand/load, to supply hot water during days/times of cold outdoor air temperatures when the air to water heat pump's performance degrades or is inoperable, which also significantly increases first cost. Air to water heat pumps also require a significant increase in the electrical service needed in these types of commercial buildings (both in terms of generation and distribution). These areas need additional review for impact on the economic viability of these prescriptive requirements. We request this section be removed and reviewed. Also, regarding the updates to Section 140.4(a)3, and specifically 140.4(a)3.C. "If chilled water produced by an AWHP is used for space-cooling it shall only be used when the AWHP is simultaneously supplying space-heating hot water equal to the AWHP's space-heating hot water demand." We take exception to this requirement and recommend it be removed. The section would prohibit the use of two-pipe AWHPs, which are designed to provide either heating or cooling, but not simultaneously. The actual difference between four-pipe and two-pipe AWHPs is one of packaging, with little difference in cost per capacity or efficiency. Prohibiting one style over the other imposes undue limitation and options for designing and selecting the appropriate components for delivering hot and chilled water to the system.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Staff notes that the analysis has taken into account design conditions where capacity of the air to water heat pumps are designed for partial capacity and consistent with industry standard design.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p> <p>Staff notes that the Energy Code preserves fuel choice and the ability to use all federally covered products.</p>	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256260&amp;DocumentContentId=92046">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256260&amp;DocumentContentId=92046</a>
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256267.001	California Building Industry Association (CBIA)	<p><b>Introduction</b> The California Building Industry Association (CBIA) is a statewide trade association representing over 3,000 member companies involved in residential and light commercial construction. CBIA member companies are responsible for over 85% of the new single-family homes built in California annually.</p> <p><b>Background</b> For the 2025 Residential Building Energy Efficiency Standards (BEES), the CEC is moving away from the Time Dependent Valuation (TDV) metric, which emphasizes summer peak load reduction measures, and will instead use the “Long-term System Cost” (LSC) metric, which focuses more on preparation for the long-term impacts of climate change and the impact of electrification policy measures on the grid. While this is a well-intentioned response to the climate crisis, some unintended short-term issues have emerged.</p> <p>The Problem Including the LSC as a metric in the 2025 Residential BEES has resulted in an analysis showing two new peak loads emerging in the winter months, now exceeding the already huge peak load in the summer months. Specifically, the current (and very large) summer HVAC peak is now in third place behind the projected #2 peak load that will occur at midnight during the winter months. The analysis also shows that the new, largest peak load will occur at 8 p.m. during the winter months and is estimated to be twice the size of the existing summer peak load. This stunning change in peak load projections is primarily due to the assumed power demand from the massive, statewide application of heat pump space heating and EV charging during the evening hours.</p> <p>CBIA is not taking issue with this projected impact of electrification on the grid in the decades to come. This may well be the case. However, if left unchanged, the impact of this new metric on the 2025 Residential BEES will effectively diminish the critically needed focus on efficiency measures that reduce the summer peak loads that are the reality of today.</p>	Thank you for your comment.	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256267&amp;DocumentContentId=92053">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256267&amp;DocumentContentId=92053</a>
256267.002	California Building Industry Association (CBIA)	<p><b>CEC Staff Response</b> After the Pre-Rulemaking Workshops last Fall, CEC Staff collaborated with stakeholders, including CBIA and our energy consultants. From those discussions, staff determined that additional flexibility would be needed to address orientation, fenestration allocations, and various construction practices.</p> <p>Most importantly, in response to the issues cited earlier, staff introduced a new proposed performance path for the peak cooling energy calculation. Specifically, new calculations for peak cooling energy in Climate Zones 4 and 8-15 that achieve 120% or less of the peak cooling energy of the 2025 single-family prototype (used in the prescriptive path) would be used to demonstrate compliance. Staff is proposing that the specific details of this compliance path calculation be incorporated into the development and adoption of the 2025 Single-Family Residential ACM Reference Manual later this year.</p>	Thank you for your comment.	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256267&amp;DocumentContentId=92053">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256267&amp;DocumentContentId=92053</a>

256267.03	California Building Industry Association (CBIA)	<p>Industry Support</p> <p>As with other groups participating in this proceeding, CBIA supports this solution to the short-term issues associated with the change in compliance metrics. CBIA recognizes the CEC’s need to address climate change’s impact on the grid in the decades to come, but this shouldn’t impact the critical need to address our current summer peak load issues. Reducing the summer peak loads is good for the grid and especially good for the pocketbooks of new homeowners. The CEC staff proposal (cited above) accomplishes both goals: addressing climate change impact on the grid while still maintaining critically needed summer peak load reduction strategies.</p>	Thank you for your comment of support.	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256267&amp;DocumentContentId=92053">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256267&amp;DocumentContentId=92053</a>
256269.001	Natural Resource Defense Council	<p>The Natural Resources Defense Council (NRDC), Earthjustice, Rewiring America, Sierra Club, and Peninsula Clean Energy Authority submit the following comments on the California Energy Commission’s (CEC) 45-Day Language Express Terms for the 2025 Title 24 Building Energy Efficiency Standards (“2025 Building Code”) published March 28, 2024.1 We appreciate the CEC’s work in developing the 45-Day Language for the 2025 Building Code. The Building Code is instrumental in decarbonizing buildings throughout the state and helping achieve California’s climate and air quality objectives.</p> <p>We strongly support critical advances to the Building Code in the 45-Day Language that further building electrification, including expanded heat pump baselines for residential and non residential new construction and provisions that strongly encourage replacement of single-zone packaged rooftop units (“RTUs”) used in commercial buildings with heat pumps. These and other energy efficiency and electric-ready updates will save Californians money, increase comfort, and reduce the state’s dependency on fossil fuels.</p> <p>However, with California falling behind on meeting its climate goals, it is incumbent on the CEC to maximize the emission reductions achievable under the Building Code. Rather than do so, the 45-Day Language eliminates key provisions contained in an earlier draft that would have substantially accelerated heat pump deployment and the corresponding climate, air quality, and public health benefits. These provisions included requirements for replacement of existing central air conditioning (“A/C”) units in residential buildings with heat pumps and use of solar and heat pumps for pool heating in existing non-residential and multi-family buildings. Indeed, the 45-Day Language does not even contain provisions to encourage the installation of heat pumps in major alterations where the full A/C system and ductwork are being replaced. We urge the CEC to restore these important measures as it moves to 15-Day Language.</p>	Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State’s long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a>

256269.002	Natural Resource Defense Council	<p>1) Residential HVAC Additions and Alterations: New and full replacement air conditioning systems as part of additions and major alterations to existing buildings should be required to be heat pumps under the prescriptive path.</p> <p>The Draft Express Terms included provisions that would have strongly encouraged replacement residential air conditioners to be heat pumps at the time of equipment changeout as well as for new systems serving additions.2 The 45-Day Language now only proposes that systems serving additions be required to be heat pumps when using the prescriptive path.3 While we strongly support the application of the provision to additions, the 45-Day Language misses a major opportunity to encourage the installation of heat pumps cost-effectively in alterations and in particular in major renovations, where both the air-conditioning equipment and duct system are being replaced.</p> <p>At a minimum, the CEC should include a prescriptive heat pump requirement in the 15-Day Language for major alterations where both the full HVAC system and ductwork are being replaced or newly installed as part of an alteration that triggers Section 150.2(b)(1)(C).4 This section applies to “entirely new or complete replacement space-conditioning systems” that include both new or replacement space-conditioning equipment and an “entirely new or replacement duct system.”5 This type of comprehensive installation project is a major upgrade and represents a significant opportunity to switch to a heat pump for a minimal incremental cost that is a small percentage of the total project cost. These incremental costs will be even smaller than those estimated by the CEC in most cases, as consumers will likely choose to install taxincentive eligible heat pumps. The existing federal tax-incentives more than cover the incremental equipment cost compared to a minimum efficiency unit, and additional rebates and programs are also available in California. A recent RMI analysis found that after the tax incentive was taken into account, a high efficiency heat pump would be between \$100 cheaper and \$900 more than a standard efficiency air conditioner.6 While the Building Code can only set standards based on minimum efficiency equipment, in considering what the likely cost impacts will be on</p>	<p>Thank you for your comment. Staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p> <p>Staff disagrees with the comment suggesting that staff incorporate language that prescriptively requires heat pumps for major alterations where both the full HVAC system and ductwork are being replaced. No changes have been made. Additional analysis to understand the costs of the suggestion would be needed to support such a change.</p>	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a>
256269.003	Natural Resource Defense Council	<p>Additionally, the CEC should require that entirely new or full replacement duct systems installed in alterations be sized to accommodate heat pump air delivery temperatures, regardless of whether a heat pump is installed. Since the recommendations above would still allow for the installation of an air-conditioner and furnace, this recommendation is important to future proof all new duct systems installed today to ensure that they are designed for a future heat pump retrofit. This will ensure that all future furnace replacements can easily accommodate a heat pump without costly duct system upgrades. Specifically, we recommend modifying the airflow requirement in 150.0(m)(13)(B) from the current value of 350 CFM/ton to 400 CFM/ton. This change will help ensure that newly installed ductwork is adequately sized for future heat pump installation, preventing the uncommon but significant cost of fully replacing the duct system when a heat pump is installed in the future.</p> <p>If the CEC determines that the reference to Section 150.1(c)6 in Section 150.2(b)(1)(C) is not feasible, at a minimum the CEC should require entirely new or replacement systems to meet the heat pump space heater ready requirements of Section 160.9. These should be replicated in Section 150.2(b)(1)(C) as follows:</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Additional analysis to understand the full implications of the suggestion would be needed to support such a change.</p>	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a>

256269.004	Natural Resource Defense Council	<p>Finally, we urge the CEC to reconsider its decision to omit the language in the Draft Express Terms that would have encouraged heat pumps at the time of air-conditioner replacement (in the scenario where only the equipment is being replaced, not the ductwork). As submitted in multiple previous comments on the docket, encouraging replacement air-conditioners to have reversing valves (i.e. be a heat pump) is a low-cost policy that leverages a critical opportunity to install heat pumps in the state.<sup>9</sup> Because heat pumps provide both heating and cooling, replacing a central A/C unit with a properly sized heat pump will ultimately save Californians more money by avoiding the future need for furnace replacement. Moreover, because state and local zeroemissions appliance standards will require future furnace installations to be heat pumps by 2030, requiring replaced A/C units to be heat pumps now avoids situations where a homeowner replaces an A/C with another A/C unit only to find out a few years down the road that they are required to replace their gas furnace and new A/C with a heat pump. If the CEC does not include this common-sense 'A/C to heat pump' provision in the 15-day language, it should commit to reevaluating its inclusion in an interim code update.</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/9/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a></p>
256269.005	Natural Resource Defense Council	<p>2) New Construction Baselines: Maintain proposed updates to prescriptive baselines for residential and nonresidential buildings and expand prescriptive options for multi-zone systems for schools and office buildings.</p> <p>The CEC has proposed to expand on the existing heat pump space and water heating prescriptive baselines established in the 2022 Building Code by setting heat pump space and water heating baselines for homes in all climates, expanding the heat pump space heating baselines for nonresidential buildings to large, multi-zone systems in schools and offices, and setting heat pump water heating baselines for individual water heaters serving multifamily buildings. We strongly support these expanded baselines, which will encourage building electrification while continuing to provide builders options under the performance path.</p> <p>For non-residential buildings, the proposed expansion of heat pump baselines for space heating to multi-zone systems serving schools and office buildings (Section 140.4(a)(3)) will send a critical decarbonization signal for these common building types. For offices, the proposed baseline offers three prescriptive system choices as well as the performance path, where any system type can be utilized. For schools, there is a single prescriptive option in addition to the performance path. These options provide for flexibility while setting an energy performance budget. While we strongly support the measure as proposed, we recommend further expanding this list of choices by adding the following modifications:</p> <ul style="list-style-type: none"> <li>- Allow schools to use the same system types as offices</li> <li>- Allow for water-source heat pumps (including ground-source systems) prescriptively in addition to air-source heat pumps</li> <li>- Add a provision that allows for the addition of additional prescriptive paths with equivalent energy use at the discretion of the CEC</li> </ul> <p>Expanding the options available as recommended above will better represent the typical systems in all-electric schools and offices, while continuing to set a strong all-electric</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff is committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.</p>	5/9/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a></p>

256269.006	Natural Resource Defense Council	<p>3) Nonresidential HVAC Retrofits: Maintain and clarify requirements for replacement single-zone packaged rooftop units.</p> <p>We strongly support the proposed requirements in Section 141.0(b)(2)(C) that encourage new or replacement single-zone packaged rooftop units (RTUs) under 65,000 Btu/hr to be heat pumps at the time of equipment replacement or failure. As submitted in previous comments on the docket, these equipment changeouts represent a critical opportunity to encourage the adoption of heat pumps, which are essentially drop-in replacements for the existing equipment. As written, the proposed requirements offer flexibility by requiring a heat pump RTU or gas RTU with additional efficiency options under the prescriptive path, depending on the climate zone.</p> <p>While we support the CEC's proposal, the language as proposed needs clarification as currently the text conflicts with the proposed requirements in Table 140.0-E-1. For example, the text includes a proposed gas furnace requirement for climate zone 16 that conflicts with the requirement proposed in Table 140.0-E-1 which would allow for a heat pump or a furnace. While our understanding is that the CEC's intent is the requirements as proposed in Table 140.0-E-1, the language as written currently is contradictory. Importantly, the language in the text is not aligned with the current trend in Truckee, Tahoe, South Lake Tahoe, and other high elevation regions which are moving towards decarbonization and the installation of all-electric, heat pump systems. Disallowing heat pumps prescriptively in this climate zone would be a major impediment to these decarbonization efforts.</p> <p>We recommend editing the language as follows (with edits in red):</p> <p>We also note that Subsection iii to Section 141.0(b)(2)(C) is confusing as written, since 140.4(e) directs certain projects to have an economizer and then the exceptions in Subsection iii direct certain projects to include an economizer. While we don't have specific proposed edits, we question the purpose of this section and whether it is</p>	<p>Staff agrees with the comment and changes have been made. Specifically, Table 141.0-E-1 has been revised to make it clear that the economizer requirements in Section 140.4(e) are applicable to the systems designated in the table. Also, the list of options has been updated to be consistent with the requirements of Section 140.4(e).</p>	5/9/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a></p>
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256269.007	Natural Resource Defense Council	<p>4) Pool and Spa Heaters: Restore Draft Express Terms provisions extending solar and heat pump pool heating requirements to permanent spas and alterations of nonresidential and multifamily pools.</p> <p>The Draft Express Terms included new requirements that pools be heated by solar energy, other renewable or site-recovered energy, or a heat pump water heater.<sup>12</sup> This requirement would have applied to new pools and spas across all sectors as well as replacement of non-residential and multifamily pools and spas. This proposal represented the single measure with the largest gas savings identified by the CASE Team and would have saved an estimated 61,293 metric tons CO<sub>2</sub>e in the first year alone and already represented a compromise by exempting pool heating in existing single family homes.<sup>13</sup> Yet in the 45-Day Language, the CEC has significantly weakened its proposal by now also exempting alterations to non-residential and multifamily pools and by adding exceptions for permanent spa applications. In doing so, the 45-Day Language significantly diminishes the potential energy and emissions reductions from this measure and locks in polluting pool heating technologies for years to come. Continuing to burn fossil fuels to heat swimming pools in hotels and apartment buildings is an excess that needlessly undermines California’s ability to meet its climate objectives. The CEC should restore the Draft Express Term provisions and only permit fossil-fueled pool heating where solar and heat pump alternatives do not meet the CEC’s cost-effectiveness requirements.</p>	<p>Thank you for your comment. This measure will remain in Part 11 for the 2025 code update. We will reconsider this proposal for the 2028 code cycle.</p>	5/9/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a></p>
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256269.008	Natural Resource Defense Council	<p>5) Heat pump water heater ventilation: Make additional changes to heat pump water heater ventilation requirements to avoid unnecessarily hindering their installation.</p> <p>The CEC has proposed requirements to ensure that integrated heat pump water heaters are installed with adequate ventilation to achieve optimum performance (Section 110.3(c)(7)). While we generally support the intent of this requirement and appreciate the changes that have been made to date to ensure that the right balance is struck between feasibility and water heater performance, there are still a few provisions included that serve to unnecessarily impede deployment of heat pump water heaters. These provisions include:</p> <p>➤ Section 110.3(c)(7)(B): The requirements state that compressor capacity shall be determined using AHRI 540 Table 4 reference conditions for refrigeration with the “High” rating test point. Manufacturers do not currently test to or publish the “High” rating test point in their product literature. Because compressor capacity is used to determine minimum HPWH space requirements, there would be no way for a contractor to document the compressor capacity to calculate the installation space required. We recommend removing the reference to these specific test conditions in the description of compressor capacity.</p> <p>➤ Section 110.3(c)(7)(B)(3)(iv): The ducted inlet configuration should only require a net free area (NFA) of 20 square inches (same as ducted exhaust). Requiring the NFA to be the same size as the duct is not supported by the research and is significantly more than what is needed for adequate ventilation.</p> <p>➤ Section 110.3(c)(7)(B)(4): This provision does not provide any relief for alternate configurations as is. There is no way to meet the requirements of 110.3(c)(7)(B) without meeting one of the three specific requirements listed. As submitted previously, we continue to recommend that this language be changed to “Installed per manufacturer’s instructions for ventilation requirements.” If this language is not acceptable an alternative could be,</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Staff disagrees with the comment related to using reference conditions with the "high" rating test point from AHRI 540, Table 4. Compressor capacity is already being included by some manufacturers in provided specification sheets, and Staff understands that manufacturers plan to include this information in their specification sheets in the future.</p> <p>Staff disagrees with lowering the net free area (NFA) requirement to 20 square inches for ducted inlets. There is insufficient research to support this change. Additionally, manufacturer instructions/methods may be used where they meet or exceed the requirements described in Section 110.3(c)7B2 though 4.</p> <p>Staff recognizes the need for reorganization of the language in Section 110.3(c)7, and changes have been made.</p>	5/9/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a></p>
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256269.009	Natural Resource Defense Council	<p>6) Residential Windows: Restore residential windows requirements to levels proposed in Draft Express Terms.</p> <p>The 45-Day Language takes a step back from the window efficiency requirements proposed in Table 150.1-A of the Draft Express Terms by removing updated window U-value requirements in climate zones 6 through 10 and 15. We strongly urge the CEC to revert to the language proposed in the Draft Express Terms by requiring a U-factor of 0.27 in all climate zones.<sup>14</sup> The levels proposed in the Draft Express Terms represent a modest improvement in energy efficiency that will improve comfort, reduce load, and provide energy savings. While the CASE report<sup>15</sup> found small life cycle costs (all less than \$100 per home) for climate zones 6 through 10, we do not think that these costs are accurate. As submitted previously, the incremental costs for windows found in the CASE report are exaggerated and even more stringent U-factors than those proposed would likely be cost-effective. The cost analysis also does not take into account reduced heating equipment sizing and, therefore, cost that is enabled by more efficient windows, or the cost reductions that will be achieved by manufacturer economies of scale in meeting a single state standard. Due to these unaccounted for costs and the very minimal incremental life cycle cost found in climate zones 6 through 10, we urge the CEC to set a single state standard at 0.27. This will increase energy savings and reduce the overall cost of this measure in all climate zones (due to the economies of scale across the state). We also note that climate zone 15 was exempted in the 45-Day Language but appears to be cost-effective in the CASE report.</p> <p>Windows are an incredibly important component to the building envelope that are expensive to replace and likely to be in place for longer than the 30-year measure analysis period considered. They affect HVAC system sizing and home comfort, especially during extreme weather events, as well as increasing the number of hours per year in moderate climate zones where heating is not needed at all. Windows meeting the U-factor 0.27 levels recommended here are readily available and as described above, cost-effective in all</p>	<p>Comment acknowledged, no changes have been made. The original analysis that showed that a U-factor of 0.27 was cost-effective in all climate zones was based on the 2022 Energy Code's single heat pump baseline. When we took into consideration the 2025 Energy Code's two heat pump baseline, a U-factor of 0.27 was no longer cost-effective in CZs 6-10 and 15.</p>	5/9/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a></p>
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256269.01	Natural Resource Defense Council	<p>7) Residential HVAC Design and Control: Maintain and strengthen requirements for residential HVAC design and control.</p> <p>The 45-Day Language includes important edits to Section 150.0(h) relative to residential space conditioning equipment design and control. Overall, we strongly support these updates, which will help ensure proper sizing and field performance of heat pumps. We recommend that the language be strengthened in the following ways:</p> <ul style="list-style-type: none"> <li>➤ Require supplementary heating control for all climate zones and building sizes. Section 150.0(h)(7) contains language limiting the use of electric resistance or gas supplementary heat, but exempts climate zones 7 and 15, as well as buildings with conditioned floor space less than 500 square feet. Given the low cost of these controls and the high potential energy use if supplementary heat is not controlled effectively (which may not be fully represented by the average costs determined in the CASE report), we strongly encourage that the CEC require this provision for all homes, regardless of size or climate zone. Furthermore, climate zones 7 and 15 should not require backup heat, so including this provision is likely to help encourage installers to design these systems properly without backup heat, at a significantly lower first cost, rather than installing uncontrolled backup heat.</li> <li>➤ Require load calculations to be submitted to the enforcement agency. We recommend that the CEC reinstate the provision from the Draft Express Terms that would have required load calculations to be submitted to the enforcement agency. Without this provision, there is no documentation that load calculations were actually performed and no way to verify that the system selection is in compliance.</li> </ul>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Staff has reviewed the suggested edits related to the control of supplementary heating for buildings with conditioned floor are of less than 500 square feet and buildings in Climate Zones 7 and 15. Staff agrees with the suggestion and has incorporated language for controls meant to limit unnecessary supplementary heating in these building types and climate zones.</p> <p>Staff has also reviewed the suggested edits surrounding the documentation of load calculations and system sizing, and no changes have been made. Instead, Staff proposes to incorporate changes in the compliance documents that will functionally accomplish the same goals as the suggested language.</p>	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a>
256269.011	Natural Resource Defense Council	<p>8) Nonresidential Lighting: Restore the stringency required for nonresidential lighting to the levels required by the 2022 Building Code.</p> <p>The 45-Day Language proposes to eliminate the tailored lighting method in Section 140.6(c)(3) and makes expansions to the allowable lighting power densities under the area category method as proposed in Table 140.6-C. While we support the effort to clarify and streamline the lighting power requirements, we are concerned that the additional space types and power allowances proposed in Table 140.6-C will unnecessarily increase energy use compared to the 2022 Building Code. We urge the CEC to remove the additional lighting power categories proposed in Table 140.6-C.</p>	<p>Thank you for your comment. Staff disagrees with the comment, and no changes have been made. Specifically, Staff disagrees with the assessment that more installed lighting power will be resulted due to moving the equivalent lighting power allowance of five lighting types from the Tailored method to the Area Category method. Currently, both methods are allowed as long as there are qualified lighting options specified in both methods.</p>	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a>

256269.012	Natural Resource Defense Council	<p>9) Maintain critical efficiency and electric-ready measures.</p> <p>We strongly support the following provisions, which will result in energy savings, reduce load, and ensure that buildings not built all-electric today will have the necessary infrastructure for future electrification. All of these measures help support the state’s goal of emissions reductions. We specifically support the following measures:</p> <ul style="list-style-type: none"> <li>➤ Section 120.2(l) - which sets mandatory requirements that zone hot water design supply temp shall be no greater than 130 F. This provision both saves energy and enables future electrification.</li> <li>➤ Section 120.3 - which requires increased mandatory pipe insulation in nonresidential buildings.</li> <li>➤ Section 120.6 (h) - which sets horticultural lighting efficacy to 2.3 micromoles/joule.</li> <li>➤ Section 120.6 (k) - which requires electric readiness for commercial kitchens.</li> <li>➤ Section 120.7 - which requires vestibules on public entrances for certain commercial building types.</li> <li>➤ Sections 140.4 (d), (e), (f), and (r) - which require the use of Guideline 36 control sequences.</li> <li>➤ Section 140.4 (s) - we support the requirement for mechanical heat recovery for systems with large simultaneous heating and cooling loads which will harness this important energy efficiency opportunity.</li> <li>➤ Section 160.1(b) - which updates the mandatory wall insulation levels for multifamily</li> </ul>	Thank you for your comment of support.	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a>
256269.013	Natural Resource Defense Council	<p>Appendix Non-Substantive/Editorial Comments</p> <p>The following comments are suggested non-substantive edits to the 45-day language:</p> <ul style="list-style-type: none"> <li>➤ Section 100.1, page 130: Suggested edit as follows:  “AIR-TO-WATER HEAT PUMP (AWHP) is a factory-made packaged heat pump system containing one or more compressors, and heat exchangers for transferring heat between refrigerant and air, as well as between refrigerant and water, and various other components. Its primary purpose is to generate heated <u>and/or</u> cooled water to meet space conditioning <u>and/or</u> domestic hot water load.”</li> </ul>	Staff agrees with the comment and changes have been made.	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a>

256269.014	Natural Resource Defense Council	<p>Appendix Non-Substantive/Editorial Comments</p> <p>The following comments are suggested non-substantive edits to the 45-day language:</p> <p>➤ Section 100.1, page 137: Recommend further editing BESS definition for specificity and clarity. Many of the terms used in this definition are not elsewhere defined - battery, modules, power conditioning system, balance of plant components - and so seem to leave ambiguity as defined.</p>	Staff disagrees with the comment, and no changes have been made. The proposed definitions align with ICC definitions.	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a>
256269.015	Natural Resource Defense Council	<p>Appendix Non-Substantive/Editorial Comments</p> <p>The following comments are suggested non-substantive edits to the 45-day language:</p> <p>➤ Section 110.2(b), page 155. Exception 3 is confusing and doesn't seem to be necessary as this section does not appear to apply to single family residential buildings</p>	Staff agrees with the comment, and changes have been made.	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256269&amp;DocumentContentId=92054</a>
256275.001	Steven M. Detrick	<p>Mandatory Hot Water recirculation systems</p> <p>With water being an ever growing issue in California, 1) every new home should have a Mandatory Hot Water recirculation systems to save millions of gallons of water. 2) there should be state tax incentives to retrofit existing homes with recirculation systems to save millions of gallons of water.</p>	Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff may revisit this topic in the next code update.	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256275&amp;DocumentContentId=92063">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256275&amp;DocumentContentId=92063</a>
256276.001	Compliance Improvement Team	<p>Markup Language to Section 150.0: We noticed a discrepancy in the reference to Section 150.0(r), which seems to end prematurely. Specifically, the reference should extend to Section 150.0(v) for comprehensive coverage and consistency. This correction is crucial for ensuring clarity and coherence within the Energy Code.</p> <p>Suggested changes: NOTE: The requirements of Sections 150.0(a) through 150.0<del>(r)</del>(v) apply to newly constructed buildings. Sections 150.2(a) and 150.2(b) specify which requirements of Sections 150.0(a) through 150.0<del>(r)</del>(v) also apply to additions or alterations.</p>	Staff agrees with the comment, and changes have been made - "150.0(r)" was changed to "150.0 <del>(r)</del> (v)".	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256276&amp;DocumentContentId=92056">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256276&amp;DocumentContentId=92056</a>

256276.002	Compliance Improvement Team	<p>Markup Language to Section 150.0(a)1: Our review of this section has brought to light an opportunity to enhance clarity and inclusivity. While we acknowledge the intent outlined in the Final Statement of Reasons (FSOR), we propose an explicit extension of the exception to ductless systems. Extending this exception aligns with the overarching goal of promoting energy efficiency across diverse building systems, ensuring equitable standards for all stakeholders.</p> <p>Suggested Changes:  Exception 1 to Section 150.0(a)1:  i. The space-conditioning system air handler and ducts are located entirely in conditioned space below the ceiling separating the occupiable space from the attic; or   ii. The space-conditioning system air handler is located in unconditioned space and has 12 linear feet or less of supply duct, including the length of the air handler and the plenum, located in unconditioned space, with all other portions of the supply ducts located in conditioned space below the ceiling separating the occupiable space from the attic.</p> <p>Note: Ductless systems shall qualify for this Exception.</p>	Staff agrees with the comment, and changes have been made. Specifically, subsection (iii) was added to Exception 1 to Section 150.0(a)1 for ductless space-conditioning systems.	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256276&amp;DocumentContentId=92056">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256276&amp;DocumentContentId=92056</a>
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256276.003	Compliance Improvement Team	<p>Markup Language to Section 150.0(c)5: We've identified two compliance issues within this section that warrant attention. Firstly, the current language refers to "Masonry walls," which is not formally defined in the standards, and the relationship between masonry and mass walls is ambiguous. We recommend adding definitions in section 100.1 to clarify these categories and their relationships 1 . Secondly, the mandatory requirement references a prescriptive table, which frustrates legibility and leads to confusion. Generally, mandatory requirements should never refer to Prescriptive language.</p> <p>Proposed changes Section 100.1 Definitions</p> <p>Mass Wall, Light is wall with a heat capacity of at least 7.0 Btu/ft<sup>2</sup>-oF and less than 15.0 Btu/ft<sup>2</sup>-oF.</p> <p>Mass Wall, Heavy is wall with a heat capacity of at least 15.0 Btu/ft<sup>2</sup>-oF.</p> <p>Masonry Wall is a wall of built-up construction or combination of building units or materials of clay, shale, concrete, glass, gypsum, stone or other approved units bonded together with or without mortar or grout or other accepted methods of joining.</p> <p>Glass unit masonry is masonry composed of glass units bonded by mortar.</p> <p>Plain masonry is masonry in which the tensile resistance of the masonry is taken into consideration and the effects of stresses in reinforcement are neglected.</p> <p>Reinforced masonry is masonry construction in which reinforcement acting in conjunction with the masonry is used to resist forces.</p> <p>Solid masonry is masonry consisting of solid masonry units laid contiguously with the joints</p>	<p>Staff agrees with the comment, and changes have been made - added the word "Mass" next to Masonry (e.g., Masonry/<b>Mass</b>).</p> <p>Staff notes that the 2025 code language in Sections 150.0 and 160.3 was edited to refer to Mass/ Masonry to prevent confusion. Staff will review this issue again in the next code update.</p>	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256276&amp;DocumentContentId=92056">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256276&amp;DocumentContentId=92056</a>
256276.004	Compliance Improvement Team	<p>Markup Language to Table 110.2-A-1: Our review has identified a discrepancy in the naming convention of Table 110.2-A-1 compared to the rest of Part 6. This inconsistency may lead to confusion among stakeholders and hinder effective implementation. To mitigate potential confusion and maintain uniformity, we recommend renumbering the table to Table 110.2-M, aligning it with existing naming conventions within the Energy Code.</p>	<p>Staff disagrees with the comment, and no changes have been made. Implementing his change in the limited time remaining may have unintended effects and cannot be reasonably adopted this in this rulemaking. Staff will consider this proposal in the next code update.</p>	5/9/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256276&amp;DocumentContentId=92056">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256276&amp;DocumentContentId=92056</a>

256279.001	Daikin U.S. Corporation	<p>Section 140.4 – Prescriptive Requirements for Space Conditioning Systems</p> <p>Daikin believes that the proposed requirements are overly prescriptive and limit consumer choice that may provide important energy efficiency improvements. The choice of equipment is business level decisions which should be made on a case-by-case basis, and CEC should not exclude energy efficiency-improving technologies. During the Lead Commissioner Hearings for the 2025 Building Energy Efficiency Standards the CEC explained that the limited selections are a result of not having sufficient time to evaluate other alternatives. Daikin believes that the lack of sufficient time to do so should not result in overly prescriptive requirements that limit consumer choice.</p> <p>In Section 140.4(a)3.A, Multizone zone space-conditioning system types for Office, CEC proposes offices designed prescriptively must use either a VRF and DOAS or a four-pipe fan coil (FPFC) with heating hot water supplied by an air-to-water heat pump (AWHP) and DOAS for ventilation for all climate zones. However, in Section 140.4(a)3.B Multizone zone space-conditioning system types for Schools, CEC limits prescriptively to only a fourpipe fan coil (FPFC) with heating hot water supplied by AWHP and DOAS for ventilation for all climate zones. An AWHP and DOAS for ventilation is uncommon for use in these instances while VRF plus a DOAS is a viable option for an all-electric solution but is prohibited in the prescriptive compliance path for schools. The VRF and DOAS type of system is commonly used in schools today and to ignore this does not seem appropriate. Further, comments that infer that AWHP are a more cost-effective solution likely ignore the fact that the costs assumed do not include the pump operational costs.</p> <p>Daikin is very concerned with the lack of choice and that building owners will struggle to comply with these overly prescriptive requirements. To address these concerns, Daikin proposes to modify Section 140(a)3.A and B as shown below in red text. Section 140.4(a)3.A. should include Schools and Section 140(a)3.B. can then be removed and the remainder of the Section renumbered accordingly</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	5/10/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256279&amp;DocumentContentId=92066">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256279&amp;DocumentContentId=92066</a></p>
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256279.002	Daikin U.S. Corporation	<p>EER2 and PV Sizing Concerns</p> <p>Daikin supports the Energy Code and the benefits of replacing gas fired equipment with electric alternatives, in addition to PV Systems. Daikin understands the proposed requirements for PV sizing are intended to address that lower EER2 HVAC systems could increase peak power usage and thus requires larger PV systems. However, Daikin believes that EER2 is an irrelevant peak power management metric for Variable Speed Heat Pumps (VSHP) technology. We believe that prescribing EER2 thresholds of 11.7 for sizing PV Systems, as currently proposed in Table 110.2-A, could be counterproductive to the adoption of VSHP technology and the attainment of the state’s heat pump and decarbonization targets.</p> <p>As explained in detail in our Daikin comments submitted to CEC on September 7, 2023, EER2 is not a metric that in any way captures the benefits and performance of VSHP’s. Daikin believes that requiring EER2 for VSHP PV System integration may slow their adoption and fail to recognize and capitalize on their inherent benefits. EER2 requirements as written could exclude VSHP, especially the cost-effective product models with moderate EER2 rating, from eligibility in this program and limit their potential to deliver greater annual energy savings and reduce energy bills.</p> <p>EER2 is a metric measured at high ambient (95F) conditions. High ambient conditions, however, represent only a small portion of time in a year across most locations in the US, albeit an important time-period from a load management perspective. The average duration that cities experienced temperature conditions between 93-97F was 1.2% of the annual hours.</p> <p>Specifically, in California, across its 16 climate zones, based on weather data from 2017, the average number of hours over 95F is estimated to be 189 hours annually, which is about 4.4% of total cooling load hours. Some of the hotter CA climate zones experience over 30% of cooling operating hours above 90F with over 20% of cooling operating hours above 95F</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made. Staff disagrees that EER2 is an irrelevant metric, especially in California, where decreasing peak electricity demand during high temperature days is critical to the stability of the power grid. Staff is restoring the original 2022 PV sizing equation for single-family and low-rise multifamily buildings. EER2 will no longer be a factor affecting the PV sizing.</p>	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256279&amp;DocumentContentId=92066">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256279&amp;DocumentContentId=92066</a>
256279.003	Daikin U.S. Corporation	<p>Sections 150.0(h)6 and 160.3(b)7 - Defrost</p> <p>Daikin also has concern in Sections 150.0(h)6 and 160.3(b)7 regarding defrost. Ratings for equipment are based on default settings. Our variable speed equipment uses demand defrost controls that initiate defrost based on measured performance parameters. Implementing a set delay timer requirement of 90 minutes would negatively impact equipment performance for these highly efficient products. It is unclear if demand defrost control products would be required to meet this 90 minute requirement.</p> <p>Daikin recommends striking this greater than or equal to 90 minutes requirement language. Alternately, CEC could add an exception, as included below, for equipment using demand defrost controls.</p> <p>Exception 3 to Section 150.0(h)6: Equipment that uses demand defrost controls</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Staff has incorporated edits to ensure that the defrost delay timer requirements are only applicable to installer-adjustable defrost delay timers.</p>	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256279&amp;DocumentContentId=92066">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256279&amp;DocumentContentId=92066</a>



256287.001	LG Electronics, USA, Inc.	<p>Joint Appendix 5 references the necessary items required for a device to meet Occupant Controller Smart Thermostat (“OCST”) requirements. In §JA5.3, HVAC System Interface, it requires that the device must have connections similar to NEMA 3-2013 Table 5-1. This table in NEMA 3 indicates the connections required for OCSTs must be the same as Unitary Thermostats.</p> <p>Many controllers on the market do not have a unitary connection as the vast majority of original equipment manufacturers (“OEM”) have a unique connection which is used to communicate information from the controller to the system. These connections often contain specialized information which is unique to the OEM’s equipment and provide a way to optimize performance for that equipment. Rather than having an on/off switch, these connections ramp the equipment up or down to meet demand. If there is a large temperature difference between what the customer wants and the current room temperature, the equipment works harder than if the temperature difference is small. This technology also allows the room temperature to be maintained with minimal energy expended.</p> <p>By requiring that all thermostats have a unitary connection, this will cause the equipment to run inefficiently and will stifle development on communication between devices. Often the communication between devices provide component status updates which are not possible via the connections listed in NEMA 3-2013 Table 5-1. By having the equipment run in an inefficient manner, this will minimize savings that are possible with each system and will increase the time needed to meet California’s carbon emission requirements.</p> <p>We request that the standard be amended to allow for unique connections as long as the OCST meets all the other requirements listed in §JA5. This would involve removing §JA5.3.</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Specifically, Staff agrees that the current OCST thermostat wiring termination requirement could limit thermostat products that use non-NEMA-DC3-2013 termination configuration. Staff proposes to delete the sentence, "OCSTs shall use labels that comply with Table 5.1 in NEMA DC3 2013", so that thermostat products with wiring terminations complying with NEMA-DC3-2013 or with other configurations can be certified to meet Reference Joint Appendix JA5.3.</p>	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256287&amp;DocumentContentId=92075">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256287&amp;DocumentContentId=92075</a>
256288.001	Baltimore Aircoil Company	<p>Our comments on the cooling tower-related changes for 2025 are as follows:</p> <ul style="list-style-type: none"> <li>• Cooling Tower Efficiency: <ul style="list-style-type: none"> <li>o We appreciate the reduction in the required minimum efficiency for axial fan open circuit cooling towers utilized on water cooled chiller plants over 300 tons from 120 gpm/hp to 80 gpm/hp. This modification to the prescriptive cooling tower efficiency in Sections 140.4(h)5 and 170.2(c)4Fv helps minimize many of our concerns as listed in our memo to Docket 22-BSTD-01 dated July 18, 2023, over the significant increases originally proposed. However, we would suggest that further study of the minimum efficiency values by climate zone be performed in the future to evaluate if additional reductions are warranted. Our concern is a result of flawed control strategies for cooling towers contained in many energy modeling programs which have potential to overestimate fan energy usage.</li> </ul> </li> </ul>	<p>Comment acknowledged, no change made. Staff will continue to review how compliance software represents these systems. Staff notes that revisions to the software is implemented in compliance software updates which are out of scope of this rulemaking.</p>	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256288&amp;DocumentContentId=92076">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256288&amp;DocumentContentId=92076</a>

256288.002	Baltimore Aircoil Company	<ul style="list-style-type: none"> <li>• Blowdown Controls: <ul style="list-style-type: none"> <li>o We are supportive of the final proposal regarding blowdown controls, including use of conductivity controls, setting of target cycles of concentration, and overflow alarms, especially as modified by the CA Utility CASE Team and Compliance Improvement Team Comments on the 45-Day Express Terms posted to the Docket on May 3, 2024. Note that as the measure moves through the CEC process, we may provide additional comments in the future.</li> </ul> </li> </ul>	Thank you for your comment of support.	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256288&amp;DocumentContentId=92076">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256288&amp;DocumentContentId=92076</a>
256292.001	Luke Morton, Gina Rodda, Brian Selby, Nick Brown	<p>We recommend adoption of 10-103 language that requires load calculation and duct design at permit application.</p> <p>We appreciate these additions to the Energy Code to bolster extant but vague requirements for sizing in parts 2.5 and 11, especially as heat pumps are becoming more prevalent, as this class of equipment is more sensitive. First– we note that the proposed language and modifications to Section 10-103 suggested in the CASE Report<sup>1</sup> were not included in the 45 day language. This draft language in the CASE Report explicitly requires load calculations and duct design as a part of permit applications and its exclusion deeply undermines the success of the broader effort to achieve right-sizing outcomes for space conditioning systems, and especially heat pumps. Proper sizing, and therefore long-term efficiency, performance and comfort of HVAC systems is a journey that should start as early as possible in the design process, and it is one that is rarely ever begun due to a litany of market failures. The proposed language in the CASE Report intends to target those failures at the time and place where it would be most beneficial and productive for all parties.</p>	Comment acknowledged, no change made. Staff has reviewed the suggested edits regarding the documentation of load calculations and do not believe Part 1 is the correct place for the proposed changes. Staff instead propose to incorporate changes in the compliance documents to accomplish the same goal.	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256292&amp;DocumentContentId=92080">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256292&amp;DocumentContentId=92080</a>

256292.002	Luke Morton, Gina Rodda, Brian Selby, Nick Brown	<p>We recommend elimination of limits on electric resistance supplementary heating in section 150.0(h)8</p> <p>We note that heat pump systems must be sized to meet the design loads without consideration of any supplementary heating. Furthermore, electric resistance heating is limited in 150.0(h)8 to no more than 2.7 kW per ton of cooling capacity. No such limit on supplementary heat is placed on dual-fuel systems. We speculate that this code may be unintentionally antagonistic to long-term building decarbonization goals expressed in other regulations and statutes.</p> <p>We see a lot of heat pumps in our work in both new and existing construction (though much less recently in the latter– more on that later). These heat pumps are nearly always oversized for the loads, and often integrate supplementary heating– either electric strip heat or gas. Given the equipment sizing, the backup will rarely, if ever, run. The purpose of supplementary heating is really an insurance policy for the HVAC subcontractor to cover for unknown deficiencies in the building envelope. When homes are uncomfortable, the HVAC system is usually the first system to be blamed.</p> <p>For supplementary heat, many HVAC subs prefer dual-fuel systems, since it feels more comfortable and familiar for them since gas has long been the default choice in any place with the infrastructure, and is still the preference due to the high (and ever increasing) price for electricity in much of California. Dualfuel heat pumps are especially prevalent in existing homes since the existing ductwork can remain, and the dual-fuel choice gives homeowners a low cost system that can offer present and future fuelsubstitution opportunities2 .</p> <p>For the purposes of the natural gas grid, an implicit preference for dual fuel heat pumps will result in another connection (in both existing and new construction) that must be maintained by the utility, and one that serves a critical health and safety requirement (CRC</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Staff disagrees that a sizing limit which only slightly restricts the size of electric resistance supplementary heating will implicitly favor dual fuel systems or gas supplementary heating especially with subsidies being taken away for new gas meters installation.</p>	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256292&amp;DocumentContentId=92080">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256292&amp;DocumentContentId=92080</a>
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256292.003	Luke Morton, Gina Rodda, Brian Selby, Nick Brown	<p>We recommend removal of the EER2 factor in Equations 150.1-C and 170.2-C</p> <p>We understand that the addition of this term was to add a compliance variable to recapture efficiency loss due to the lack of minimum EER2 in heat pumps due to federal regulations. EER2 generally represents AC efficiency better than SEER/SEER2 ratings during peak summertime cooling hours, which are of special concern during this energy code cycle.</p> <p>However, taking a step back, we wonder if this addition is prudent and worthy of the added complexity and inscrutability of the Energy Code. We cannot see the merit of this particular language in light of other, and arguably better targeted rules which address this concern.</p> <p>The ACM Standard Design and LSC values already penalize low EER equipment: The vast majority of new construction (both single and low-rise multifamily) uses the performance pathway. The proceedings for the 2025 ACM have not yet happened, but we'll make an educated guess that EER2 for Standard Design will remain unchanged from the 2022 to 2025 code cycle– i.e. the Standard Design EER2 will be fixed at 11.7. Casual review of the AHRI database indicates that heat pump EER2 can go as low as 7, however we observe that this would incur a significant penalty in the Performance path. If peak cooling is of concern here, why aren't the LSC values themselves a sufficient and more rigorously quantitative policy signal to disincentivize low EER equipment?</p> <p>The Peak Cooling test adds additional regulation to Single-Family</p> <p>There is an additional compliance test in the Performance path that also addresses peak cooling hours for single-family. We noted that in the meetings on this new compliance test that it does not apply to multifamily, but for some reason the added EER2 is still included in the low-rise Multifamily PV calculation. If we're correct that the EER2 term is intended to address times of peak cooling, then we cannot rationalize why the much more targeted peak cooling test was not adopted for multifamily.</p>	Staff agrees with the comment, and changes have been made. Staff is restoring the original 2022 PV sizing equation for single-family and low-rise multifamily buildings. EER2 will no longer be a factor affecting the PV sizing.	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256292&amp;DocumentContentId=92080">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256292&amp;DocumentContentId=92080</a>
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256292.004	Luke Morton, Gina Rodda, Brian Selby, Nick Brown	<p>We recommend elimination attic insulation trigger (150.2(b)1J) in New/Replacement Duct Systems</p> <p>In duct alteration projects where the project is installing Entirely New or Complete Replacement duct systems, Section 150.2(b)1J prescriptively triggers the requirements of 150.2(b)1J when the air handler and ducts are located in a vented attic. In the Performance path, Section 150.2(b)1J is applied to Standard Design any time the ducts are Altered or New and regardless of location of the ducts or air handler.</p> <p>We have found this requirement to be quite antagonistic to any duct alterations and, in particular, electrification of space heating and encourage the removal of the 150.2(b)1J trigger here</p> <p>When evaluating compliance on a project where the clients are considering heat pumps to replace their existing furnace, the typical recommendation is to install new ductwork, as that is the best way to ensure proper airflow and delivery of conditioned air to the dwelling. This already comes at a significant added expense relative to replacing the existing furnace/AC unit. This triggered section then adds an R-49 insulation requirement and other air-sealing measures to the existing ceiling, regardless of whether or not altering the ceiling is within the scope of work, which adds even more expense.</p> <p>Though this added ceiling insulation has gone through formal cost-effectiveness tests, the added costs for adding this insulation, even if proven to be cost-effective at the project level in the long-term (which is not always the case), are often a deal-breaker. All projects are budget constrained, and this trigger can double or more the cost of the HVAC system. It should not be surprising that some projects balk.</p> <p>The reaction from the trades and code enforcement we get is that this is an inappropriate overreach of requirements and either discourages scope (as mentioned above) or</p>	<p>Comment acknowledged, no change made. Staff is sympathetic to the commenter's concern. Staff agrees that when a homeowner upgrades from an existing furnace to a heat pump, a duct replacement is recommended to ensure adequate airflow. However, Staff is reluctant to relax the attic insulation upgrade due to concerns of the operational cost impacts of a heat pump in a poorly insulated house.</p>	5/10/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256292&amp;DocumentContentId=92080">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256292&amp;DocumentContentId=92080</a></p>
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256293.001	ASHRAE	<p>We support the inclusion of ANSI/ASHRAE/IES Standard 90.1-2022, Energy Efficiency in Sites and Buildings Except Low-Rise Residential Buildings, in the proposed 2025 Building Energy Efficiency Standards. Standard 90.1 has been the benchmark for commercial building energy codes in the United States and a key basis for codes and standards around the world for more than 35 years. It is an indispensable reference for engineers and other professionals involved in design of buildings and building systems. ASHRAE Standard 90.1 is under continuous maintenance by the 90.1 Standard Project Committee, and energy performance has improved in each successive edition, resulting in major improvements over time. Over the period of 2004-2019, which included six editions of Standard 90.1, energy performance improved by 36%.</p> <p>The latest edition of Standard 90.1, the 2022 edition, has made significant updates and expands on previous editions. It includes a new optional appendix that allows the use of alternative metrics like site energy, source energy, or carbon emissions in addition to the traditional energy metric. Most importantly, for the first time in a minimum-efficiency U.S. national energy standard, 90.1-2022 has an expanded scope that includes not just buildings, but the entire building site, including on-site renewable energy.</p> <p>The U.S. Department of Energy (DOE) has issued a determination that ASHRAE Standard 90.1- 2022 will achieve greater energy efficiency in commercial buildings subject to the code, as compared to the previous 2019 edition of the standard. The determination estimates savings for commercial buildings of approximately 9.8% in site energy and 9.4% in source energy, along with an estimated 8.9% reduction in energy costs and 9.3% savings in carbon emissions.<sup>1</sup> We are pleased to see that, with this regulation updating from the 2019 to the 2022 edition of Standard 90.1, California will be on track to continue to achieve these energy efficiency benefits in a timely manner.</p> <p>We also appreciate the proposal updating references in ASHRAE standards to their latest edition, including the following:</p>	Thank you for your comment of support.	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256293&amp;DocumentContentId=92081">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256293&amp;DocumentContentId=92081</a>
256293.002	ASHRAE	<p>Section 140.4 "Prescriptive Requirements for Space Conditioning Systems"</p> <p>With respect to Section 140.4, the proposed changes for multizone space conditioning systems would significantly restrict HVAC system type selection and make major changes from the current best practices for offices and schools. The requirements in this section would unnecessarily constrain design options by preventing the use of system designs and technology options that may be a better fit for specific types of buildings such as offices and school buildings. This restriction has the potential to increase the cost of HVAC systems in offices and schools, as well as require additional equipment and technology that the covered building owners and operators, especially school districts and school facilities, may not have the funds or expertise to install.</p> <p>ASHRAE instead supports an approach based on setting metrics and minimum standards for performance rather than requiring a specific technology. ASHRAE suggests improving the clarity of this section by replacing the text of Section 140.4(a)3 with the following: "Multizone space conditioning systems in office buildings and school buildings not covered by Section 140.4(a)2 shall be an electric heat pump."</p>	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating. Staff is committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256293&amp;DocumentContentId=92081">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256293&amp;DocumentContentId=92081</a>

256300.001	South Coast Air Quality Management District	<p>The South Coast Air Quality Management District (South Coast AQMD) appreciates the opportunity to submit comments on the California Energy Commission's (CEC) 45-Day Language Express Terms for the 2025 Title 24 Building Energy Efficiency Standards (2025 Building Code) published March 28, 2024, and supports the CEC's work in developing the 2025 Building Code, which will assist the South Coast AQMD in achieving the National Ambient Air Quality Standards for ozone and particulate matter.</p> <p>South Coast AQMD is the local air pollution control agency for the four-county region that includes Orange County and portions of Los Angeles, San Bernardino, and Riverside Counties. Our air district is the largest of the 35 local air agencies in California and encompass almost 11,000 square miles and 17 million residents. Our region has the worst air quality in the nation, and we are obligated to adopt all feasible measures, which includes zero NOx-emission standards, to achieve federal air quality standards.</p> <p>The 2022 Air Quality Management Plan (AQMP) was adopted by our Governing Board on December 2, 2022. The 2022 AQMP includes specific control measures which seek further NOx emission reductions from commercial and residential building space and water heating appliances. The control strategy focuses on a combination of regulatory and incentives with an emphasis on replacing existing space and water heaters with new zero-emission technologies. Staff is currently developing rules to transition space and water heating to zeroemission technologies that will be considered for adoption by our Governing Board this year.</p> <p>The CEC's 2025 Building Code has the ability to strengthen the work currently being done by air districts in California, such as aligning our zero-emission building appliance implementation dates with the effective dates in the building code. However, the building code also has the ability to drive early deployment of zero-emission technologies that will improve air quality and generate public health benefits.</p>	Introductory remarks - no response needed.	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256300&amp;DocumentContentId=92102">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256300&amp;DocumentContentId=92102</a>
256300.002	South Coast Air Quality Management District	<p>As such, the South Coast AQMD requests that the CEC include in the final version of the building code two provisions found in the draft version of the 2025 Building Code that have since been removed. Specifically, the provision that required air conditioners in existing homes to be replaced with heat pumps. As heat pumps are essentially air conditioning units that can also provide heated air, heat pump installation at the time of air conditioning replacement will support early deployment of zero-emission technologies. It will also eliminate stranded assets from those homes needing to replace the space heating unit with a heat pump in future years following the air conditioning replacement. In a region where approximately 87 percent of homes have air conditioning units, the inclusion of this provision will assist greatly in air pollution reduction sooner, as well as the overall fiscal benefits to the population.</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/10/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256300&amp;DocumentContentId=92102">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256300&amp;DocumentContentId=92102</a>

256300.003	South Coast Air Quality Management District	<p>Retaining the provision that would have required the use of solar and heat pumps for pool heating in existing non-residential and multi-family buildings would result in substantial emission reductions. Currently, the South Coast AQMD has proposed zero emissions limit on pool heaters under Proposed Amended Rule 1146.2 - Control of Oxides of Nitrogen from Large Water Heaters, Small Boilers and Process Heaters (PAR 1146.2) that could be met with the operation of heat pumps or solar technology. We estimate that there are approximately 700,000 pool heaters in our region. A transition to zero-emission heat pumps will result in substantial emission reductions.</p> <p>Establishing building code requirements to transition to zero-emission technologies, such as heat pumps, aligns with the South Coast AQMD's regulatory approach and consistency amongst regulatory agencies but also sends a strong market signal and promotes certainty for appliance manufacturers, homeowners, and our local businesses. Including these two provisions back into the final 2025 Building Code would enhance the progress necessary for the state and regions to meet their air quality standards and achieve public health benefits. Thank you for considering our comments.</p>	<p>Comment acknowledged, no change made. Additional analysis and stakeholder engagement is needed to adequately address the proposal. Staff will revisit this topic in the next code update.</p>	5/10/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256300&amp;DocumentContentId=92102">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256300&amp;DocumentContentId=92102</a></p>
256307.001	Pool and Hot Tub Alliance	<p>The Pool &amp; Hot Tub Alliance (PHTA) represents more than 3,650 company members and over 11,000 individual members nationwide, including companies that manufacture pool and spa heating equipment. PHTA has a long history of working with the California Energy Commission (Commission or CEC) and appreciates the opportunity to provide feedback on the current proposed language.</p> <p>The California Pool &amp; Spa Association (CPSA) is the statewide trade association that represents more than 230 company members in the state of California, including pool and spa builders, service companies, manufacturers, and distributors.</p> <p>PHTA and CPSA are grateful for the opportunity to participate in this rulemaking and the serious consideration and positive response that the Commission has given the comments that PHTA and CSPA have previously submitted.</p> <p>PHTA and CSPA have one additional comment on the March 28, 2024, proposed changes to 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 45-day Language. The comments appear in their entirety on the attached pages that follow. Additionally, we are reiterating previous comments on the need to retain the exceptions provided in the 45-day Language, along with specifically responding to other comments that have recently been submitted.</p> <p>We welcome your careful consideration of the comments below in response to the pool and spa related proposals for the 2025 California Energy Code. If you have any questions on these comments, please contact me at gcton@phta.org on behalf of PHTA.</p>	<p>Introductory remarks - no response needed.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256307&amp;DocumentContentId=92123">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256307&amp;DocumentContentId=92123</a></p>



256308.001	R.F. MacDonald Co.	<p>R.F. MacDonald Co. writes regarding the California Energy Commission's ("CEC") proposed updates to Section 140.4(a)3 of Title 24 addressing multi-zone space conditioning systems for schools and offices and prescribing four-pipe fan coils supplied by an air to water heat pump spaceheating hot water loop. R.F. MacDonald is a manufacturer's representative that sells and services hydronic and steam equipment, and offers gas-fired boilers, electric resistance boilers, and air-towater heat pumps, among other types of equipment.</p> <p>As written, this update would unduly limit methods for supplying hot water for building heat, such as gas-fired boilers. We disagree with the CEC's proposed approach for the following reasons: (1) heat pumps are 5-10 times the cost of a gas-fired boiler and in many instances will not be economically feasible to use on a project; (2) the output of air-to-water heat pumps is dependent on ambient air temperatures and declines during periods of cold ambient air temperatures (when building heating load is at its peak); thus additional backup sources of heat, such as electric resistance boilers or gas-fired boilers, should be incorporated into such systems to supply hot water during periods of cold ambient air temperature when the heat pump cannot meet the required building load. We believe in many instances an optimal solution for building heat will be a hybrid system, that incorporates both a heat pump and either a gas-fired or electric resistance boiler; (3) heat pumps are 4-5 times the footprint of gas-fired boilers, and often the required space is not available on a given project, especially an existing building; (4) existing systems for heating buildings often utilize heating coils designed around 180F supply temperature and 30F delta-T; airto-water heat pumps are limited with respect to both the supply temperature and delta T they are able to provide (typically around 140F-149F supply temperature and 14F-20F delta-T); thus incorporation of air-to-water heat pumps into existing buildings will require resizing and replacement of heating coils in air handlers and fan coil units, which will add significant cost beyond installing a heat pump; (5) many buildings utilize gas-fired boilers in indoor equipment rooms, often with limited available footprint; air-to-water heat pumps require</p>	<p>Thank you for your comment. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256308&amp;DocumentContentId=92122">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256308&amp;DocumentContentId=92122</a></p>
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256308.002	R.F. MacDonald Co.	<p>Additionally, California’s grid is already stretched thin and according to a recent white paper by Southern California Edison, the state’s decarbonization goals will require an additional approximately 90 GW of utility scale clean generation, 25 GW of utility-scale energy storage and more than 15 GW each of behind the meter solar and storage. It is questionable whether California will be able to provide this level of clean energy to its grid so as to meet its decarbonization goals. The latest CEC data also shows that 36% of the state’s electricity generation comes from fossil fuel. Using heat derived from natural gas to produce electricity and then converting the electricity back to heat is terribly inefficient—approximately 35% efficient for an electric resistance boiler when accounting for transmission line losses. While a heat pump is more efficient than an electric resistance boiler, if fossil fuel is the source of electricity generation, overall heat pump efficiency will be in the range of a gas-fired condensing boiler (assuming a COP of 3 for the heat pump and up to 99% efficiency for a condensing boiler). As noted above, the heat pump system carries with it much more cost, complexity and challenges as compared to a gas-fired boiler. Without clean electricity generation (massive amounts of which will be required to meet the state’s decarbonization goals), over-reliance on electricity for heating could in fact only shift (and potentially increase) emissions to the site of power production rather than provide a true reduction in emissions.</p> <p>For the reasons above, we request that the CEC remove the proposed heat pump baselines in 140.4(a)3.</p> <p>Thank you for consideration of the above comment. If you have any questions, please don’t hesitate to contact me.</p>	<p>Thank you for your comment. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256308&amp;DocumentContentId=92122">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256308&amp;DocumentContentId=92122</a></p>
256309.001	Window & Door Manufacturers Association	<p>The Window and Door Manufacturers Association (WDMA) appreciates the opportunity to comment on the fenestration measures for the Energy Code Rulemaking for the 2025 edition of California’s Title 24 energy code. WDMA is a national trade association representing the nation’s leading producers of windows, doors, and skylights. Our members sell to distributors, dealers, builders, remodelers, homeowners, architects, contractors, and other specifiers in the residential, commercial, and institutional construction markets. WDMA members manufacture high-quality products designed and constructed to performance-based standards that provide improved safety, comfort, and energy efficiency for new construction and renovation of residential and light commercial buildings.</p> <p>WDMA has actively participated throughout the development of this edition of the California Energy Code. Last year we provided public input at various stages in the process and acknowledge the thoughtful consideration given to many of our comments by the CASE team.</p> <p>WDMA has four public comments we have for the California Energy Commission to consider:</p>	<p>Introductory remarks - no response needed.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256309&amp;DocumentContentId=92121">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256309&amp;DocumentContentId=92121</a></p>

256309.002	Window & Door Manufacturers Association	<p><b>Fenestration U-Factors in Table 150.1-A</b></p> <ul style="list-style-type: none"> <li>The U-factors for fenestration in Table 150.1-A (Page 484) have been revised for Climate Zones 1-5, 11-14, and 16. Initially, during the May 17, 2023, CASE presentation, the "Fenestration - Maximum U-factors" in the residential prescriptive table were adjusted from 0.30 to 0.28. WDMA was pleased with this update.</li> <li>The October CASE Report further reduced the U-factor to 0.27. These updated values have been maintained in the current 45-day draft language.</li> <li>The Environmental Protection Agency developed a cost and energy savings analysis (EPA Final Draft Data Package 1b- Savings Data) to justify the revised specifications for ENERGY STAR V7.0 requirements. When using the EPA cost and savings values with a 0.28 U-factor baseline compared to an incremental change to a 0.27 U-factor window, the paybacks vary from 35 to 71 years. WDMA encourages the CEC to perform a similar incremental cost-effectiveness analysis comparing a baseline window with a 0.28 U-factor with a 0.27 U-factor.</li> </ul> <p><i>See docketed comment for tables.</i></p> <ul style="list-style-type: none"> <li>It should be noted that WDMA is not in full support of the window costs developed by EPA for the ENERGY STAR V7.0 analysis. We believe their analysis underestimates the incremental cost and unfairly penalizes non-vinyl windows. However, for this comparison, we believe these values can be used as a conservative assessment of the years it will take for the consumer to recoup the incremental increase in construction costs for a 0.27 U-factor window instead of a 0.28 window.</li> <li>The change from the 2022 Title 24 U-factor of 0.30 to a 0.28 U-factor statewide will result in a significant improvement of 7% in fenestration performance.</li> </ul>	Comment acknowledged, no changes made. The proposed U-factor of 0.27 is based on the calculation done by the CASE team using the California Metric of LSC and showed a B/C ratio between a 1.56 to 3.79. This is based on a 30-year present valued LSC Savings. Staff confirmed that product availability supports the proposed U-factor.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256309&amp;DocumentContentId=92121">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256309&amp;DocumentContentId=92121</a>
256309.003	Window & Door Manufacturers Association	<p><b>SHGC Change in Table 150.1-A Climate Zone 15</b></p> <ul style="list-style-type: none"> <li>Page 484 Table 150.1 SHGC in Climate Zone 15 was changed from 0.23 to 0.20.</li> <li>This change was new with the March 28th 45-day Language. The change does not show up in any of the presentations and does not appear to be justified.</li> <li>To have this as a separate requirement for one, relatively unpopulated, climate zone is confusing and potentially problematic.</li> <li>For the sake of uniformity and economies associated with only having one SHGC requirement statewide, WDMA recommends retaining the 0.23 SHGC for Climate Zone 15.</li> </ul>	Comment acknowledged, no changes made. This change was proposed in the 2025 Single-Family Two Heat Pump Baseline Report, which found that there is a negligible cost impact associated with the change from an SHGC of 0.23 to 0.20. Additionally, Staff found that projects containing windows with an SHGC of 0.20 already make up around 25% of residential new construction projects in Climate Zone 15 according to the CEC's data.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256309&amp;DocumentContentId=92121">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256309&amp;DocumentContentId=92121</a>
256309.004	Window & Door Manufacturers Association	<p><b>Fenestration SHGC Area-Weighted Averages</b></p> <ul style="list-style-type: none"> <li>Page 474 Item 3 A – Adding the “a” may have unintended consequences.</li> </ul> <p>3. Fenestration.</p> <p>A. Installed fenestration products, including glazed doors, shall have an areaweight average U-factor and a Solar Heat Gain Coefficient (SHGC) meeting the applicable fenestration value in Table 150.1-A and shall be determined in accordance with Sections 110.6(a)2 and 110.6(a)3.</p> <ul style="list-style-type: none"> <li>The “a” potentially changes the intent by no longer permitting the SHGC to be areaweight average. WDMA recommends removing the “a” or changing it to “an areaweight average”.</li> </ul>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256309&amp;DocumentContentId=92121">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256309&amp;DocumentContentId=92121</a>

256309.005	Window & Door Manufacturers Association	<p><b>Fire-resistant Glazing Exception</b></p> <ul style="list-style-type: none"> <li>• Fire-resistant glazing is occasionally required in certain hazardous locations and when specified fire separation distances are met.</li> <li>• It can be difficult to achieve fire-resistance ratings along with the energy efficiency performance requirements of the California Energy Code.</li> <li>• WDMA recommends adding an exception for fenestration energy ratings when fire-resistant glazing is required.</li> <li>• WDMA has been working with the National Glass Association to develop the following language which we support:  <u>Exception 2 to Section 110.6 (a): Fire-resistance rated glazed walls, and windows and exterior doors that are required to comply with the provisions of The California Building Code Title 24 Part 2, Section 716 Opening Protectives</u></li> </ul> <p>Again, we appreciate this opportunity to comment on the CEC draft of the Express Terms for the 2025 Title 24. Please don't hesitate to contact me at CDrumheller@wdma.com if you have any questions regarding our comments.</p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256309&amp;DocumentContentId=92121">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256309&amp;DocumentContentId=92121</a>
256310.001	Lutron Electronics Co.	<p>Thank you for the opportunity to review and provide comments on the 2025 Title 24 Part 6 45-day Language. These comments are submitted on behalf of Lutron Electronics Co., Inc.</p> <p>As you may know, Lutron was founded in 1961 and is headquartered in Coopersburg, Pennsylvania. From dimmers for the home, to lighting management systems for entire buildings, the company offers more than 17,000 energy-saving products, sold in more than 100 countries around the world. In the U.S. alone, Lutron products save an estimated 10 billion kWh of electricity, or approximately \$1 billion in utility costs per year. The company's early inventions— including the first solid-state dimmer invented by Lutron's founder, Joel Spira—are now at the Smithsonian's National Museum of American History in Washington, DC.</p> <p>Please find our detailed comments below. We look forward to working with you further on this important project. Please contact Michael Jouaneh at 484-809-2782 or mjouaneh@lutron.com if you have questions or would like more information on these comments. Thanks again for your consideration.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120</a>

256310.002	Lutron Electronics Co.	<p>The comments and suggested edits to the proposed 2025 Title 24 Part 6 45-day Language are shown below. The changes are indicated in the text by <u>underlining</u> (for additions) and <del>striketrough</del> (for deletions) to the draft language.</p> <p><b>General Comments</b></p> <p>Lutron comments:</p> <ul style="list-style-type: none"> <li>☑ It would be helpful to users of the standard if all defined terms were italicized as is done in ASHRAE 90.1. What would be even more useful is if the defined terms were clickable right to the definition or if the definition shows up when the mouse hovers over the term.</li> <li>☑ The PDF should be bookmarked better. Currently, the draft has every clause bookmarked which makes the bookmarks cumbersome and unhelpful. The way that Title 24 2022 PDF was bookmarked was much easier to navigate, and we recommend using that format for 2025.</li> <li>☑ If a section or table is referenced in another section, please link the section or table reference so that users can navigate to the reference more easily.</li> </ul>	<p>Comment acknowledged, no change made.</p> <p>In alignment with ADA accessibility standards, Staff avoid using italics to emphasize defined terms. Staff is considering revisiting this issue in the next code update.</p> <p>Bookmarks will be included in the final 2025 Building Energy Efficiency Standards publication, similar to the bookmarking of the 2022 Building Energy Efficiency Standards.</p> <p>On links to tables, the CEC will consider embedding links to referenced sections and tables within the PDF document.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120</a>
256310.003	Lutron Electronics Co.	<p><b>Subchapter 1-100.0</b> <b>Table 100.0-A Application of Standards.</b></p> <p>Lutron comments: Section 110.12 (demand response) applies throughout Table 100.0-A. It does not appear anywhere in the table and should be added where it is mandated. Also, we recommend adding another column to show where in the main body of the standard each Joint Appendix is used.</p>	<p>Staff agrees with the comment, and changes have been made. Specifically, columns were added to Table 100.0-A to include Demand Response, and a reference to the Reference Joint Appendix, JA5, was added.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120</a>
256310.004	Lutron Electronics Co.	<p><b>Section 100.1 –Definitions and Rules of Construction.</b></p> <p>Lutron comments: Change definition of Multilevel Lighting Control to be clearer.</p> <p>Changes: <del>Multilevel Lighting Control enables the level of lighting illumination to be adjusted upward and downward, raised or lowered in addition to full-ON and OFF across multiple levels.</del></p>	<p>Staff agrees with the comment, and changes have been made. Specifically, the adopted definition of "Multilevel Lighting Control" is: enables the intensity of lighting to be adjusted upward and downward.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120</a>
256310.005	Lutron Electronics Co.	<p><b>Subchapter 2-110</b> <b>Section 110.12(a) Demand responsive controls.</b></p> <p>Lutron comments: Item 4 states an obvious outcome and is not required. There is no language in the standard that would prohibit demand responsive controls from performing other functions. The addition of this item merely adds confusion.</p> <p>Changes: <del>(a)4. When the demand response signal is disabled or unavailable, all demand responsive controls shall continue to perform all other control functions provided by the control.</del></p>	<p>Staff disagrees with this comment, and no changes have been made. The language is intended to ensure that controls continue to operate as intended during periods where a demand response signal is disabled or unavailable.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120</a>

256310.006	Lutron Electronics Co.	<p><b>Subchapter 4-130</b>  <b>Section 130.1(b) Multilevel lighting controls.</b>  Lutron comments:  ☒ A square footage threshold is not necessary, since an exception exists for spaces using only one luminaire, which would typically provide sufficient illumination for spaces less than 100 square feet.  ☒ The threshold for requiring multilevel lighting controls should solely be based on the lighting power in the space.  ☒ The lighting power threshold should be lowered from 0.5W/sf to 0.4 W/sf of lighting power. This should capture additional spaces where multilevel lighting would be effective, such as dining areas and theater areas.  ☒ The exception for classrooms should be stricken. It is a dated exception that was used to permit switching of fluorescent lighting in lieu of dimming them. Classrooms are another key space where multilevel lighting can be effectively implemented to save energy. Lutron supports the California Energy Alliance (CEA) proposal on multilevel lighting expansion submitted to the Commission on Aug. 2023.</p>	<p>Staff disagrees with these comments, and no changes have been made. This comment is similar to comments in TN256335, TN256346, TN256310, and TN256334, as well as suggested changes in pre-rulemaking (Docket Number: 22-BSTD-01, TN# 252270).  Staff notes that the information provided in the comment is insufficient to support the proposed change.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120</a>
256310.007	Lutron Electronics Co.	<p><b>Section 130.1(c) Shut-OFF controls.</b>  Lutron comments: Captive card key controls should not be considered an equivalent compliance option to occupant sensing or automatic controls in hotel guestrooms. Captive card key controls are a manual control (not automatic) that are easily and often bypassed by the user, thereby negating any potential energy savings. A compromise is to allow the option only for smaller hotels/motels with fewer than 50 rooms. Larger hotels should be required to use automatic guestroom controls, guaranteeing energy savings and providing guests with a more satisfactory experience.</p> <p>Changes:  8. Hotel/motel guest rooms shall be controlled with one of the following such that, no longer than 20 minutes after the guest room has been vacated, lighting power is switched off.  i. <del>captive card key controls;</del> or  ii. occupant sensing controls;  or  iii. automatic controls.</p> <p><b>EXCEPTION 1 to Section 130.1(c)8:</b> One high efficacy luminaire as defined in TABLE 150.0-A that is switched separately and where the switch is located within 6 feet of the entry door.</p> <p><b>EXCEPTION 2 to Section 130.1(c)8:</b> <u>Hotels with fewer than 50 guestrooms, shall be permitted to use captive card key controls to comply with this requirement.</u></p>	<p>Comment acknowledged, no change made. This proposal for Section 130.1(c)8 is out of scope of this rulemaking. Staff did not modify the types of shut-off controls allowed in hotel/motel guest rooms in the 2025 code cycle. Staff will revisit this topic in the next code update.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120</a>

256310.008	Lutron Electronics Co.	<p><b>Section 130.1(d) Daylight responsive controls.</b> Lutron comments: This section should align with energy codes such as ASHRAE 90.1, which prohibit manual controls from raising light levels beyond those set by daylight responsive controls. It is unclear why manual controls would be necessary for this purpose, and it undermines the energy savings facilitated by daylight responsive controls. Therefore, the second sentence should be removed.</p> <p>Changes: F. In spaces where manual controls are required, the manual controls shall be capable of turning off or decreasing light levels below the light level set by the daylighting controls. <del>Manual controls shall be permitted to temporarily increase electric lighting light levels above the light level set by the daylight responsive controls if the controls are configured to reset electric lighting controls back to the Section 130.1(d)3 defaults after electric lighting have been turned off or reduced by a manual control, occupancy sensor or timeclock.</del></p>	Staff agrees with the comment, and changes have been made. Specifically, Staff has deleted from Section 130.1(d) the sentence "Manual controls shall be permitted to temporarily increase electric lighting light levels above the light level set by the daylight responsive controls if the controls are configured to reset electric lighting controls back to the Section 130.1(d)3 defaults after electric lighting have been turned off or reduced by a manual control, occupancy sensor or timeclock."	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256310&amp;DocumentContentId=92120</a>
256310.009	Lutron Electronics Co.	<p><b>Subchapter 7-150</b> <b>Section 150.0(k)1C Recessed Downlight Luminaires in Ceilings.</b> Lutron comments: Section 150.0(k)1C prohibits screw-based sockets in recessed ceiling downlight luminaires. Since Title 20 has ensured that only energy efficient lamps can be sold in California, this prohibition is no longer required.</p> <p>Changes: C. <b>Recessed Downlight Luminaires in Ceilings.</b> In addition to complying with 150.0(k)1A, luminaires recessed into ceilings shall meet all of the following requirements: <del>i. Shall not contain screw base lamp sockets.</del> [renumber ii, iii, and iv]</p>	Comment acknowledged, no change made. Staff is aware of the Title 20 requirements for general service lamps which include general service LED lamps. However, staff disagrees the proposed requirement in the Energy Code is not needed.	5/13/2024	45 day	
256310.01	Lutron Electronics Co.	<p><b>Section 150.0(k)3 Residential outdoor lighting.</b> Lutron comments: ☒ All permanently installed outdoor lighting should be controlled even when not mounted to a building (e.g., light poles). ☒ There are no requirements for outdoor lighting to have dimmers, occupant sensors, or vacancy sensor, so the second sentence in 150.0(k)3C does not make sense and should be stricken.</p> <p>Changes: A. Outdoor <del>permanently installed</del> lighting <del>permanently mounted to a residential building or to other buildings on the same lot</del> shall meet the following requirements:  C. An energy management control system (EMCS) or other controls that provides the specified lighting control functionality and complies with all requirements applicable to the specified controls may be used to meet these requirements. <del>No controls shall bypass control functions of a dimmer, occupant sensor, or vacancy sensor where the dimmer or sensor has been installed to comply with Section 150.0(k)3.</del></p>	Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.  1. Staff disagrees with the proposal to remove "permanently mounted to a residential building or to other buildings on the same lot" and add "permanently installed". The adopted language is intended to clarify that the requirements do not apply to landscape lighting. Light poles installed in typical residential building sites are commonly used for landscape lighting and are not subject to the Energy Code's residential outdoor lighting requirements.  2. Staff agrees with the proposal to delete the sentence in Section 150.0(k)3C "No controls shall bypass control functions of a dimmer, occupant sensor, or vacancy sensor where the dimmer or sensor has been installed to comply with Section 150.0(k)3."	5/13/2024	45 day	

256311.001	ASHRAE TC8.6 Standards Subcommittee	<p>These comments are being submitted by the ASHRAE TC8.6 Standards Subcommittee on the 45-day language for the 2025 Building Energy Efficiency Standards, Title 24, Parts 1 and 6, Express Terms. ASHRAE Technical Committee (TC) 8.6 is concerned with open and closed-circuit cooling towers, evaporative condensers, adiabatic condensers and fluid coolers, spray ponds, and other types of contact type liquid-to-air heat rejection equipment along with their application and impact on complete HVAC, Industrial, and Refrigeration systems, including the associated energy and water usage as well as water treatment requirements.</p> <p>Please feel free to visit our Committee’s website at:  <a href="https://tc0806.ashraetcs.org/">https://tc0806.ashraetcs.org/</a></p> <p>TC8.6 supports the California Energy Commission’s goals to improve building energy efficiency and reduce overall water use, while also decreasing carbon emissions, which align closely with those of the TC and its members. We appreciate the changes incorporated into the 45 day language in response to stakeholder comments, including those of this TC.</p> <p>After reviewing the 45 day language, the CEC Staff Supplemental to the 2025 Case Report – Cooling Towers dated March 28, 2024, and the California Utility CASE Team and Compliance Improvement Team comments dated May 3, 2024, we would like to offer the following additional comments:</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256311&amp;DocumentContentId=92118">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256311&amp;DocumentContentId=92118</a>
256311.002	ASHRAE TC8.6 Standards Subcommittee	<p><b>Minimum Efficiency by Climate Zone for Cooling Towers</b></p> <p>The TC is grateful for the reduction in the minimum efficiency of axial fan open circuit cooling towers used on chiller plants over 300 tons. This change from a maximum of 90 to 80 gpm/hp will help to minimize potential negative impacts on the water-cooled marketplace going forward. Our members have also noted, however, that while the minimum efficiency has been lowered in California Climate Zones 8, 10, and 15, the minimum efficiency values have been increased in California Climate Zones 2, 4, 5, and 13 as compared to the initial Draft Case Report as illustrated in the Table below.</p> <p><i>See docketed comment for Table.</i></p> <p>These increases were not explained in the Final Case Report nor the CEC Staff Supplement. Can these increases be explained, especially the substantial increase in CZ13 from 60 to 80 gpm/hp?</p>	Comment acknowledged, no change made. The cooling tower efficiencies in the 2025 Energy Code are based on the Final CASE Report proposal. For Climate Zones 2, 4, 5, and 13, the analysis showed that higher efficiencies of 70 or 80 GPM/hp were cost effective.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256311&amp;DocumentContentId=92118">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256311&amp;DocumentContentId=92118</a>



256311.003	ASHRAE TC8.6 Standards Subcommittee	<p><b>Cooling Tower Blowdown Controls</b></p> <p>While the requirement for a confirmation test for the blowdown controls and the highwater alarm will add cost and effort when using water-cooled systems, we believe that these requirements will help to ensure that water treatment systems are in place and functioning properly. However, after reviewing the CA Utility CASE Team and Compliance Improvement Team's comments on the 45 day language, we agree with and support the simplifications and corrections proposed for setting the cycles of concentration, relying only on the values contained in Table 110.2-A-1. Overall, the modified proposal will save water while helping to protect water-cooled systems from unintended scaling and corrosion and the associated loss of both cooling tower and associated system thermal efficiency. The Subcommittee will continue to follow the changes in this section in the upcoming 15 day language.</p>	Staff disagrees with the comment, and no changes have been made. Staff wanted to avoid any confusion on how to perform the calculation for setting the cycles of concentration. Staff also wanted to avoid referencing a separate calculator.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256311&amp;DocumentContentId=92118">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256311&amp;DocumentContentId=92118</a>
256311.004	ASHRAE TC8.6 Standards Subcommittee	<p><b>Adiabatic Fluid Cooler Minimum Efficiency (addition to Title 24)</b></p> <p>The TC 8.6 Standards Subcommittee proposed the addition of a minimum efficiency and test code for pad-type Adiabatic Fluid Coolers for the 2022 Edition of ASHRAE 90.1. This addition was approved by the SSPC and adopted in the 2022 Edition with the publication of Addendum "q" (link attached below). For Title 24, these requirements would be added to Table 110.2-E PERFORMANCE REQUIREMENTS FOR HEAT REJECTION EQUIPMENT as follows:</p> <p><i>See docketed comment for Table.</i></p> <p>Add the following Test Code to Appendix 1-A:  <u>CTI ATC-105 Adiabatic (23) Acceptance Test Code for Adiabatic Fluid Coolers</u></p> <p>Add the following in Section 10-102 DEFINITIONS:  <u>adiabatic fluid coolers, integral pad-type: a heat-rejection device consisting of a heat exchanger, an air moving device, integral pad-type adiabatic air-cooling system, and a structure. Water to the pads can be supplied as once-through or recirculated by a spray pump. Adiabatic heatrejection devices with spray systems and no wetted media are not included in this definition, nor are adiabatic cooling systems field installed on the unit and supplied by anyone other than the manufacturer of the unit.:</u></p> <p>This addition will:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> include a growing category of heat rejection devices in the Code</li> <li><input checked="" type="checkbox"/> help to build awareness of a heat rejection category that offers lower energy use than dry coolers (already covered in the Table) with lower water use than cooling towers, both of which are important goals of the CEC</li> <li><input checked="" type="checkbox"/> and lastly will harmonize Title 24 with Standard 90.1.</li> </ul>	Comment acknowledged, no change made. Additional analysis is needed to adequately address the proposal. Staff will revisit this topic in the next code update.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256311&amp;DocumentContentId=92118">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256311&amp;DocumentContentId=92118</a>

256312.001	Thomas Culp	<p>Previously I submitted comments on behalf of the National Glass Association and Aluminum Extruders Council expressing concerns about the proposed mandatory fenestration backstops in Sections 120.7(d) and 141.0(b)1E. (See comments dated Nov 17, 2023 under docket 22-BSTD-01.) Our concerns relate to the fact that backstops do not save energy, yet create potential compliance issues for non-standard products and applications. Some examples raised as potential issues were fire-rated fenestration assemblies, blast-resistant fenestration assemblies, and historic renovation projects.</p> <p>We have become aware of others discussing related concerns and the need for an exception for firerated fenestration to ensure the energy code never trumps life-safety. It has been suggested to address this through a new exception under Section 110.6(a), and we agree this would also help mitigate our concerns about fire-rated construction. We suggest the exception be worded as follows to address fireresistance rated glazed walls (curtain wall) as well as the fire-protective windows and doors in 716 to make it more inclusive:</p> <p><u>(NEW) Exception 2 to Section 110.6 (a): Fire-resistance rated glazed walls, and windows and exterior doors that are required to comply with the provisions of The California Building Code Title 24 Part 2, Section 716 Opening Protectives.</u></p> <p>This would not address concerns about blast-resistant fenestration, but those are rare and generally covered by DoD or Federal rules anyway.</p> <p>While we still have general concerns about mandatory fenestration backstops, this would at least mitigate some of our issues, and we would be resolved if this were included.</p> <p>Thank you again for the opportunity to comment, and please contact me with any questions.</p>	<p>Staff agrees with the comment, and changes have been made. Specifically, exceptions have been added where mandatory maximum U-factor requirements for fenestration products exist within the Energy Code.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256312&amp;DocumentContentId=92115">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256312&amp;DocumentContentId=92115</a></p>
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256313.001	1 Earth HERS Rater	<p>With respect to considerations for changing the title of “HERS Raters”, we believe that it would prove to be very helpful if the title of a Title 24 Compliance Verifier (i.e. HERS Rater) was more closely aligned with it’s role and function. The title of “Energy Code Compliance Inspector” increases the visibility of the energy code and, as importantly, it increases awareness to the fact that there are project specific requirements that are associated with the Energy Code. It also serves to announce to all parties (Designers, Implementers (i.e. Contractors), Home Owners, and Project Developers) that some sort of formal examination pertaining specifically to matters regulated by the California Energy Code will be required. Inclusion of the word “Inspector” in the title is critical to this end. Including the word “Inspector” would not infer that this specifically identified function of verifying compliance with energy code requirements would supersede the role or function of any building department official. References that include the word “Rater”, such as Energy Code Compliance “Rater”, fail to distinguish the remarkably different role that a California HERS Rater currently fulfills when compared to the nationally recognized role of a “HERS Rater” which is limited to conducting residential energy audits, limited diagnostic testing, and other things that are important, but entirely different in effect.</p> <p>We respectfully request that the moniker “HERS Rater”, as it is currently referred to within the State of California, be hereafter referred to as “Energy Code Compliance Inspector”.</p>	<p>Comment acknowledged, no change made. Staff agrees that there are some benefits to changing the term from 'Rater' to 'Inspector.' Staff also sees many considerations including administrative costs to Raters, as well as potentially confusing Raters with local building inspectors. Several terms were considered through the rulemaking process, and it is Staff's opinion that a name change at this point would create unnecessary confusion.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256313&amp;DocumentContentId=92112">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256313&amp;DocumentContentId=92112</a>
256314.001	Jennifer Green	<p>I support the provisions in the proposed 2025 Energy Code that advance all-electric new construction. Also, I urge the CEC to consider requiring that central AC systems be replaced with heat pumps, making this mandatory rather than voluntary for residential customers.</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256314&amp;DocumentContentId=92110">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256314&amp;DocumentContentId=92110</a>
256315.001	Harris & Sloan	<p>Harris &amp; Sloan is an engineering consulting firm to builders/developers in CA, with a focus on new residential construction in master planned communities we are directly involved in the design and construction of roughly 25% of all new residential units built annually. Harris &amp; Sloan appreciates the commission and staff’s goal of reducing energy use through a wide array of measures and are thankful for the opportunity to comment on the Commission’s 45-Day Express Terms docketed March 28th, 2024.</p>	<p>Introductory remarks - no response needed.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256315&amp;DocumentContentId=92108">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256315&amp;DocumentContentId=92108</a>

256315.002	Harris & Sloan	<p><b>Section 10-103.3 ECC Program</b></p> <p>This section includes 44 pages of additional code language, centered around reorganization of the ECC (formerly HERS) program and concerns of conflict of interest, lack of transparency, and limited regulation. While well intentioned, it is only a partial step and effectively limits a portion of the industry that has historically been unregulated by adding regulation, then allowing self-certification. If these regulations are born from concern, then more should be done, if there is not significant concern then consideration should be given to reducing the amount of information that must be managed as it would only be increasing efforts and, ultimately, costs. If the new regulations are not enforced, this portion of the industry is effectively walled off, keeping out potential new competition with an abundance of regulation, while continuing the business-as-usual approach that has led to the concerns in the first place. We urge the commission to work toward a more regulated future that does not allow self-certification and/or swiftly enforcing the regulations that have been added.</p>	<p>Comment acknowledged, no change made. This comment is in regards to the Declaration of Separation of Services, which is a provision provided in the proposed regulations to allow an ECC-Rater Company to provide services other than FV&amp;DT. This provision is a self-certification of the corporate design that will ensure that the ECC-Rater can remain as a 3rd-party, independent entity on projects where the ECC-Rater Company acts as the Responsible Person. Staff has neither found nor been presented with any evidence to support a more stringent requirement for providing such needed and necessary services to the market place.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256315&amp;DocumentContentId=92108">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256315&amp;DocumentContentId=92108</a></p>
256315.003	Harris & Sloan	<p><b>Section 100.1 Definitions</b></p> <p>The reorganization of the 2022 BEES to include separate sections for Single-Family and Multifamily buildings has created a lack of clarity around Townhouses, how they are modeled, which standards apply, local jurisdiction interpretation, and limit our ability to get builders/developers to participate in incentive-based programs like California Electric Homes Program (CalEHP) which categorizes any Townhouse as Single-Family regardless of Occupancy Group. Approximately 75% of the Townhouse projects we design meet the Townhouse definition (each unit extends from foundation to roof with open space on at least two sides) but are Occupancy Group R-2. Based on the current definitions a building of occupancy Group R-2 other than a hotel/motel is defined as a Multifamily Building, the definition of LowRise Residential Building further substantiates this. We recommend the following changes:</p> <ul style="list-style-type: none"> <li>• Remove Low-Rise Residential Building from the definitions and throughout the code as it is no longer relevant. Alternatively remove R-2 and R-3 from the definition of Multifamily Building and Single-Family Building</li> <li>• Adjust the definition of Single-Family to add clarity around a townhouse: <ul style="list-style-type: none"> <li>o A townhouse of <b>Occupancy Group R-2 or R-3</b>,</li> </ul> </li> </ul>	<p>Staff disagrees with the comment, and no changes have been made. The definition of "single-family building" explicitly includes the term "townhouse" without any occupancy group qualifiers. Staff clarifies that a townhouse of any occupancy group satisfies the definition of a "single-family building".</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256315&amp;DocumentContentId=92108">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256315&amp;DocumentContentId=92108</a></p>

256315.004	Harris & Sloan	<p><b>Section 150.0(h) Mandatory Requirement for Space Conditioning, Single-Family</b>  Proposed requirements for System Selection eliminate the use of auxiliary electric-resistance heating (heat strips) to meet heating loads. Single-speed packaged units are the most widely used HVAC systems for roughly 90% of new construction that utilize Heat Pump technology. These packaged units offer similar heating and cooling capacities. While well intentioned, this requirement will result in significant over-sizing for cooling, will drastically reduce the ability to comply with Energy Star (which provides tax incentives for efficient homes), and does not include exceptions for conditions that would increase energy use beyond the savings attained through eliminating auxiliary heating. As example, larger homes in mild/costal climates will need (2) systems to comply. We believe the use of auxiliary heating should be reduced to the point that it is not allowing significant system under-sizing while allowing auxiliary heating for a small percentage of days/hours to ensure systems are "right sized" for both heating and cooling. We recommend the following changes:</p> <p>5. System Selection.</p> <p>A. Equipment sizing and selection shall meet the cooling and heating loads of Section 150.0(h)1 and 2.</p> <p>B. Systems shall be sized based on ACCA Manual S-2023 in accordance with these requirements:)</p> <p>i. Cooling Capacity: There is no limit on the minimum capacity.</p> <p>ii. Furnaces: Heating capacity shall be sized based on ACCA Manual S-2023, Table N2.5.</p> <p>iii. Heat Pump Heating Capacity: There is no limit on the minimum capacity.</p> <p>a. Minimum: Heating systems are required to have a heating capacity meeting the minimum requirements of the CBC not including any supplementary heating <b>with the following exceptions:</b></p> <p>1. Where total cooling capacity would exceed 130% of total cooling load</p> <p>2. Where system size would exceed a single nominal 5-ton system</p>	<p>Comment acknowledged, no change made</p> <p>Staff notes that NIST's study on Sensitivity Analysis of Installation Faults on Heat Pump Performance shows no energy impact associated with cooling oversizing, if airflow is adequate as is required by Title 24.</p> <p>Staff reviewed Energy Star requirements, and were unable to find a conflict between the requirements of Energy Star and the 2025 Energy Code.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256315&amp;DocumentContentId=92108">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256315&amp;DocumentContentId=92108</a></p>
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256315.005	Harris & Sloan	<p><b>Section 150.0(h) &amp; 160.3 (b) Mandatory Requirement for Space Conditioning, Single-Family and Multifamily</b></p> <p>Draft 2025 Building Energy Efficiency Standards Express Terms included a requirement for space conditioning system load calculations to be provided for approval by the enforcement agency, which has since been removed. We recommend this language be reintroduced and included. As a builder consultant we can express firsthand that this is the only designed/engineered system in a new residential building that is not currently subject to review by the enforcement agency. Technically, Part 6 and 11 require calculations but it has become commonplace for that not to be enforced. While we understand requirements like this may be on the edge of the commission's purview, requirements for accurate sizing are well within the purview and requiring calculations to be provided is a step toward achieving this goal. Without including this requirement we do a disservice to the building industry at-large; potentially increasing first costs to builders/developers (which will be passed on to buyers) and utility costs to owners, and limit the ability to reach the commissions long-term goals.</p> <p>We believe these clarifications will go a long way toward providing the clarity, consistency, costeffectiveness that is in the best interest of homeowners, and ultimately continue the push toward building more energy-efficient and affordable homes for years to come. If there are any further clarifications or questions that we can address, please contact me at (916) 921-2800.</p>	<p>Comment acknowledged, no change made. Staff has reviewed the suggested edits regarding the documentation of load calculation and system sizing and do not believe Sections 150.0(h)1 and 160.3(b) are the correct place for the proposed changes. Staff instead propose to incorporate changes in the compliance documents to accomplish the same goal.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256315&amp;DocumentContentId=92108">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256315&amp;DocumentContentId=92108</a></p>
256316.001	NEMI	<p>As an established leader in enhancing building safety and health, the National Energy Management Institute (NEMI) is committed to advancing energy efficiency across the industry. With this commitment in mind, we propose specific amendments to the 2025 California Energy Code. Our suggestions aim to optimize energy performance and environmental sustainability in ways that are both innovative and practical. By aligning our expertise in building systems with the state's energy goals, NEMI seeks to foster a collaborative effort with the California Energy Commission (CEC) to set new standards that benefit all Californians.</p>	<p>Introductory remarks - no response needed.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a></p>
256316.002	NEMI	<p>1) §10-102 <b>Comment-</b> The change from HERS to ENERGY CODE COMPLIANCE (ECC) PROGRAM is not appropriate and will create confusion. The Acceptance Test Technician (ATT) program also covers ENERGY CODE COMPLIANCE (ECC). The proposed name change should be adjusted to cover represent the program's limited scope. ("residential construction"). Proposed change for all locations containing "ECC".</p> <p><b>Proposed Change-</b> <u>RESIDENTIAL ENERGY CODE COMPLIANCE (RECC) PROGRAM</u></p>	<p>Comment acknowledged, no change made. Several names for the residential program were considered as part of this rulemaking. Staff chose Energy Code Compliance (ECC) for several reasons documented in the rulemaking record.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a></p>

256316.003	NEMI	<p>2) 10-103.2(c)Fii &amp; iii  <b>Comment-</b>  The suggestion to conduct shadow audits at a training center is a positive step forward. However, it is crucial that such audits do not impose excessive burdens on Acceptance Test Technician Certification Providers (ATTCs) who are responsible for their implementation. While the idea of executing random mechanical audits at job sites could be effective under certain conditions, it will prove impractical for widespread implementation due to challenges related to access, security, safety, and legal considerations.</p> <p>Therefore, ATTCs should be afforded the flexibility to carry out shadow audits either on-site or at a training center, depending on the specific situation. Consequently, the regulations and objectives governing shadow audits should be consistent, irrespective of the location where they are conducted. Furthermore, there is a need for clarification on the general requirement for 1% audit frequency to ensure uniform compliance across all ATTCs. The proposed amendment to the existing 45-day rule aims to address these concerns.</p> <p><b>Proposed Change-</b>  See docketed comment for proposed language changes.</p>	<p>Comment acknowledged, no change made.</p> <ul style="list-style-type: none"> <li>o Job-site audits set a higher standard compared to laboratory training audits. Job-site audits represent actual field conditions, varying installation conditions, and other factors that will affect the ATTs acceptance testing performance. Job-site audits are more rigorous in ensuring ATT competency .</li> <li>o The training facility audit is provided as an alternative in response to comments received to provide flexibility because job-site audits may not always be practical in the field.</li> <li>o The training facility audit ensures all ATT get audited over a set time period. Staff views the training facility audit to occur once every code cycle (3 years) as a minimum requirement.</li> <li>o This criteria can be revisited once there is more information and data for the ATTCP program.</li> </ul>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a>
256316.004	NEMI	<p>3) 10-103.3(a)  <b>Comment-</b>  The proposed scope of the Energy Code Compliance (ECC) Program, outlined in Section 10-103.3(a), currently does not match the defined purpose of the ECC Program. According to the definition in Section 10-102, the ECC Program is specifically designed for field verification and diagnostic testing in residential construction. To avoid ambiguity and ensure clarity, the language describing the scope of the ECC Program should explicitly be limited to residential buildings only. This adjustment will align the program's scope with its intended purpose as clearly defined in the Energy Code.</p> <p><b>Proposed Change-</b>  (a) Scope. The requirements in this section apply to RECC-Providers, RECC-Raters, and RECC-Rater Companies performing residential work relating to field verification and diagnostic testing for the Residential Energy Code Compliance (RECC) Program. The ECC Program is intended to verify that the newly constructed residential buildings and additions and alterations to existing residential buildings comply with the requirements of the Building Energy Efficiency Standards in order to protect consumers from poor construction and installations.</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Several names for the residential program were considered as part of this rulemaking. Staff chose Energy Code Compliance (ECC) for several reasons documented in the rulemaking record. No change made.</p> <p>Staff agrees with the suggestion to add the term 'residential' to the various locations in the scope detailed in Section 10-103.3(a), and changes have been made.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a>

256316.005	NEMI	<p>4) 160.2(b)2.A.iv.b.2 (Compartmentalization Testing)</p> <p><b>Comment-</b> The alternative procedure provides for an unfair market advantage as sampling would not be allowed. Compartmentalization Testing in multifamily buildings with four or more habitable stories should remain under the scope of the ATT until an equitable option for sampling can be provided.</p> <p><b>Proposed Change-</b> <i>See docketed comment for proposed language changes.</i></p>	<p>Comment acknowledged, no change made. Staff recommends keeping the intent of the 2022 Code where the testing of ventilation systems serving single dwellings and the dwelling unit envelope leakage test be performed by the HERS Program. A certified ATT can perform the tests using alternative procedure NA1.9. Staff clarifies that the intent of NA1.9 is not to allow the ATTCP program to replace or compete with the HERS program, or vice-versa. It is intended to provide flexibility on a case-by-case basis where the Responsible Party may use a certified ATT who is already on-site to perform the tests.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a>
256316.006	NEMI	<p>5) Section 160.3(d)2.B (Compartmentalization Testing)</p> <p><b>Comment-</b> The alternative procedure provides for an unfair market advantage for HERS (ECC) testers as sampling would not be allowed by an ATT certified individual or company. Compartmentalization Testing in multifamily buildings with four or more habitable stories should remain exclusively under the scope of the ATT until an equitable option for sampling can be provided.</p> <p><b>Proposed Change-</b> <u>B. In multifamily buildings with four or more habitable stories, dwelling unit enclosure leakage shall be tested in accordance with NA7.18.2 when exhaust or supply ventilation systems are used for compliance with whole-dwelling unit ventilation requirements as specified in Section 160.2(b)2.A.iv.b.2.</u></p>	<p>Comment acknowledged, no change made. Staff recommends keeping the intent of the 2022 Code where the testing of ventilation systems serving single dwellings and the dwelling unit envelope leakage test be performed by the HERS Program. A certified ATT can perform the tests using alternative procedure NA1.9. Staff clarifies that the intent of NA1.9 is not to allow the ATTCP program to replace or compete with the HERS program, or vice-versa. It is intended to provide flexibility on a case-by-case basis where the Responsible Party may use a certified ATT who is already on-site to perform the tests.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a>
256316.007	NEMI	<p>6) 160.2(b)2.B.iv</p> <p><b>Comments-</b> The alternative procedure provides for an unfair market advantage for HERS (ECC) testers as sampling would not be allowed by an ATT certified individual or company. Dwelling unit field verification and diagnostic testing in multifamily buildings with four or more habitable stories should remain exclusively under the scope of the ATT until an equitable option for sampling can be provided.</p> <p><b>Proposed Change-</b> <u>iv. In multifamily buildings with four or more habitable stories, the field verification and diagnostic testing required in Section 160.2(b)2.B.i, ii, and iii which requires an ECG Rater may alternatively shall be performed by a certified Mechanical Acceptance Test Technician according to the requirements specified in Reference Appendix NA1.9-2.3.</u></p>	<p>Comment acknowledged, no change made. Staff recommends keeping the intent of the 2022 Code where the testing of ventilation systems serving single dwellings and the dwelling unit envelope leakage test be performed by the HERS Program. A certified ATT can perform the tests using alternative procedure NA1.9. Staff clarifies that the intent of NA1.9 is not to allow the ATTCP program to replace or compete with the HERS program, or vice-versa. It is intended to provide flexibility on a case-by-case basis where the Responsible Party may use a certified ATT who is already on-site to perform the tests.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a>
256316.008	NEMI	<p>7) Section 160.3(d)2.A</p> <p><b>Comment-</b> The alternative procedure provides for an unfair market advantage for HERS (ECC) testers as sampling would not be allowed by an ATT certified individual or company. Dwelling unit field verification and diagnostic testing in multifamily buildings with four or more habitable stories should remain exclusively under the scope of the ATT until an equitable option for sampling can be provided.</p> <p><b>Proposed Change-</b> <u>A. In multifamily buildings with four or more habitable stories, dwelling unit ventilation systems shall be tested in accordance with NA7.18.1.</u></p>	<p>Comment acknowledged, no change made. Staff recommends keeping the intent of the 2022 Code where the testing of ventilation systems serving single dwellings and the dwelling unit envelope leakage test be performed by the HERS Program. A certified ATT can perform the tests using alternative procedure NA1.9. Staff clarifies that the intent of NA1.9 is not to allow the ATTCP program to replace or compete with the HERS program, or vice-versa. It is intended to provide flexibility on a case-by-case basis where the Responsible Party may use a certified ATT who is already on-site to perform the tests.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a>



256316.009	NEMI	<p>NA1.9.1 Field Verification by the Acceptance Test Technician</p> <p><b>Comment-</b> The alternative procedure provides for an unfair market advantage for HERS (ECC) testers as sampling would not be allowed by an ATT certified individual or company. Systems verified under the alternative procedure should be permitted to utilize the sampling procedures described in NA1.6. Not allowing sampling for an ATT will impede competitiveness and create a market disadvantage for the ATT. The CEC needs either provide an equal opportunity for sampling under NA 1.6 or remove the sampling option altogether.</p> <p><b>Proposed Change-</b> Under this alternative procedure, when the Certificate of Compliance indicates that HERS field verification and diagnostic testing is required as a condition for compliance with Title 24, Part 6, a certified ATT may perform the verification to satisfy the condition of compliance, at the discretion of the enforcement agency. System is verified under this procedure are not eligible for use of the sampling procedures described in NA1.6.</p>	<p>Comment acknowledged, no change made. NA1.9 is not intended to allow the ATTCP program to replace or compete with the HERS program, or vice-versa. It is intended to provide flexibility on a case-by-case basis where the Responsible Party may use a certified ATT who is already on-site to perform the tests.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a></p>
256316.01	NEMI	<p>8) 140.9(c)1.C/ NA7.16</p> <p><b>Comment-</b> The section clearly calls out for an acceptance requirement and that a certificate of acceptance be submitted to the enforcement agency.</p> <ul style="list-style-type: none"> <li>• "Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance ... "</li> <li>• " ... a certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.16" The associated acceptance forms should be dedicated to a Mechanical Acceptance Testing technician to ensure that the intent of this requirements was achieved.</li> </ul> <p><b>Proposed Change-</b> <u>C. Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance, as specified by the reference Nonresidential Appendix NA7.16. A certificate of acceptance shall be completed by a certified ATT and submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.16.</u></p>	<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a></p>

256316.011	NEMI	<p>9) SECTION 140.9(b)3 - PRESCRIPTIVE REQUIREMENTS FOR COVERED PROCESSES</p> <p><b>Comment-</b> The section clearly calls out for an acceptance requirement and that a certificate of acceptance be submitted to the enforcement agency.</p> <ul style="list-style-type: none"> <li>• "Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance ... "</li> <li>• " ... A certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.11" The associated acceptance forms should be dedicated to a Mechanical Acceptance Testing technician to ensure that the intent of this requirements was achieved.</li> </ul> <p><b>Proposed Change-</b> 3. Kitchen exhaust system acceptance. Before an occupancy permit is granted for a commercial kitchen subject to Section 140.9(b), the following equipment and systems shall be certified, <u>by a certified ATT</u>, as meeting the acceptance requirements for code compliance, as specified by the Reference Nonresidential Appendix NA7. A certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.11.</p>	<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a>
256316.012	NEMI	<p>10) 140.9(c)4B /NA7.17</p> <p><b>Comment-</b> The section clearly calls out for an acceptance requirement and that a certificate of acceptance be submitted to the enforcement agency.</p> <ul style="list-style-type: none"> <li>• "Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance ... "</li> <li>• " ... a certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA ... " The associated acceptance forms should be dedicated to a Mechanical Acceptance Testing technician to ensure that the intent of this requirements was achieved.</li> </ul> <p><b>Proposed Change-</b> B. Fume Hood Automatic Sash Closure Acceptance. Before an occupancy permit is granted for the fume hoods subject to 140.9(c)4, the equipment and systems shall be certified, <u>by a certified ATT</u>, as meeting the Acceptance Requirement for Code Compliance as specified by the Reference Nonresidential Appendix NA7. A Certificate of Acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.17.</p>	<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a>

256316.013	NEMI	<p>11) 140.3 (a) 9 C/ NA5.S Enclosure Measurement Procedures</p> <p><b>Comment-</b> This test should follow NA5.8 and NA5.9 to ensure adequate reports and independent third-party verification. The testing should also include fundamental workforce standards for these tasks which would include certification as an ATT and as a Testing, Adjusting, and Balancing technician.</p> <p><b>Proposed Change-</b> C. Verification. Verification of the installed air barrier may be performed. i. If verification is performed the entire building shall meet one of the following requirements: a. An air leakage rate not exceeding 0.40 cfm/ft2 at a pressure differential of 0.3 in. of water (1.57 psf) (2.0 L/m2 at 75 Pa). when the entire building is tested, after completion of construction, in accordance with NA 5, or another test method approved by the Commission; orb. For buildings that have more than 50,000 ft2 of conditioned floor area, a sectional test method of co-pressurizing representative test floors and taking data from the specific floors to achieve the requirement in Section 140.3(a)9Ci when following the procedures in Sections NA5.2 to NA5.79. Representative test floors must meet the following conditions: I. The entire floor area of all stories that have any spaces directly under a roof. II. The entire floor area of all stories that have a building entrance or loading dock. III. Representative above grade wall sections of the building totaling at least 25 percent of the wall area enclosing the remaining conditioned space. Floor areas in Parts a and b above shall not be included in the 25 percent. ii. If the air leakage requirements of either Section 140.3(a)9Cia or 140.3(a)9Cib are not met, a visual inspection and diagnostic evaluation shall be completed in accordance with NA5.7, all observed leaks shall be sealed where such sealing can be made without destruction of existing building components, and buildings where the tested leakage rate exceeded 0.6 cfm/ft2 of building shell area at 75 Pa have been retested to confirm leakage is below 0.6 cfm/ft2 of building shell at 75 Pa.</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Section 140.3(a)9C requires the building to meet the applicable requirement in NA5.2 to NA 5.9.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a></p>
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256316.014	NEMI	<p>12) 140.4 (a) 3.A&amp;B  <b>Comment-</b>  The proposal presents significant constraints primarily targeted at design professionals, potentially inflating costs for end users without clear evidence of universal energy savings across all building types. While a performance option exists for designers to explore alternative approaches, its adoption may be hindered by increased expenses and intricate requirements, discouraging the utilization of established, effective technologies. It's crucial to consider the diverse needs of rural and smaller facilities, granting them the flexibility to select from a wider array of design options tailored to meet regional energy standards and indoor air quality objectives.</p> <p><b>Proposed Change-</b>  <u>Multizone zone space-conditioning system types. Multizone space conditioning systems in office buildings and school buildings not covered by Section 140.4(a)2 shall meet the following requirements~~ A. Offices. Office buildings shall use space conditioning systems complying with one of the following requirements: i. The space conditioning system shall be a variable refrigerant flow (VRF) heat pump system with a dedicated outdoor air system (DOAS) providing ventilation. Indoor fans shall meet the requirements of Section 140.4(a)3D. The DOAS shall comply with Section 140.4(a)3.E; or. ii. The space conditioning system shall be a four-pipe fan coil (FPFC) system with a DOAS providing ventilation. The FPFC hot water coils shall be supplied by an air-to-water heat pump (AWHP) spaceheating hot water loop which complies with Section 140.4(a)3.C. The DOAS shall comply with Section 140.4(a)3.E; or. iii. The space conditioning system shall utilize heating supplied through a hot water loop served by an AWHP which complies with Section 140.4(a)3.C. Ventilation systems shall include DCV in all zones. All air systems shall be equipped with a heat recovery system in compliance with Section 140.4(q). A hydronic recirculated-air heating system complying with Section 140.4(a)3.F shall</u>  be used in climate zone 16. B. School buildings. The space conditioning system shall be four-pipe fan coil (FPFC) terminal units with a DOAS providing ventilation. The FPFC hot</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating. Staff is committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a>
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256316.015	NEMI	<p>13) 140.4 (c) 2.A.B</p> <p><b>Comment-</b> We propose the integration of a requirement for certified Acceptance Test Technicians (ATTs) to conduct construction inspections and functional verification of static pressure resets in conjunction with NRCA-MCH-07A. Additionally, the inclusion of ASHRAE Guideline 36 in the code necessitates the expansion of functional performance tests detailed in the existing NRCA-MCH-07A Mechanical form. These critical tests should also be performed by certified ATTs to ensure compliance with the new guidelines and maintain the highest standards of energy efficiency and system reliability.</p> <p><b>Proposed Change-</b> Static pressure sensor location. Static pressure sensors used to control variable air volume fans shall be placed in a position such that the controller set point is no greater than one-third the total design fan static pressure, except for systems with zone reset control complying with Section 140.4(c)2B. If this results in the sensor being located downstream of any major duct split, multiple sensors shall be installed in each major branch with fan capacity controlled to satisfy the sensor furthest below its setpoint; and B. Setpoint reset. For systems with direct digital control of individual zone boxes reporting to the central control panel: 2025 Building Energy Efficiency Standards Page 347 SECTION 140.4 - PRESCRIPTIVE REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS i., static pressure setpoints shall be reset based on the zone requiring the most pressure; <del>i. e., the setpoint is reset lower until one zone damper is nearly wide open.</del> ii. <u>Control sequences of operation for static pressure setpoint reset shall be in accordance with ASH RAE Guideline 36. iv., Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance, as specified by the reference Nonresidential Appendix NA7.7. A certificate of acceptance shall be completed by a certified ATT and submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.7.</u></p>	<p>Comment acknowledged, no change made. Staff is not recommending field verification of new requirements in Section 140.4(c)2B in this code cycle. Staff will consider this topic in the next code update.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a></p>
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256316.016	NEMI	<p>14) 140.4 (d)2.A  <b>Comment-</b>  We propose the integration of a requirement for certified Acceptance Test Technicians (ATTs) to conduct construction inspections and functional verification of temperature resets in conjunction with NRCA-MCH-16A. Additionally, the inclusion of ASHRAE Guideline 36 in the code necessitates the expansion of functional performance tests detailed in the existing NRCA-MCH-016A Mechanical form. These critical tests should also be performed by certified ATTs to ensure compliance with the new guidelines and maintain the highest standards of energy efficiency and system reliability.</p> <p><b>Proposed Change-</b>  2. Zones served by variable air-volume systems that are designed and controlled to reduce, to a minimum, the volume of reheated, recooled, or mixed air are allowed only if the controls meet all of the following requirements: A. For each zone with direct digital controls (DDC): i. The volume of primary air that is reheated, recooled, or mixed air supply shall not exceed the larger of: a. 50 percent of the peak primary airflow; or b. The design zone outdoor airflow rate as specified by Section 120.1(c)3. ii. The volume of primary air in the deadband shall not exceed the design zone outdoor airflow rate as specified by Section 120.1(c)3. iii. The first stage of heating consists of modulating the zone supply air temperature setpoint up to a maximum setpoint no higher than 95F while the airflow is maintained at the dead band flow rate. iv. The second stage of heating consists of modulating the airflow rate from the dead band flow rate up to the heating maximum flow rate. v. <u>Control sequences of operation for reheat zones shall be in accordance with ASH RAE Guideline 36.</u> vi. Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance, as specified by the reference Nonresidential Appendix NA7 .16. A certificate of acceptance shall be completed by a certified ATT and submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.16.</p>	<p>Comment acknowledged, no change made. Staff is not recommending field verification of new requirements in Section 140.4(d)2A in this code cycle. Staff will consider this topic in the next code update.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a></p>
256316.017	NEMI	<p>15) 110.2(e) NA.5.7.18  <b>Comment-</b>  We wish to emphasize that our intent is focused on data collection during the construction inspection phase of this test, specifically by the certified Acceptance Test Technician (ATT). The ATT is not responsible for reviewing or verifying the design or engineering aspects of the project.</p> <p>We appreciate the California Energy Commission's dedication and effort towards shaping the 2025 California Energy Code. Your commitment to improving energy efficiency and building standards is instrumental in moving our state towards a more sustainable future. NEMI values this opportunity to contribute to these important discussions and looks forward to continuing our collaboration. Thank you for considering our recommendations and for your ongoing work in this vital area.</p>	<p>Comment acknowledged, no change made. Staff clarifies that the proposed requirement directs mechanical acceptance test technicians (ATTs) to verify the conductivity controls and overflow alarm as set by the design documentation, including the NRCC-MCH-E. The proposed acceptance test procedures do not require or direct ATTs to re-evaluate the engineering designs of the cooling tower.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256316&amp;DocumentContentId=92107</a></p>

256317.001	Robert Benz	<p>The updates to Section 140.4(a)3 that require four pipe fan coils supplied by an air to water heat pump space-heating hot water loop which complies with Section 140.4(a)3C will increase carbon pollution. That air to water heat pumps are very efficient is beyond question. The problem is that besides the heat pump-based hot and cold 4 pipe systems being 5-10 times more expensive than equivalent capacity gas-fired boilers, the air-to-water heat pumps during cold periods consume electricity that is substantially gas generation via combined cycle or simple peaker gas turbine generation. In the quest to attain high efficiency, the source of electricity must be considered in order to attain the net zero carbon future.</p> <p>The CEC and local air districts such as the South Coast Air Quality Management District seem to believe that because heat pumps are electrically driven, these Rankin cycles are then zero emission. This belief is fictional when the low-temperature heat sink is less than 40F. Unfortunately, low ambient temperatures often correspond with periods of low or no renewable generation meaning that the electricity is largely supported with natural gas generation.</p> <p>Consider a 4-pipe water-to-air application with a 140F heating hot water loop and an ambient temperature of 40F; despite the impressive performance of an invertercontrolled air/water heat pump, the coefficient of performance is given this low ambient condition is less than 2 - meaning that the heat pump will consume at best one kilowatt to provide 2 kilowatts of heating. Given the average grid heat rate of 8000btu/kw (as of 2022) and the newest condensing gas fired boilers are &gt;92% efficiency, the heat pump will require 512btus more than the condensing boiler to provide the 2 kilowatts of heating. Clearly, heat pumps can and will excel in higher ambient conditions, however with a higher cost as electricity is far more expensive than equivalent gas heating value.</p> <p>The paramount concern for the CEC is increasing (or mandating) additional electrical load to the grid that could be complicit in causing electrical grid blackouts. The advent of AI</p>	Thank you for your comment. Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256317&amp;DocumentContentId=92106">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256317&amp;DocumentContentId=92106</a>
256318.001	California Solar & Storage Association	<p>CALSSA applauds the Commission for its commitment to world-leading building standards and for the extensive work that led to release of the 45-day language for the 2025 update to the standard. We offer the following comments.</p> <p><b>1. Battery Operating Modes</b></p> <p>CALSSA appreciates work by Commission staff to create reasonable assurances that batteries receiving energy efficiency credit are operated in a way that achieves the anticipated energy reduction. The new requirement in JA12.3.3 (d) to require residential systems to restore settings to the committed amount of cycling capacity every 72 hours is a good approach. Other associated requirements have the right intentions, but some of the language needs to be refined as recommended below.</p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>

256318.002	California Solar & Storage Association	<p><b>A. Aggregator specification</b></p> <p>JA12.3.3 (b) and JA12.4.4 require a storage system to be capable of discharging on command for demand flexibility. The entities named that may issue a dispatch signal are “the local utility or a third-party aggregator.” Depending on the location and the program, it may be the equipment manufacturer or the installer that issues a command. Also, a local utility may have specific integration rules for a limited program that are not intended for everyone to be able to adhere to. This requirement should be stated more generally, requiring a system to be able to receive a signal from “an entity managing the system for a demand flexibility program or tariff.”</p>	Staff agrees with the comment, and changes have been made. Specifically, we have edited Reference Appendices, Joint Appendix JA12.3.3.1(c) to include signals from a load serving entity or a third-party aggregator. Stakeholders have indicated that the third party aggregator term is broad enough to capture the ways that batteries are currently dispatched.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>
256318.003	California Solar & Storage Association	<p><b>B. Communications protocol</b></p> <p>Demand flexibility programs have evolved significantly from traditional demand response programs. The requirement in Section 110.12 that demand response signals be communicated via OpenADR is outdated and is not appropriate for customer-sited batteries. Proxy demand response programs do not allow exports to the grid from customer-sited batteries due to CAISO concerns about the feasibility of deliverability studies. CAISO should support program reform to allow exports from customer-sited batteries, which would make those programs more successful, but this will not happen via Title 24 requirements. The Commission must recognize that demand flexibility programs involving customer-sited batteries do not use OpenADR, including the Commission’s own Demand Side Grid Support program. A requirement that OpenADR be programmed into storage systems for JA12 compliance would add cost with no benefit.</p> <p>The reference in JA12.4.3 to Section 110.12 (a) should be deleted. That section was written for HVAC controls, lighting controls, and other load controls. It does not translate to customer-sited batteries. Simply requiring that a storage system be capable of changing its charge and discharge timing in response to a demand flexibility signal is sufficient to validate his operating mode.</p>	Comment acknowledged, no change made. After much discussion with stakeholders, Staff concludes that the requirements in Section 110.12(a) do not present a barrier to battery participation in demand flexibility programs.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>
256318.004	California Solar & Storage Association	<p><b>C. Weather and demand flexibility allowances</b></p> <p>In a common battery operating mode known as solar self-consumption, the battery charges when there is available solar and discharges when there is not enough solar generation to meet onsite load. Typically, this mode includes the ability to switch away from that behavior in advance of severe weather and grid shutoffs or for participation in demand flexibility programs. JA12.3.3 indicates that the Commission is supportive of allowances for severe weather, but that section is intended for manual changes to the reserve level by the customer. JA12.4.1, which defines solar self-consumption mode, should include the allowances.</p> <p>Further, the allowance should include demand flexibility programs. If a day-ahead discharge signal is issued and the battery is not fully charged due to cloud cover or any other reason, allowing the battery to charge from the grid will enable greater participation in grid services and can help customers meet program obligations. The following language in JA12.4.1 would offer clarity. “In advance of a severe weather advisory, Public Safety Power Shutoff event, or demand response event, the BESS may depart from the default operation mode to charge from the electric grid and reserve the full charge for a potential interruption of service.”</p>	Staff agrees with the comment, and changes have been made. <p>Specifically, Reference Joint Appendix JA12 has been modified to allow grid charging during off-peak hours if solar generation is not available, and to allow grid charging periods of severe weather, Public Safety Power Shutoff events, or anticipated demand response signals.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>



256318.005	California Solar & Storage Association	<p><b>D. Specification as default</b></p> <p>JA12.4.2, on TOU control, requires the mode to be “installed in the default operating mode.” However, JA12.3.3 (c) clarifies that systems should be capable of switching between all of the control strategies of JA12.4. TOU control should not be defined as a default operating mode at the time of installation.</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Specifically, references to a "default operating mode" have been removed from Reference Joint Appendix JA12.4.2.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>
256318.006	California Solar & Storage Association	<p><b>E. Grid charging in TOU mode</b></p> <p>JA12.4.2 should allow grid charging when solar charging is insufficient to fill the battery. Because the battery will be discharged during TOU peak hours, charging from the grid during off-peak hours will have an energy efficiency benefit. The benefit of solar charging is greater, so charging from available solar should be a requirement, but if there is battery capacity beyond available solar, off-peak grid charging adds to that benefit. This will be particularly important in the winter months, when shorter daylight hours and cloudy skies can cause a battery to be less than fully charged in a day if it is relying exclusively on solar.</p> <p>Interconnection rules prevent customers from discharging energy that was drawn from the grid back onto the grid, so there is not a problem with violating tariffs by allowing batteries to be charged from both solar and the grid. Under existing interconnection rules, if the customer engages in grid charging, they can only discharge their system for onsite load. If they want the ability to export, they cannot charge from the grid. TOU mode does not require the ability to export, so grid charging should be allowed when there is insufficient solar to charge the battery, with the understanding that the energy from the grid will only be used for onsite load. CALSSA recommends requiring that a battery “shall charge from an on-site photovoltaic system when the photovoltaic system production is greater than the on-site electrical load.” This would require solar charging but allow grid charging to supplement solar charging when needed.</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Specifically, for systems combined with an on-site solar photovoltaic system, Reference Joint Appendix JA12 has been modified to allow grid charging during off-peak hours, and during periods of severe weather, Public Safety Power Shutoff events, or anticipated demand response signals if allowed by the load-serving entity.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>
256318.007	California Solar & Storage Association	<p><b>F. Start point of storage charge</b></p> <p>For stand-alone storage, customers are committing to discharge a certain amount of energy daily, with that discharge happening during the TOU peak hours if there is enough onsite load to use all of the required discharge amount during those hours. It is not necessary, nor is it desirable, for all customers to start charging as soon as the off-peak hours begin, as long as the battery can fully charge for its compliance cycling capacity during the period. JA12.4.4 should be amended to remove language about starting the activity “at the onset” of a TOU period.</p> <p>Proposed Language Following are proposed changes to incorporate the points above. The following language is based on accepting the Commission’s proposed 45-day language, with redlines to add CALSSA’s recommendations.</p> <p><i>See docketed comment for proposed code language.</i></p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Specifically, Staff will remove "onset" and replace it with "during" in Reference Joint Appendix JA12.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>

256318.008	California Solar & Storage Association	<p><b>2. Labeling</b>  JA12.5 requires specific information to be written on a label on the storage device. This includes the “CEC JA12 kWh Cycling Capacity” as distinct from the system’s nameplate “Total ESS kWh Capacity.” This is a problem for systems that are programmed remotely. The installer may not know how much of the battery is dedicated to CEC compliance cycling. The installer knows the nameplate capacity, but that is already on a label on the device.</p> <p>The compliance cycling capacity will be stated on the energy compliance form submitted to the Commission as part of the overall Title 24 compliance demonstration. This is not a value that can be verified onsite by the local inspector, but it is a value the Commission will know from the Title 24 submittal of the property developer. CALSSA recommends deleting JA12.5.</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Specifically, Staff have removed the labeling requirements.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>
256318.009	California Solar & Storage Association	<p><b>3. System Sizing for Multimeter Nonresidential Properties</b>  The proposed 2025 update recognizes that the virtual net billing tariff adopted by the California Public Utilities Commission for the investor-owned utilities eliminates onsite netting for nonresidential accounts, and solar systems will therefore need to be interconnected to individual services rather than having a single interconnection at the property with virtual credits applied to individual units. This creates a cost-effectiveness challenge for smaller units. The same situation exists for publicly-owned utilities.</p> <p>CALSSA members that specialize in nonresidential multimeter properties have determined that 2000 square feet is a threshold below which the viability of individual solar systems is not certain. Depending on site conditions, units smaller than that may still be viable, but this cannot be assumed. This aligns with Exception 5 to Section 140.10 (a), which removes the projected consumption for units less than 2000 square feet that have their own HVAC from the sizing calculation for the site.</p> <p>Although systems will be interconnected to individual units, it is important to maintain the solar and storage sizing requirements as aggregate values across the property. This gives property developers flexibility in sizing the separate interconnections to optimize tenant value.</p> <p>CALSSA supports the sizing calculation, including Exception 5, as proposed</p>	<p>Thank you for your comment of support.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>

256318.01	California Solar & Storage Association	<p><b>4. Pool Heating</b></p> <p><b>A. Hybrid solar and heat pump systems</b></p> <p>Section 110.4 (c) requires solar heating systems for commercial pools to have collector area at least 65 percent of the pool surface area if there is another heating source. That is reasonable if the backup heating source is gas, but if solar is installed in combination with a heat pump there should be no minimum size.</p> <p>Solar heating systems for commercial pools have historically been installed to reduce the cost of running gas heating systems. Outdoor pools are expensive to heat if they are used beyond the core summer months. This is especially true of fifty-meter pools, which are Olympic-sized pools for competitive training. Properties that install heat pumps will have even more of a price incentive to also use solar heating than there has been for traditional properties that used gas heating. A smart property developer installing a heat pump pool heater will get as much of the heat as they can from solar, even if they do not have enough roof space for collectors that total 65 percent of the pool surface area. They will do this for economic reasons, but it will have an energy efficiency benefit and should be encouraged. The Commission should allow hybrid heat pump and solar systems with a smaller heat pump sizing requirement and no minimum size for solar.</p>	Staff agrees with the comment, and changes have been made. Specifically, a new option for a combination solar pool heater and heat pump pool heater system without additional supplemental heater has been added.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>
256318.011	California Solar & Storage Association	<p><b>B. Residential pool covers</b></p> <p>Section 110.4 (b)(3) would require all outdoor pools to have pool covers. This is an unreasonable requirement for single-family residential pools heated by solar. It would add cost without an energy efficiency benefit. Opting against a pool cover means the pool will not be as well heated outside of the hottest months, but it is not reasonable for the Commission to mandate a certain amount of heating for residential pools. In CALSSA's experience, many single-family residential pool covers go unused because the homeowner values being able to use the pool quickly over having the pool well heated during the shoulder months. If a homeowner chooses to heat their pool with solar and does not retain the captured heat as well as they could, there is no loss in building energy efficiency. This requirement should be eliminated for single-family residential pools.</p> <p>CALSSA appreciates that opportunity to submit these recommendations and is available for further clarification if needed.</p>	Staff agrees with the comment, and changes have been made. Specifically, an exception has been added for pools heated solely by solar systems.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256318&amp;DocumentContentId=92124</a>

256322.001	Carrier Corp.	<p>Carrier Global Corporation (Carrier) provides fire safety, security, building automation, heating, ventilation, air conditioning, and refrigeration systems and services to promote integrated, high-performance buildings that are safer, smarter, and more sustainable. Carrier is the founder of the modern HVAC industry and operates across the globe. Our range of products includes unitary residential and commercial products, including ducted and ductless, transport refrigeration products, chillers, and HVAC building services.</p> <p>Carrier appreciates the opportunity to comment on the proposed 45-day language of the 2025 Title 24 Energy Code Rulemaking. Carrier would like to thank the CEC staff for the opportunity for manufacturers to participate in many of the preliminary discussions that were focused on the updates that were being proposed in this code cycle. While Carrier is encouraged by many aspects of this code, there are issues and areas of needed clarification that are addressed in the following comments.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>
256322.002	Carrier Corp.	<p><b>Section 110.2(a) – Minimum Efficiency Tables</b></p> <p>The minimum efficiency tables have been updated to either prompt the reader of this code to refer to the federal minimum efficiency level for a regulated metric or the tables have been removed completely when all the metrics in the table have a federal minimum. Carrier is concerned that this update could create greater confusion in this code. Manufacturers, designers, consultants, contractors, and authorities using this code need to have the required relevant information all in one place, and removing the levels regulated by DOE could create undue complexity and possible frustration for those users. For those users that are not referencing DOE federally minimum levels for given products on a regular basis, that information can be difficult to find. Carrier understands that the CEC would not want to update this code in the middle of a cycle due to a DOE required efficiency level increase but believes that the compliance dates of new or updated DOE regulations are set far enough in advance that this should not be an issue for this code.</p> <p>Specific additional comments to the minimum efficiency tables as proposed:</p> <p>Condensing units: CEC has labeled the IEER as a “Federal Minimum.” DOE does not have an Energy Conservation Standard for standalone commercial condensing units. Carrier proposes that these values should be aligned with ASHRAE 90.1.</p> <p>VRF equipment: The VRF table references AHRI 1230 as the test procedure for multisplit equipment less than 65,000 Btu/hr. All multi-split equipment less than 65,000 Btu/hr is currently rated to AHRI 210/240-2023 (appendix M1).</p> <p>Full load metrics: For the 2025 version of T24, full load metrics remain required in the minimum efficiency tables. Carrier supports the inclusion of full load performance requirements as the efficiency of units operating at peak temperatures (or low temperatures in heating) have significant impact on overall energy usage and the cost that customers will pay for the electricity consumed during those operating hours.</p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>

256322.003	Carrier Corp.	<p><b>Section 120.10 – Mandatory Requirements for Fans</b> As written, fans and blowers in scope of T24-2025 require testing and the calculation of FEI is in accordance with ANSI/AMCA 208-18. Carrier believes that because the DOE test procedure for fans and blowers is now effective, that fans and blowers rated with the FEI metric must be tested in accordance with the DOE test procedure that can be found in 10CFR part 431.174. Carrier recommends alignment with the DOE test procedure only where applicable.</p>	Comment acknowledged, no change made. Staff will update fan testing requirements to align with DOE in the next code update.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>
256322.004	Carrier Corp.	<p><b>Section 140.4 – Prescriptive Requirements for Space Conditioning Systems</b> <b>140.4(a)2 – Single Zone Space-Conditioning System Type</b> Carrier understands this section applies to single zone space-conditioning systems with DX cooling with rated cooling capacity up to 240,000 Btu/hr. This section includes the statement “All other system types, including systems with rated cooling capacity greater than 240,000 Btu/hr, multi-zone systems and systems using central boilers or chillers, shall comply with the applicable requirements of Section 140.” Carrier cannot find any other specific requirements for single zone rooftop units above 240,000 Btu/hr in section 140.4. Carrier requests clarification as to whether there are no other prescriptive requirements for that equipment other than the general unit capabilities that are laid out in this section.</p> <p>In the sub-requirements of this section, CEC prescriptively requires specific product technologies depending on building type and climate zone. While Carrier is strategically transforming its portfolio through electrification, and therefore understands CEC’s approach for prescribing product types that use no or fewer fossil fuels for heating as the baseline, Carrier believes that the requirements in this section are too limiting, regardless of the energy analysis that CEC performed showing that the equipment types selected meet performance and energy efficiency criteria to be considered the baseline. Carrier proposes that these prescriptive requirements provide additional options to the user to avoid the need to complete a complex building model to permit the use of a different equipment technology utilizing the performance approach.</p> <p>Examples would be as follows: <b>140.4(a)2.B:</b> Instead of “Retail and grocery building spaces in Climate Zones 1 and 16 with cooling capacity less than 65,000 Btu/hr. The space-conditioning system shall be an air conditioner with furnace,” Carrier requests CEC provide options such as “Retail and grocery building spaces in Climate Zones 1 and 16 with cooling capacity less than 65,000 Btu/hr. The space-conditioning system shall be an air conditioner with furnace, a dual fuel heat pump, or a heat pump.” <b>140.4(a)2.C:</b> Instead of “Retail and grocery building spaces in Climate Zones 1 and 16 with</p>	Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff may revisit this topic in the next code update.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>

256322.005	Carrier Corp.	<p><b>Section 140.4(a)3: Multizone Space-Conditioning System Types</b></p> <p>As stated above, Carrier is strategically transforming its portfolio through electrification; however, [certain] heat pump products may provide the same or greater energy savings in certain circumstances than [other] heat pump products. Accordingly, Carrier does not agree with prescribing a fixed product type to be used in specific applications. For example, there are other heat pump product types that exist in the market today other than VRF with a DOAS or a four-pipe fan coil that can be applied in office buildings or schools that can provide the same or better energy efficiency, especially with options such as economizers. While utilizing the performance approach addresses this issue, not all design firms have the ability to do so, and for those that do, it comes at a significant cost burden for many building owners.</p> <p>Carrier is also concerned with 140.4(a)3.D: Indoor Fans. Since this section requires less fan power to be used compared to the allowances in 140.4(C), Carrier believes this requirement is derived from requiring specific product types, which limits innovation and may constrain some product manufacturers from being able to provide products for these applications.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating. Staff is committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>
256322.006	Carrier Corp.	<p><b>Section 140.4(r)</b></p> <p>This section and throughout this code proposal, CEC makes reference to DDC controllers utilizing sequences of operation from ASHRAE Guideline 36. Carrier has no issue with this requirement, as long as it pertains to the Building Management System and not the HVAC unit controls. Carrier would like to see this clarified.</p>	<p>Comment acknowledged, no change made. During CASE report development, the CASE team determined that it would be difficult to clearly and concisely specify when the Guideline 36 requirement applies and when the exception (labeled as Exception 1, but should be Exception 3) applies. The 2025 compliance manual will provide additional guidance.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>
256322.007	Carrier Corp.	<p><b>Section 141.0(b)2.C.ii</b></p> <p>The prescriptive requirements proposed for single zone packaged rooftop systems with a cooling capacity less than 65,000 Btu/hr in both a – d of this section and Table 141.0- E-1 only specify an air conditioner with gas furnace or heat pumps. There is no mention of dual fuel products. Carrier believes this omission to be in error, since dual fuel products would be a viable, energy efficient alternative where an air conditioner with gas furnace is specified. This section addresses the issues in sections 140.4(a)2 and 140.4(a)3 identified above, in that designers or building owners have flexibility to select various system types without completing a full performance model. Carrier recommends adding dual fuel heat pumps to this section as an additional option</p>	<p>Staff agrees with the comment, and changes have been made. Specifically, Staff has added dual fuel heat pumps in Section 141.0(b)2C and Table 141.0-E-1.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>

256322.008	Carrier Corp.	<p><b>Section 150.0(h)9: Capacity Variation with Third-Party Thermostats</b> Carrier is concerned that this mandatory section requires all variable or multi-speed units be capable of capacity variation when connected to third party thermostats. Carrier has models that are currently not configured with this capability. In any application, Carrier agrees that the thermostat and a variable or multi-speed system combination must be able to respond to changing conditions and modulate compressor speed, but having the requirement for that capability using a third-party thermostat is too restrictive. Carrier proposes that CEC revise this section to remove the third-party specificity of the thermostat and create a general requirement for all thermostats that are connected to variable or multi-speed units.</p> <p>The AHRI Standards Technical Committee consisting of manufacturers and other various stakeholders completed an update to the test procedure for central air conditioners and heat pumps (AHRI 210/240) earlier this year. This update includes a controls verification procedure (CVP) designed to ensure that variable speed products and paired thermostats will meet the required operating capabilities to be classified as a variable speed system. In the most recent Notice of Proposed Rulemaking for the Test Procedure for Central Air Conditioners and Heat Pumps, DOE proposed to incorporate by reference the updated version of AHRI 210/240, which would become effective 180 days of issuance of the final rule. Carrier believes that having the CVP in both the industry and federal test procedure will validate proper operation of variable speed equipment and further makes the third-party thermostat specific requirement in this code less necessary.</p>	Comment acknowledged, no change made. Staff clarifies that the requirements of Section 150.0(h)9 are not intended to compel space conditioning systems manufacturers to make their systems compatible with all thermostats. Rather, the intention of the requirement is that installers select an appropriate thermostat for the installed space conditioning system.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>
256322.009	Carrier Corp.	<p><b>Various Sections of the Residential Prescriptive Approach</b> Carrier believes that minimum airflow requirements, such as requiring 350 CFM/Ton, are overly prescriptive and limit the design and performance decisions of manufacturers. The capacity of a given unit is certified at the rated airflow, such that regardless of whether a unit is running at 350 CFM/ton or not, the output of the system will be as designed. Many systems on the market today utilize a certified airflow below 350 CFM/Ton and requiring a higher airflow may negatively impact efficiency.</p>	Comment acknowledged, no change made.  Staff notes that 350 cfm/ton was determined by research as a minimum value necessary to limit degradation to cooling system efficiency; an airflow rate based on rated capacity would not be compatible with the purpose of the 350 cfm/ton minimum airflow rate requirement.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>
256322.01	Carrier Corp.	<p><b>Section 150.2(a)1E: Space-Conditioning Load Calculations and System Capacity</b> As noted above, Carrier does not agree with the requirements or verification of systems running at least 350 CFM/ton. Further, in Tables 150.2-A and 150.2-B, Carrier has concern with half ton increments for oversizing for two stage and variable speed equipment. Carrier believes the maximum oversizing is better in one-ton increments for these product types, since two stage and variable speed equipment will run in part load. Many two stage and variable speed product lines on the market today do not have half ton size options.</p>	Staff agrees with the comment, and changes have been made.  Specifically, an exception for variable-speed and multi-speed systems has been included for situations where the maximum system capacity specified in Tables 150.2-A or 150.2-B falls between two available system capacities for a space-conditioning system. In these cases the exception allows for the larger of the two available capacities to be selected.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>

256322.011	Carrier Corp.	<p><b>Summary:</b> Carrier appreciates the opportunity to provide feedback to the CEC on the 2025 cycle of the California Energy Code Rulemaking. Carrier appreciates the intent behind many of the proposals and current requirements contained in Title 24. However, Carrier believes that the intent can be better achieved by providing more prescriptive options on product technologies, eliminating specificity when it is confusing or unnecessary, and revising requirements that may not impact overall energy efficiency. Doing so would allow for a more straightforward approach without requiring the use of very costly energy models to incorporate alternative energy efficient and/or electric or dual fuel heat pump options.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256322&amp;DocumentContentId=92132</a>
256323.001	Western Propane Gas Association	<p>The Western Propane Gas Association (WPGA) appreciates this opportunity to comment on the California Energy Commission's proposed changes for the 2025 Building Energy Efficiency Standards. WPGA understands the complex needs to reduce greenhouse gas emissions while simultaneously managing energy system stability without negatively affecting the cost of housing in California. With this context in mind, WPGA submits the following comments.</p> <p><b><u>PROPOSED REVISIONS IMPERIL RURAL COMMUNITY ENERGY RESILIENCE</u></b> Overemphasizing electrification at the cost of other fuel types runs three substantial risks to homeowners and ratepayers in California.</p> <p>First, California's electrical grid has been seen to operate at and even beyond its capacity causing economic harm measured in the billions of dollars, both in terms of Public Safety Power Shutoffs (PSPS) and in terms of delayed construction projects across the state.<sup>1</sup></p> <p>Second, a transition to a generally new building energy technology, electric heat pump water heaters, in particular, bear substantial risk to California's housing market. Most contractors in the state are unfamiliar with the technology, and those that are familiar often see it as underperforming and needlessly expensive. Additionally, a forced transition to a new technology in a constrained timeframe bears significant supply chain risks.</p> <p>Lastly, California has one of the most diverse geographies of any state with sixteen independent climate zones. The energy needs of California communities vary as much as those climates do. While heat pump systems may prove sufficient and cost effective in many of the milder and hotter climates in the state; in our vast north coasts, foothills, and mountain communities, there are much higher heating needs that are more effectively met with combustion-based heating systems, like propane space heaters.</p>	Staff disagrees with the assertions in this comment; the comment does not suggest changes to the regulatory text and, therefore, no changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256323&amp;DocumentContentId=92131">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256323&amp;DocumentContentId=92131</a>



256323.002	Western Propane Gas Association	<p>The Energy Commission’s Lifecycle System Cost metric does not directly reflect how these costs will affect individual homes, with many at risk of facing increased energy costs in a state with a massive housing affordability crisis and an unhoused population that makes up more than 25% of the national total.<sup>2</sup> Cold-weather electric heating equipment faces significantly higher energy demands per joule of energy than their gaseous fuel equivalents. Any measure that may risk furthering this crisis deserves only the utmost of scrutiny. The figure below shows the impact of the change in the CEC’s energy accounting from the 2022 Code to the 2025 Code.</p> <p><i>See docketed comment for figure.</i></p> <p>This analysis begins with the CEC’s choice to use a high electrification adoption model as their baseline, causing a presumed large scale cost increase for natural gas as seen in the figure below.</p> <p><i>See docketed comment for figure.</i></p> <p>This single assumption causes an 80% retail price increase for natural gas. This assumption ignores propane and the fact that propane does not suffer cost increases due to aging and abandoned infrastructure, and does not account for the proportionately higher use of propane in rural and heating dominated climate zones. This assumption is also highly vulnerable to the fact that energy prices are notoriously difficult to forecast.</p>	<p>Staff disagrees with this comment, and no changes have been made. The high electrification scenario is a reasonable assumption given the best available data. While the high electrification scenario has significant impacts on the gas retail rate forecast, the demand scenario has no direct impact on the propane LSC factors. The methodology used for the development of propane LSC factors is not impacted in any way by aging and abandoned gas infrastructure, and does account for the use of propane in rural and heating dominated climate zones.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256323&amp;DocumentContentId=92131">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256323&amp;DocumentContentId=92131</a>
256323.003	Western Propane Gas Association	<p><b><u>EPCA AND CURRENT CASE LAW PREEMPTS THE PROPOSED REVISIONS</u></b></p> <p>The federal Energy Policy and Conservation Act (“EPCA”) expressly preempts the proposed revisions because they constitute regulations concerning the energy use of a covered product under 42 U.S.C § 6297(c), and do not meet all seven requirements a building code must meet in order to avoid preemption under EPCA in 42 U.S.C § 6297(f)(3).</p> <p>Furthermore, in California Restaurant Ass’n v. City of Berkeley, 89 F.4th 1094 (9th Cir. Jan. 2, 2024), the Ninth Circuit recently held that the City of Berkeley’s ban on natural gas infrastructure in new buildings was preempted by EPCA. As the Ninth Circuit explained, EPCA “extends to regulations that address the products themselves and building codes that concern their use” of fuels and that EPCA ensures that “States and localities could not prevent consumers from using covered products in their homes, kitchens, and business.” Accordingly, if enacted as written, the proposed revisions will be legally invalid.</p>	<p>The CEC disagrees with the commenter's application of the law, and no changes have been made. The self-described "limited" and "narrow" holding of CRA v. Berkeley is not applicable to a state building code that meets EPCA's seven-part building code exception. The Energy Code has been specifically developed to meet these federal criteria and, therefore, it is not preempted.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256323&amp;DocumentContentId=92131">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256323&amp;DocumentContentId=92131</a>

256323.004	Western Propane Gas Association	<p>This conclusion is further supported by the holding in <i>AHRI v. Albuquerque</i>, 2008 WL 5586316 (D. NM 2008). In <i>Albuquerque</i>, the court found the City’s argument unavailing and held that revisions to a prescriptive path to compliance was a regulation subject to EPCA’s preemption provision, regardless of the availability of a performance path to compliance. In reaching this holding, the court stated, “[t]he City has not persuaded the Court that a local law is not preempted when it presents regulated parties with viable, non-preempted options. (See Mem. Op. and Order at 14, Doc. No. 61, filed October 3, 2008, 2008 WL 5586316 (“the Court can find no support for the novel proposition that the inclusion of one or more alternatives for compliance in a regulation keeps each of the alternatives from being considered a regulation”).” Ultimately, the Court concluded “that the prescriptive provisions of Volume I requiring the use of heating, ventilation, or air conditioning products or water heaters with energy efficiency standards more stringent than federal standards are regulations that concern the energy efficiency of covered products and, therefore, are preempted as a matter of law.”</p> <p>As in <i>Albuquerque</i>, the proposed revisions revise the prescriptive path to compliance under the Energy Code. The <i>Albuquerque</i> court found that such a regulation is subject to EPCA’s preemption provision, regardless of the existence of a performance path to compliance. Thus, the fact that an alternative performance path under the proposed revisions exists, will not save either the prescription or performance regulations from EPCA preemption.</p> <p>The CEC claims that EPCA is not a problem, based entirely on its reading of EPCA § 6297(f)(3)(A) that permits a builder to meet their energy consumption or conservation objective “by selecting items whose combined energy efficiencies meet the objective.” However, the reality of the code is such that it would in practice effectively prevent certain fuels from being used across all climate zones with significant impediments to access and sets up a de facto ban on the use of certain types of energy across the entire state. Moreover, the CEC ignores that the building code exception has seven requirements, not just one, and it doesn’t attempt to</p>	<p>The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. <i>AHRI v. Albuquerque</i> is a case from a different federal Circuit, and the Ninth Circuit Court of Appeals, where California is located, has not accepted or extended the logic or conclusions of <i>Albuquerque</i> to building codes that meet all seven criteria of EPCA's seven-part building code exception.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256323&amp;DocumentContentId=92131">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256323&amp;DocumentContentId=92131</a></p>
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256324.001	A.O. Smith	<p>A. O. Smith Corporation (“A. O. Smith” or “Company”) appreciates the opportunity to submit comments on the 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 45-day Language (“Express terms”), Published on 3, 28, 2024. The company worked with the Codes and Standards Enforcement (CASE) team during the pre-rulemaking phase and appreciate the work the team has done to incorporate our feedback into the Express terms. Throughout the process the Company has raised concerns surrounding the updates to the System Design Requirements put forth in the report. While some of the Company’s concerns have been addressed, the Express terms still include proposed requirements that remain problematic that may undermine California’s stated goal of installing six million new heat pumps by 2030.</p> <p><b>About A. O. Smith</b></p> <p>A. O. Smith Corporation, with global headquarters in Milwaukee, Wisconsin since 1874, applies technology and energy-efficient solutions to products manufactured and marketed worldwide with operations in the U.S., Canada, China, India, Mexico, the Netherlands, and the UK. Listed on the New York Stock Exchange (NYSE: AOS), the company is one of the world’s largest manufacturers of residential and commercial water heating equipment and boilers, as well as a leading manufacturer of water treatment and air purification products. Along with its wholly owned subsidiaries, A. O. Smith is the largest manufacturer and seller of residential and commercial water heating equipment, high efficiency residential and commercial boilers, and pool heaters in North America.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130</a>
256324.002	A.O. Smith	<p><b>Overview</b></p> <p>On February 17, 2023, the CASE team presented proposed modifications to the California Title 24 requirements for Multifamily Domestic Hot Water. Inclusive of the proposals was a proposed modification to the prescriptive pathway for commercial heat pump water heaters (“CHPWH”) systems that would require that single pass HPWH system design not utilize hot water return to primary. In addition, the CASE team added an alternative compliance pathway for CHPWHs which would allow a CHPWH to be installed so long as it meets the Northwest Energy Efficiency Alliance (“NEEA”) Advanced Water Heating Specification (“AWHS”) Tier 3. As drafted, those proposals would present an uneven playing field as CO2 based CHPWH systems would be significantly advantaged over non-CO2 based CHPWHs. The Company raised concerns with this overly prescriptive requirement to the CASE team during the pre-rulemaking comment period. In August 2023, the CASE team published their final CASE report, in which the CASE team did amend the NEEA AWHS requirement from tier 3 to tier 2 under the alternative compliance pathway. In the August 2023 CASE Report, however, the CASE team maintained the prescriptive requirement that disallows single pass return to primary designs. The Company remains concerned that this approach will arbitrarily restrict CHPWH options for building owners without proper technical justification, which in turn codifies a specific system design that reinforces an uneven playing field.</p>	<p>Comment acknowledged, no change made. CO<sub>2</sub>-based central heat pump water heating systems are not the basis of the CASE proposal, nor the Energy Code language. Staff recognize that the prescriptive requirement is currently limited to single-pass HPWH systems. Other system types can be modeled under the performance compliance path.</p> <p>Staff will evaluate additional central HPWH system types in the next code update.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130</a>

256324.003	A.O. Smith	<p><b><u>Section 170.2(d).2: Prescriptive System Design for CHPWHs</u></b></p> <p>Section 170.2 is written to provide prescriptive requirements for multifamily buildings and the underlying analysis supporting those proposed requirements was performed solely by using multifamily building stocks. However, Section 140.5(d) further references the requirements of section 170.2(d) such that Hotel/Motel occupancies will also need to meet the same service water heating requirements. However, neither the docket, nor the CASE report, presents any analysis supporting the economic justification for these changes under the Hotel/Motel occupancies. The Company finds this troubling and respectfully requests that CEC perform and publish an economic analysis that justifies the inclusion of Hotel/Motel occupancies within the scope of requirements as proposed under Section 170.2(d).</p> <p>Additionally, this section does not provide a compliance pathway for integrated systems (also referred to as “unitary”). Currently the prescriptive requirements would require an integrated CHPWH to comply with the same requirements as a split system. Based off of the code language this effectively bans integrated products because all integrated CHPWHs would best be categorized as multi-pass systems per AWHs V8.0. The Company however feels that this is an inappropriate classification given the difference in operation between split systems and integrated systems. These products are highly efficient and capable of reaching COPs up to 4.2 and are being readily adopted in the marketplace. The Company would request that CEC provide a compliance pathway for integrated products which are quickly growing in popularity due to their cost, ease of installation and high efficiency.</p>	<p>Comment acknowledged, no change made. Requirements for hotel/motel occupancies have referenced the multifamily water heating requirement for several code cycles. Both central HPWH and gas WH systems are allowed prescriptively. The requirements in Section 170.2(d)2A are only applicable when a central HPWH is used as an alternative to a central gas WH system, therefore a cost effectiveness analysis is not needed. The core requirements for a central gas WH system remain unchanged in the 2025 Energy Code.</p> <p>Staff recognize that the prescriptive requirement is currently limited to single-pass HPWH systems. Other system types can be modeled under the performance compliance path. Staff will evaluate additional central HPWH system types in the next code update.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130</a></p>
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256324.004	A.O. Smith	<p>Finally, and notwithstanding the foregoing, the Company remains concerned that the prescriptive requirements of CHPWH's as presented in the Express terms are premature and do not allow for new technology to be introduced into the marketplace under this pathway. As the CEC knows, the baseline system design in the prescriptive pathway is a single-pass system with a swing tank design utilizing CO2 as a refrigerant. While this is an efficient design, and suitable for certain installations, there are many other non-CO2 based efficient designs in use in the field today and should be afforded the same opportunity to compete to meet the needs of building owners. By setting the baseline requirement for CHPWHs to a single more expensive type of system design, CEC is potentially incentivizing designers to use the significantly cheaper prescriptive pathway of utilizing high efficiency gas-fired water heaters. The Company observes that when the analysis was performed, the CASE Team only compared products that were either solely multi-pass systems or solely single-pass systems. However, since that initial analysis was completed, additional products have entered the market which are designed to work in either a single-pass or multi-pass configuration. These products are extremely flexible and allow the building designer to use the most efficient configuration for the specific building type and desired specification from an architect or specifying engineering firm. Given the potential rapid growth in this market sector, the Company would recommend the CEC continue to allow for multi-pass systems with a swing tank in the prescriptive pathway, and further direct the CASE team to review in totality the CHPWH market and reassess if the restrictions on return to primary systems are appropriate. Lastly, and consistent with the state's goal to install six million new heat pumps and HPWHs, the building code should not arbitrarily hinder the adoption of any CHPWH.</p>	<p>Comment acknowledged, no change made. CO<sub>2</sub>-based central heat pump water heating systems are not the basis of the CASE proposal, nor the Energy Code language. Staff recognize that the prescriptive requirement is currently limited to single-pass HPWH systems. Other system types can be modeled under the performance compliance path.</p> <p>Staff will evaluate additional central HPWH system types in the next code update.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130</a></p>
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256324.005	A.O. Smith	<p><b>Section 170.2(d).2: Alternative Compliance Pathway</b></p> <p>The Company is supportive of the alternate compliance pathway of meeting the requirements of NEEA tier 2. The Company does have some reservations regarding the implementation of this compliance pathway and does not want it to become a moving target for compliance. The AWHS and NEEA's Qualified Product's List ("QPL") provide a meaningful tool to compare CHPWHs in lieu of the U.S. Department of Energy ("DOE") publishing an updated test procedure for these products. The issue, however, is that the AWHS is not published under an industry-consensus standards certification body that publishes updates on a standardized cadence like other Standards Development Organizations ("SDOs") such as ASHRAE and AHRI. Further the maintenance and administration of the QPL of a previous specification version is under no obligation to be maintained after a new revision of the AWHS is published. Unless maintenance of the referenced specification and QPL is agreed to, this alternate pathway faces one of two outcomes:</p> <p>First, if CEC adopts a static version of the AWHS and associated QPL, as is currently proposed in the Express terms, this closes the door on new products becoming eligible for compliance under this pathway. To further highlight this problem, the analysis for this alternative compliance pathway was based around NEEA AWHS V8.0. Between the time the analysis was performed, and the Express terms published, NEEA has published a proposed new V8.1 and the V8.0 QPL will no longer be supported. Hence, if V8.1 is adopted by NEEA and the Express terms maintain a reference to V8.0, the net effect will be that only 4 products would be listed on the QPL and only 3 products would qualify for the alternative compliance pathway under the proposed Express terms.</p>	<p>Comment acknowledged, no change made. This proposal is similar to the current alternative pathway for unitary heat pump water heaters, which references Northwest Energy Efficiency Alliance's (NEEA) Advanced Water Heating Specification (AWHS). The Standard necessitates adoption of the current version of AWHS. Based on current practice, we expect that products previously certified would be grandfathered in that Tier.</p> <p>The CEC will stay in communication with NEEA to ensure that future AWHS versions will not present an issue for manufacturers to meet the requirements of Section 170.2(d)2.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130</a>
256324.006	A.O. Smith	<p>Second, the other option would be that Title 24 reference the most recent versions of the AWHS and QPL. Of course, this too raises an administration and compliance problem as building owners and manufacturers would have to navigate an uncertain business environment when attempting to specify CHPWHs for their projects. This results in business uncertainty as the AWHS and QPL could increase stringency without approval or analysis by CEC or the CASE team, which in turn translates to a situation where manufacturers are required to design to a moving target, which inserts confusion into to the marketplace and further hinder adoption of CHPWHs.</p> <p>As a result, the Company strongly recommends that CEC engage with NEEA to proffer an agreement such that the current version (i.e., V8.0) of the AHWS and QPL referenced in Title 24 remain maintained in perpetuity as long as the code references them. This would allow for a stable baseline and would not preempt NEEA from further developing new versions of the AWHS and QPL.</p>	<p>Comment acknowledged, no change made. This proposal is similar to the current alternative pathway for unitary heat pump water heaters, which references Northwest Energy Efficiency Alliance's (NEEA) Advanced Water Heating Specification (AWHS). The Standard necessitates adoption of the current version of AWHS. Based on current practice, we expect that products previously certified would be grandfathered in that Tier.</p> <p>The CEC will stay in communication with NEEA to ensure that future AWHS versions will not present an issue for manufacturers to meet the requirements of Section 170.2(d)2.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130</a>
256324.007	A.O. Smith	<p><b>Conclusion</b></p> <p>A. O. Smith appreciates the opportunity to provide comments in response to the 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 45-day Language. Please feel free to contact me if you have questions and the Company stands ready to work with the Commission moving forward.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256324&amp;DocumentContentId=92130</a>

256325.001	Fenestration & Glazing Industry Alliance	<p>The Fenestration &amp; Glazing Industry Alliance (FGIA) represents more than 420 member companies who manufacturer and market windows, doors, skylights, tubular daylighting devices (TDDs), and glazing components that go into them for residential and commercial application. In addition to member companies, FGIA represents hundreds of professional and technical members.</p> <p>FGIA appreciates the opportunity to provide the following comments on the proposed 45-day language for the 2025 California Energy Code.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129</a>
256325.002	Fenestration & Glazing Industry Alliance	<p><b>Table 150.1-A Component Package – Single Family Standard Building Design</b> <i>Fenestration Maximum U-factor</i></p> <p>FGIA recommends that for the 0.27 Maximum U-factor being proposed in Climate Zones 1-5, 11-14 and 16, that the California Energy Commission (Commission) consider changing that Ufactor to 0.28. Doing so will better align those climate zones with the 0.28 U-factor being proposed in Table 170.2-A for Multifamily Standard Building Design.</p> <p>Having climate zones better align between single family and multifamily are beneficial for several reasons. First, the slightly improved U-factor of 0.28 for any climate zone used to justify the proposal for multifamily, should also justify the requirement for single-family projects. It provides for greater product availability for in-state businesses/dealers, making it easier to offer these products that get installed into the same types of openings (i.e. punched) for either multifamily or single family projects. In turn, that larger product availability makes it easier for businesses/dealers, contractors, and homeowners to comply, and for the code official to enforce the requirements.</p>	Comment acknowledged, no changes have been made. The proposed U-factor of 0.27 is based on analysis by the CASE team using LSC, which showed a B/C ratio between 1.56 and 3.79. Staff confirmed that product availability supports the proposed U-factor.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129</a>
256325.003	Fenestration & Glazing Industry Alliance	<p><i>Fenestration – Maximum SHGC</i></p> <p>In the review of the 45-day proposed language, FGIA could not find any documentation providing the rationale as to why for Climate Zone 15 the Solar Heat Gain Coefficient (SHGC) is changing from 0.23 to 0.20. To provide consistency with the other climate zones, FGIA urges the Commission to change this back to 0.23. To do otherwise would require this small area to have a different SHGC from the surrounding areas, making product availability difficult.</p>	Comment acknowledged, no changes made. This change was proposed in the 2025 Single-Family Two Heat Pump Baseline Report, which found that there is a negligible cost impact associated with the change from an SHGC of 0.23 to 0.20. Additionally, Staff found that projects containing windows with an SHGC of 0.20 already make up around 25% of residential new construction projects in Climate Zone 15 according to the CEC's data.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129</a>
256325.004	Fenestration & Glazing Industry Alliance	<p><b>Section 150.1(c)3A – Prescriptive Fenestration</b></p> <p>FGIA is concerned that the addition of “a” in front of SHGC could be interpreted to mean that only the U-factor can use the area-weighted average and not the SHGC. We do not think that was the intent of the Commission and suggest the removal of the “a”. Alternatively, FGIA would suggest “area-weighted average” also be inserted in front of SHGC to make it clear both the Ufactor and SHGC can use it.</p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129</a>

256325.005	Fenestration & Glazing Industry Alliance	<p><b><u>Adding an Exception for Fire-resistance Rated Products</u></b></p> <p>FGIA supports the inclusion of language that would ensure flexibility for fenestration U-factors when considering fire-resistance rated requirements found in the California Wildland-Urban Interface Code. Life safety must take precedence over energy conservation when it comes to fire safety. To that end, FGIA supports the exception language being submitted by the National Glass Association (NGA) as follows:</p> <p><b><u>Exception 2 to Section 110.6 (a):</u></b> Fire-resistance rated glazed walls, and windows and exterior doors that are required to comply with the provisions of The California Building Code Title 24 Part 2, Section 716 Opening Protectives.</p>	Staff agrees with the comment, and changes have been made. Specifically, exceptions have been added where mandatory maximum U-factor requirements for fenestration products exist within the Energy Code.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129</a>
256325.006	Fenestration & Glazing Industry Alliance	<p><b><u>Conclusion</u></b></p> <p>We welcome your careful consideration of these comments. If you have any questions, please contact me at jen@jhatfieldandassociates.com on behalf of FGIA.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256325&amp;DocumentContentId=92129</a>
256326.001	Kurt Hurley, City of Berkeley	<p>I am the building sustainability manager for the City of Berkeley.</p> <p>In the interests of building decarbonization and reduced source energy impacts, the city wishes to express its support for:</p> <p>[1] Expanding the prescriptive appliance baseline to include both heat pump space conditioning and heat pump water heating appliances</p> <p>[2] Require Heat Pump Space Conditioning appliances at AC burnout</p> <p>[3] Reduce prescriptive fenestration U-factor values by 0.02 in all climate zones to improve envelope performance and enhance the load shifting aptitude of new construction</p> <p>[4] Introduce a Prescriptive exterior finish minimum Aged Solar Reflectance value in Table 150.1-A for Single Family for all climate zones with 5% west fenestration area limits to reduce exterior heat gain in climate zones with significant cooling loads</p> <p>[5] Reduce from 40% to 35% the Multifamily Prescriptive Maximum Window to Wall Ratio in Table 170.2-A to improve envelope performance and enhance the load shifting aptitude of new construction. Consider a parallel requirement as in [4] above.</p> <p>Thank you for considering our comments and do not hesitate contact us with questions.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256326&amp;DocumentContentId=92127">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256326&amp;DocumentContentId=92127</a>
256327.001	Polyisocyanurate Insulation Manufacturers Association	<p>Thank you for the opportunity to comment on the California Energy Commission's (CEC) proposed 2025 Building Energy Efficiency Standards that were released for public comment on March 29, 2024. The Polyisocyanurate Insulation Manufacturers Association (PIMA) is encouraged by the small increases in envelope stringency. Although these are certainly welcomed changes, the proposed increases in stringency for nonresidential "wood framed and other" roof category envelope requirements are overdue and are still below the requirements under current versions of the IECC and ASHRAE 90.1 Standard. Ultimately, PIMA encourages the CEC to move the State's requirements for building envelope insulation to be more in line with (or exceed) the values required under the 2021 IECC and ASHRAE 90.1-2022 Standard.</p> <p>Better, more efficient envelopes have multiple benefits, some of which may not be captured by the current energy code.</p>	Comment acknowledged, no change made. Staff notes that the prescriptive standard sets a baseline requirement for insulation that allows all insulation products to be used. Builders may choose more insulation, and receive a compliance credit using the performance compliance path.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256327&amp;DocumentContentId=92126">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256327&amp;DocumentContentId=92126</a>



256327.002	Polyisocyanurate Insulation Manufacturers Association	<p><b>Energy Efficiency:</b> As with all energy efficiency measures, better envelopes reduce energy use and costs; reduce the potential burden on the electric grid during the transition to electrification; and make it more likely that buildings will be able to achieve net-zero status with onsite renewable energy and smart, flexible technologies.</p> <p><b>Resiliency:</b> Better envelopes directly improve resiliency and passive survivability.</p> <p><b>On-Site Emissions:</b> According to the 2018 CBECS (Table E7), 69% of on-site natural gas use is for space heating, which is disproportionately impacted by the envelope.</p> <p><b>Multiplier Effect:</b> Better envelopes facilitate the use of smaller, less expensive, and more efficient heating and cooling equipment, so the ultimate gain in efficiency and improvement in cost-effectiveness is greater than it would be for the envelope measure alone. The inverse is also true, that low performing envelopes limit equipment options and opportunities to improve efficiency in the future without expensive retrofits.</p> <p><b>Dependability:</b> Unlike other types of equipment, which are prone to malfunction and, therefore, not achieving the anticipated and reliable energy savings, envelopes are essentially permanent features that continue working as intended throughout the life of a building.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256327&amp;DocumentContentId=92126">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256327&amp;DocumentContentId=92126</a>
256327.003	Polyisocyanurate Insulation Manufacturers Association	<p>Information about the Polyisocyanurate Insulation Manufacturers Association PIMA is the trade association for North American manufacturers of rigid polyiso foam insulation – a product that is used in most low-slope commercial roofs as well as in commercial and residential walls. Polyiso insulation products and the raw materials used to manufacture polyiso are produced in over 50 manufacturing facilities across North America.</p> <p>Thank you for the opportunity to submit these comments. Please contact me should additional information be necessary (jkoscher@pima.org; (703) 224-2289).</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256327&amp;DocumentContentId=92126">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256327&amp;DocumentContentId=92126</a>
256328.001	Lennox International	<p>Lennox International Inc. (Lennox) hereby submits comments on the Codes and Standards Enhancement Proposal for the 2025 California Energy Code (Title 24, Part 6) regarding the 45-day Express Term proposal.</p> <p>Lennox is a leading provider of climate control solutions for the heating, air-conditioning, and refrigeration (HVACR) equipment markets based in the United States. Lennox is a publiclytraded company and has thousands of employees. Lennox manufacturers HVACR products, equipment and control systems subject to California Energy Commission (CEC) requirements.</p> <p>Lennox supports CEC’s goals of improving energy efficiency exemplified by Lennox’s tradition of innovation in the HVAC industry and consistent leadership regarding product efficiencies. Lennox offers the following comments on the Express Terms Proposal.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143</a>

256328.002	Lennox International	<p><b>A. General Comments</b></p> <p>California is clearly leading efforts to aggressively decarbonize and reduce emissions and the ongoing review and update of the California Energy Code (Title 24, Part 6) is a key component to support these objectives. Lennox generally supports the review and update of the code for the 2025 code cycle to further these objectives but reiterates that the CEC use caution to ensure the proposed measures yield meaningful results, are cost effective for California consumers and provide choice options that best suit California consumer needs.</p> <p>In the effort to decarbonize and accelerate the deployment of heat pumps, peak load performance will become an increasingly important factor. Per the Department of Energy report, Decarbonizing the U.S. Economy by 2050 – A National Blueprint for the Building Sector, April 2024, buildings account for 74% of the U.S. Electrical use. The report further indicates that building heating and air conditioning drive peak demand, and therefore grid infrastructure cost which will ultimately be carried by consumers. The DOE report and the California IEPER Electrical Demand Forecast indicate significant increases in electrical demand as efforts to decarbonize continue.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143</a>
256328.003	Lennox International	<p>Split system ducted heat pumps on the market today come in variety of forms ranging from single stage products which have a moderate range of peak load performance to variable speed which can have a much wider range of peak load EER performance including values that are over 30% less efficient than comparable single stage products. The Mass deployment of heat pump products with inefficient peak load performance can significantly add to the peak load projections and infrastructure required. Lennox is supportive of the acceleration of heat pump adoption but cautions that the impacts of low peak load performing products must be considered.</p> <p>To illustrate a DOE minimum efficiency ducted single stage split system heat pump (14.3 SEER2) will generally also have rated peak load EER performance values of 11.5 – 12.5 SEER2 with other rated combinations that exceeded the DOE minimum attaining up to 14 EER2. Variable speed systems rated values can range from industry leading SEER2 and EER2 levels to very low peak load EER2 values of 8.00 or below which is over 30% less efficient than a comparable DOE minimum efficiency single stage system.</p>	Background remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143</a>

256328.004	Lennox International	<p>While competitive manufacturers have stated that EER2 is an irrelevant peak load metric for variable speed heat pump systems, Lennox strongly disagrees and finds EER2 to have a strong correlation to efficient performance near or above the rated peak load test condition as well as improved seasonal efficiency. The EER of a system is the capacity (Btu/h) provided divided by energy consumed (Watts) and thermodynamic fundamentals indicate this driven by the relationship of the heat exchanger size relative to the compressor capacity. While variable speed systems can vary the capacity and therefore the efficiency of the system by turning down capacity to meet the building load they must maintain reasonable peak load performance levels or they will have negative consumer and infrastructure impacts under peak load conditions. The additional arguments of limited hours of peak load hours and system oversizing are also very questionable. In 2017 Lennox conducted a data collection from our communicating systems to determine the percentage of time at or near full speed operation for single stage, two stage and variable speed systems from a cross section of products across the country. This data indicated, as expected the run time of variable speed and two stage systems is much longer than for single stage systems, but the data also indicated that variable speed products spend 10 – 15% of their run time at full speed far exceeding the average time that peak load temperatures are experienced. Given that the run time of variable speed products is approximately 3 times the run time of single stage equipment the number of operational hours is significant. This information was collected from representative systems in the field regardless of level of oversizing.</p>	Background remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143</a>
256328.005	Lennox International	<p>Further, oversizing is problematic from many perspectives. Oversized systems increase consumer first cost and operational cost over the life of the system as oversized system reduces the benefits of part load performance by limiting turn down versus a properly sized system. Oversized systems require additional airflow capability and duct sizing, greatly increasing the need for duct modifications in replacement applications. In addition, oversized systems may also limit latent control, particularly in humid areas and require larger electrical services than properly sized systems. While oversizing is an issue, it should not be considered as best practice for consideration in the development of building codes such as Title 24. Lennox is continuing to collect data representative of field performance and would be happy to meet with the CEC regarding this issue in much greater detail.</p>	Background remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143</a>

256328.006	Lennox International	<p><b>B. Specific Issues regarding the Express Terms Proposal</b></p> <p>In addition to the above general comments, Lennox offers the following comments on the specific measure proposals.</p> <p><b>SECTION 140.4 – PRESCRIPTIVE REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS</b></p> <p>The CEC should not prescriptively limit appropriate system choices that provide important energy efficiency improvements. These business-level decisions are made on a case-by-case basis, and the CEC should not exclude energy efficiency-improving technologies. The proposed changes for offices and schools in Section 140.4 – Prescriptive Requirements for Space Conditioning Systems limit consumer choice and may not be the most efficient or cost effective selection in many applications. Lennox is concerned that Californian building owners may struggle to comply with these overly prescriptive requirements, especially as they apply to additions and alterations of nonresidential buildings. These concerns are further outlined in our trade association (AHRI) comments.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating. Staff is committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p> <p>Staff notes that Sections 140.4(a)2 and 140.4(a)3 do not apply to new or replacement space conditioning systems or components in alterations to existing buildings, see Exception 1 to Section 141.0(b)2C.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143</a>
256328.007	Lennox International	<p><b>SECTION 150.0 – SINGLE-FAMILY RESIDENTIAL BUILDINGS – MANDATORY FEATURES AND DEVICES</b></p> <p>Lennox is also concerned that Sections 150.0(h)6 (and 160.3(b)7), Defrost, imparts a design requirement on equipment that can impact equipment ratings. Ratings for equipment are based on default settings. Requiring the defrost delay timer to be set to greater than or equal to 90 minutes, as required in subsection A, may change the default setting for defrost used by some manufacturers. Additionally, some equipment is programmed to defrost on demand, rather than a set schedule. Demand defrost includes use of measured performance parameters to aid in determining when defrost is required rather than a fixed time.</p> <p><b>In summary, Lennox appreciates the opportunity to provide input on the Express Terms proposal. As noted Lennox would be happy to discuss any aspect of these comments with the CEC directly regarding.</b></p>	<p>Staff agrees with the comment, and changes have been made to ensure that the defrost delay timer requirements are only applicable to installer-adjustable defrost delay timers.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256328&amp;DocumentContentId=92143</a>

256329.001	California Energy Alliance (CEA)	<p>Thank you for the opportunity to provide comments on the California Energy Commission’s (CEC) 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 45-Day Language (Energy Code). The California Energy Alliance (CEA) is a leading advocacy organization for California’s energy stakeholders. Founded in 2016, CEA is a nonprofit, non-partisan alliance of over thirty-five business, government, academia, and NGO leaders working to bring beneficial, equitable change to energy standards, policies, and programs by developing consensus among diverse and engaged stakeholders. CEA envisions a healthy and equitable built environment that is powered by carbon-free, reliable energy sources.</p> <p>CEA and its Members had the opportunity to work collaboratively with the CEC, Compliance &amp; Enforcement Stakeholders, and the California Statewide Utility Codes and Standards Enhancement (Case) Team on improving and expanding upon the 2022 Building Energy Efficiency Standards. The joint work covered measures related to multilevel lighting controls, fault detection &amp; diagnostics, controlled environment horticulture, multifamily compartmentalization, and residential HVAC performance. Additionally, CEA is pleased to see the CEC adopt many of the recommendations from the 2025 Title 24 Lighting Language Cleanup Initiative (Docket No: 22-BSTD-01, TN#250676) that led to eliminating and cleaning up confusing language in the lighting and lighting controls sections of the Energy Code.</p> <p>We applaud the CEC for listening to stakeholders and making the necessary updates to the Energy Code to continue reducing greenhouse gas emissions by maximizing efficiency. While the above recommendations were generally accepted, CEA would like to comment on and address areas of concern in the 2025 Energy Code Express Terms, 45-Day Language. CEA is submitting (3) separate comment letters to address distinct areas of the Energy Code (Lighting/Electrical Sections, Mechanical Sections, and Supplementary Sections/Reports).</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a>
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256329.002	California Energy Alliance (CEA)	<p><b>1) CEA encourages the CEC to reconsider comments submitted in the 2025 Title 24 Lighting Language Cleanup Initiative (Docket No: 22-BSTD-01, TN# 250676) report regarding useability and functionality of the Energy Code.</b></p> <p>a) The Energy Code Structure Subcommittee from the Title 24 Cleanup Initiative looked beyond the lighting sections of the code and focused recommendations on the entire framework of the Energy Code.</p> <p>i) Create an online version of the Energy Code on the CEC's website and add modern digital features in compliance with ADA requirements to improve accessibility and compliance.</p> <p>ii) Reorganize Energy Code to improve accessibility and reduce lookup time.</p> <p>(1) Move Tables to follow the language where it is first introduced.</p> <p>(2) Capitalize (maybe Italicize) defined terms.</p> <p>iii) Add periods after sub-section letters and numerals, for example, Section 170.2(c)4Niv would change to Section 170.2(c)4.N.iv. By updating the subsection naming convention, it will support moving the code to an online format and help with the incorporation of regulations into software.</p> <p>iv) Update/add a better reference to Healthcare Facility(ies) throughout the Energy Code to properly reference this exempted space type to reduce ambiguity related to the code sections that reference healthcare facilities.</p>	Thank you for your comment. The CEC is considering options for restructuring the Energy Code for the 2028 cycle, and hopes to continue to engage with industry stakeholders as those efforts take shape.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a>
256329.003	California Energy Alliance (CEA)	<p><b>2) 2025 Energy Code, 45-Day Language - PDF Bookmark Issues</b></p> <p>i) It appears the CEC tried to bookmark more sections of the Energy Code to support easier navigation, however, the 45-Day Language PDF has bookmarks to countless subsections and lines in the Energy Code. This now makes the PDF bookmarks unnavigable.</p> <p>ii) CEA recommends addressing these bookmark issues in the 15-Day Language.</p>	Thank you for the comment. Bookmarks will be included in the final 2025 Building Energy Efficiency Standards publication, similar to the bookmarking of the 2022 Building Energy Efficiency Standards.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a>

256329.004	California Energy Alliance (CEA)	<p><b>3) Section 10-102 – Concerns with Naming of Energy Code Compliance Program</b></p> <p>a) The change from HERS to ENERGY CODE COMPLIANCE (ECC) PROGRAM is not appropriate and will create confusion. We understand the CEC’s motivations in moving away from Home Energy Rating System (HERS), but the new name is likely to cause confusion and in various ways undermine the State’s compliance improvement efforts.</p> <p>Ensuring compliance with the energy code requires a wide swath of integrated initiatives, from performance models, to prescriptive compliance evaluations, to mandatory measure determinations, to AHJ enforcement, and integrated support from the HERS and Acceptance Testing industries. CEA members have seen entities characterize highly non-compliant building designs as fully compliant because the CBECC “compliance calculations” say that a building is “compliant”. But CBECC “compliance calculations” only assess a subset of code issues, and the “compliance calculation” name has thereby misled and confused many entities in assessing the broad scope of compliance efforts.</p> <p>CEA believes this problem is likely to be repeated through the relabeling of the HERS program as the Energy Code Compliance (ECC) Program. For one, HERS generally does not impact nonresidential buildings, so the name should include a “Residential” clarification. There is also significant risk that stakeholders in the Title 24 compliance and enforcement ecosystem will see the rebranded ECC as the singular means to manage “Energy Code Compliance”. This will further deprioritize the critical role of AHJs in ensuring enforcement of the Standards, and the “ECC” name suggests that a positive result from an ECC rater ensures that a project is compliant. There are many ways in which this misunderstanding can undermine the CEC’s energy objectives, the most obvious of which are the numerous Title 24 elements that are required by code but do not have HERS requirements to assist with compliance.</p>	Comment acknowledged, no change made. Several names for the residential program were considered as part of this rulemaking. Staff chose Energy Code Compliance (ECC) for several reasons documented in the rulemaking record.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a>
256329.005	California Energy Alliance (CEA)	<p><b>b) One Recommendation for HERS Renaming</b></p> <p>The CEC’s FV&amp;DT programs mirror in many ways what are normally considered “Special Inspections” in standard AHJ operations (e.g. concrete PSI testing). For consistency, we might recommend using that term, as it will provide clarity to AHJ staff on the role played by the former HERS program in assisting with code enforcement.</p> <p>CEA thinks that the CEC should determine for itself what is an appropriate name for the program, perhaps being a bit more verbose to help minimize confusion. Something like “Residential Energy Special Inspections for Designated Elements” (RESIDE) might work well.</p> <p>c) CEA highly recommends the CEC address this naming concern, and we suggest that the CEC implement a different name for all locations/references containing “ECC”.</p>	Comment acknowledged, no change made. Staff spent more than a year with at least three public workshops to determine the new program name Energy Code Compliance (ECC), as documented in the rulemaking record. Staff notes that as part of moving the Home Energy Rating System (HERS) administrative regulations from Title 20 (Section 1670-1675) to Title 24 (Section 10-103.3) Staff also removed the term ‘Special Inspector’ from the Energy Code when in reference to Raters. A special inspector is required to be approved by the local enforcement agency prior to taking any actions on the project site.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a>
256329.006	California Energy Alliance (CEA)	<p><b>4) Section 100.0, Table 100.0-A</b></p> <p>a) Table 100.0-A in Section 100.00 does not reference Section 110.12 where it is applicable. Additionally, the Joint Appendices should be added to this table.</p> <p>b) CEA recommend the CEC add reference to Section 110.12 and Joint Appendices into Table 100.0-A where applicable.</p>	Staff agrees with the comment and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a>

256329.007	California Energy Alliance (CEA)	<p><b>5) Section 110.12(a)</b></p> <p>a) The mandatory requirements should include currently available OpenADR specifications that will be available to the market within the 2025 Energy Code Cycle. OpenADR 3.0 supports utilities, operators, aggregators, and customers to manage the growing range of distributed energy resources (DER) including renewables, energy storage, electric vehicle (EV) batteries and charging infrastructure, as well as demand response resources like commercial buildings or homes. OpenADR 3.0 device and equipment manufacturers will be able to add new functionality more easily into customer products, including smart thermostats, EV charging stations, energy storage, and control systems.</p> <p>i) OpenADR3.0 Reference:  <a href="https://www.openadr.org/index.php?option=com_content&amp;view=article&amp;id=211:openadr-alliance-launches-openadr-3-0&amp;catid=21:pressreleases&amp;Itemid=121">https://www.openadr.org/index.php?option=com_content&amp;view=article&amp;id=211:openadr-alliance-launches-openadr-3-0&amp;catid=21:pressreleases&amp;Itemid=121</a></p> <p>b) CEA recommends adding a reference or clarification to “Clause 11, Conformance” in Section 110.12(a)1A.</p> <p>c) CEA also recommends clarifying who the certification is to be provided to by the Manufacturer in Section 110.12(a)1B. We believe this language should indicate the CEC.</p> <p>d) CEA recommends the underlined language be added to Sections</p> <p>A. A certified OpenADR 2.0a, or OpenADR 2.0b, or OpenADR 3.0 Virtual End Node (VEN), as specified under Clause 11, Conformance, in the applicable OpenADR 2.0 or OpenADR 3.0 Specification; or</p> <p>B. Certified by the manufacturer, to the California Energy Commission, as being capable of responding to a demand response signal from a certified OpenADR 2.0b or OpenADR 3.0 Virtual End Node by automatically implementing the control functions requested by the Virtual End Node for the equipment it controls.110.12(a)1A and B.</p>	Staff agrees with the comment, and changes have been made. Specifically, Open ADR3.0 has been added to the demand responsive control requirements of the Energy Code.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a>
256329.008	California Energy Alliance (CEA)	<p><b>6) Sections 160, 170, 180 - Noted Discrepancies in Multifamily Building Requirements</b></p> <p>a) CEA aims to develop and advocate for measure proposals for building energy code improvements that will deliver energy savings, reduce costs, increase code compliance, and move California closer to its energy and environmental goals. We feel Sections 160, 170, and 180 in the energy code regarding multifamily buildings create more complexity and repetition. This increasing complexity translates into more significant challenges understanding and implementing the code which will surely reduce code compliance. As noted by many CEA Members, there are discrepancies between information in the multifamily sections and other parts of the code from which it has been assembled. Additionally, this is not consistent with other standards such as ASHRAE 90.1 and IECC.</p> <p>b) We recognize and appreciate all the work the CEC has done to create this multifamily section, but the CEA requests this multifamily language be removed or refer to previous code sections where applicable. This will allow CEA and its Members to thoroughly review the changes and support in educating energy stakeholders on these updates to ensure code compliance.</p>	Thank you for your comment. The CEC is considering options for restructuring the Energy Code for the 2028 cycle, and hopes to continue to engage with industry stakeholders as those efforts take shape.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a>



256329.009	California Energy Alliance (CEA)	<p>c) CEA would like to call out an example of inconsistency in the multifamily section with the nonresidential section for multilevel lighting controls.</p> <p>i) 2025 Energy Code, 45-Day Language:</p> <p>(1) Section 130.1(b) Multilevel lighting controls. The general lighting of any enclosed space with a size of area 100 square feet or larger and with a connected lighting load that exceeds greater than 0.5 watts per square foot shall provide with multilevel lighting controls that allow the level of lighting to be adjusted up and down. The multilevel lighting controls shall provide and enable continuous dimming from 100 percent to 10 percent or lower of lighting power. The multi-level controls shall:</p> <p>(2) Section 160.5(b)4B. Multi-level lighting controls. The general lighting of any enclosed area space 100 square feet or larger with a connected lighting load that exceeds greater than 0.5 watts per square foot shall provide with multi-level lighting controls. The multilevel lighting controls shall provide and enable continuous dimming from 100 percent to 10 percent or lower of lighting power that allow the level of lighting to be adjusted up and down to achieve illuminance uniformity. The multi-level controls shall:</p> <p>ii) The language is inconsistent between the nonresidential section 130.1(b) and multifamily section 160.5(b)4B.</p> <p>(1) To start, there is use of a hyphen in "multi-level" in the multifamily section where there isn't one in 130.1(b) or the rest of the Energy Code. This may seem minor but can be troubling when searching for words spelled a certain way in the PDF document.</p> <p>(2) Additionally, language in the two sections were not similarly updated between the 2022 version and 2025 version. For example, "enclosed" has a strikeout in one section and remains in the other, and "to achieve illuminance uniformity" was added to the multifamily section and not the nonresidential section.</p> <p>(3) CEA recognizes the difficulties in updating the entire Energy code, but this goes to prove the issue of keeping consistency with the residential/nonresidential sections and the multifamily sections. Again, this is just one section we happened to catch the discrepancy</p>	Staff agrees with the comment, and changes have been made. Consistent terminology will be used in Section 160.5(b)4B and Section 130.1(b).	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a>
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256329.01	California Energy Alliance (CEA)	<p><b>7) Acknowledging Compliance Shortfalls in the “2025 Energy Code Accounting Methodology” and Related Form 399 Documentation</b></p> <p>a) The CEA continues to be concerned with the realities of Title 24 implementation in the field. Compliance and enforcement challenges have created a gap between the theoretical consumer benefits and the reality of what actually gets delivered to Californians. The consequences of this gap are particularly acute as California’s utility rates continue to soar.</p> <p>This subset of comments does not involve recommended code changes. Nonetheless, CEA strongly recommends that the CEC’s supporting documentation tied to the Title 24 2025 Energy Code update reflect a more realistic understanding of the gaps between the theory of 100% code implementation and the realities on the ground. It is CEA’s observation that only when the entities responsible for code adoption properly acknowledge compliance gaps will agencies such as the CEC start to give enforcement challenges the attention that they deserve.</p> <p>The Acceptance Testing industry that was created by the CEC to help with nonresidential code compliance is crumbling due to degrading Acceptance Testing implementation rates. Building departments have been telling the CEC for over a decade that the Standards are a challenge to enforce given the growing complexity of the regulations. Adding more complexity via Title 24 2025 Energy Code is only going to worsen this condition, impacting the Acceptance Testing industry, which will continue to bleed jobs.</p> <p>For the CEC’s accounting and Form 399 estimates to be reasonably accurate, CEA suggests that the CEC implement a best-estimate of likely compliance shortfalls for the new measures, adjusting the savings projections accordingly. This applies to electricity savings, demand reductions, natural gas savings, and pollutants such as nitrous oxide. The derating due to noncompliance should also be extended to the calculation of net consumer benefits in terms of dollars saved.</p>	<p>Comment acknowledged, no change made. The enforceability and expected levels of compliance of proposed measures were included in the measure proposal reports, and were considered as described within the reports.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a></p>
256329.011	California Energy Alliance (CEA)	<p>CEA thanks the CEC for the opportunity to submit these comments, and we look forward to answering any questions or comments regarding our recommendations to the 2025 Energy Code Express Terms, 45-Day Language.</p>	<p>Thank you for your comment.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256329&amp;DocumentContentId=92142</a></p>

256330.001	California Energy Alliance (CEA)	<p>Thank you for the opportunity to provide comments on the California Energy Commission’s (CEC) 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 45-Day Language (Energy Code). The California Energy Alliance (CEA) is a leading advocacy organization for California’s energy stakeholders. Founded in 2016, CEA is a nonprofit, non-partisan alliance of over thirty-five business, government, academia, and NGO leaders working to bring beneficial, equitable change to energy standards, policies, and programs by developing consensus among diverse and engaged stakeholders. CEA envisions a healthy and equitable built environment that is powered by carbon-free, reliable energy sources.</p> <p>CEA and its Members had the opportunity to work collaboratively with the CEC, Compliance &amp; Enforcement Stakeholders, and the California Statewide Utility Codes and Standards Enhancement (Case) Team on improving and expanding upon the 2022 Building Energy Efficiency Standards. The joint work covered measures related to multilevel lighting controls, fault detection &amp; diagnostics, controlled environment horticulture, multifamily compartmentalization, and residential HVAC performance. Additionally, CEA is pleased to see the CEC adopt many of the recommendations from the 2025 Title 24 Lighting Language Cleanup Initiative (Docket No: 22-BSTD-01, TN#250676) that led to eliminating and cleaning up confusing language in the lighting and lighting controls sections of the Energy Code.</p> <p>We applaud the CEC for listening to stakeholders and making the necessary updates to the Energy Code to continue reducing greenhouse gas emissions by maximizing efficiency. While the above recommendations were generally accepted, CEA would like to comment on and address areas of concern in the 2025 Energy Code Express Terms, 45-Day Language. CEA is submitting (3) separate comment letters to address distinct areas of the Energy Code (Lighting/Electrical Sections, Mechanical Sections, and Supplementary Sections/Reports).</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>
256330.002	California Energy Alliance (CEA)	<p><b>The following comments and recommendations (CEA Comment Letter 2 of 3) relate to “Mechanical Sections” of the Energy Code (TN# 255315-2):</b></p> <p><b>1) Sections 10-103.2(c)3Fii &amp; iii</b></p> <p>a) The suggestion to conduct shadow audits at a training center is a positive step forward. However, it is crucial that such audits do not impose excessive burdens on Acceptance Test Technician Certification Providers (ATTCPs) who are responsible for their implementation. While the idea of executing random mechanical audits at job sites could be effective under certain conditions, it will prove impractical for widespread implementation due to challenges related to access, security, safety, and legal considerations. Therefore, ATTCPs should be afforded the flexibility to carry out shadow audits either on-site or at a training center, depending on the specific situation. Consequently, the regulations and objectives governing shadow audits should be consistent, irrespective of the location where they are conducted. Furthermore, there is a need for clarification on the general requirement for 1% audit frequency to ensure uniform compliance across all ATTCPs.</p>	<p>Comment acknowledged, no change made.</p> <ul style="list-style-type: none"> <li>o Job-site audits set a higher standard compared to laboratory training audits. Job-site audits represent actual field conditions, varying installation conditions, and other factors that will affect the ATTs acceptance testing performance. Job-site audits are more rigorous in ensuring ATT competency .</li> <li>o The training facility audit is provided as an alternative in response to comments received to provide flexibility because job-site audits may not always be practical in the field.</li> <li>o The training facility audit ensures all ATT get audited over a set time period. Staff views the training facility audit to occur once every code cycle (3 years) as a minimum requirement.</li> <li>o This criteria can be revisited once there is more information and data for the ATTCP program.</li> </ul>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>

256330.003	California Energy Alliance (CEA)	<p>b) The following underlined amendments to <b>Sections 10-103.2(c)3Fii and iii</b> and additions of <b>iv and v</b> in the 2025 Energy Code, 45-Day Language aims to address these concerns:</p> <p><b>Section 10-103.2(c)3F</b></p> <p>“i. Remains as drafted in 2025 Energy Code, 45-Day Language</p> <p><u>ii. By the end of each code cycle, the ATTCP shall review a random sample of no fewer than 1 percent of each ATT’s compliance forms completed in the prior code cycle (for any ATT that has completed more than 20 compliance forms).</u></p> <p><u>iii. The ATTCP shall randomly select and shadow audit no fewer than 1 percent of each ATE’s overseen projects in the prior code cycle. The ATTCP shall perform shadow audits by observing the performance of a randomly selected ATT on at least five functional tests either:</u></p> <p><u>a. On the job site; or</u></p> <p><u>b. At an ATTCP training facility.</u></p> <p><u>iv. The shadow audit must replicate field conditions for installed equipment and controls in the building. The ATTCP training facility where the shadow audit is performed shall be set up to allow auditing of all functional tests for which the ATT is certified.</u></p> <p><u>v. The shadow audits must be in addition to any testing used for ATT recertification.”</u></p>	<p>Comment acknowledged, some changes have been made.</p> <ul style="list-style-type: none"> <li>o Staff clarified that ATTCP Training facilities only need to be set up for shadow audit tests for which the ATT is certified.</li> <li>o Job-site audits set a higher standard compared to laboratory training audits. Job-site audits represent actual field conditions, varying installation conditions, and other factors that will affect the ATTs acceptance testing performance. Job-site audits are more rigorous in ensuring ATT competency .</li> <li>o The training facility audit is provided as an alternative in response to comments received to provide flexibility because job-site audits may not always be practical in the field.</li> <li>o The training facility audit ensures all ATT get audited over a set time period. Staff views the training facility audit to occur once every code cycle (3 years) as a minimum requirement.</li> <li>o This criteria can be revisited once there is more information and data for the ATTCP program.</li> </ul>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>
256330.004	California Energy Alliance (CEA)	<p><b>2) Section 120.1(d)5</b></p> <p>a) Language in 120.1(d)5A says “Spaces meeting these criteria above include, but not limited to:”</p> <p>i) This language indicates that there are more spaces where occupied standby controls are required, but this can create confusion and added steps for the reader try to figure it out.</p> <p>b) For clarification, CEA recommends listing all applicable spaces where this is required. Or if there are not any additional space, then strike "but not limited to".</p>	<p>Staff agrees with this comment, and changes have been made. Specifically, the language and examples noting conflicting spaces listed in 130.1(c)5 and 6 have been removed.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>
256330.005	California Energy Alliance (CEA)	<p><b>3) Section 140.3(a)9Cib and NA5.5</b></p> <p>a) This test should follow NA5.8 and NA5.9 to ensure adequate reporting and independent third-party verification. The testing should also include fundamental workforce standards for this task, which would include certification as an ATT and as a Testing, Adjusting, and Balancing technician.</p> <p>b) CEA recommends amending <b>Section 140.3(a)9Cib</b> with the following strikeout and underlined language:</p> <p>“b. For buildings that have more than 50,000 ft2 of conditioned floor area, a sectional test method of co-pressurizing representative test floors and taking data from the specific floors to achieve the requirement in Section 140.3(a)9Ci when following the procedures in Sections NA5.2 to NA5.79. Representative test floors must meet the following conditions:”</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Section 140.3(a)9C requires the building to meet the applicable requirements in NA5.2 to NA 5.9.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>

256330.006	California Energy Alliance (CEA)	<p><b>4) Section 140.4(a)3A and B</b></p> <p>a) The 2025 Energy Code language proposal presents significant constraints primarily targeted at design professionals, potentially inflating costs for end users without clear evidence of universal energy savings across all building types. While a performance option exists for designers to explore alternative approaches, its adoption may be hindered by increased expenses and intricate requirements, discouraging the utilization of established, effective technologies. It's crucial to consider the diverse needs of rural and smaller facilities, granting them the flexibility to select from a wider array of design options tailored to meet regional energy standards and indoor air quality objectives.</p> <p>i) CEA recommends the CEC remove the new proposed requirements:</p> <p><del>Multizone zone space-conditioning system types. Multizone space conditioning systems in office buildings and school buildings not covered by Section 140.4(a)2 shall meet the following requirements:</del></p> <p><del>A. Offices. Office buildings shall use space conditioning systems complying with one of the following requirements:</del></p> <p><del>i. The space conditioning system shall be a variable refrigerant flow (VRF) heat pump system with a dedicated outdoor air system (DOAS) providing ventilation. Indoor fans shall meet the requirements of Section 140.4(a)3D. The DOAS shall comply with Section 140.4(a)3E; or.</del></p> <p><del>ii. The space conditioning system shall be a four pipe fan coil (FPFC) system with a DOAS providing ventilation. The FPFC hot water coils shall be supplied by an air to water heat pump (AWHP) space heating hot water loop which complies with Section 140.4(a)3C. The DOAS shall comply with Section 140.4(a)3E; or.</del></p> <p><del>iii. The space conditioning system shall utilize heating supplied through a hot water loop served by an AWHP which complies with Section 140.4(a)3C. Ventilation systems shall include DCV in all zones. All air systems shall be equipped with a heat recovery system in compliance with Section 140.4(q). A hydronic recirculated air heating system complying with Section 140.4(a)2F shall be used in climate zone 16.</del></p> <p><del>B. School buildings. The space conditioning system shall be four pipe fan coil (FPFC)</del></p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating. Staff is committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a></p>
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256330.007	California Energy Alliance (CEA)	<p><b>5) Section 140.4(c)2B</b></p> <p>a) We propose the integration of a requirement for certified Acceptance Test Technicians (ATTs) to conduct construction inspections and functional verification of static pressure resets, in conjunction with NRCA-MCH-06A. Additionally, the inclusion of ASHRAE Guideline 36 in the code necessitates the expansion of functional performance tests detailed in the existing NRCAMCH-06A Mechanical form. These critical tests should also be performed by certified ATTs to ensure compliance with the new guidelines and maintain the highest standards of energy efficiency and system reliability.</p> <p>b) CEA recommends adding the following underlined language and create subsection 140.4(c)2Biii:</p> <p>“B. Setpoint reset. For systems with direct digital control of individual zone boxes reporting to the central control panel:</p> <p>i. static pressure setpoints shall be reset based on the zone requiring the most pressure</p> <p>ii. Control sequences of operation for static pressure setpoint reset shall be in accordance with ASHRAE Guideline 36.</p> <p>iii. <u>Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance, as specified by the reference Nonresidential Appendix NA7.5.6. A certificate of acceptance shall be completed by a certified ATT and submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.5.6.”</u></p>	<p>Comment acknowledged, no change made. Staff is not recommending field verification of new requirements in Section 140.4(c)2B in this code cycle. Staff will consider this topic in the next code update.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a></p>
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256330.008	California Energy Alliance (CEA)	<p><b>6) Section 140.4(d)2A</b></p> <p>a) CEA proposes the integration of a requirement for certified Acceptance Test Technicians (ATTs) to conduct construction inspections and functional verification of temperature resets, in conjunction with NRCA-MCH-15A. Additionally, the inclusion of ASHRAE Guideline 36 in the code necessitates the expansion of functional performance tests detailed in the existing NRCAMCH-015A Mechanical form. These critical tests should also be performed by certified ATTs to ensure compliance with the new guidelines and maintain the highest standards of energy efficiency and system reliability.</p> <p>b) CEA recommends adding the following underlined language and create subsection <b>140.4(d)2Avi</b>:</p> <p>“2. Zones served by variable air-volume systems that are designed and controlled to reduce, to a minimum, the volume of reheated, recooled, or mixed air are allowed only if the controls meet all of the following requirements:</p> <p>A. For each zone with direct digital controls (DDC):</p> <p>i. The volume of primary air that is reheated, recooled, or mixed air supply shall not exceed the larger of:</p> <p>a. 50 percent of the peak primary airflow; or</p> <p>b. The design zone outdoor airflow rate as specified by Section 120.1(c)3.</p> <p>ii. The volume of primary air in the deadband shall not exceed the design zone outdoor airflow rate as specified by Section 120.1(c)3.</p> <p>iii. The first stage of heating consists of modulating the zone supply air temperature setpoint up to a maximum setpoint no higher than 95°F while the airflow is maintained at the dead band flow rate.</p> <p>iv. The second stage of heating consists of modulating the airflow rate from the dead band flow rate up to the heating maximum flow rate.</p> <p>v. Control sequences of operation for reheat zones shall be in accordance with ASHRAE Guideline 36.</p> <p>vi. <u>Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance, as specified by the reference Nonresidential Appendix</u></p>	<p>Comment acknowledged, no change made. Staff is not recommending field verification of new requirements in Section 140.4(d)2A in this code cycle. Staff will consider this topic in the next code update.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a></p>
256330.009	California Energy Alliance (CEA)	<p><b>7) Section 140.9(b)3</b></p> <p>a) The section clearly calls out for an acceptance requirement and specifies that a certificate of acceptance be submitted to the enforcement agency.</p> <p>i) “Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance...”</p> <p>ii) “...A certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.11”</p> <p>b) The associated acceptance forms should include a requirement for a certified Mechanical Acceptance Testing technician to perform this task to ensure that the intent of this requirement is achieved.</p> <p>c) CEA recommends adding the following underlined language to Section 140.9(b)3: “3. Kitchen exhaust system acceptance. Before an occupancy permit is granted for a commercial kitchen subject to Section 140.9(b), the following equipment and systems shall be certified, <u>by a certified ATT</u>, as meeting the acceptance requirements for code compliance, as specified by the Reference Nonresidential Appendix NA7. A certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.11.”</p>	<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a></p>

256330.01	California Energy Alliance (CEA)	<p>8) 140.9(c)1C and NA7.16 a) The section clearly calls out for an acceptance requirement and specifies that a certificate of acceptance be submitted to the enforcement agency.</p> <p>i) "Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance..."</p> <p>ii) "...A certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.16"</p> <p>b) The associated acceptance forms should include a requirement for a Mechanical Acceptance Testing Technician to perform this task to ensure that the intent of this requirement is achieved.</p> <p>c) CEA recommends adding the following underlined language to Section 140.9(c)1C:  "C. Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance, as specified by the reference Nonresidential Appendix NA7.16. A certificate of acceptance shall be <u>completed by a certified ATT and</u> submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.16."</p>	<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>
256330.011	California Energy Alliance (CEA)	<p><b>9) Section 140.9(c)4B and NA7.17</b></p> <p>a) This section clearly calls out for an acceptance requirement and specifies that a certificate of acceptance be submitted to the enforcement agency.</p> <p>i) "Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance..."</p> <p>ii) "...A certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA..."</p> <p>b) The associated acceptance forms should include a requirement for a Mechanical Acceptance Testing Technician to perform this task to ensure that the intent of this requirement is achieved.</p> <p>c) CEA recommends adding the following underlined language and <del>strikeout to</del> <b>Section 140.9(c)4B:</b>  "B. Fume Hood Automatic Sash Closure Acceptance. Before an occupancy permit is granted for <del>buildings with</del> the fume hoods subject to 140.9(c)4, the equipment and systems shall be certified, <u>by a certified ATT</u>, as meeting the Acceptance Requirement for Code Compliance as specified by the Reference Nonresidential Appendix NA7. A Certificate of Acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.17.</p>	<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>



256330.012	California Energy Alliance (CEA)	<p><b>10) Section 160.2(b)2Aivb2</b></p> <p>a) The alternative procedure provides for an unfair market advantage because sampling would not be allowed by certified ATTs like it is for ECC-Raters. Compartmentalization Testing in multifamily buildings with four or more habitable stories should remain exclusively under the scope of a certified ATT until an equitable option for sampling can be provided.</p> <p>b) CEA recommends amending <b>Section 160.2(b)2Aivb2</b> with the following strikeouts and underlined language:</p> <p><b>"2. Compartmentalization Testing.</b> The dwelling unit envelope leakage shall not exceed 0.3 cubic feet per minute at 50 Pa (0.2 inch water) per ft2 of dwelling unit envelope surface area as confirmed by ECC-rater field verification and diagnostic testing in accordance with the procedures specified in Reference Appendix RA3.8 or NA2.3 as applicable. In multifamily buildings with four or more habitable stories, the field verification and diagnostic testing <del>shall which requires an ECC Rater may alternatively</del> be performed by a certified Mechanical Acceptance Test Technician according to the requirements specified in Reference Appendix NA1.9 <u>2.3.</u>"</p>	<p>Comment acknowledged, no change made. Staff recommends keeping the intent of the 2022 Code where the testing of ventilation systems serving single dwellings and the dwelling unit envelope leakage test be performed by the HERS Program. A certified ATT can perform the tests using alternative procedure NA1.9. Staff clarifies that the intent of NA1.9 is not to allow the ATTCP program to replace or compete with the HERS program, or vice-versa. It is intended to provide flexibility on a case-by-case basis where the Responsible Party may use a certified ATT who is already on-site to perform the tests.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a></p>
256330.013	California Energy Alliance (CEA)	<p><b>11) Section 160.2(b)2Biv</b></p> <p>a) The alternative procedure provides for an unfair market advantage because sampling would not be allowed by certified ATTs like it is for ECC-Raters. Compartmentalization Testing in multifamily buildings with four or more habitable stories should remain exclusively under the scope of a certified ATT until an equitable option for sampling can be provided.</p> <p>b) CEA recommends amending <b>Section 160.2(b)2Biv</b> with the following strikeouts and underlined language: "iv. In multifamily buildings with four or more habitable stories, the field verification and diagnostic testing required in Section 160.2(b)2Bi, ii and iii <del>which requires an ECC Rater may alternatively</del> <u>shall</u> be performed by a certified Mechanical Acceptance Test Technician according to the requirements specified in Reference Appendix NA1.9 <u>2.3.</u>"</p>	<p>Comment acknowledged, no change made. Staff recommends keeping the intent of the 2022 Code where the testing of ventilation systems serving single dwellings and the dwelling unit envelope leakage test be performed by the HERS Program. A certified ATT can perform the tests using alternative procedure NA1.9. Staff clarifies that the intent of NA1.9 is not to allow the ATTCP program to replace or compete with the HERS program, or vice-versa. It is intended to provide flexibility on a case-by-case basis where the Responsible Party may use a certified ATT who is already on-site to perform the tests.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a></p>
256330.014	California Energy Alliance (CEA)	<p><b>12) Section 160.3(d)2A</b></p> <p>a) The alternative procedure provides for an unfair market advantage because sampling would not be allowed by certified ATTs like it is for ECC-Raters. Compartmentalization Testing in multifamily buildings with four or more habitable stories should remain exclusively under the scope of a certified ATT until an equitable option for sampling can be provided.</p> <p>b) CEA recommends reverting <b>Section 160.3(d)2A</b> to the 2022 Energy Code language and adding "by a certified Mechanical Acceptance Test Technician":</p> <p><u>"A. In multifamily buildings with four or more habitable stories, dwelling unit ventilation systems shall be tested by a certified Mechanical Acceptance Test Technician in accordance with NA7.18.1."</u></p>	<p>Comment acknowledged, no change made. Staff recommends keeping the intent of the 2022 Code where the testing of ventilation systems serving single dwellings and the dwelling unit envelope leakage test be performed by the HERS Program. A certified ATT can perform the tests using alternative procedure NA1.9. Staff clarifies that the intent of NA1.9 is not to allow the ATTCP program to replace or compete with the HERS program, or vice-versa. It is intended to provide flexibility on a case-by-case basis where the Responsible Party may use a certified ATT who is already on-site to perform the tests.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a></p>

256330.015	California Energy Alliance (CEA)	<p><b>13) Section 160.3(d)2B</b></p> <p>a) The alternative procedure provides for an unfair market advantage because sampling would not be allowed by certified ATTs like it is for ECC-Raters. Compartmentalization Testing in multifamily buildings with four or more habitable stories should remain exclusively under the scope of a certified ATT until an equitable option for sampling can be provided.</p> <p>b) CEA recommends reverting Section 160.3(d)2B to keep the 2022 Energy Code language and adding “by a certified Mechanical Acceptance Test Technician”:  <u>“B. In multifamily buildings with four or more habitable stories, dwelling unit enclosure leakage shall be tested by a certified Mechanical Acceptance Test Technician in accordance with NA7.18.2 when exhaust or supply ventilation systems are used for compliance with whole-dwelling unit ventilation requirements as specified in Section 160.2(b)2Aivb2.”</u></p>	<p>Comment acknowledged, no change made. Staff recommends keeping the intent of the 2022 Code where the testing of ventilation systems serving single dwellings and the dwelling unit envelope leakage test be performed by the HERS Program. A certified ATT can perform the tests using alternative procedure NA1.9. Staff clarifies that the intent of NA1.9 is not to allow the ATTCP program to replace or compete with the HERS program, or vice-versa. It is intended to provide flexibility on a case-by-case basis where the Responsible Party may use a certified ATT who is already on-site to perform the tests.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>
256330.016	California Energy Alliance (CEA)	<p><b>14) NA1.9.1 Field Verification by the Acceptance Test Technician</b></p> <p>a) Systems verified under the alternative procedure should be permitted to utilize the sampling procedures described in NA1.6. Not allowing sampling for an ATT will impede competitiveness and create a market disadvantage for the ATT. The CEC needs to either provide an equal opportunity for sampling under NA 1.6 or remove the sampling option altogether.</p> <p>b) CEA recommends amending this section with the following strikeouts:  “Under this alternative procedure, when the Certificate of Compliance indicates that field verification and diagnostic testing is required as a condition for compliance with Title 24, Part 6, a certified ATT may perform the verification to satisfy the condition of compliance. <del>Systems verified under this procedure are not eligible for use of the sampling procedures described in NA1.6.”</del></p>	<p>Comment acknowledged, no change made. NA1.9 is not intended to allow the ATTCP program to replace or compete with the HERS program, or vice-versa. It is intended to provide flexibility on a case-by-case basis where the Responsible Party may use a certified ATT who is already on-site to perform the tests.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>
256330.017	California Energy Alliance (CEA)	<p><b>15) Applying EER2 thresholds for PV System Sizing could be counterproductive for adoption of variable speed heat pumps.</b></p> <p>a) CEA recommends the CEC consider Daikin’s comments and concerns on EER2 and PV sizing. Recommendations for addressing these concerns can be found in a letter submitted to Docket 22-BSTD-01, TN# 252178 and in Docket 24-BSTD-01, TN# 256279.</p>	<p>Staff agrees with the comment, and changes have been made. Staff is restoring the original 2022 PV sizing equation for single-family and low-rise multifamily buildings. EER2 will no longer be a factor affecting the PV sizing.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>
256330.018	California Energy Alliance (CEA)	<p><b>16) Section 110.2(e) Appendix NA.7.5.18 Cooling Tower Conductivity Controls</b></p> <p>a) We wish to emphasize that our intent is focused on data collection during the construction inspection phase of this test, specifically by the certified Acceptance Test Technician (ATT). The ATT is not responsible for reviewing or verifying the design or engineering aspects of the project.</p> <p>CEA thanks the CEC for the opportunity to submit these comments, and we look forward to answering any questions or comments regarding our recommendations to the 2025 Energy Code Express Terms, 45-Day Language.</p>	<p>Comment acknowledged, no change made. Staff clarifies that the proposed acceptance test procedures do not require or direct Acceptance Test Technicians (ATTs) to re-evaluate the engineering designs of the cooling tower.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256330&amp;DocumentContentId=92141</a>

256331.001	California Energy Alliance (CEA)	<p>Thank you for the opportunity to provide comments on the California Energy Commission’s (CEC) 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 45-Day Language (Energy Code). The California Energy Alliance (CEA) is a leading advocacy organization for California’s energy stakeholders. Founded in 2016, CEA is a nonprofit, non-partisan alliance of over thirty-five business, government, academia, and NGO leaders working to bring beneficial, equitable change to energy standards, policies, and programs by developing consensus among diverse and engaged stakeholders. CEA envisions a healthy and equitable built environment that is powered by carbon-free, reliable energy sources.</p> <p>CEA and its Members had the opportunity to work collaboratively with the CEC, Compliance &amp; Enforcement Stakeholders, and the California Statewide Utility Codes and Standards Enhancement (Case) Team on improving and expanding upon the 2022 Building Energy Efficiency Standards. The joint work covered measures related to multilevel lighting controls, fault detection &amp; diagnostics, controlled environment horticulture, multifamily compartmentalization, and residential HVAC performance. Additionally, CEA is pleased to see the CEC adopt many of the recommendations from the 2025 Title 24 Lighting Language Cleanup Initiative (Docket No: 22-BSTD-01, TN#250676) that led to eliminating and cleaning up confusing language in the lighting and lighting controls sections of the Energy Code.</p> <p>We applaud the CEC for listening to stakeholders and making the necessary updates to the Energy Code to continue reducing greenhouse gas emissions by maximizing efficiency. While the above recommendations were generally accepted, CEA would like to comment on and address areas of concern in the 2025 Energy Code Express Terms, 45-Day Language. CEA is submitting (3) separate comment letters to address distinct areas of the Energy Code (Lighting/Electrical Sections, Mechanical Sections, and Supplementary Sections/Reports).</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>
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256331.002	California Energy Alliance (CEA)	<p><b>The following comments and recommendations (CEA Comment Letter 1 of 3) relate to “Lighting/Electrical Sections” of the Energy Code (TN# 255315-2):</b></p> <p><b>1) CEA submitted an energy savings measure proposal to the CEC (Docket Number: 22-BSTD-01, TN# 252270) regarding the expansion of Subsection 130.1(b) requirements for nonresidential Multilevel Lighting Controls.</b></p> <p>a) Using the CEC’s measure proposal template, CEA showed that lowering the connected lighting load threshold along with removing of certain exceptions meets the cost-effectiveness criteria set forth by the CEC. The changes to Subsection 130.1(b) were workshopped with CEA stakeholders and during numerous meetings with stakeholders taking part in the Lighting Language Cleanup Initiative (Docket No: 22-BSTD-01, TN# 250676) referenced above. While many of the recommendations from the Cleanup Initiative were included in the 2025 Energy Code Express Terms, the lowering of the connected lighting load threshold from 0.5 W/sf to 0.4 W/sf was omitted.</p> <p>b) <b>CEA respectfully asks the CEC to reconsider this Multilevel Lighting Controls measure proposal and include in the 2025 Energy Code Express Terms, 15-Day Language.</b> This energy savings measure proposal supports the CEC’s goal of reducing wasteful, uneconomical, and unnecessary uses of energy for the state.</p> <p>c) If the CEA proposal is rejected by the CEC, we request an explanation to why this proposal is rejected.</p> <p>i) If the CEA measure proposal is omitted, then the CEC should <b>delete “Exception 5 to Section 130.1(b)”</b> based on the increased costeffectiveness of today’s continuous dimming LED products compared to stepped dimming LED products.</p> <p>ii) If the CEA measure proposal is omitted, then we recommend removing the “100 square feet” language.</p> <p>iii) If the CEA measure proposal is omitted, then we recommend making revisions to the 2025 Energy Code, 45-Day language:</p>	<p>Staff agrees with part of the comment, and disagrees with part of the comment. Some changes have been made.</p> <p>1. Staff disagrees with the comments regarding expansion of Section 130.1(b) requirements for nonresidential Multilevel Lighting Controls, and no changes have been made. This comment is similar to comments in TN256335, TN256346, TN256310, and TN256334, as well as suggested changes in pre-rulemaking (Docket Number: 22-BSTD-01, TN# 252270).</p> <p>Staff notes that the information provided in the comment is insufficient to support the proposed change.</p> <p>2. Staff agrees with the comment regarding deletion of Exception 5 to Section 130.1(b), and changes have been made.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>
256331.003	California Energy Alliance (CEA)	<p><b>2) Section 130.1(b) Exception 1</b></p> <p>a) Strike “indoor”. Not needed as this whole section is for indoor lighting.</p> <p>i) Exception 1 to Section 130.1(b): An indoor space that has only one luminaire.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Keeping this language facilitates readability for first-time readers of the Section.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>

256331.004	California Energy Alliance (CEA)	<p><b>3) Sections 130.1(c)5 and 6</b></p> <p>a) Recommend making the titles shorter to reference easier.</p> <p>i) <b>130.1(c)5. Occupant sensing controls.</b> <del>are</del> <b>Required</b> for specified offices, multipurpose rooms, classrooms, conference rooms and restrooms.</p> <p>ii) 130.1(c)6. Full or partial-OFF occupant sensing controls. <del>are</del> <b>Required</b> for warehouse aisle ways, and warehouse open areas in warehouses, library book stack aisles, corridors and stairwells, and offices greater than 250 square feet, parking garages, <del>parking areas</del>, and loading and unloading areas.</p> <p>b) Correct and/or clarify "parking areas" term used 130.1(c)6. and 130.1(c)6E.</p> <p>i) CEA is confused by the spaces "parking garages and parking areas" being called out versus the terms used in the definitions Section 100.1 which are "parking garage buildings", "parking garage areas", and "parking zone and ramps".</p> <p>(1) CEA recommends updating this terminology throughout the Energy Code to maintain consistency across sections.</p> <p>c) Editorial comment for Section 130.1(c)6E. This section says "space" instead of "zone".</p> <p>i) 130.1(c)6Eiii. The occupant sensing controls shall be capable of automatically turning the lighting fully ON only in the separately controlled <del>space</del> <b>zone</b>, and shall be automatically activated from all designed paths of egress.</p>	<p>1. Staff agrees with the comment, and changes have been made.</p> <p>2. Comment acknowledged, no change made. Staff notes that "Parking areas" specified in Section 130.1(c)6E are the areas on the roof of a parking structure. Parking garages, parking areas, and loading and unloading areas are defined in Section 100.1 and 130.1(c)6 as follows:</p> <p>Parking garage (parking garage buildings) is a building with building floor areas used for parking vehicles.</p> <p>Parking areas are those areas of a parking garage for the purpose of parking.</p> <p>-"Parking areas include sloping floors of a parking garage."</p> <p>-"Parking areas and ramps do not include Daylight Adaptation Zones or the roof of a Parking Garage, which may be present in a Parking Garage."</p> <p>Loading and unloading areas are those areas of a parking garage for the purpose of loading and unloading passengers.</p> <p>3. Staff agrees with the comment, and changes have been made.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>
256331.005	California Energy Alliance (CEA)	<p><b>4) Sections 130.1(d) and 160.5(b)4D</b></p> <p>a) CEA feels there is a typographical error in Exception 3 to Sections 130.1(d) and 160.5(b)4D. The 45-Day Language states less than "85" watts when the requirement threshold is "75" watts. To be consistent with the new wattage threshold noted in the section, the exception should reference the same threshold.</p> <p>i) Exception 3 to Section 130.1(d): Where daylight responsive controls are not required for the primary sidelit daylit zones, and where the total wattage of general lighting luminaires in the secondary sidelit daylit zones is less than <del>875</del> 75 watts, daylight responsive controls are not required for the secondary sidelit zone.</p> <p>ii) CEA would also like to note that if the exception should be 75 watts, then the Exception should be stricken as it's already called out in the secondary daylit zone section above.</p> <p>iii) Also note that all recommendations and comments apply to Section 160.5(b)4D.</p>	<p>Comment acknowledged, no change made. Exceptions 3 to Sections 130.1(d) and 160.5(b)4D are correct. The "less than 85 watts" threshold of the secondary sidelit daylit zone is intended to be a less stringent requirement than the "less than 75 watts" requirement.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>

256331.006	California Energy Alliance (CEA)	<p><b>5) Sections 130.2(c)2B and 130.2(c)3B</b></p> <p>a) CEA recommends removing the newly added word “partially” as it creates confusion in the requirements.</p> <p>i) 130.2(c)2B. Automatic scheduling controls shall be capable of partially reducing the outdoor lighting power by 50 to 90 percent, and separately capable of turning the lighting OFF, during scheduled unoccupied periods.</p> <p>ii) 130.2(c)3B. Motion sensing controls shall be capable of partially reducing the outdoor lighting power of each controlled luminaire by 50 to 90 percent, and separately capable of turning the luminaire OFF, during unoccupied periods.</p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>
256331.007	California Energy Alliance (CEA)	<p><b>6) Section 130.4(a)1</b></p> <p>a) Reinstating Plan Review Requirements for Enhanced Title 24, Part 6 Compliance in Section 130.4(a)1 per Docket 22-BSTD-01, TN# 252276. This proposal is essential for ensuring Energy Code compliance while introducing a more collaborative approach with the Authority Having Jurisdiction (AHJ). CEA respectively asks the CEC to reconsider the TN#252276 proposal with the following update:</p> <p>i) Change “Certifies” to “Review”</p> <p>(1) “<del>Certifies</del> <b>Review</b> plans, specifications, installation certificates, and operating and maintenance information meet the requirements of Part 6.”</p> <p>ii) Reinstating these requirements allows the Acceptance Test Technician to be involved earlier in the design phase to help the responsible parties, such as the lead architect or engineer, with compliance by alerting them of any gaps in energy code requirements prior to construction.</p>	Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>
256331.008	California Energy Alliance (CEA)	<p><b>7) Section 130.5(d)</b></p> <p>a) The strikethrough of “Note: ...Plug-in strips and other plug-in devices shall not be used to comply with the requirements of Section 130.5(d).” was moved into a space following requirements of Section 130.5(d). However, the current placement seems odd and could cause confusion to the reader.</p> <p>b) CEA agrees with keeping this language, but we recommend moving the language into a new subsection “130.5(d)5” or move into the main requirements of 130.5(d).</p>	Staff disagrees with the comment, and no changes have been made. The note was originally located at the end of Section 130.5(d). Staff moved the requirement into the introductory text of Section 130.5(d) to improve clarity and readability.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>
256331.009	California Energy Alliance (CEA)	<p><b>8) Section 150.0(k)3</b></p> <p>a) This requirement should be for all permanently installed outdoor lighting not just outdoor lighting that is mounted to a building. The current requirement leaves out lighting poles and other hardwired lighting. Permanently does not include solar lights or plugged in lights.</p> <p>i) 150.0(k)3A. Outdoor <b>permanently installed</b> lighting <del>permanently mounted to a residential building or to other buildings on the same lot</del> shall meet the following requirements:</p>	Staff disagrees with the comment, and no changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>

256331.01	California Energy Alliance (CEA)	<p><b>9) Section 150.0(k)3C</b></p> <p>a) The 2nd sentence in this subsection was added for the indoor lighting controls Section 150.0(k)2D, but it doesn't belong in the outdoor controls section as dimmers, for instance, are not required for outdoors. CEA recommends striking this sentence.</p> <p>i) C. An energy management control system (EMCS) or other controls that provides the specified lighting control functionality and complies with all requirements applicable to the specified controls may be used to meet these requirements. <del>No controls shall bypass control functions of a dimmer, occupant sensor, or vacancy sensor where the dimmer or sensor has been installed to comply with Section 150.0(k)2.</del></p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Staff agree that the sentence in Section 150.0(k)3C regarding controls is not relevant to outdoor lighting.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>
256331.011	California Energy Alliance (CEA)	<p><b>10) Section 100.1 Definitions</b></p> <p>a) BESS Ready Interconnection Equipment and BESS Ready Panelboard definitions</p> <p>i) CEA feels that excluding switchboards is not appropriate and should be included in both definitions. The definitions should be inclusive of switchboards because electrical distribution equipment includes both panelboards and switchboards. The use of each depends on the application. The National Electrical Code (NEC) Article 408 differentiates the differences between panelboards and switchboards. Switchboards are free standing with amperage up to 6000 Amps having UL 891 as their safety standard, while panelboards are NOT free standing having UL 67 as their safety standard with amperage up to 1200 A.</p> <p>(1) BESS READY INTERCONNECTION EQUIPMENT is equipment, including but not limited to a Battery Energy Storage System (BESS) ready panelboard <u>or switchboard</u>, that can accommodate the connection of a distributed energy resource or a BESS capable of either automatic or manual isolation from the utility power source.</p> <p>(2) BESS READY PANELBOARD <u>OR SWITCHBOARD</u> is a panelboard <u>or switchboard</u> that can accommodate either automatic or manual switching between a utility power source to a distributed energy resource or a BESS, such as a split bus panelboard.</p> <p>ii) CEA recommends the CEC to review the use of only panelboard throughout the Energy Code and update accordingly.</p> <p>b) Multilevel Lighting Control: Recommend clarifying the definition.</p> <p>i) Multilevel Lighting Control <del>enables the level of lighting to be adjusted upward and downward across multiple levels</del> <u>is a lighting control that enables the illumination to be raised or lowered in addition to ON and OFF.</u></p>	<p>Staff agrees with the comment, and changes have been made.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256331&amp;DocumentContentId=92140</a>

256332.001	Northwest Energy Efficiency Alliance (NEEA)	<p>The Northwest Energy Efficiency Alliance (NEEA) submits the following comments in response to the Notice of Proposed Action – 2025 Building Energy Efficiency Standards. Specifically, the 2025 Energy Code Express Terms proposes that DOAS will be prescriptively required in medium to large offices and large schools using central space heating systems. These provisions remain consistent with those introduced in the 2025 Energy Code – Pre-Rulemaking Workshop Presentation and proposed in Section 140.4(a) of the Draft 2025 Energy Code Express Terms.</p> <p>NEEA is a non-profit organization working to encourage the development and adoption of energy-efficient products, practices, and services. Funded by regional utilities, NEEA is a collaboration of 140 utilities and efficiency organizations working together to advance energy efficiency in the Northwest on behalf of more than 13 million consumers. This unique partnership has helped make the Northwest region a national leader in energy efficiency.</p> <p>NEEA’s High-Performance HVAC Program has conducted several years of research, market analysis, and demonstration projects to support increased adoption of Very High Efficiency (VHE) DOAS, which pairs high performance HVAC equipment with key design principles to provide cleaner and safer indoor air, enhance indoor comfort, and reduce commercial building HVAC energy use. The data collected by this program was foundational to the incorporation of DOAS requirements in the Washington State Energy Code (WSEC).</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139</a>
256332.001	Northwest Energy Efficiency Alliance (NEEA)	<p>Comments</p> <p><b>1. Case Studies Demonstrate the Cost-Effectiveness of DOAS in Relevant Climactic Conditions</b></p> <p>Testing and demonstrating the significant potential for increased energy savings of DOAS has been a focal point of NEEA’s High Efficiency HVAC program team since 2015:</p> <ul style="list-style-type: none"> <li>• Between 2016 and 2019, the NEEA team tested 8 pilot project sites, demonstrating proof of concept and achieving an average of 65% HVAC energy savings compared to code minimum at that time.</li> <li>• Between 2019 and 2021, the NEEA team participated in 20 additional technology demonstration projects to further evaluate cost effectiveness and savings opportunities.</li> <li>• Between 2021 and 2022, the NEEA team studied 4 field demonstration projects, further validated the benefits of DOAS as a design strategy, and demonstrated how VHE DOAS can achieve 45% to 61% HVAC energy savings beyond the latest energy code while less efficient DOAS configurations achieve 20% to 30% HVAC energy savings.</li> </ul>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139</a>



256332.002	Northwest Energy Efficiency Alliance (NEEA)	<p>Many of these demonstration project sites were located in Oregon and Washington coastal regions similar to California climate zones. While most systems primarily demonstrated heating savings, two offices in Portland, Oregon saw extreme heat waves in 2022; both demonstrated an ability to maintain comfort and a net reduction in cooling energy using an HRV-DOAS configuration with VRF heat pumps and ventilation-economizing<sup>1</sup>. The site built to the full VHE DOAS standard saw a cooling savings of 54% compared to a code minimum system, and the site with a market-average DOAS unit saw a 2% cooling savings to code minimum.</p> <p>Extensive study of the parameters critical to energy savings and resulting in cost effective DOAS system configurations was undertaken in 2022. This analysis found that standard efficiency DOAS packages reach average payback periods of 2 to 12 years and higher efficiency DOAS packages achieve payback in 8 to 15 years. Several examples of packages were assessed for ASHRAE Climate Zone 4C, which represents portions of California as well.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139</a>
256332.003	Northwest Energy Efficiency Alliance (NEEA)	<p><b>2. DOAS Maintain High Indoor Air Quality and Efficiency</b></p> <p>In the 8 pilot sites studied from 2016 to 2019 mentioned above, the improvement most reported by building occupants was vastly enhanced indoor-air quality<sup>3</sup>. Each pilot site gathered at least 13 months of post-conversion HVAC and whole-building energy use data, as well as indoor-air quality and temperature data.</p> <p>In late 2021, NEEA investigated the energy impacts of increased ventilation to mitigate and reduce the risk of viral transmission of COVID-19<sup>4</sup>. The study evaluated a theoretical classroom building, working with the University of Oregon's ESBL viral risk estimation model to study the aerosol transmission of the virus through modified operation of building HVAC systems. By increasing ventilation to 217%, pushing most VHE DOAS systems to their maximum, the in-room viral risk rate is reduced to 32% compared to 49% at code minimum ventilation levels. The analysis also found that in Pacific Northwest climates, a VHE DOAS system was the lowest cost system to operate under such acute airflow conditions of the three systems evaluated, with 35% and 37% lower energy costs than the two other mixed-air systems. While there are many strategies now available for use in reducing indoor viral risk, including in-room filtration units, this study articulates the benefits which DOAS can provide as one solution.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139</a>
256332.004	Northwest Energy Efficiency Alliance (NEEA)	<p><b>3. Washington Has Required DOAS for Additional Building Types Since 2017</b></p> <p>If California seeks to widen the scope of this DOAS provision in future rulemaking, Washington provides a potential example to follow. The 2015 WSEC introduced a DOAS requirement for office, retail, education, libraries, and fire stations following the prescriptive path starting in 2017. Since then, the 2018 WSEC expanded this DOAS requirement to additional Assembly occupancy types, and this scope was maintained in the present 2021 WSEC. Washington has demonstrated that DOAS code provisions can extend beyond offices and schools.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139</a>

256332.005	Northwest Energy Efficiency Alliance (NEEA)	<p>Summary</p> <p><b>Analysis conducted by NEEA supports the cost-effectiveness of DOAS and demonstrates performance in climactic conditions relevant to California. NEEA research also indicates that DOAS can maintain high indoor air quality efficiently and cost-effectively. Washington has required DOAS for building types beyond those proposed by California since 2017.</b></p> <p>Thank you for considering our comments, which are based on a substantial volume of research, market analysis, demonstration projects, and other data collected over several years. Please contact us if you need any further information on this topic.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256332&amp;DocumentContentId=92139</a>
256333.001	Rheem Manufacturing Company	<p>Rheem Manufacturing Company (Rheem) appreciates the opportunity to comment on the 2025 Building Energy Efficiency Standards, Express Terms, 45-Day Language.</p> <p>Rheem is an industry leader in total heating, cooling, refrigeration and water heating solutions and one of the few global brands with product offerings covering residential and commercial heating, cooling, conventional and hybrid storage water heaters (HPWH), tankless water heaters, solar water heating systems, pool and spa heaters, commercial boilers, residential hydronic and geothermal systems, commercial refrigeration products, indoor air quality accessories, and replacement parts for all categories. Rheem is headquartered in Atlanta, Georgia and with a manufacturing facility in Oxnard, California. Rheem also has U.S. based manufacturing facilities in Alabama, Arkansas, Connecticut, and North Carolina and distribution facilities throughout the US, Canada and around the world. Rheem is committed to a clean energy future and continues to bring to market products that advance the goals of emissions reduction at an affordable price to the homeowner, working cooperatively with environmental agencies and regulators.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>
256333.002	Rheem Manufacturing Company	<p><u>General Comments</u></p> <p>Rheem is a strong proponent of building decarbonization and truly values the efforts of the California Energy Commission (CEC) to drive improved energy performance through building energy efficiency standards. Rheem supports CEC's market-based approach to transition low-rise residential buildings to electric heat pump technologies over a reasonable timeframe which includes consideration of the work needed to increase the electric equipment readiness, labor force training, impacts to homeowners and business owners, and market adoption of heat pumps when setting requirements for new and existing buildings.</p> <p>In our review of the 2025 Building Energy Efficiency Standards, Express Terms, 45-Day Language, we appreciate the efforts towards simplification and clarification as they will help aid overall understanding and adoption. Rheem supports the CEC's activity to encourage heat pump space and water heaters in residential and nonresidential buildings. However, we urge CEC to preserve the flexibility for equipment to use any energy source as primary or back-up when it is economically beneficial to do so.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>

256333.003	Rheem Manufacturing Company	<p><u>Comments on Formulas, Abbreviations, and Referenced Materials Needing Additional Clarification</u></p> <p>Throughout the 45-day express terms language, there are several places where values, tables, sections, and formulas are referenced that require further clarification for us to understand and evaluate. They are:</p> <ul style="list-style-type: none"> <li>• Section 140.4(e)2F and Section 170.2(c)4Civ and tables 140.4-H and 170.2-H – these note “Direct Expansion (DX) units greater than 65,000 Btu/hr that control the capacity of the mechanical cooling directly based on occupied space temperature shall have a minimum of two stages of mechanical cooling capacity.” In the second sub-bullet but in the table directly below that language, it shows the minimum number of mechanical cooling stages for DX units greater than or equal to 65,000 Btu/h and less than 240,000 Btu/h is 3 stages. Rheem requests a clarification to understand if both of those conditions need to be satisfied (in which case all DX units greater than or equal to 65,000 Btu/h would be required to have a minimum of 3 stages of cooling) or can equipment satisfy only one of those conditions?</li> <li>• Sections 150.0(h)9 and 160.3(b)8 both refer to “Variable or multi-speed systems shall comply with the following requirements” but within the energy code language, multi-speed systems is not defined. Rheem requests a clarification that defines multi-speed systems that aligns with the AHRI 210/240 test procedure definition that clearly identifies single-speed, two-speed, and multi-speed separately.</li> <li>• Section 150.0(i)2: Refers to Section 150.0(i)A, which does not exist. Should this instead be 150.0(h)7A?</li> <li>• Table 150.1-A and Table 170.2-K do not specify what CEER to use in the standard design.</li> <li>• Section 150.1(c)14 and Section 170.2(f) refer to EER2 as part of an equation but offer no explanation for what EER2 is the proper input for the equation. Additionally, Section 170.2(f) pertains to multi-family residential buildings which likely means the presence of multiple units that can have different EER2 values.</li> </ul>	<p>Staff thanks you for your comment.</p> <p>Staff notes that the requirements in Sections 140.4(e)2F and 170.2(c)4Civ existed in previous code version. Staff clarifies that for Direct Expansion (DX) units greater than 65,000 Btu/hr that meet the requirements of Sections 140.4(e)2Fii and 170.2(c)4Civ(b), respectively i.e. they <b>control the capacity of the mechanical cooling directly based on occupied space temperature</b>, shall have a minimum of two stages. For units that do not comply with Sections 140.4(e)2Fii and 170.2(c)4Civ(b) , the requirements of Sections 140.4(e)2Fiii and 170.2(c)4Civ(c)are triggered.</p> <p>Staff will clarify the differences between single-speed, two-speed and multi-speed systems in the nonresidential compliance manual.</p> <p>The incorrect reference to Section 150.0(i)A has been updated to refer to the correct section, Section 150.0(i)1.</p> <p>Regarding the comments related to Tables 150.1-A and 170.2-K, since CEER is a metric used only for room air conditioner federal minimum system efficiency requirements, Staff will add language to the compliance manual that specifies that room ACs shall meet the federal minimum CEER requirement.</p> <p>The comment related to the equation in Sections 150.1(c)14 and 170.2(f) regarding EER2 in the equation for PV system sizing is no longer relevant. Staff is restoring the original 2022 PV sizing equation for single-family and low-rise multifamily buildings. EER2 will no longer be a factor affecting the PV sizing.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>
256333.004	Rheem Manufacturing Company	<p><u>All Occupancies—Mandatory Requirements</u></p> <p>SECTION 100.1 – DEFINITIONS AND RULES OF CONSTRUCTION</p> <p>Rheem notes that a definition for air to water heat pumps (AWHP) was proposed which includes “Its primary purpose is to generate heated or cooled water to meet space conditioning and domestic hot water load.” Rheem requests clarification on how the AWHP definition interacts with the term “hydronic heat pump (WLHP)” that is used in several sections but not explicitly defined.</p>	<p>Thank you for your comment. The WLHP (Hydronic Heat Pump) definition is not intended to describe an air-to-water heat pump as outlined in Section 140.4(a)3. The hydronic heat pump definition refers to a water source heat pump, which is a different system type and has separate requirements. The difference between these systems will be provided in the nonresidential compliance manual.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>

256333.005	Rheem Manufacturing Company	<p>SECTION 110.2 – MANDATORY REQUIREMENTS FOR SPACE-CONDITIONING EQUIPMENT</p> <p>CEC has proposed modifications to minimum efficiency requirements for mechanical equipment in this section, removal of product tables where all products are subject to federal minimum requirements such as Table 110.2-E Package Terminal Air Conditioners and Table 110.2-J Gas and Oil-Fired Boilers, Minimum Efficiency Requirements. We understand that since changes to federal minimum efficiency requirements may change asynchronously from the California Energy Code cycle, those tables may be difficult to keep maintained. However, Rheem does not support the complete removal of the tables proposed for deletion in section 110.2 as we believe there is value in system designers being able to clearly and quickly identify equipment that meets Title 24 requirements. To that end, we fully support CEC’s plan to release a compendium to Title 24 with federal standards to be maintained by CEC staff.</p> <p>Additionally, in 110.2(b), it is noted that controls for non-residential and multi-family building heat pumps with supplementary electric resistance heaters shall have controls in which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplemental heating. Rheem’s concern with this language is that in some cases, the space may be left without compressor heating or electric resistance heating (such a condition arises when compressor cut-in and supplementary heating cut-in temperatures are 35 and 32 °F respectively, and the compressor and supplementary heating cut-out temperatures are 30 and 28 °F respectively. This setting complies with the proposed language. Similarly, such a condition arises when compressor cut-in and supplementary heating cut-in temperatures are 35 and 28 °F and compressor cut-out and supplementary heating cut-out temperatures are 30 and 28 °F respectively. This setting also complies with the proposed language). As the desired performance is that there should be overlap between the compressor cut-in temperature and supplemental electric resistance cut-out temperature as well as</p>	<p>Thank you for your comment of support regarding Staff’s plan to release a compendium to Title 24 containing federal standards.</p> <p>Regarding comments related to the cut-in and cut-off temperatures of compressors and supplementary heaters, CEC staff intends to add language to the compliance manual that clarifies how to interpret the Energy Code language surrounding cut-in and cut-out temperatures.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a></p>
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256333.006	Rheem Manufacturing Company	<p>SECTION 110.3 – MANDATORY REQUIREMENTS FOR SERVICE WATER-HEATING SYSTEMS AND EQUIPMENT</p> <p>Rheem appreciates the Commission’s efforts to ensure heat pump water heaters are appropriately installed with regards to backup heat and ventilation. For the ventilation requirements, Rheem recommends that manufacturer’s installation instructions be the primary method used. When manufacturer’s installation instructions are not available, or insufficient, the ventilation requirements in 110.3(c)(7)(B)(1-3) should be used. Currently, manufacturer’s instructions on room size and ventilation are more restrictive than proposed by the Commission (i.e., the proposal allows 400-450 ft3 while 700 ft3 is recommended by most manufacturers). The proposal generally aligns with the NEEA study<sup>1</sup> titled, “Heat Pump Water Heaters in Small Spaces Lab Testing: “The Amazing Shrinking Room”.” This study helps to approximate the drop in efficiency associated with installation in small enclosures and does not need to be used in the mandatory requirements for new construction or additions as the appropriate space can be allocated during design of the building. These provisions are more appropriate for replacement (covered as alterations in Title 24) applications. As the proposal allows for installations in smaller enclosures than manufacturer recommendations, the architect will lean towards this design and the installed equipment will not perform as well as it is rated. If the current language is maintained, then a derate may need to be applied in the performance calculations.</p>	Staff agrees with the comment, and changes have been made. Specifically, language pertaining to manufacturer-provided ventilation methods has been moved to the top of the list found in Section 110.3(c)7B.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>
256333.007	Rheem Manufacturing Company	<p>SECTION 110.4 – MANDATORY REQUIREMENTS FOR POOL AND SPA SYSTEMS AND EQUIPMENT</p> <p>Consistent with comments separately submitted by PHTA, Rheem recommends removing “The control for the heat pump pool heater shall meet the requirements specified in section 110.2(b).” from section 110.4(c)(2). This mandatory requirement would effectively ban supplementary (backup) heating during the typical pool season as supplementary heating would not be allowed at outdoor temperatures above 35°F. If the CEC desires clarification of supplementary heating sizing and operation, then this should be explicit and directly apply to pool heating’s unique application.</p> <p>Rheem appreciates the Commission’s addition of exemptions to section 110.4(c), particularly Exception 2 which allows a consumer to replace an existing pool heater with a pool heater of the same fuel type. This change is consistent with other provisions within Title 24 where replacement applications are directly addressed (e.g., section 150.2(b)(H)(iii)(a))</p>	Staff agrees with the comment, and changes have been made. Specifically, Staff agrees that requirements in Section 110.2(b) do not all apply to heat pump pool heaters. Staff has removed the reference to Section 110.2, and added a new subsection, 110.4(d), to more clearly specify requirements applicable to these systems.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>

256333.008	Rheem Manufacturing Company	<p>Nonresidential Occupancies—Mandatory Requirements SECTION 140.4 – PRESCRIPTIVE REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS</p> <p>Rheem strongly disagrees with the overly prescriptive requirements proposed for certain applications using multi-zone systems, significantly limiting appropriate system choices by local system designers looking to make energy efficiency improvements in their projects. These are business-level decisions that need to be made based on a series of complex conditions: building location, building type, climate, building orientation, availability of different fuel types, etc. The proposed changes for offices and schools in Section 140.4 – Prescriptive Requirements for Space Conditioning Systems limit consumer choice to an extreme degree.</p> <p>Section 140.4(a)3B, Multizone space-conditioning system types for schools provides only one option for buildings categorized as large schools or large offices – AWHP + FPFC. For mediumsized offices, the only option is VRF + DOAS. This is overly prescriptive and problematic for these reasons:</p> <ul style="list-style-type: none"> <li>• These systems are not typical or widespread in these applications today and will require higher up-front equipment and labor costs to the school districts and nonresidential building owners</li> <li>• Due to the atypical nature of these system types today in California, finding the right technical expertise among engineers and contractors to design, install, and maintain these types of mechanical systems will become increasingly difficult, further driving up costs for building owners throughout the life of the equipment</li> <li>• Identifying only one prescriptive path to compliance for each of these building types and sizes significantly limits the designer’s options when selecting from the variety of system types available on the market today and which energy efficiency measures to pursue when designing a new project.</li> </ul> <p>Rheem emphasizes that maintaining some degree of system flexibility for the specifier is critical to meet the needs of every project that will come with a unique set of design</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating. Staff is committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>
256333.009	Rheem Manufacturing Company	<p>SECTION 141.0 – ADDITIONS, ALTERATIONS, AND REPAIRS TO EXISTING NONRESIDENTIAL, AND HOTEL/MOTEL BUILDINGS</p> <p>Section 141.0(b)2C introduces new language that prescribes heat pumps for new or replacement single-zone packaged rooftop systems &lt;65,000 Btu/h. This requirement places significant undue burden on business owners, especially in replacement scenarios that may become necessary due to equipment mechanical failures. We encourage the CEC to consider allowing replacement with the same equipment type in existing buildings to encourage business owners to continue to invest in overall energy efficiency measures as their business plans allow, as opposed to being forced into the prescriptive heat pump requirement in an emergency replacement situation. Furthermore, in emergency replacement scenarios, identifying a heat pump to fit exactly where the previous equipment of a different type was located will require more design and contractor labor time, further negatively impacting California business owners financially while increasing the amount of time their business must go without air conditioning, leading to lost profitability and in some cases, closures.</p>	<p>Thank you for your comment. The requirement for heat pumps in new and replacement single-zone packaged rooftop systems under 65,000 Btu/h is a necessary step towards achieving California’s energy goals. The proposal provides alternative options to account for project limitations.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>

256333.01	Rheem Manufacturing Company	<p><u>Single-Family Residential Buildings</u> SECTION 150.0 — MANDATORY FEATURES AND DEVICES</p> <p>Rheem notes that the spirit of Section 150.0(h)7 for single family residential buildings is similar to that of section 110.2(b), in its desire to limit and use of supplementary heat and help design supplementary heat parameters. Within Section 150.0(h)7, however, we believe an exclusion should be added, like the exception 1B to Section 110.2(b) that allows homeowners who do maximize their energy savings with aggressive setback temperatures to experience the desired heating performance during transient periods. To that point, the following exception language should be added as Exception 4 to 150.0(h)7: “transient periods such as start-ups and following room thermostat setpoint advance, if the controls provided preferential rate control, intelligent recovery, staging, ramping or another control mechanism designed to preclude the unnecessary operation of supplementary heating.”</p> <p>Section 150.0(h)9 and 160.3(b)8 – Capacity variation with third-party thermostats both contain language that implies variable or multi-speed systems need to be compatible with all 3rd party thermostats, which is quite broad in scope. Manufacturers develop equipment with controllers that are designed to perform optimally when matched together. The requirement to be compatible with all 3rd party thermostats may result in equipment matched with thermostats that do not take full advantage of the energy efficient features of the equipment design and other features in the building code language, resulting in the homeowner’s loss of overall efficiency and system functionality.</p> <p>In addition, the testing procedure in the CF2R the installer should use to certify on the Certificate of Installation that the control configuration has been tested is not available for review so we were not able to get further clarification on steps to compliance with this proposed measure. Rheem believes CEC should consider compatibility with third-party thermostats holistically and should avoid near-term requirements that preclude long-term demand response goals.</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Staff has reviewed the suggested edits related to compatibility of variable and multi-speed space conditioning systems with third party thermostats, and no changes have been made. The requirements are not intended to compel space conditioning system manufacturers to make their systems compatible with all thermostats, but rather to require installers to select an appropriate thermostat for the space conditioning system they are installing.</p> <p>Staff agrees with the comment concerning an exception for supplementary heating use during transient periods, and changes have been made.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>
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256333.011	Rheem Manufacturing Company	<p>SECTION 150.1 – PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES FOR SINGLE-FAMILY RESIDENTIAL BUILDINGS</p> <p>Section 150.1(b) identifies the performance approach for single family residential buildings and includes references to Long-term System Cost (LSC) as an avenue to accomplish performance method compliance but during the 45-day express terms comment period, the CBECC-Res Compliance Software for 2025 was not available for exploration and assessment. In the future, we ask that related compliance software be made available for assessment during the comment period so it can be reviewed alongside the building energy code language.</p> <p>In regards to domestic water heating systems described in section 150.1(c)(8)(B), Rheem recommends the Commission remove reference to the NEEA Advanced Water Heater Specification (AWHS). The AWHS tier is determined by a cold climate efficiency (CCE), prescriptive design, and warranty requirements. The U.S. DOE recently adopted certification and enforcement provisions for optional test conditions now allowing for representations of UEF at cold temperatures (E50), that also parallel the conditions required by the AWHS. Therefore, the Commission should set UEF and E50 requirements consistent with DOE’s rule to avoid the risk of DOE enforcement action and confusion in making any efficiency claims using the CCE metric. Further, Rheem questions whether the Commission has the authority to set warranty requirements. Rheem notes that AWHS tier 3 or higher requires CTA-2045, therefore, if the Commission moved away from an AWHS reference then an AHRI 1430 reference could be made. AHRI 1430 is an industry standard which applies the CTA-2045 protocol to consumer water heaters. This recommendation also applies to sections 150.2(a)(D)(ii), 150.2(b)(H)(iii)(c), 170.2(d), and 180.2(b)(3)(C)(iii) which reference the AWHS.</p> <p>Rheem appreciates the Commission’s proposal to remove the word “instantaneous” from exception 1 to section 150.1(c)(8) as small electric storage water heaters are also used for point-of-use applications.</p>	<p>Comment acknowledged, no change made. This proposal is similar to the current alternative pathway for unitary heat pump water heaters, which references Northwest Energy Efficiency Alliance's (NEEA) Advanced Water Heating Specification (AWHS). The Standard necessitates adoption of the current version of AWHS. Based on current practice, we expect that products previously certified would be grandfathered in that Tier.</p> <p>The CEC will stay in communication with NEEA to ensure that future AWHS versions will not present an issue for manufacturers to meet the Energy Code requirements of Section 150.1(c)8B.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>
256333.012	Rheem Manufacturing Company	<p>SECTION 150.2 – ENERGY EFFICIENCY STANDARDS FOR ADDITIONS AND ALTERATIONS TO EXISTING SINGLE-FAMILY RESIDENTIAL BUILDINGS</p> <p>Rheem appreciates and supports the CEC’s decision to move the prescriptive requirement for heat pumps when replacing an air conditioner in existing single-family homes to Part 11 as a voluntary measure to alleviate the cost to residents and homeowners while providing more time for industry professionals to gain more familiarity with heat pumps. We are ready to support the CEC’s efforts in making industry professionals more familiar with heat pump technology and have adopted aggressive training goals to close the knowledge gap that exists in the industry today.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>
256333.013	Rheem Manufacturing Company	<p><u>Multi-Family Buildings</u></p> <p>SECTION 160.3 – MANDATORY REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS IN MULTIFAMILY BUILDINGS</p> <p>Please refer to above comments for Section 150.0.</p> <p>SECTION 160.9 – MANDATORY REQUIREMENTS FOR ELECTRIC READY BUILDINGS</p> <p>Rheem appreciates and supports the Commission’s proposal for heat pump water heater provisions in section 160.9(e-f).</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>



256333.014	Rheem Manufacturing Company	<p><u>Joint Appendix JA14</u> Rheem notes that central heat pump water heaters can be split-system (heat pump and a separate storage tank) or integrated (heat pump and storage tank connected). Split-system heat pump water heaters can be single-pass and multi-pass. JA14 references the DOE test procedure at Appendix E to Subpart G of 10 CFR Part 431, however, the DOE test procedure prescribes a set inlet and outlet temperature which can be achieved by varying the flow rate. JA14 requires input power, output capacity, and COP be reported at various ambient, inlet, and outlet temperatures. For single-pass and multi-pass water heaters with a single possible flow rate, these values can be provided. However, for integrated and multi-pass heat pump water heaters that can operate at multiple flow rates there is not enough information on how to set the flow rate to achieve a specific outlet temperature. Rheem recommends that the provisions in JA14 be reviewed and amended to allow for integrated and multipass heat pump water heaters with multiple possible flow rates to be certified.</p>	<p>Comment acknowledged, no change made. Reference Joint Appendix JA14 specifies the minimum information required for certification. Manufacturers can provide additional information to create a more accurate model in the software.</p> <p>Staff will reach out to the commenter to explore JA14 updates in the 2028 Energy Code.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>
256333.015	Rheem Manufacturing Company	<p><u>Joint Appendix JA15</u> Rheem is concerned about the heat pump space requirements within the central heat pump water heater ready requirements. Below 200,000 Btu/h typically represents residential applications for instantaneous water heating and commercial applications for storage water heating. Many commercial applications in this range could be accomplished with an integrated heat pump water heater which typically has a height above the 48 inches required at JA14.2.1(a). For greater than or equal to 200,000 Btu/h applications, Rheem is concerned that the minimum floorspace is far too large. Rheem applied the 3.6 ft<sup>2</sup>/10,000 Btu/h of input our existing central heat pump water heating system and found that the floorspace required by JA14 would be between 33% and 89% greater than necessary. The method applied is a direct output capacity replacement and doesn't account for reduced capacity due to the addition of storage tanks. Therefore, Rheem expects the actual space to install a central heat pump water heater to reduce further.</p>	<p>Comment acknowledged, no change made. Staff notes that Reference Appendices, Joint Appendix JA15 is not the only method to meet the central heat pump water heater ready requirement in Section 160.9(f). Staff expects most projects will meet these requirements by calculation and documentation by the responsible person associated with the project. JA15 is intended to provide a conservative backstop if the responsible person is not available.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>
256333.016	Rheem Manufacturing Company	<p><u>24-BSTD-01 draft 2025 Proposed Nonresidential HVAC Performance System Map</u> Rheem appreciates the additional clarification effort provided in this draft document posted on April 25, 2025 as the variety of building types, work type, and single zone vs. multi zone requirements are quite numerous. We have concerns as this document references sections such as 140.4(b)2C and Table 2 in the text that do not exist in the 2025 Building Energy Efficiency Standards, Express Terms, 45-Day Language.</p> <p><u>Conclusion</u> We thank the CEC for their continued hard work on the 2025 code, and we remain willing to support CEC on the remaining steps of the rulemaking.</p> <p>Thank you for your consideration</p>	<p>Comment acknowledged, no change made. This comment pertains to nonresidential system mapping in the ACM, which is out of scope of this rulemaking. Staff will review and address the proposed edit in the upcoming ACM rulemaking.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256333&amp;DocumentContentId=92138</a>

256334.001	National Electrical Manufacturers Association (NEMA)	<p>The National Electrical Manufacturers Association (NEMA) represents nearly 325 electrical equipment and medical imaging manufacturers that make safe, reliable, and efficient products and systems serving the building systems, building infrastructure, lighting systems, industrial products and systems, utility products and systems, transportation systems, and medical imaging markets. Our combined industries account for 370,000 American jobs in more than 6,100 facilities covering every state. These industries produce \$124 billion in shipments and \$42 billion in exports of electrical equipment and medical imaging technologies per year.</p> <p>Members of NEMA's High Performance Buildings Codes &amp; Standards Review Committee have carefully reviewed the proposed amendments to the 2025 Building Energy Efficiency Standards 45-day language and developed the attached commentary for your careful consideration.</p> <p>Additionally, NEMA's Lighting Systems Division has noted that the proposed changes to Joint Appendix 8 (JA8) with regards to the use of the Elevated Temperature Life Test as published in the ENERGY STAR Lamps V2.1 product specification and the rated life test in the ENERGY STAR Luminaires V2.1 product specification are not reflected in <b>JA8.5 Marking</b>. Given the Environmental Protection Agency's plan to sunset the ENERGY STAR Lamps and Luminaires programs at the end of 2024, NEMA members request this presumed drafting error be corrected consistent with the changes proposed in <b>JA8.3.3 Start Time Test</b>.</p> <p><i>See docketed comment for table of proposed edits.</i></p>	<p>Staff agrees with the comment, and changes have been made. Staff has updated Reference Joint Appendix JA8 to refer to the "time of failure" portion of the DOE test procedure in Appendix BB to Subpart B of 10 CFR Part 430 instead of referring to the ENERGY STAR Elevated Temperature Life Test method.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256334&amp;DocumentContentId=92135">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256334&amp;DocumentContentId=92135</a></p>
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256335.001	Leviton Manufacturing	<p>Leviton extends our appreciation for all that has been done to improve the energy code and respectfully submits the below listed comments on the California Energy Commission’s (CEC) 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 45-Day Language (Energy Code). At Leviton, we build what’s next to light, power, and connect everyday spaces, encompassing electrical, lighting, data networks, and energy management. With a rich history spanning over 115 years, Leviton develops thoughtful solutions that streamline processes, elevate safety standards, increase efficiency, and enhance productivity. We are committed to our people as their innovation, ingenuity, and dedication to safety and quality are fundamental to the success of every product we deliver to our customers.</p> <p>Leviton has had the opportunity to work collaboratively with the CEC, Compliance &amp; Enforcement stakeholders, the California Statewide Utility Codes and Standards Enhancement (Case) Team, NEMA (National Electrical Manufacturers Association), and the CEA (California Energy Alliance) on improving and expanding upon the 2022 Building Energy Efficiency Standards. The joint work that we participated in included mandatory lighting controls, lighting control acceptance requirements, electrical power distribution, and residential lighting control requirements. Leviton is thankful that the CEC adopted much of the recommendations from the 2025 Title 24 Lighting Language Cleanup Initiative (Docket No: 22-BSTD-01, TN# 250676) that led to the elimination and clean-up of much of the confusion found in these sections of the Energy Code.</p> <p>Leviton commends the CEC for the attention given to the stakeholder’s comments and then working to make the necessary updates to the Energy Code which will contribute to the reduction of greenhouse gas emissions by continuing to maximize efficiency. However, Leviton would like to provide the following comments on and address areas of concern in the 2025 Energy Code Express Terms, 45-Day Language.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>
256335.002	Leviton Manufacturing	<p><b>The following comment and recommendation relates to “Demand Response” requirement of the Energy Code:</b></p> <p><b>1) Demand Response requirements:</b></p> <p><b>a) Subsection 110.12(a)1B</b></p> <p>i) Clarification is needed, as current wording makes it unclear as to who the certification is to be provided to by the Manufacturer</p> <p>ii) <b>Change wording to add underlined:</b> Certified by the manufacturer, <u>to the California Energy Commission</u>, as being capable of responding to a demand response signal from a certified OpenADR 2.0b Virtual End Node by automatically implementing the control functions requested by the Virtual End Node for the equipment it controls.</p>	Staff agrees with the comment, and changes have been made. Specifically, adopted language in Subsection 110.12(a)1B is: Certified to the Energy Commission as being capable of responding to a demand response signal from a certified OpenADR 2.0b or a certified Baseline Profile OpenADR 3.0 Virtual End Node by automatically implementing the control functions requested by the Virtual End Node for the equipment it controls.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>

256335.003	Leviton Manufacturing	<p>The following comments and recommendations relate to “Mandatory Indoor Lighting Control” requirements of the Energy Code:</p> <p><b>2) Manual Control remote location clarification</b></p> <p><b>a) Subsection 130.1(a)2</b></p> <p>i) The word display creates confusion as to what the nature of the display needs to be for compliance when all that is required is to see the status and this could be a simple pilot light or other method of status indication.</p> <p>ii) <b>Change wording to remove display:</b> Be located in the same enclosed area space, or be located such that with the controlled lighting it controls or <u>status display of the controlled lighting can be seen when operating the controls</u>; and</p>	Staff agrees with the comment and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>
256335.004	Leviton Manufacturing	<p><b>3) Current Multilevel Control Requirements.</b></p> <p><b>a) Subsection 130.1(b)</b></p> <p>i) Multiple change recommendations:</p> <p>(a) Grammar correction</p> <p>(b) Should be based on watts per square feet so remove 100 square feet</p> <p>(c) Lowering of connected lighting load threshold from 0.5 W/sf to 0.4 W/sf</p> <p>ii) <b>Change wording to:</b> Multilevel lighting controls. The general lighting of any enclosed area space <del>100 square feet or larger</del> with a connected lighting load <del>that exceeds greater than 0.5</del> 0.4 watts per square foot shall be provided with multilevel lighting controls <del>that allow the level of lighting to be adjusted up and down. The multilevel lighting controls shall provide and enable continuous dimming from 10 to 100 percent of lighting power to achieve illuminance uniformity.</del> The multi-level controls shall:</p> <p><b>b) Exception 1 to Section 130.1(b)</b></p> <p>i) Remove this exception based on the increased cost-effectiveness of today’s continuous dimming LED lighting and control solutions compared to stepped dimming LED products and the fact that most classrooms are designed using 0-10V controls.</p> <p>ii) <b>Remove this section:</b> <del>Classrooms with a connected general lighting load of 0.6 watts per square foot or less shall have a minimum of one control step between 30 and 70 percent of full rated power, regardless of luminaire type.</del></p>	<p>Staff agrees with part of the comment, and disagrees with part of the comment. Some changes have been made.</p> <p>1. Staff agrees with the grammatical correction, and changes have been made.</p> <p>2 &amp; 3. Staff disagrees with the comments regarding expansion of Section 130.1(b) requirements for nonresidential Multilevel Lighting Controls, and no changes have been made. This comment is similar to comments in TN256335, TN256346, TN256310, and TN256334, as well as suggested changes in pre-rulemaking (Docket Number: 22-BSTD-01, TN# 252270).</p> <p>Staff notes that the information provided in the comment is insufficient to support the proposed change.</p> <p>4. Staff agrees with the comment regarding deleting Exception 1 to Section 130.1(b), and changes have been made.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>
256335.005	Leviton Manufacturing	<p><b>4) Full of Partial-Off</b></p> <p><b>a) Section 130.1(6)</b></p> <p>i) Although this is mentioned in the Exception portion of 130.1(c) – there is the definite possibility that it would be missed as it is stated as a requirement to meet Section 1008 and not as an exception and therefore should be moved to 130.1(c)6 or included again since this is the section that pertains to Partial-Off.</p> <p>ii) Add underlined wording: Full or partial-OFF occupant sensing controls are required for <u>warehouse aisle ways, and warehouse open areas in warehouses, library book stack aisles, corridors and stairwells, and offices greater than 250 square feet, parking garages, parking areas, and loading and unloading areas. The lighting providing for means of egress illumination, as defined in the California Building Code, must be configured to provide no less than the illumination required by California Building Code Section 1008 while in the partial-off mode.</u> Lighting installed in the following areas shall meet the requirements below in addition to complying with Section 130.1(c)1.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Exception 2 to Section 130.1(c) states the California Building Code, Section 1008 requirements for partial-off mode on egress illumination.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>

256335.006	Leviton Manufacturing	<p><b>5) Occupancy Sensing and Full or partial-Off</b>  <b>a) Sections 130.1(c)5 and 6</b>  i) Recommend making the titles shorter to reference easier.  (1) <b>130.1(c)5. Occupant sensing controls.</b> <del>are</del> Required for specified offices, multipurpose rooms, classrooms, conference rooms and restrooms.  (2) <b>130.1(c)6. Full or partial-OFF occupant sensing controls.</b> <del>are</del> Required for warehouse aisle ways, and warehouse open areas in warehouses, library book stack aisles, corridors and stairwells, and offices greater than 250 square feet, parking garages, <del>parking areas,</del> and loading and unloading areas.  b) Editorial comment for Section 130.1(c)6E  i) Section 130.1(c)6E This section says "space" instead of "zone".  ii) 130.1(c)6Eiii. The occupant sensing controls shall be capable of automatically turning the lighting fully ON only in the separately controlled <del>space zone,</del> and shall be automatically activated from all designed paths of egress.</p>	Staff agrees with this comment and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>
256335.007	Leviton Manufacturing	<p><b>6) Error in Daylighting Threshold Wattage</b>  <b>a) Sections 130.1(d) and 160.5(b)4D</b>  i) Typographical error in Exception 3 to Sections 130.1(d) and 160.5(b)4D. The 45-Day Language states less than "85" watts when requirement threshold is "75" watts  ii) Exception 3 to Section 130.1(d): Where daylight responsive controls are not required for the primary sidelit daylit zones, and where the total wattage of general lighting luminaires in the secondary sidelit daylit zones is less than 875 watts, daylight responsive controls are not required for the secondary sidelit zone.</p>	Comment acknowledged, no change made. Exceptions 3 to Sections 130.1(d) and 160.5(b)4D are correct. The "less than 85 watts" threshold of the secondary sidelit zone is intended to be a less stringent requirement than the "less than 75 watts" requirement.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>
256335.008	Leviton Manufacturing	<p><b>The following comments and recommendations relate to "Mandatory Outdoor Lighting Control" requirements of the Energy Code:</b>  <b>7) Outdoor Lighting Controls</b>  <b>a) Sections 130.2(c)2B and 130.2(c)3B</b>  i) Remove the newly added word "partially" as it creates confusion in the requirements.  ii) 130.2(c)2B. Automatic scheduling controls shall be capable of partially reducing the outdoor lighting power by 50 to 90 percent, and separately capable of turning the lighting OFF, during scheduled unoccupied periods.  iii) 130.2(c)3B. Motion sensing controls shall be capable of partially reducing the outdoor lighting power of each controlled luminaire by 50 to 90 percent, and separately capable of turning the luminaire OFF, during unoccupied periods.</p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>
256335.009	Leviton Manufacturing	<p><b>8) Outdoor Lighting Motion Controls</b>  <b>a) 130.2(c)3C</b>  <b>i) Simple wording correction is needed to change dim to Partial-off</b>  <b>ii) Change strike and underlined:</b> Motion sensing controls shall be capable of reducing the lighting to its <del>dim</del> <u>partial off</u> or OFF state no longer than 15 minutes after the area has been vacated, and of returning the lighting to its ON state when the area becomes occupied.</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>The current text "dim or OFF state" conveys the state of the outdoor lighting and it is correct in the context of the sentence. Staff is concerned that "partial-OFF" could be confused with the indoor control type, "partial-off occupancy sensing controls".</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>

256335.01	Leviton Manufacturing	<p><b>The following comments and recommendations relate to “Acceptance Testing” requirements of the Energy Code:</b></p> <p><b>9) Acceptance Testing Requirements</b></p> <p><b>a) Section 130.4(a)1</b></p> <p>i) Reinstating Plan Review Requirements for Enhanced Title 24, Part 6 Compliance in Section 130.4(a)1 per Docket 22-BSTD-01, TN# 252276. This proposal is essential for ensuring Energy Code compliance while introducing a more collaborative approach with the Authority Having Jurisdiction (AHJ). CEA respectively asks the CEC to reconsider the TN#252276 proposal with the following update:</p> <p>ii) Change “Certifies” to “Review”</p> <p>(1) “<del>Certifies</del> Review plans, specifications, installation certificates, and operating and maintenance information meet the requirements of Part 6.”</p> <p>iii) Reinstating these requirements allows the Acceptance Test Technician to be involved earlier in the design phase to help the responsible parties, such as the lead architect or engineer, with compliance by alerting them of any gaps in energy code requirements prior to construction.</p>	Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>
256335.011	Leviton Manufacturing	<p><b>The following comments and recommendations relate to “Residential Indoor Lighting Control” requirements of the Energy Code:</b></p> <p><b>10) Residential Indoor Lighting Controls</b></p> <p><b>a) Section 150.0(k)3C</b></p> <p>i) The 2nd sentence in this subsection was added for the indoor lighting controls Section 150.0(k)2D, but it doesn't belong in the outdoor controls section as dimmers, for instance, are not required for outdoors. CEA recommends striking this sentence.</p> <p>ii) C. An energy management control system (EMCS) or other controls that provides the specified lighting control functionality and complies with all requirements applicable to the specified controls may be used to meet these requirements. <del>No controls shall bypass control functions of a dimmer, occupant sensor, or vacancy sensor where the dimmer or sensor has been installed to comply with Section 150.0(k)3.</del></p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Specifically, Staff agrees with the proposal to delete the sentence in Section 150.0(k)3C "No controls shall bypass control functions of a dimmer, occupant sensor, or vacancy sensor where the dimmer or sensor has been installed to comply with Section 150.0(k)3."</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>
256335.012	Leviton Manufacturing	<p><b>The following comments and recommendations relate to “Residential Outdoor Lighting Control” requirements of the Energy Code:</b></p> <p><b>11) Residential Outdoor Lighting controls</b></p> <p><b>a) Section 150.0(k)3</b></p> <p>i) This requirement should be for all permanently installed outdoor lighting not just outdoor lighting that is mounted to a building. The current requirement leaves out lighting poles and other hardwired lighting. Permanently does not include solar lights or plugged in lights.</p> <p>ii) 150.0(k)3A. Outdoor <del>permanently installed</del> lighting <del>permanently mounted to a residential building or to other buildings on the same lot</del> shall meet the following requirements:</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>The adopted language is intended to clarify that the requirements do not apply to landscape lighting. Light poles installed in typical residential building sites are commonly used for landscape lighting and are not subject to the Energy Code's residential outdoor lighting requirements.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>

256335.013	Leviton Manufacturing	<p>The following comments and recommendations relate to “Residential Outdoor lighting” requirements of the Energy Code:</p> <p><b>12) Receptacle Control requirements</b></p> <p><b>a) Section 130.5(d)</b></p> <p>i) Change wording for clarification as the additional wording creates confusion instead of clarification.</p> <p>ii) Install at least one controlled receptacle within 6 feet from each uncontrolled receptacle <del>or install a splitwired multiple receptacle with at least one controlled and one uncontrolled receptacle.</del> Where receptacles are installed in modular furniture in open office areas, at least one controlled receptacle shall be installed at each workstation; and</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Staff disagrees with removing the requirement for one controlled and one uncontrolled receptacle. To address the comment, Staff has used "multiple-outlet device" to clarify the intent</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>
256335.014	Leviton Manufacturing	<p><b>13) Separation of Loads for Energy Monitoring</b></p> <p><b>a) Section 130.5(b)</b></p> <p>i) 2019 Title 24, Part 6 changed wording to “separation of Electrical Circuits for Energy Monitoring” – Leviton suggests that the requirements for metering be included in this section in order to properly line up with current energy codes 2021 IECC and ASHRAE 90.1</p> <p><b>ii) Change working to the following:</b></p> <p><b>SECTION 130.5</b></p> <p><del>(b) Separation of Electrical Circuits for Electrical Energy Monitoring. Electrical power distribution systems shall be designed so that measurement devices can be installed to measure, monitor and record the electrical energy usage of load types according to per the aggregation requirements of TABLE 130.5-B to enable effective energy management. The electrical energy usage for all loads shall be recorded a minimum of every 15 minutes and reported at least hourly, daily, monthly, and annually. The data for each tenant space shall be made available to that tenant. In buildings having a digital control system, the energy usage data shall be transmitted to the digital control system and graphically displayed. The sy</del></p>	<p>Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>
256335.015	Leviton Manufacturing	<p><b>14) Section 100.1 Definitions</b></p> <p><b>a) Section 100.1</b></p> <p>i. Multilevel Lighting Control: Recommend clarifying the definition.</p> <p>ii. Multilevel Lighting Control enables the level of lighting to be adjusted upward and downward across multiple levels is a lighting control that enables the illumination to be raised or lowered in addition to ON and OFF.</p> <p>We appreciate the opportunity to submit these comments and are available in the event that clarification is required on any of the comments.</p>	<p>Staff agrees with the comment, and changes have been made. Specifically, the adopted definition of "Multilevel Lighting Control" is: enables the intensity of lighting to be adjusted upward and downward.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256335&amp;DocumentContentId=92134</a>

256340.001	PAE Engineers	<p>Established in 1967 and stretching across six offices on the West Coast – from Seattle to Los Angeles – PAE is a 350-person firm providing services in mechanical, electrical, and plumbing engineering, building performance analysis, technology, and lighting design services. We work with clients to design the nation’s highest performing and most regenerative built environments that keep people comfortable, healthy, and productive inside while restoring the natural world outside.</p> <p>PAE fully supports the decarbonization of building systems and recognizes the need to update the Energy codes to address all electric HVAC systems. Unfortunately, the proposed changes to the office and school prescriptive baseline systems around VRF + DOAS and FPFC + DOAS with air to water heat pumps are a radical shift from the previous packaged VAV and VAV reheat systems, that would have a severe first and operational costs impact on projects. PAE understands that the performance path would still be available, but it imposes time and cost constraints on projects and should not be the only method required to demonstrate code compliance.</p> <p>The supporting evidence to these drastic changes provided by the CEC is clearly lacking as highlighted by the other public comments from the industry, including the ASHRAE President. We hope that the California Energy Commission will listen and consider the concerns expressed by the experts in the field and that the proposed changes to the baseline systems be postponed until in depth and verified analyses have been conducted and further clarifications have been provided.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256340&amp;DocumentContentId=92152">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256340&amp;DocumentContentId=92152</a>
256341.001	Sierra Club	<p>The CEC must adopt a 2025 building code that requires air conditioners to be replaced with heat pumps at their end of life. Our communities are experiencing unprecedented health and economic impacts from wildfires, heat waves, and droughts. The same fossil fuels causing climate change are also disproportionately burdening low-income communities and communities of color with some of the most polluted air in the nation. We want healthy, clean air solutions, and we are looking to you, our state energy representatives, to curb pollution by reducing gas use in our homes and communities.</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State’s long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256341&amp;DocumentContentId=92149">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256341&amp;DocumentContentId=92149</a>
256342.001	Sierra Club	<p>The undersigned organization, city elected officials, and individuals commend the California Energy Commission’s (CEC) work in developing the 2025 Title 24 Building Energy Efficiency Standards (“Building Code”). As we all recognize, the Building Code is a critical tool to decarbonize California’s buildings and achieve our climate and air quality objectives.</p> <p>We strongly support critical advances to the Building Code in the 45-day language that further building decarbonization, including expanded heat pump baselines for new construction in residential and commercial buildings and provisions that strongly encourage replacement of single-zone packaged rooftop units used in commercial buildings with heat pumps. Taken together, these measures will help ensure emissions-free heating and cooling in California’s new buildings and begin to make in-roads into decarbonizing existing commercial buildings.</p>	<p>Thank you for your comment of support.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256342&amp;DocumentContentId=92148">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256342&amp;DocumentContentId=92148</a>



256342.002	Sierra Club	<p>However, with California behind in meeting its climate objectives, it is incumbent on the CEC to ensure the 2025 Building Code realizes its full potential in reducing fossil fuel dependency in buildings. We are therefore concerned that the 45-Day Language eliminates key provisions from the earlier draft that would accelerate heat pump deployment and their corresponding climate, air quality and public health benefits in existing homes. Notably, the current draft omits prescriptive requirements that would encourage households statewide to install two-way heat pumps when replacing old air conditioning (AC) units. Due to their similar installation requirements, replacing central AC units with a heat pump is a low-cost intervention that protects against gas price volatility, reduces fossil fuel dependency, improves air quality and public health, and avoids the need for future gas.</p> <p>Moreover, including AC to heat pump replacement provisions in the Building Code are necessary to lay the groundwork for successful implementation of Air District and California Air Resources Board (CARB) zero-emission appliance standards. Because heat pumps provide both heating and cooling, restoring proposed provisions that require heat pump installation at the time of AC replacement provide a zero-emission heating source that avoids the future need to install a heat pump at the time of furnace replacement. Accordingly, we ask that the CEC prescriptively require new and full replacement residential air conditioning systems installed in major alterations be heat pumps as part of the 2025 Building Code. At a minimum, the CEC should prescriptively require heat pumps when the A/C replacement also includes replacement of ductwork and commit to revisiting heat pump replacement for routine A/C replacements in a mid-cycle review.</p>	<p>Comment acknowledged, no change made. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256342&amp;DocumentContentId=92148">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256342&amp;DocumentContentId=92148</a></p>
256343.001	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p>We write on behalf of the Joint Committee on Energy and Environmental Policy (“JCEEP”), Western States Council of Sheet Metal, Air, Rail and Transportation Workers (“WSC SMART”), California Association of Sheet Metal and Air Conditioning Contractors, National Association (“CAL SMACNA”), and National Energy Management Institute Committee (“NEMIC”) (collectively, “the Coalition”) to comment on the 2025 update to the Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 6 (also known as the California Energy Code). The Coalition greatly appreciates the Commission’s engagement with stakeholders throughout the pre-rulemaking process. Overall, the Coalition supports the comprehensive updates being made to the California Energy Code. However, discrete modifications to certain administrative provisions are needed to improve implementation and eliminate unnecessary costs.</p>	<p>Introductory remarks - no response needed.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a></p>

256343.002	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p><b>I. INTRODUCTION</b></p> <p>On March 29, 2024, the Commission released proposed changes to the B contained in the California Code of Regulations (CCR), Title 24, Part 6 (also known as the California Energy Code) and associated administrative regulations in Title 24, Part 1, Chapter 10 (“45-Day Language”). These include several significant changes to field verification and diagnostic testing (“FV&amp;DT”) program and acceptance test technician certification provider (“ATTCP”) program.</p> <p>Overall, the Coalition strongly supports the proposed changes to the nonresidential FV&amp;DT program. Specifically, the Coalition endorses eliminating redundant testing requirements for duct leakage testing for certain heating, ventilation, and air conditioning (“HVAC”) systems in nonresidential buildings. The Coalition also agrees with the proposed revisions to the acceptance test technician alternative procedure, which would allow field verification and diagnostic testing to be performed by certified acceptance test technicians (“ATTs”) without local agency pre-approval.</p> <p>In addition, the Coalition supports revisions to ATTCP quality assurance and accountability requirements, including the removal of the building department surveys and the newly added alternative shadow audit procedure at ATTCP training facilities. However, the Coalition is concerned that the proposed language is inequitable and creates additional unnecessary costs and administrative burdens. As a result, the Coalition proposes several discrete modifications to these requirements.</p> <p>Lastly, the Coalition opposes changing the FV&amp;DT program nomenclature to the Energy Code Compliance (“ECC”) program as it would cause considerable confusion and overstate the role of Home Energy Rating System (“HERS”) Raters.</p>	Thank you for your comments – Staff will respond to the itemized comments/concerns below.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a>
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256343.003	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p><b>II. STATEMENT OF INTEREST</b></p> <p>JCEEP is an advocacy organization that represents the California sheet metal workers' local unions and over 25,000 technicians working for over 600 contractors throughout California. JCEEP's mission is to promote responsible environmental, indoor air quality, and energy policy in California as it pertains to and impacts the HVAC industry.</p> <p>WSC SMART represents sheet metal workers local unions located in California, Arizona, Nevada, and Hawaii. WSC SMART's sheet metal worker members install HVAC systems and are committed to ensuring not just indoor heating and cooling comfort, but also protecting air quality that occupants breath and ensuring that HVAC systems are energy efficient. WSC SMART's California members have over 15 training facilities throughout the state where thousands of workers are trained daily in HVAC specialties, including heat pump installations.</p> <p>CAL SMACNA is a non-profit statewide trade association representing over 300 sheet metal and air conditioning contractors who employ more than 25,000 union employees and administrative personnel throughout California. CAL SMACNA aims to unify the voice of the industry for the benefit of member companies, employees, our communities, and industry through advocacy and program services. CAL SMACNA member contractors perform commercial and residential HVAC services, architectural and industrial sheet metal work, and manufacturing, testing and balancing, siding, and deck work.</p> <p>NEMIC is a non-profit organization that works with public, private, and government entities to promote certification, education, and emerging market opportunities in HVAC fire life safety, testing, adjusting and balancing, indoor air quality, and energy efficiency. NEMIC ensures trained and certified professionals are placed in positions to properly install, inspect, and maintain buildings' air</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a>
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256343.004	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p><b>III. THE PROPOSED CHANGES TO NONRESIDENTIAL FIELD VERIFICATION AND DIAGNOSTIC TESTING REQUIREMENTS ARE NECESSARY AND APPROPRIATE</b></p> <p>The 45-Day Language makes 4 important changes to the nonresidential FV&amp;DT program that the coalition strongly supports. First, it requires duct leakage testing to be performed by only a certified ATT, instead of both a HERS Rater and a certified ATT. Second, it allows any nonresidential FV&amp;DT to be performed by a certified ATT without local enforcement agency pre-approval. Third, it requires dwelling unit ventilation tests to be performed by either a HERS Rater or certified ATT, instead of both. Finally, it requires high rise multifamily dwelling unit enclosure leakage tests to be performed by either a HERS Rater or certified ATT, instead of both.</p> <p>The Commission properly recognizes that nonresidential duct leakage testing performed by HERS Raters is duplicative of acceptance testing performed by certified ATTs. Only recently, and under limited circumstances, were HERS raters required to perform field verification in nonresidential buildings and common areas in multifamily buildings. However, the concerns which initially prompted the Commission to require nonresidential duct leakage testing by HERS Raters are no longer present given the advent of certified ATTs. Eliminating this requirement would not result in any energy efficiency changes given the similarities between HERS Raters and certified ATTs (i.e., training, oversight, documentation). It would, however, streamline the compliances process by eliminating redundant testing, which in turn can reasonably be expected to lower costs.</p> <p>The Commission also rightly modifies the acceptance test technician alternative procedure to eliminate the requirement that certified ATTs obtain approval from local enforcement agency before they can perform nonresidential FV&amp;DT to satisfy the condition of compliance. While there are some distinctions between certified ATTs and HERS Raters, those dissimilarities did not necessitate an</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a>
256343.005	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p><b>IV. THE PROPOSED CHANGES TO ATTCP QUALITY ASSURANCE AND ACCOUNTABILITY REQUIREMENTS ARE GENERALLY APPROPRIATE, BUT REQUIRE SOME MODIFICATIONS</b></p> <p>The 45-Day Language makes 2 substantive changes to the ATTCP quality assurance and accountability requirements in Section 10-103.2(c)3F. First, it appropriately eliminates building department surveys to determine acceptance testing effectiveness. This requirement imposed unnecessary costs and burdens without any countervailing benefits or improved energy efficiency outcomes. The Coalition supports removal of this provision.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a>

256343.006	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p>Second, the 45-Day Language allows an ATTCP to meet the shadow audit mandate by either (1) observing the performance of an assigned ATT on the job site, for no less than 1 percent of each ATE's overseen projects or (2) observing the performance of each ATT on at least five functional tests at an ATTCP training facility at least once per code cycle. The training facility must replicate field conditions for installed equipment and controls in buildings and be set up to allow auditing of all functional tests. Shadow audits must be in addition to any recertification testing.</p> <p>While the Coalition supports shadow audits at an ATTCP training facility, the proposed language is inequitable and creates unnecessary costs and administrative burdens. To make the two shadow audit procedures truly equivalent and eliminate any potential ambiguity, the Commission should use the same language for both procedures. ATTCPs should be permitted to perform the shadow audit either on the job site or at an ATTCP training facility. In addition, ATTCPs should audit at least 1 percent of each ATE's overseen projects regardless of location.</p> <p>The proposed alternative procedure would impose significant, unnecessary costs because, as written, it would require that all ATTCP training facilities be set up to audit all functional tests. The Commission should narrow this requirement to ensure that only the ATTCP training facility where the audit occurs can conduct all the functional tests for which the ATT is certified to perform. This change is consistent with the fact that Commission regulations allow ATTs to be certified on just a subset of the most commonly performed acceptance tests. Allowing ATTCPs to designate certain training facilities for audits of just those partially-certified ATTs will make audits more cost-efficient. If a facility is not auditing any fully certified ATTs, it makes no financial or policy sense to require that facility to have the ability to audit for functional tests that it will never actually audit.</p>	<p>Comment acknowledged, no change made. Staff notes:</p> <ul style="list-style-type: none"> <li>o Job-site audits set a higher standard compared to laboratory training audits. Job-site audits represent actual field conditions, varying installation conditions, and other factors that will affect the ATTs acceptance testing performance. Job-site audits are more rigorous in ensuring ATT competency .</li> <li>o The training facility audit is provided as an alternative in response to comments received to provide flexibility because job-site audits may not always be practical in the field.</li> <li>o The training facility audit ensures all ATT get audited over a set time period. Staff views the training facility audit to occur once every code cycle (3 years) as a minimum requirement.</li> <li>o Staff will revisit this criteria once there is more information and data for the ATTCP program.</li> </ul>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a>
256343.007	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p>Finally, the Coalition proposes two additional modifications to the audit requirements to eliminate ambiguity. First, the Commission should clarify how ATTCPs determine 1 percent for audits. The current requirement is vague and ambiguous, which has made compliance difficult and inconsistent. For paper audits, the Coalition recommends clarifying that the number of compliance forms audited by an ATTCP shall be equal to 1 percent of the forms completed by an ATT in the prior code cycle. For example, if an ATT completed 500 forms during the 2019 code cycle, then an ATTCP would need to audit 5 of those completed forms.</p> <p>To reduce administrative burdens and costs, the paper audit should not apply to recently certified ATTs since the paper audit is meant to ensure that the ATT maintains competency over time. Therefore, the Coalition recommends that the paper audit apply to ATTs who have completed at least 20 compliance forms. In our experience, this roughly equates to approximately 3 jobs since an ATT completes an average of 7 forms per job.</p>	<p>Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a>

256343.008	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p>For shadow audits, the Coalition recommends clarifying that the number of shadow audits shall be equivalent to no fewer than 1 percent of each ATE's overseen projects in the prior code cycle. For example, if an ATE oversaw 400 projects in the prior code cycle, then the ATTCP would need to audit 4 randomly selected ATTs employed by the ATE.</p> <p>Second, the Commission should clarify the timeline for completing audits. The Coalition recommends that the paper audits for each ATT's prior code cycle be completed by the end of the next code cycle. Similarly, the Coalition recommends that the number of shadow audits completed in a code cycle be determined by the number of projects completed in the prior code cycle. This frequency is consistent with the 45-Day Language requiring that ATTCP shadow audit at an ATTCP training facility occur at least once per code cycle.</p>	<p>Staff disagrees with the comment, no changes have been made. The 1% trigger requirement has been part of the ATTCP program requirements for some time and the interpretation of the requirement have been established by a collaborative process with the ATTCP community. Staff may consider revisiting this topic in future code updates.</p> <p>Staff disagrees that the requirements regarding desk or paper audits is unclear. Staff will explore incorporating changes in compliance documents to address any remaining confusion.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a>
256343.009	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p>Consistent with the proposed modifications discussed above, the Coalition respectfully requests the Commission modify Section 10-103.2(c)3F as identified in the 45-Day Language as follows, with blue underline representing added language, and red strikethrough representing deleted language:</p> <p><i>See docketed comment for proposed language.</i></p>	<p>Thank you for your comment - Staff will respond to the itemized comments and questions below.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a>
256343.01	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p><b>V. THE PROPOSED NOMENCLATURE FOR THE FIELD VERIFICATION AND DIAGNOSTIC TESTING PROGRAM SHOULD BE RECONSIDERED</b></p> <p>The 45-Day Language proposes to rename the FV&amp;DT Program to the ECC Program to separate field verification from Home Energy Rating and Labeling program set forth in California Code of Regulations, Title 20. With this name change, HERS Rater, Provider, and Rater Companies would be identified as ECCRater, ECC-Provider, and ECC-Rater Companies, respectively. The Coalition strongly opposes this name change.</p> <p>Energy Code compliance is not exclusively performed by HERS Raters through the FV&amp;DT program. For example, acceptance testing for HVAC controls, lighting controls, and other covered processes in nonresidential and certain multifamily projects must be performed by certified ATTs.1 Acceptance test requirements specify targeted inspections and functional performance tests that demonstrate that the building components, equipment, systems and interface conform to the Energy Code.2 This helps ensure that the building achieves the energy savings potential specified in its design and protects installing technicians by providing demonstrable proof that the system functioned as required by the code when it was installed.3</p>	<p>Comment acknowledged, no change made. While there are many similarities between the Acceptance Test Technician Certification Program (ATTCP) and the Home Energy Rating System (HERS) program, the primary differences are that the HERS program is a residential, 3rd party compliance verification program, while the ATTCP program is a nonresidential 1st party acceptance test program. Staff spent more than a year with at least three public workshops to determine the new program name Energy Code Compliance (ECC), as documented in the rulemaking record.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a>

256343.011	JCEEP; WSC SMART; CAL SMACNA; NEMIC	<p>Like HERS Raters, ATTs must complete specific compliance documentation. Certificates of acceptance are completed by the certified ATT and must be submitted to the enforcement agency during the final inspection phase and prior to the enforcement agency issuing the certificate of occupancy.4 Certificates of verification are completed by HERS Raters, but may be waived if the related certificate of acceptance is completed by a certified ATT.5</p> <p>Identifying the FV&amp;DT program as the ECC program would cause considerable confusion and overstate the role of HERS Raters with respect to Energy Code compliance. In addition, the proposed name change would not simplify the identification of program stakeholders. Moreover, HERS programs have operated under that name for almost 30 years. Changing the name of the program now would simply cause confusion in the marketplace with no discernable benefit. The fact that Commission staff have indicated that HERS companies could continue to call themselves HERS Raters even with the name change underscores just how confusing and unnecessary this name change would be. The Commission should return to its original program name and continue to identify program stakeholders in a manner that accurately reflects the work they perform.</p> <p><b>VI. CONCLUSION</b> The Coalition greatly appreciates the Commission’s continued efforts to improve the Energy Code and thanks the Commission for consideration of these comments.</p>	<p>Comment acknowledged, no change made. While there are many similarities between the Acceptance Test Technician Certification Program (ATTCP) and the Home Energy Rating System (HERS) program, the primary differences are that the HERS program is a residential, 3rd party compliance verification program, while the ATTCP program is a nonresidential 1st party acceptance test program. Staff spent more than a year with at least three public workshops to determine the new program name Energy Code Compliance (ECC), as documented in the rulemaking record.</p> <p>Staff summarizes from the rulemaking record a few reasons for renaming the HERS program: (1) The HERS name has very little relationship to Rater activities while providing FV&amp;DT services. (2) The HERS name aligns more closely with the Whole House Rating program, which the Energy Commission is maintaining. (3) The HERS name may be unavailable for the Energy Commission to continue to use because it has been copyrighted by RESNET.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256343&amp;DocumentContentId=92151</a>
256344.001	Institute for the Building Envelope	<p>The undersigned organizations appreciate the opportunity to comment on the California Energy Commission’s (CEC) 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms (2025 Building Energy Efficiency Standards). We are recommending changes to the proposed 2025 Building Energy Efficiency Standards and the forth coming CBECC-Res 2025 User Manual. We encourage CEC to adopt a prescriptive unvented (sealed) attic design; update the definition of ‘conditioned space, indirectly,’ and change the requirements for modeling unvented (sealed) attics in CBECC-Res. These changes will promote the construction of more energy efficient homes without increasing cost and bring the 2025 Building Energy Efficiency Standards and CEC Guidance into alignment with Senate Bill 837, which was signed by Governor Newsom on October 8, 2023.</p>	<p>Comment acknowledged, no change made.</p> <p>Staff are not making any changes to the prescriptive compliance method on this matter. Instead, Staff are exploring credits for unventilated attics in the ACM Reference Manual and compliance software.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153</a>
256344.002	Institute for the Building Envelope	<p><b>Recommended Changes to the 2025 Building Energy Efficiency Standards and CBECC-Res 2025 User Manual</b> A. Creating Prescriptive Unvented (Sealed) Attic Design Based upon CEC’s analysis of unvented (sealed) attics, we are recommending CEC adopt a “high performance attic” design for unvented (sealed) attics. During our recent discussions with CEC, the Commission suggested unvented (sealed) attics with roof deck insulation of R-30 have an equivalent energy performance as compared to the current High-Performance Attic option B. Therefore, we are proposing a new High-Performance Attic with R-30 air impermeable insulation applied to the roof deck, with a whole home airtightness value of less than 3.0 ACH50.</p>	<p>Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update. In the meantime, Staff will explore addressing this topic in the ACM Reference Manual and compliance software.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153</a>

256344.003	Institute for the Building Envelope	<p>We encourage CEC to adopt the following changes to Section 150.1(c):</p> <p>1. Insulation.</p> <p>A. Roof and ceiling insulation shall be installed in a ventilated attic with an R-value equal to or greater than that shown in Table 150.1-A meeting options ii <del>or</del> iii, <u>or iv</u> below.</p> <p>i. Option A: RESERVED.</p> <p>ii. Option B: A minimum R-value of insulation installed between the roof rafters in contact with the roof deck and an additional layer of ceiling insulation located between the attic and the conditioned space when meeting Section 150.1(c)9A; or</p> <p>iii. Option C: A minimum R-value of ceiling insulation located between the attic and the conditioned space when meeting Section 150.1(c)9B.</p> <p>iv. Option D: <u>Unvented (sealed) Attics: A minimum R-value of air impermeable insulation applied to the roof deck.</u></p>	<p>Comment acknowledged, no change made.</p> <p>Staff are not making any changes to the prescriptive compliance method on this matter. Instead, Staff are exploring credits for unventilated attics in the ACM Reference Manual and compliance software.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153</a>
256344.004	Institute for the Building Envelope	<p>B. Updating the Definition of "Conditioned Space, Indirectly"</p> <p>While there is a strong case that unvented (sealed) attics meet the requirements of 'CONDITIONED SPACE, INDIRECTLY,' we are recommending additional changes to the definition of 'CONDITIONED SPACE, INDIRECTLY' to comply with SB 837 and clarify that unvented (sealed) attics meet the definition. We encourage CEC to adopt the following changes:</p> <p>CONDITIONED SPACE, INDIRECTLY is enclosed space that (1) is not directly conditioned space; and (2) either (a) has a thermal transmittance area product (UA) to directly conditioned space exceeding that to the outdoors or to unconditioned space and does not have fixed vents or openings to the outdoors or to unconditioned space, or (b) is a space through which air from directly conditioned spaces is transferred at a rate exceeding three air changes per hour, or (c) meeting the requirements of the high performance unvented (sealed) attic, per option D section 150.1.</p>	<p>Staff disagrees with the comment, and no changes have been made. Staff will review options to address the comment through the performance compliance path.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153</a>
256344.005	Institute for the Building Envelope	<p>C. Updating the CBECC-Res 2025 User Manual</p> <p>Finally, we are recommending CEC update the note regarding unvented attics in the CBECC-Res 2025 User Manual. We suggest the following changes:</p> <p>NOTE: Ducts located in an <u>high performance</u> unventilated (<u>sealed</u>) attic <del>do not</del> qualify as ducts in conditioned space and should be modeled as "ducts located in <u>a conditioned</u> attic (<del>ventilated or unventilated</del>)".</p>	<p>Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Specifically, this comment requests a change to the CBECC-Res 2025 User Manual. Staff notes that we are not making any changes to the prescriptive compliance method on this matter. Instead, Staff are exploring credits for unventilated attics in the ACM Reference Manual and compliance software.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153</a>



256344.006	Institute for the Building Envelope	<p><b>Background of Unvented (or Sealed) Attics</b> Unvented (sealed) attics are a modern construction assembly, which (generally) use air impermeable insulation to encapsulate and seal the attic space. Unvented (sealed) attics are insulated on the underside of the roof deck and the attic eaves are insulated and sealed from the environment. Unvented (sealed) attics should be as airtight as the other sections of the building thermal envelope.</p> <p>Unvented (sealed) attics are more energy efficient than traditional attics because the HVAC equipment and ductwork are operating in conditioned space at a temperature that is essentially equivalent to the occupied space.</p> <p>Unvented (sealed) attics have been approved for use in the International Residential Code (IRC) since the 2004 IRC Supplement. Unvented (sealed) attics are considered conditioned space in the 49 other states.</p> <p>CEC should promote the use of unvented attics in California to cost-effectively increase energy efficiency.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153</a>
256344.007	Institute for the Building Envelope	<p><b>CEC Modeling Guidance for Unvented Attics</b> Currently, the CEC does not consider unvented (sealed) attics conditioned space, although, this is not clearly articulated in Title 24, Part 6. It is outlined in the CBECC-Res User Manual.</p> <p>Section 5.2.2 of the CBECC-Res 2022 User Manual states: NOTE: Ducts located in an unventilated attic do not qualify as ducts in conditioned space and should be modeled as “ducts located in attic (ventilated or unventilated)”.</p> <p>Title 24, Part 6 includes 3 definitions related to conditioned space: CONDITIONED SPACE is an enclosed space within a building that is directly conditioned or indirectly conditioned.</p> <p>CONDITIONED SPACE, DIRECTLY is an enclosed space that is provided with wood heating, mechanical heating that has a capacity exceeding 10 Btu/hr-ft<sup>2</sup>, or mechanical cooling that has a capacity exceeding 5 Btu/hr-ft<sup>2</sup>. Directly conditioned space does not include process space. (See “process space.”)</p> <p>CONDITIONED SPACE, INDIRECTLY is enclosed space that (1) is not directly conditioned space; and (2) either (a) has a thermal transmittance area product (UA) to directly conditioned space exceeding that to the outdoors or to unconditioned space and does not have fixed vents or openings to the outdoors or to unconditioned space, or (b) is a space through which air from directly conditioned spaces is transferred at a rate exceeding three air changes per hour</p>	<p>Comment acknowledged, no change made.</p> <p>Staff notes that we are not making any changes to the prescriptive compliance method on this matter. Instead, Staff are exploring credits for unventilated attics in the ACM Reference Manual and compliance software.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153</a>

256344.008	Institute for the Building Envelope	<p>We believe that Unvented (sealed) attics fall within the definition of “CONDITIONED SPACE, INDIRECTLY” because the attic space is indirectly conditioned from the adjacent occupied space below. Therefore, complying with subsection (1) because Unvented (sealed) attics are not directly conditioned and subsection (2) because more conditioned air is moving across the ceiling between the occupied space and the attic than across the building envelope separating the attic from the exterior. Figure 1 demonstrates the airtightness of several attics in Florida. (Note: the current airtightness requirement in Florida is 7 ACH50.)</p> <p>There is no insulation on the attic floor and any penetrations such as recessed can lights or plumbing or wiring are not air sealed. This enables the two spaces to communicate via air leakage from the occupied space below. Typically, the Unvented (sealed) attic space maintains a temperature and relative humidity very close to the space below. This communication prevents the ductwork from being surrounded by very hot temperatures in the summer season and cold temperatures in the winter season, thus reducing the Delta T across the duct insulation. Additionally, any duct leakage in the unvented (sealed) attic stays inside the thermal envelope, thus reducing overall air infiltration and energy loss.</p> <p><i>See docketed comment for figure.</i></p>	<p>Comment acknowledged, no change made.</p> <p>Staff notes that we are not making any changes to the prescriptive compliance method on this matter. Instead, Staff are exploring credits for unventilated attics in the ACM Reference Manual and compliance software.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153</a>
256344.009	Institute for the Building Envelope	<p><b>Conclusion</b></p> <p>Unvented (sealed) attics are like putting a hat on a home. These keep attics cool in the summer and warm in the winter. They reduce energy usages and save homeowners money, without increasing construction costs. CEC can increase the effectiveness of Title 24; Part 6 by promoting the use of unvented (sealed) attics. Accordingly, we encourage CEC to adopt the following three changes:</p> <ol style="list-style-type: none"> <li>1. Create a prescriptive high-performance unvented (sealed) attic.</li> <li>2. Update the definition of ‘conditioned space, indirectly.’</li> <li>3. Update the CBECC-Res 2025 User Manual</li> </ol>	<p>Comment acknowledged, no change made.</p> <p>Staff notes that we are not making any changes to the prescriptive compliance method on this matter. Instead, Staff are exploring credits for unventilated attics in the ACM Reference Manual and compliance software.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256344&amp;DocumentContentId=92153</a>

256346.001	Wattstopper Legrand	<p>Legrand, especially its California based Wattstopper lighting control brand, appreciates this opportunity to submit comments on the lighting portion of the 45 Day Language draft for the 2025 Title 24, Part 6 Standard. We gratefully acknowledge the significant work put forward by all proposal teams, commission staff, commission consultants and other contributors to improve the energy efficiency and applicability of the Title 24 lighting and lighting control related sections.</p> <p>We would like to first reiterate the general statement we offered in our letter of response to previous Express Terms draft, which is to applaud the overall improvement in readability that has occurred in much of the lighting and lighting control code sections. It appears that the CEC took to heart many of the recommendations published in the CLTC's "2025 Title 24 Lighting Language Cleanup Initiative" which sought to clarify and simplify the code language. We are extremely pleased to see that many of the recommendations we and others voiced in the past have found their way into the draft 2025 Title 24 Code language.</p> <p>For the bulk of our comments, we've arranged them in accordance with the Energy Code's section numbering scheme.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.002	Wattstopper Legrand	<p><b>Section 100.0(a)1 – Scope</b></p> <p>We noticed that type "L" Occupancy Groups are now covered by Title 24 Part 6 (and that Laboratory and Laboratory Suites are now defined in Section 100.1) but did not see any exceptions for this building type in the lighting control portion of the code. Since it might be dangerous for the occupants in these structures to have their lighting turned off suddenly, we believe the CEC should consider adding an exemption to "Section 130.1(c) Shut-OFF Controls" based on language used in ASHRAE 90.1's Exceptions to 9.4.1.1(h)3. ASHRAE states that automatic shut off of lighting is not required for "General Lighting and task lighting in spaces where automatic shutoff would endanger the safety or security of the room of building occupants."</p>	Staff disagrees with the comment. Health and safety code requirements supersede Energy Code requirements.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.003	Wattstopper Legrand	<p><b>Section 100.1 – Definitions</b></p> <p><b>Multilevel Lighting Control</b> enables the level of lighting to be adjusted upward and downward. This seems too simple a definition, as even a single pole wall switch would meet this requirement. Would suggest the definition instead be "<b>Multilevel Lighting Control – a dimmer that enables the intensity of lighting to be continuously adjusted up to full on and down to full off, or levels dictated by the energy code.</b>"</p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>

256346.004	Wattstopper Legrand	<p><b>Section 110.12 – Demand Response</b> Regarding the proposed changes in the 2025 Code, would offer the following comments:</p> <p><u>110.12(c)2 – Demand responsive controls</u> For buildings where demand response controls are required, demand responsive controls shall control the general lighting in the spaces required to meet Section 130.1(b) or 160.5(b)4B and may control additional lighting. We understand that the code should contain the specific requirements, but worry that by removing the text “and may control additional lighting.” it could be taken to mean that additional lighting cannot be controlled by the Demand Responsive system. Suggest leaving that phrase in the code since it was there previously.</p> <p><u>110.12(c) – Demand Responsive Controlled Receptacles</u> Demand Responsive Controlled Receptacles. In spaces required to have controlled receptacles per Section 130.5(d) or 160.6(d) and where demand-responsive lighting controls are installed, the controlled receptacles shall be capable of automatically turning off all connected loads in response to a demand response signal. Extremely pleased to see that the requirement for DR Controlled Receptacles has been modified such that it only applies to spaces with DR Lighting Controls, and the additional extra line in the Express Terms has now been deleted.</p>	Staff disagrees with the comment, and no changes have been made. Currently proposed language allows demand responsive controls to control additional lighting.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.005	Wattstopper Legrand	<p><b>Section 120.1(d)5A – Occupied – Standby Zone Controls</b> The summary language in this section “Spaces meeting these criteria include, but no limited to:” is unfortunately confusing, because there are more spaces than these that are included. Also however, “Breakrooms” are included in the list, but are not an area that is required to have Occupant Sensors per Section 130.1©5 and 6 (which should actually be 130.1©5 or 6. Believe this section needs to be edited further for clarity.</p>	Staff agrees with this comment, and changes have been made. Specifically, the language and examples noting conflicting spaces listed in 130.1(c)5 and 6 have been removed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.006	Wattstopper Legrand	<p><b>Section 130.1(a) – Manual Controls</b> There’s much to be applauded in this section – especially the deletion of the laundry list of spaces in Exemption 1 to Section 130.1(a)2 by simply rewording that section and putting decision making power in the hands of the project designers when it comes to any space on the project. Thank you, it’s very much appreciated.</p> <p>One paragraph is confusing however and should be edited.</p> <p><b>Exception to Section 130.1(a)2: The controls for the egress lighting are not accessible to unauthorized personnel.</b></p> <p>Egress lighting is often controlled with other lighting in a space when normal power is available and would be controllable by anyone using that space. If this is the case, we would suggest editing to read: <b>Exception to Section 130.1(a)2: When normal power has failed, egress lighting should not be controllable by unauthorized personnel.</b></p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Staff agrees that the suggested wording will clarify access to controls of egress lighting during power outages.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>

256346.007	Wattstopper Legrand	<p><b>Section 130.1(b) – Multilevel lighting controls</b>  <b>“The general lighting of any space with a size of 100 square feet or larger and with a connected lighting load greater than 0.5 watts per square foot shall be provided provide with multilevel lighting controls.”</b>  Grammatical error, words “be provided” or “be included” should be added and “provide” eliminated in the sentence.</p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.008	Wattstopper Legrand	<p><b>Section 130.1(c)3 – Shut-Off Controls</b>  Appreciate that in the subsection, there is now an exemption for areas which use occupancy sensors in addition to an automatic time-switch control. This is a design practice that we regularly see – adding occupancy sensors so that after hours lights are automatically on when someone is in the area – and appreciate it being called out as an allowable exemption in the Energy Code.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.009	Wattstopper Legrand	<p><b>Section 130.1(c)5 – Shut-Off Controls</b>  Would ask that the CEC use the opportunity to clear up something that has confused many people. Asking for clarity regarding the sentence:  <b>“In areas required by Section 130.1(b) to have multi-level lighting controls, the occupant sensing controls shall function either as a:”</b></p> <p>Does the above sentence, and the conditions below that sentence, apply to ANY space that uses occupancy sensing controls, or just the five spaces in the first line of 130.1(c)5:  <b>“Occupant sensing controls are required for specified offices, multipurpose rooms, classrooms, conference rooms and restrooms.”</b></p> <p>If it just applies to four of the listed five spaces (restrooms being now excluded), please consider rewording this sentence to read:  <b>“In areas required by Section 130.1(b) to have multi-level lighting controls, the <u>specified offices, multipurpose rooms, classrooms, and conference rooms with</u> occupant sensing controls shall function either as a:”</b></p> <p>If it just applies to any space with occupancy controls (except restrooms), would reword this sentence to read:  <b>“In areas required by Section 130.1(b) to have multi-level lighting controls, <u>any space except restrooms using</u> the occupant sensing controls shall function either as a:”</b></p> <p>Based on above, it may also be helpful to edit the second conditional sentence to be clear as to whether it applies to just those four specific spaces or all spaces using occupancy sensors.</p>	Comment acknowledged. Changes were made to this section. Section 130.1(c)5 applies to "offices 250 square feet or smaller, multipurpose rooms of less than 1,000 square feet, classrooms, conference rooms, and restrooms." These spaces subject to Section 130.1(c)5 fall into two categories: those subject to the requirements for multilevel lighting controls in Section 130.1(b); and those that are not subject to Section 130.1(b). Staff has removed the proposed 45-Day edits / language about restrooms from Section 130.1(c)5.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.01	Wattstopper Legrand	<p><b>Section 130.1(c)6C</b>  <b>Full or partial-OFF occupant sensing controls are required for warehouse aisle ways, warehouse open areas, library book stack aisles, corridors, and stairwells, and offices greater than 250 square feet, parking garages, parking garage areas, and loading and unloading areas.</b></p> <p>Grammatical errors – eliminate the word “and” twice, add a comma between corridors and stairwells, and add word garage since “parking garage areas” are defined.</p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>

256346.011	Wattstopper Legrand	<p><b>Section 130.1(c)6C</b>  <b>In corridors and stairwells, lighting shall be controlled by occupant sensing controls that separately reduce the lighting power in each space by at least 50 percent when the space is unoccupied.</b></p> <p>We still believe that the above sentence should specify “general lighting” instead of just “lighting”, as was called out for consideration in a previous year’s draft code. Lighting that is used to light an individual room number or doorway should not be included in the 50% calculation requirements when there are other general lighting fixtures for the hallway.</p>	<p>Staff disagrees with the comment, and no changes were made.</p> <p>The requirements of Section 130.1(c)6C apply to all lighting in the areas subject to Section 130.1(c)6C.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.012	Wattstopper Legrand	<p><b>Section 130.1(c)6E</b>  <b>In parking garages, parking areas and loading and unloading areas, general lighting shall be controlled by occupant sensing controls that meet the requirements below instead of complying with Section 130.1(c)1:</b></p> <p>“Parking areas” are not listed in the definitions. Should the phrase “parking garage areas” be used instead? This should also be considered for 130.1(d)E - should both parking garage and parking garage areas be called out together?</p>	<p>Comment acknowledged, no change made. Staff notes that "Parking areas" specified in Section 130.1(c)6E are the areas on the roof of a parking structure. Parking garages, parking areas, and loading and unloading areas are defined in Section 100.1 and 130.1(c)6 as follows:</p> <p>Parking garage (parking garage buildings) is a building with building floor areas used for parking vehicles.</p> <p>Parking areas are those areas of a parking garage for the purpose of parking.  -“Parking areas include sloping floors of a parking garage.”  -“Parking areas and ramps do not include Daylight Adaptation Zones or the roof of a Parking Garage, which may be present in a Parking Garage.”</p> <p>Loading and unloading areas are those areas of a parking garage for the purpose of loading and unloading passengers.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.013	Wattstopper Legrand	<p><b>Section 130.1(c)8 – Hotel/motel guest rooms</b>  Appreciate that the language in this section has stayed the same, and that Captive Card Key controls are still allowed. This optional control method helps with challenging conditions in hotel rooms – particularly when people are covered by their blankets.</p>	<p>Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.014	Wattstopper Legrand	<p><b>Section 130.1(d) – Daylight Responsive Controls</b>  We certainly applaud the changes in this section’s language regarding the wattage triggers for primary, secondary, and skylit daylight zones. Calling each zone out individually with its trigger wattage is far more understandable than the previous language in the 2022 Energy Code.</p> <p>While we are concerned with the language in 130.1(d)2C which seeks to “break” general lighting luminaires longer than 8 feet into segments of 8 feet or less, the 45 day language is better than what was proposed before. We do believe examples of this division of longer fixtures should be included in the Compliance Manual to make it clear how designers should apply this requirement.</p>	<p>Thank you for your comment of support.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.015	Wattstopper Legrand	<p><b>Section 130.1(d)2Biii &amp; Ci-iv– Daylight Responsive Controls</b>  Section 130.1(d)2Biii appears to have the dangling word “;and.” at the end of the paragraph. Also should this and 130.1(d)2Ci-iv all be individual sentences, or sentences with the word “, and” at the end of all paragraphs except the last?</p>	<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Staff notes that "and" is included after each subsection, from Section 130.1(d)2A thru 2F, to convey that ALL of the requirements of Section 130.1(d), from 2A thru 2F, are required.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>

256346.016	Wattstopper Legrand	<p><b>Section 130.1(d)2F – Daylight Responsive Controls Override</b></p> <p>Want to add that we believe the additional paragraph allowing daylighting systems to be temporarily overridden by the user makes an enormous amount of sense. While there was language before in the Compliance Manual, bringing it to the language of the code itself is hugely beneficial and we believe that in the long run this will prevent users from disabling their daylight controls after they've been installed.</p> <p>There are several suggestions we would make about this overall section. First is that the word in the first sentence should be <b>decreasing</b> instead of <b>decrease</b>. Next, in the sentence fragment <b>“Manual controls shall be permitted to temporarily increase electric lighting light levels...”</b>, that “shall be permitted” should be changed to “may be permitted” which I believe matches the CEC’s intention – there are sites and designers that may not wish to allow employees to override the light level, and so the permissive “may” is a better term to use than the mandatory “shall”.</p> <p>Additionally, the last portion of the final line <b>“...reset electric lighting controls back to the Section 130.1(d)3 defaults after electric lighting have been turned off or reduced by a manual control, occupancy sensor or timeclock.”</b>, we do not think the “reduced by a manual control” should be called out, as it might be confusing. If someone reduces their light level slightly, they may be confused as to why the photocell has taken back control and driven the light levels lower. However there would be little confusion when the lighting has been turned off, and control has been returned to the daylighting controller when a person or device calls for the lights to come back on.</p> <p>It’s also a little unusual that the exemptions to the entire 130.1(d) section are listed at the end of the section, instead of right after the beginning of the section as done in 130.1(c).</p> <p>Lastly, do not see why Exemption 3 to Section 130.1(d) is needed. If a secondary sidelit zone is less than 85W, it already meets the exemption for secondary sidelit zones of 75W</p>	<p>1. Thank you for your comment of support.</p> <p>2. Staff agrees with the comment, and changes have been made.</p> <p>3. Staff agrees with the comment, and changes have been made.</p> <p>4. Staff disagrees with the comment, and no changes have been made. Section 130.1(d)2F details requirements for Interactions with other lighting controls. It is not an exception.</p> <p>5 &amp; 6. Comment acknowledged, no change made. Exceptions 3 to Sections 130.1(d) and 160.5(b)4D are correct. The "less than 85 watts" threshold of the secondary sidelit daylight zone is intended to be a less stringent requirement than the "less than 75 watts" requirement.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.017	Wattstopper Legrand	<p><b>Section 130.1(f) – Control Interactions</b></p> <p>We wanted to say we are very appreciative that this entire section has been removed, as the only item in it that provided additional information – whether daylighting controls can be overridden temporarily – is now in the daylighting section of the code.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>

256346.018	Wattstopper Legrand	<p><b>Remaining Energy Code Sections</b></p> <p>Rather than call out each section individually, we wanted to just mention a few remaining key thoughts:</p> <p>☑ We have trouble understanding why PAFs can only apply to General Lighting (per 140.6(a)2). In the case of Demand Response, for instance, we believe it would be valuable to offer a multiplier for other types of lighting should they be set up to participate in Demand Response. Consider Display and Decorative Lighting in a large retail establishment. We especially do not understand why the Demand Response PAF Type of Area column now states “If DR controls are required of Section 110.12(c), this PAF is not available for any lighting in the project.” Why would the CEC not want to incentivize projects that have areas of general lighting less than .5W/sqft, or general lighting in rooms less than 100 sqft, to include the general lighting in these spaces in their DR program?</p> <p>☑ Also concerning the PAF table, why call out specifically that it must be <b>one sensor</b> controlling areas no larger than 125 square feet, or <b>one sensor</b> controlling areas from 126-250 square feet. It may be that multiple sensors are embedded in the fixtures in these areas, so why wouldn’t that be allowed to take advantage of these PAFs if they’re controlling the appropriate areas?</p> <p>☑ An apology regarding our letter on the Express Terms draft. We did not fully comprehend the way this new version of the code was planning on handling lighting that would have fallen under the Tailored Method previously. We believed it to have been entirely eliminated, but on review see that lighting that would have possibly used the Tailored Method is now included as new rows in the Area Method table. We appreciate that the CEC is offering designers a straightforward way to deal with display lighting at different mounting heights (and the like) and will make sure that we point this out when we start our presentations on the changes in the code next year.</p> <p>☑ We’re very appreciative that Table 140.7-B now includes information letting readers know when a Specific Application may be used as additional allowance for applicable illuminated hardscape area on the site.</p> <p>☑ We’re still of the opinion that High-rise Multifamily dwellings do not need to have their</p>	<p>Comment acknowledged, no changes made.</p> <ol style="list-style-type: none"> <li>The comment proposes to set a different trigger threshold for the PAF requirements, which is out of the scope of this rulemaking. Staff will revisit this topic in the 2028 code update.</li> <li>The Demand Response (DR) PAF Type of Area column now states “If DR controls are required of Section 110.12(c)” to clarify the scenarios when the PAF is applicable. Staff notes that the PAF is available when DR lighting controls are not required, and are installed on a voluntary basis.</li> <li>Different thresholds for meeting the PAF is out of the scope of this rulemaking. This topic could be considered for a future code update.</li> <li>Staff thanks the commenter for their observations on the Tailored Method.</li> <li>Thank you for your comment of support on Table 140.7-B.</li> </ol>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256346.019	Wattstopper Legrand	<p>If there is any discussion point in this letter where the CEC finds our concerns or suggestions unclear, we hope that you’ll consider contacting us for clarifications. We’ve certainly enjoyed the opportunities we’ve had in the past to discuss the Energy Code language by phone, email, and in person, and hope to continue that positive relationship for many years to come.</p>	<p>Thank you for your comment.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256346&amp;DocumentContentId=92159</a>
256347.001	Western Riverside Council of Governments on behalf of I-REN	<p>The Inland Regional Energy Network (I-REN) respectfully submits these comments in support of the changes proposed in the rulemaking process for the 2025 Building Energy Efficiency Standards to the California Energy Commission (CEC).</p> <p>Please find attached WRCOG Comments on 2025 Energy Code Rulemaking, 45-day Language on behalf of the Inland Regional Energy Network.</p>	<p>Introductory remarks - no response needed.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158</a>



256347.002	Western Riverside Council of Governments on behalf of I-REN	<p>The Inland Regional Energy Network (I-REN) respectfully submits these comments in support of the changes proposed in the rulemaking process for the 2025 Building Energy Efficiency Standards to the California Energy Commission (CEC). I-REN appreciates the leadership that CEC has shown in the development of the Energy Code, and would like to recognize the CEC's successes in incorporating building industry feedback.</p> <p>I-REN is a collaboration among three California local inland governments (Coachella Valley Association of Governments, San Bernardino Council of Governments, and Western Riverside Council of Governments) established to actively participate in California's clean energy initiatives and build a stronger clean energy economy throughout communities in Riverside and San Bernardino counties. I-REN implements a dynamic and targeted set of programs to assist local government agencies in better understanding and enforcing the Energy Code, including its Codes &amp; Standards program, which supports and trains local building departments and the building industry to enable long-term Energy Code compliance.</p> <p>When reviewing the proposed changes, I-REN has kept the following guidelines in mind:</p> <ul style="list-style-type: none"> <li>☑ Code should align with California's energy goals.</li> <li>☑ To the extent possible, code requirements should be clear and consistent, to enable a streamlined code that is approachable and understandable.</li> <li>☑ Code requirements should reflect the feedback of building industry stakeholders about implementation and compliance needs.</li> <li>☑ Code requirements should be cost effective, even for underserved and hard-to-reach stakeholders.</li> </ul>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158</a>
256347.003	Western Riverside Council of Governments on behalf of I-REN	<p><b>I-REN supports the heat pump baseline updates for residential buildings across all climate zones, residential prescriptive heat pump requirements, and updates to multifamily heat pump requirements.</b></p> <p>These changes have been shown to be cost effective, and the changes to the residential baseline will help establish a clear, consistent residential code for all climate zones. Critically, these changes will support energy and climate goals statewide. The shift toward heat pumps also supports efforts to improve air quality in the Inland Empire, which is a significant concern in this region.</p> <p>In the pre-rulemaking process, I-REN noted that Climate Zone 15 was proposed as a potential exception to these changes due to cost effectiveness, based on some heating load assumptions that I-REN advised were potentially inappropriate. I-REN appreciates that these concerns have been reviewed, the heating load assumptions have been updated, and now there is a consistent requirement across all climate zones.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158</a>
256347.004	Western Riverside Council of Governments on behalf of I-REN	<p><b>I-REN supports the proposed Controlled Environment Horticulture (CEH) language.</b></p> <p>This proposed update to lighting for CEH is highly cost-effective. Indoor horticulture is prevalent in I-REN's service area and I-REN is excited to support this measure for its potential energy and cost savings.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158</a>

256347.005	Western Riverside Council of Governments on behalf of I-REN	<p><b>I-REN supports the proposed mandatory requirement for thermal pool and spa heating systems in nonresidential, multifamily, and new construction single family homes with heated pools and spas.</b></p> <p>These updates are cost effective and will save wasted energy, in line with California’s energy goals. Additionally, I-REN appreciates that building industry feedback provided during the pre-rulemaking phase was taken into consideration.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158</a>
256347.006	Western Riverside Council of Governments on behalf of I-REN	<p><b>I-REN supports PV and Energy Storage updates and supports the new categories of nonresidential buildings for storage requirements.</b></p> <p>The new categories of nonresidential buildings for storage requirements will improve grid resiliency. Additionally, I-REN appreciates that the building industry feedback was taken into consideration to ensure optimal customer value for the investment in energy storage systems. I-REN supports updates to the solar heat gain coefficient (SHGC) for fenestration but seeks clarity on the language around exceptions.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158</a>
256347.007	Western Riverside Council of Governments on behalf of I-REN	<p>The SHGC is limited to 0.23 in Climate Zone 15 (part of I-REN territory) for additions and alterations, per Section 150.2(b)1A. Based off language for exceptions in the prior code cycle, it may be clearer to use the word additions as opposed to alterations, so that Exception 1 adds an exception for any additions that add vertical fenestration in CZ 15.</p> <p>Further, the replacement fenestration updates in Section 150.2(b)1B is also limited to a SHGC of 0.23 in CZ 15. However, Exception 1 currently allows for a SHGC of 0.35 for replacement of vertical fenestration less than or equal to 75 square feet. This presents a discrepancy between Exception 1 and Exception 3, and I-REN believes that Exception 1 should apply to CZs 6-14, not CZs 6-15.</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <ol style="list-style-type: none"> <li>Staff disagrees with the comment regarding adding an exception for additions of vertical fenestration in climate zone 15. This exception only applies to alterations where additional fenestration is being added. This exception allows the newer fenestration to more closely resemble the existing/replacement fenestration. No changes have been made.</li> <li>Staff agrees with the comment regarding SHGC requirements in replacement fenestration, and changes have been made.</li> </ol>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158</a>
256347.008	Western Riverside Council of Governments on behalf of I-REN	<p><b>I-REN is ready to support the CEC in making updates to the Home Energy Rating program, and requests that the CEC continue to gather and incorporate industry feedback on these changes.</b></p> <p>Overall, I-REN supports the CEC’s vision to make updates to the Home Energy Rating program. However, we have heard concerns about select changes, including some industry confusion about differentiating the roles that the HERS rater can play in a project, and about the proposed program name. In particular, I-REN recommends that the name reference the concept of “verification” to better align with the program goal, as the proposed “compliance” may unintentionally misrepresent program scope. As the CEC held a workshop on the proposed changes on April 30, we anticipate that the CEC will continue to gather and incorporate industry feedback to address these concerns.</p>	Thank you for your comment. This comment is out of scope of this rulemaking.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158</a>
256347.009	Western Riverside Council of Governments on behalf of I-REN	<p>Finally, as a general comment: I-REN appreciates that the CEC had made significant effort in this revision to propose updates that help the code to stay organized, current, and understandable. Maintaining clear and concise language is critical to ensuring ongoing Energy Code compliance.</p> <p>We appreciate the opportunity to review the proposed code language and provide comment. I-REN looks forward to working with the CEC and regional stakeholders to provide updated training and education materials, and to support the rollout of the 2025 Energy Code.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256347&amp;DocumentContentId=92158</a>

256348.001	Bradford White Corporation	<p>On behalf of Bradford White Corporation (BWC), we would like to thank you for the opportunity to comment on California Energy Commission's (CEC) Title 24, Part 6 45-day language.</p> <p>BWC is an American-owned, full-line manufacturer of residential, commercial, and industrial products for water heating, space heating, combination heating, and water storage. In California, a significant number of individuals, families, and job providers rely on our products for their hot water and space heating needs. We have compiled our comments and questions to the CEC's 45-day language below.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256348&amp;DocumentContentId=92157">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256348&amp;DocumentContentId=92157</a>
256348.002	Bradford White Corporation	<p>B. Ventilation Consumer integrated HPWHs shall meet one of the ventilation requirements below. Minimum volume and opening size requirements shall be the sum of all HPWHs installed within the same space. Compressor capacity shall be determined using AHRI 540 Table 4 reference conditions for refrigeration with the "High" rating test point:</p> <ol style="list-style-type: none"> <li>1. Installed using a method certified by the manufacturer to meet the ventilation requirements of 110.3(c)7B.</li> <li>2. For HPWH installation without ducts, the installation space shall have a volume equal to the greater of 100 cubic feet per kBtu per hour of compressor capacity, or the minimum volume provided by the manufacturer for this method; or</li> <li>3. For HPWH installation without ducts, installation space shall be vented to a communicating space via permanent openings, according to the following requirements: <ol style="list-style-type: none"> <li>i. Communicating space shall meet the minimum volume of section 110.3(c)7B1 above, minus the volume of the HPWH installation space; and</li> <li>ii. Permanent openings shall consist of a single layer of fixed flat slat louvers or grilles, with a total minimum NFA the larger of 125 square inches plus 25 square inches per kBtu per hour of compressor capacity, or the minimum provided by the manufacturer for this method. The permanent openings shall be fully louvered doors or two openings, one located within 12 inches from the enclosure top and one located within 12 inches from the enclosure bottom; or</li> </ol> </li> <li>4. For HPWH installations with ducts, the following requirements shall be met: <ol style="list-style-type: none"> <li>iii. The space joined to the installation space via ducts shall meet the minimum volume of section 110.3(c)7B1 above, minus the volume of the HPWH installation space; and</li> <li>iv. All duct connections and building penetrations shall be sealed; and</li> <li>v. Exhaust air ducts and all ducts which cross pressure boundaries shall be insulated to minimum of R-6; and</li> <li>vi. If only the HPWH inlet or outlet is ducted, installation space shall include permanent openings consist of a single layer of fixed flat slat louvers or grilles in the bottom half of the room, and/or a door undercut. With a ducted inlet, the minimum NFA shall be equal to the cross-sectional area of the duct. With a ducted</li> </ol> </li> </ol>	Staff agrees with the comment, and changes have been made. Specifically, language pertaining to manufacturer-provided ventilation methods has been moved to the top of the list found in Section 110.3(c)7B.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256348&amp;DocumentContentId=92157">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256348&amp;DocumentContentId=92157</a>
256348.003	Bradford White Corporation	<p>In addition to these changes, BWC urges the CEC to continue evaluating the proposed standards through working with manufacturers as well as considering learnings from field studies to determine whether the space and ducting provisions are adequate to support current and future HPWH installations. Comments submitted by Gary Klein and Nick Brown in TN: 256224 suggest much larger spaces and ducting provisions than the current recommendation.</p>	Thank you for your comment. Staff will reevaluate these requirements as part of the next code update.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256348&amp;DocumentContentId=92157">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256348&amp;DocumentContentId=92157</a>

256348.004	Bradford White Corporation	<p><b><u>Section 150.0(n) and Section: 160.9(e)</u></b>  BWC reviewed section 150.0(n) and 160.9(e) and found inconsistencies in the specifications prescribed for designated spaces for future HPWH installation. Our recommendation is to make these sections the same requirements, using the requirements listed under 160.9(e). In terms of the inconsistency, the designated space requirements for a future HPWH in section 150.0(n) for single family homes is less than section 160.9(e) for multifamily individual dwelling units. BWC suggests aligning these two requirements and using the larger space requirements as shown in section 160.9(e). Furthermore, section 150.0(n) has no provisions in place for ventilation. We recommend including ventilation provisions in section 150.0(n). Our proposed edits to section 150.0(n) are shown below:</p> <p><i>See docketed comment for proposed edits.</i></p>	<p>Comment acknowledged, no change made. Staff agrees that it would be ideal for the single family and multifamily designated space requirements to be consistent. Additional analysis and stakeholder engagement is needed to adequately address the proposal. Staff will revisit this topic in the next code update.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256348&amp;DocumentContentId=92157">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256348&amp;DocumentContentId=92157</a></p>
256348.005	Bradford White Corporation	<p><b><u>Section 150.1(8), section 150.2(a)1D, section 150.2(b)1Hiii, section 170.2(d)1, and section 180.2(b)3C</u></b>  Each of the following sections allows for a NEEA approved HPWH as a prescriptive compliance option. For the new construction prescriptive approach in section 150.1(8) and 170.2(d)1, the code specifies that a “240 volt” NEEA Tier 3 HPWH may be used, along with exception 2 for 120-volt products. For additions and alterations in section 150.2, the requirement is simply a NEEA Tier 3 HPWH. Since 120-volt products are relatively new to the market, BWC raise the following questions regarding the CEC’s intent of having different requirements with respect to 240 volt and 120-volt products:</p> <ol style="list-style-type: none"> <li>1. Was it the intent of the CEC to only allow “240 Volt” NEEA Tier 3 or better products to be used in new construction?</li> <li>2. For additions and alterations, was it the intent of the CEC to allow any HPWH meeting NEEA Tier 3 (including 120-volt) to be used to comply?</li> <li>3. Barring differences in HPWH voltage, is there a specific reason that 120-volt HPWHs are limited to 1 bedroom or less homes in the new construction prescriptive approach? <ol style="list-style-type: none"> <li>a. If a 120-volt HPWH meets the required First Hour Rating (FHR) of the California Plumbing Code, why would it not be allowed in any building?</li> </ol> </li> </ol> <p><i>See docketed comment for proposed edits.</i></p> <p>In closing, we would like to thank the CEC for the opportunity to comment on the 45-day language. Please let me know if you have any questions or would like to schedule a meeting to discuss our comments further.</p>	<p>Thank you for your comment. The intent is for newly constructed buildings to prescriptively use 240V HPWH, and to allow both 240V and 120V HPWH for additions and alterations. Our data shows that generally buildings with 1 bedroom or less are used small households, and a 120V HPWH should be sufficient to meet the hot water load. A 120V HPWH that meets the first hour rating would still likely have a long recovery time, and that can result in potential consumer dissatisfaction. In summary, Staff believe that while 120V HPWH is a good solution for additions and alterations, for newly constructed buildings 240V is the safer choice that works in all climate zones. Staff will continue to monitor new 120V HPWH products and will revisit this topic in the next code update.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256348&amp;DocumentContentId=92157">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256348&amp;DocumentContentId=92157</a></p>

256349.001	SMUD	<p>The Sacramento Municipal Utility District (SMUD) appreciates the opportunity to comment on the California Energy Commission’s (CEC) proposed Express Terms for 2025 Building Energy Efficiency Standards (Energy Code)1 and related rulemaking documents. SMUD has long supported building decarbonization and offers programs to assist builders and homeowners in our region to increase energy efficiency and electrify building end-uses. The Energy Code plays an important role in accelerating costeffective building efficiency and electrification measures, including heat pumps, that save energy and money for customers, reduce greenhouse gas emissions, and improve public health outcomes, while saving customers money.</p> <p>SMUD offers the following comments on the 2025 Energy Code:</p> <ul style="list-style-type: none"> <li>• Support for the proposed expansion of heat pump baselines for new buildings.</li> <li>• Support for the additional electric-ready requirements for buildings where electric end-uses are not yet prescribed.</li> <li>• Recommend clarifying the battery energy storage control strategy requirements to support participation in evolving load flexibility initiatives.</li> </ul> <p>SMUD’s comments are further described below</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256349&amp;DocumentContentId=92156">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256349&amp;DocumentContentId=92156</a>
256349.002	SMUD	<p><b>SMUD supports the proposed expansion of heat pump baselines for new buildings.</b> SMUD appreciates the CEC’s continued leadership in encouraging the installation of heat pumps through the expansion of prescriptive requirements for new residential and nonresidential buildings. Under the proposed Energy Code, new single-family homes, as well as new additions served by new space or water heating systems, would have heat pump baselines for both space and water heating. The proposed Energy Code also establishes prescriptive heat pump requirements for individual water heating systems serving dwelling units in new low-rise multifamily buildings, complementing the existing heat pump space heating baseline for these buildings. Establishing prescriptive heat pump baselines for space and water heating will encourage the installation of costeffective, efficient, all-electric construction while still ensuring compliance flexibility for individual builders.</p> <p>SMUD also supports the incremental proposals to expand prescriptive heat pump space heating requirements to include multi-zone systems for medium and large offices, financial institutions and libraries, and large schools. SMUD recognizes that the nonresidential building sector is diverse and has additional complexities; however, pioneering new projects are demonstrating the potential for all-electric construction. For example, the Department of General Services’ new May S. Lee State Office Complex, located on Richards Boulevard in Sacramento, comprises four all-electric office towers and features a dining area, gym, daycare center, auditorium, and the country’s largest all-electric commercial kitchen. SMUD believes there are significant and growing opportunity for cost-effective, efficient electric construction in non-residential buildings and supports the steps in the Energy Code to accelerate key elements through expanded heat pump baselines.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256349&amp;DocumentContentId=92156">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256349&amp;DocumentContentId=92156</a>

256349.003	SMUD	<p><b>SMUD supports the proposed electric-ready requirements for buildings where electric end-uses are not prescribed.</b></p> <p>SMUD supports the expansion of electric-ready requirements in new multifamily and non-residential buildings. The proposed Energy Code includes electric-ready requirements for individual and central water heating systems in new multifamily buildings where heat pumps are not yet prescribed. These requirements are cost-effective and will save homeowners and building owners money when systems are changed out in the future. This is crucial given the state's heat pump goals, the California Air Resources Board's plan to establish future zero-emission space and water heater standards and increasing customer interest in heat pump technology. For example, SMUD has partnered with a multifamily property in Citrus Heights to install 70 heat pump water heaters for individual units. A second phase of the project, comprising an additional 70 systems, was recently approved. SMUD is also working with Mercy Housing on the installation of a centralized CO2 heat pump water heater for a residential apartment building.</p> <p>SMUD similarly supports the inclusion of cost-effective electric-ready requirements for new commercial kitchens. Multiple SMUD customers have expressed interest in electrifying commercial kitchens in existing buildings, and SMUD is supporting several kitchen electrification projects with local nonprofits. In some cases, the costs associated with electric infrastructure upgrades can pose barriers to kitchen electrification. Incorporating electric-ready requirements in new construction, when it is most cost-effective, can significantly reduce these cost barriers.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256349&amp;DocumentContentId=92156">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256349&amp;DocumentContentId=92156</a>
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256349.004	SMUD	<p><b>SMUD recommends clarifying the battery energy storage control strategy requirements to support participation in evolving load flexibility initiatives.</b></p> <p>Battery storage installed for purposes of Energy Code compliance must meet certain requirements specified in Appendix JA12 of the 2025 Joint Appendices.2 These requirements include selecting a specified control strategy for battery cycling – such as “basic” control, time-of-use control, advanced demand flexibility control, and alternative controls as approved by the CEC – that must be programmed at installation for the portion of the battery that is used for compliance.</p> <p>SMUD provides incentives for battery storage installations and recently launched a residential battery virtual power plant program to optimize battery dispatch for the benefit of customers and the grid. SMUD is also planning to develop similar program offerings for commercial and multifamily customers. SMUD anticipates that programs may be modified over time, informed by evolving grid conditions as well as measurement and verification results. To that end, SMUD appreciates that Appendix JA12 includes of a range of control strategies, including those that incorporate signals from utility programs. However, SMUD wishes to clarify several key elements to ensure that the 2025 Energy Code requirements do not unduly restrict customers’ future ability to participate in evolving programs and rates.</p> <p>First, SMUD recommends expressly clarifying in Appendix JA12.4 that customers may elect to switch between control strategies after the battery is initially programmed. Further, SMUD recommends clarifying that, after demonstrating compliance, customers may switch to battery control strategies beyond those enumerated in JA12.4.1-5. Utility and third-party demand flexibility initiatives are developed separate from the Energy Code, and SMUD believes it would be counter to the state’s load flexibility goals if customers are limited to only those control strategies that are expressly identified in the 2025 Energy Code or that must separately be approved by the CEC Executive Director. Finally, SMUD recommends updating the requirements for demand responsive controls, as specified in section 110.12</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Staff has revised the language to clarify that switching between the different Reference Joint Appendix JA12 control strategies is allowed.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256349&amp;DocumentContentId=92156">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256349&amp;DocumentContentId=92156</a>
256350.001	SPX Cooling Technologies	<p>Thank you for the opportunity to provide comments on the 45-Day Title 24 language related to cooling towers informed by both the 2025 Staff Supplement to the 2025 Case Report on Cooling Towers issued March 28, 2024 and the CA Utility CASE Team and Compliance Improvement Team Comment on 45-Day Express Terms dated May 3, 2024. SPX Cooling Technologies continues to understand and support the California Energy Commission’s goals to improve building energy efficiency and reduce overall water use, while also decreasing carbon emissions. As per our Vision statement, SPX delivers valued cooling products and together with our customers, partners, suppliers and the public, SPX supports environmentally friendly, sustainable, and highly efficient heat rejection technologies, including evaporative heat rejection products.</p>	<p>Introductory remarks - no response needed.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256350&amp;DocumentContentId=92155">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256350&amp;DocumentContentId=92155</a>

256350.002	SPX Cooling Technologies	<p>Referring to Section (e) Open and Closed Circuit Cooling Tower and Table 110.2-A-1 Recirculating Water Properties, SPX Cooling Technology recommends: 1) a reduction of the Calcium Parameter by 50%, from 540 ppm to 270 ppm, resulting in an operating LSI reduction for evaporative cooling systems, and 2) addition of an explanatory Water Treatment Note to clarify cooling system operational needs when operating at elevated LSI's.</p> <p>SPX Water Quality Guidelines, as well as those of other equipment Manufacturers, recommend LSI Range of 0-1. The current CEC Title 24 Recommendation for California Waters calculated to LSI's of Range of 0.68-2.49 with an Average of 1.82, and a Maximum of 2.49. Well above manufacturer's recommendations. Elevation of LSI presents a variety of system equipment and efficiency challenges, including Heat Exchanger [HX] scale and efficiency reduction, Cooling Tower [CT] scale and efficiency reduction, and under-deposit corrosion which shortens equipment life.</p> <p>Even with this proposed Calcium Parameter reduction of 50% in place, CEC Title 24 Water Conservation and Cycles of Concentration [COC] goals can still be met with the addition of specialized water treatment modifications, such as ion exchange softening, membrane softening, pH reduction, and/or use of sophisticated chemical scale inhibitors.</p>	<p>Staff disagrees with the comment, and no changes have been made. Staff notes that a calcium parameter of 540 ppm aligns with the requirements of ASHRAE 189.1. LSI is one of the parameters that can be used to determine when blowdown occurs, and the 2.5 LSI limit is unchanged from previous code cycle requirements.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256350&amp;DocumentContentId=92155">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256350&amp;DocumentContentId=92155</a>
256350.003	SPX Cooling Technologies	<p><u>Proposed Text Changes:</u></p> <p>1. Section: (e) Open and closed circuit cooling tower Item 2. E. [edit]: <del>540</del> 270 divided by calcium hardness of the entering make-up water</p> <p>2. Table: 110.2-A-1 Recirculating Water Properties Line 5 [edit]: Calcium Hardness as CaCO<sub>3</sub> (ppm) <del>540ppm</del> 270 ppm</p> <p>Note [Add]: <b>Water chemistry modifications, including adding specialized Water Treatments, such as, ion exchange softening, membrane softening, pH reduction, and/or use of sophisticated chemical scale inhibitors, may be necessary to operate at the elevated circulating LSI's that result from these CEC Title 24 Recommended Water Properties. LSI's above 1.0 are defined as resulting in substantial Calcium Carbonate Scale, unless water is modified.</b></p> <p><b>Justification: It is important for System Operators to be aware of special Water Treatment needs for systems before implementing the CEC Title 24 Recommendations.</b></p> <p><b>In support of this proposal, SPX undertook calculations of LSI's for a variety of California waters, which can be shared with the CEC.</b></p>	<p>Staff disagrees with the comment, and no changes have been made. Staff notes that a calcium parameter of 540 ppm aligns with the requirements of ASHRAE 189.1. LSI is one of the parameters that can be used to determine when blowdown occurs, and the 2.5 LSI limit is unchanged from previous code cycle requirements.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256350&amp;DocumentContentId=92155">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256350&amp;DocumentContentId=92155</a>



256351.001	SunPower	<p>Thank you for the opportunity to provide comments on Docket No. 24-BSTD-01. SunPower is one of the nation's leading providers of residential and multifamily solar, battery storage, and energy services. SunPower currently serves more than 550,000 residential customers in the U.S. We provide solar and battery storage directly to customers and work with home builders and multifamily developers to install solar and storage in new construction projects.</p> <p>We appreciate the work and collaboration from CEC staff on the 45-day language for the 2025 Building Energy Efficiency Standards. We support the change put forward by CEC staff to update the low-rise multifamily solar Exception 2 to Section 170.2(f), which will provide an exception if the minimum required PV system size is less than 4 kWdc.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256351&amp;DocumentContentId=92165">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256351&amp;DocumentContentId=92165</a>
256351.002	SunPower	<p><b>JA12 Proposed Changes</b></p> <p>CEC staff have proposed a set of changes to Appendix JA12 to help ensure that batteries are cycling regularly to help benefit the grid and reduce greenhouse gas emissions. We support the proposed change to automatically reset the cycling capacity of the battery back to compliance capacity level after 72 hours, with the exceptions of during severe weather or Public Safety Power Shutoff (PSPS) events. We also support the minimum usable battery capacity for JA12 eligibility remaining at 5 kWh. We recommend a set of edits to JA12 language to ensure that the control strategy requirements are not unnecessarily restrictive and unintentionally prevent customer's from enrolling their batteries in a grid services program.</p> <p>This version of the Building Energy Efficiency Standards will be in place through 2028, so it is critical that the JA12 language remain flexible enough to allow installed batteries to participate in grid services programs which are evolving to help bring greater benefits to the grid. As one example, the CEC recently approved the Demand Side Grid Support (DSGS) program to help reduce net-energy load. Between now and the end of 2028, more grid services programs may be available, or the structure of programs may be updated to support the electric grid in various ways. Grid services program may encourage or require batteries to charge from the grid under certain conditions. JA12 language shouldn't prevent batteries from being able to charge from the grid when it can benefit customers and the grid overall. We believe that changes to the proposed JA12 language to ensure that JA12 batteries are able to participate fully in grid services programs aligns with the intent of the battery compliance credit – which is to ensure that batteries are helping to reduce greenhouse gas emissions and support the reliability of the electric grid. We offer the following revisions to the JA12 language:</p> <p><i>See docketed comment for proposed language changes.</i></p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Staff will modify the language to allow Reference Joint Appendix JA12 compliant battery energy storage systems to charge from grid in normal operation during off-peak time.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256351&amp;DocumentContentId=92165">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256351&amp;DocumentContentId=92165</a>

256351.003	SunPower	<p><b>California Flexible Installation (CFI) Proposed Changes</b></p> <p>We are proposing that the CEC create a CF13 for the 2025 Building Energy Efficiency Standards. The CF13 should allow for PV installed in the azimuth range between 90 to 300 degrees from true north and with all modules at the same tilt as the roof for pitches up to 8:12. Creating a CF13 to account for this azimuth range and roof pitch can help streamline compliance, reducing the cost of compliance to the home builder.</p> <p>We appreciate the opportunity to provide these comments on the 45-day language.</p>	<p>Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256351&amp;DocumentContentId=92165">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256351&amp;DocumentContentId=92165</a></p>
256352	AHRI	<p>LSC is also intended to prove measures to be cost effective. While AHRI understands the importance of time that energy is used is as important as the amount of energy used, AHRI questions whether the forecasting over 30-years, and multiple equipment purchases, is accurate or technically correct. For each Energy Code cycle, the cost of construction has increased. In some code editions, the increase in cost has been substantial. For example, the 2019 Energy Code increased the initial cost of a single-family house average cost, which ranges, depending on climate zone it is built in, between \$8,205 and \$17,511.42 In the 2022 Energy Code, a group of measures is required when performing alterations to single-family and low-rise multifamily buildings: cool roofs, low-sloped roof insulation, electric replacement heating equipment, duct sealing, duct insulation, and attic insulation. Nonresidential alterations are impacted by the new 2022 Energy Code approach to calculate the fan power allowance. This measure affects fan systems in all prototypes and affects nearly the entire nonresidential building stock.</p>	<p>Background remarks - no response needed.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a></p>

256352.001	AHRI	<p>The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) respectfully submits this letter in response to the CEC 2025 45-day Express Term proposed changes to Energy Code (Title 24, Part 6), published on the CEC public docket on March 29, 2024.</p> <p>AHRI represents more than 330 manufacturers of air conditioning, heating, water heating, and refrigeration equipment. It is an internationally recognized advocate for the HVACR industry and certifies the performance of many of the products manufactured by its members. In North America, the annual economic activity resulting from the HVACR industry is more than \$211 billion. In the United States alone, AHRI member companies, along with distributors, contractors, and technicians employ more than 704,000 people.</p> <p>AHRI supports efforts to reduce greenhouse gas (GHG) emissions while promoting sustainable, safe, reliable, and affordable access to the essential air and water heating, and cooling provided by the products manufactured by AHRI members. As discussed below, AHRI has legal and technical concerns regarding proposed revisions to the Energy Code. Most importantly, CEC has proposed overly prescriptive mechanical systems to be used for residential and nonresidential buildings when using the prescriptive path. Not only does this unacceptably limit owner and designer choices when using the prescriptive path – a more cost-effective path through the Energy Code – it impacts the performance path by inflating the energy budget. Additionally, we have serious questions and concerns regarding the proposed new metric, Long Term System Cost, which is used both to analyze the cost effectiveness of proposed updates to the Energy Code and for compliance when comparing proposed building design to their energy budget when using the performance compliance approach. AHRI supports taking a measured, transparent approach to Energy Code improvements and urges CEC to consider our recommendations.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.002	AHRI	<p><b><u>EPCA Preempts the Proposed Revisions to the Prescriptive Compliance Path</u></b></p> <p>The Proposed Revisions in Title 24 are preempted by the Energy Policy and Conservation Act (EPCA). 42 USC § 6291 et al. EPCA’s preemption provisions prohibit states and localities from instituting laws, regulations and building codes which “concern” energy use of EPCA-covered products and equipment. Although there are limited exemptions for building codes, these exemptions do not apply in this instance. On January 2, 2024, the Ninth Circuit Court of Appeals upheld its April 2023 decision in the California Restaurant Association v. City of Berkeley (Berkeley) case. The court ruled that building codes that concern energy use are preempted by EPCA. Additionally, the case law related to the prescriptive compliance path and the performance compliance path indicates that EPCA preempts the proposed Title 24 revisions. As such, the revisions as currently proposed are subject to legal scrutiny, if enacted as written.</p>	The CEC disagrees with the commenter's application of the law, and no changes have been made. The self-described "limited" and "narrow" holding of <i>CRA v. Berkeley</i> is not applicable to a state building code that meets EPCA's seven-part building code exception. The Energy Code has been specifically developed to meet these federal criteria and, therefore, it is not preempted.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.003	AHRI	<p><b>1. EPCA Preemption Provision</b> EPCA gives the U.S. Department of Energy (DOE) the authority to set nationwide energy conservation standards for various types of appliances and equipment. Its goal is to prevent individual states from creating rules that would affect the energy consumption standards of these appliances, with limited exceptions.</p> <p>Under EPCA’s preemption provision, state regulations “concerning” the “energy efficiency” or “energy use” of covered products “shall [not] be effective.”<sup>1</sup> Courts have interpreted this preemption provision to be expansive, finding that the term “concerning” suggests Congress intended the provision to have a “broad preemptive purpose.”<sup>2</sup></p> <p>Congress intended for EPCA to “preempt State law under most circumstances.” Air Conditioning, Heating, &amp; Refrigeration Inst., 2008 WL 5586316, at *7; H.R. Rep. 100-11 at 19. “The plain language of the [Act’s] preemption statute makes clear that Congress intended the preemption to be broad in scope.” Air Conditioning, Heating, and Refrigeration Inst. v. City of Albuquerque, 835 F. Supp. 2d 1133, 1136 (D.N.M. 2010). In particular, “the use of the word ‘concerning’ suggests that Congress intended the preemption provision to be expansive.” Id. (citation omitted).</p>	<p>The CEC disagrees with the commenter’s interpretation and application of the law, and no changes have been made. <i>AHRI v. Albuquerque</i> is a case from a different federal Circuit, and the Ninth Circuit Court of Appeals, where California is located, has not accepted or extended the logic or conclusions of <i>Albuquerque</i> to building codes that meet all seven criteria of EPCA’s seven-part building code exception. The Energy Code is consistent with the leading case in the Ninth Circuit on EPCA’s seven-part building code exception in 42 U.S.C. 6297(f)(3).</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.004	AHRI	<p>The Proposed Revisions to the prescriptive compliance path, in Table 150.1-A prohibit the ability to use gas space or water heating for Single-Family Standard Building Design in climate zones 1-16, and a performance path to compliance is irrelevant to whether the Proposed Revisions are preempted.<sup>3</sup> The Proposed Revisions to the prescriptive path are regulations concerning the energy use of covered products, regardless of the existence of exemptions or the availability of the performance path to compliance. EPCA does not require a regulation to prohibit the energy use of covered products to be preempted in all circumstances; it merely must concern the energy use of covered products. The Proposed Revisions to the prescriptive path to compliance do just that.</p> <p>While this is not a mandatory ban, there are significant cost barriers to installing fossil fuel space and water heaters when using the performance path. The tradeoffs required to install non-heat pump space and water heaters were cataloged at the July 27, 2023, prerulemaking staff workshop.<sup>4</sup> The cost of tradeoffs is significant and prohibitive.</p>	<p>The CEC disagrees with the commenter’s interpretation and application of the law, and no changes have been made. Builders have multiple compliance pathways that are not preempted, and any single prescriptive compliance pathway that may be preempted in isolation, if it exists, would not result in a legal requirement for the builder to choose that specific pathway. The builder is free to choose among different compliance pathways of varying costs. The Energy Code is specifically designed to meet all seven criteria of EPCA’s seven-part building code exception in 42 U.S.C. 6297(f)(3).</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.005	AHRI	<p><b>2. Cases Involving EPCA</b></p> <p>There are two cases that present similar facts which are relevant to the discussion around the Proposed Revisions at issue: (1) California Restaurant Association v. City of Berkeley (Berkeley); and (2) Air Conditioning, Heating, and Refrigeration Institute v. City of Albuquerque. Discussion of these two cases below indicates the necessity for CEC to reassess the Proposed Revisions, as written, as they are legally invalid.</p> <p>a. California Restaurant Association v. City of Berkeley</p> <p>States are expressly preempted from setting energy use regulations for products that DOE regulates.<sup>5</sup> Recently, the Ninth Circuit in Berkeley, stated “EPCA preempts regulations, including “building code requirements,” §6297(f), that relate to “the quantity of [natural gas] directly consumed by” certain consumer appliances at the place where those products are used.”<sup>6</sup> In Berkeley, the court ruled that EPCA expressly preempts the City of Berkeley’s 2019 ordinance banning the installation of natural gas piping in newly constructed buildings.</p> <p>Further, the court in Berkeley stated that “EPCA’s preemption provision extends to regulations that address the products themselves and building codes that concern their use of natural gas. By enacting EPCA, Congress ensured that States and localities could not prevent consumers from using covered products in their homes, kitchens, and business.”<sup>7</sup></p> <p>The Ninth Circuit concluded that Berkeley’s ordinance was a “regulation concerning the ... energy use” of a covered product because the plain text and structure of EPCA’s preemption provision encompasses building codes that regulate natural gas use by covered products,” including eliminating the use of natural gas. “EPCA preemption extends to regulations that address the products themselves and the on-site infrastructure for their use of natural gas.”</p>	<p>The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. Both cases are distinguishable from the Energy Code: (1) <i>CRA v. Berkeley</i> did not analyze EPCA's seven-part building code exception and (2) <i>Albuquerque</i> is a decision from the District Court in the Tenth Circuit. California is located in the Ninth Circuit, and the Ninth Circuit Court of Appeals has not accepted or extended the logic or conclusions of <i>Albuquerque</i> to building codes that meet all seven criteria of EPCA's seven-part building code exception.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a></p>
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256352.006	AHRI	<p>b. Air-Conditioning, Heating, and Refrigeration Institute v. City of Albuquerque</p> <p>It is important to consider the court’s decision in Air-Conditioning, Heating and Refrigeration Institute v. City of Albuquerque (Albuquerque). In Albuquerque, AHRI challenged Volumes I and II of the 2007 Albuquerque Energy Conservation Code on the grounds that the code imposed minimum energy efficiency standards for commercial and residential buildings that were preempted by EPCA. 835 F. Supp. 2d at 1135. Volume I applied to commercial and multi-family residential buildings, and Volume II applied to one- and two-family detached dwellings and townhouses. Id. Both volumes included performance and prescriptive paths to compliance. The prescriptive paths included in both volumes set prescriptive standards for individual components that provided for energy efficiency standards more than federal standards. Id. However, the City of Albuquerque argued the prescriptive compliance path was not preempted because there were other lawful compliance paths. Id. at 1136.</p> <p>The court held that revisions to a prescriptive path to compliance was a regulation subject to EPCA’s preemption provision, regardless of the availability of a performance path to compliance. Id. at 1140. In reaching this holding, the court stated, “[t]he City has not persuaded the court that a local law is not preempted when it presents regulated parties with viable, non-preempted options. (See Mem. Op. and Order at 14, Doc. No. 61, filed October 3, 2008, 2008 WL 5586316 (“the Court can find no support for the novel proposition that the inclusion of one or more alternatives for compliance in a regulation keeps each of the alternatives from being considered a regulation”).” Id. at 1137. The court concluded “that the prescriptive provisions of Volume I requiring the use of heating, ventilation, or air conditioning products or water heaters with energy efficiency standards more stringent than federal standards are regulations that concern the energy efficiency of covered products and, therefore, are preempted as a matter of law.” Id</p> <p>The case law confirms the broad scope of EPCA’s preemption. The court ruled that local</p>	<p>The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. <i>AHRI v. Albuquerque</i> is a case from a different federal Circuit, and the Ninth Circuit Court of Appeals, where California is located, has not accepted or extended the logic or conclusions of <i>Albuquerque</i> to building codes that meet all seven criteria of EPCA's seven-part building code exception.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a></p>
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256352.007	AHRI	<p><b>3. Building Codes Exemption</b></p> <p>EPCA allows for building codes to be exempt from its preemption provisions if it meets a seven-factor test outlined in 42 USC 6297(f)(3). The CEC has not demonstrated that the Proposed Revisions meet the required seven-factor test to qualify for an exemption from preemption. Most notably, the prescriptive codes proposed fail to satisfy the fourth factor of the seven-factor test.<sup>8</sup></p> <p><b>The fourth factor</b> states that a state’s energy code cannot require that “a covered product have an energy efficiency exceeding the applicable energy conservation standard established in or prescribed under” 42 U.S.C. § 6295, unless DOE Secretary has issued a rule granting a waiver for the state regulation. In this instance, the Proposed Revisions fail to meet this factor as there is a requirement, as outlined above, for use of specific equipment, such as heat pumps, and an outright ban on gas fired equipment in all climate zones, per Table 150.1-A. This effectively bans the use of EPCA-covered products from use in new buildings under the code. In banning EPCA-covered products, the Proposed Revisions reduce the energy use of those covered products to zero. This effectively requires that “a covered product have an energy efficiency exceeding the applicable energy conservation standard,” and the CEC has not sought a waiver from the DOE Secretary allowing this.</p>	The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. The Energy Code does not legally require the installation of products exceeding their federal minimums; rather, builders are free to choose among multiple compliance options, many of which allow for the installation of federally covered products at their federal minimum efficiency levels.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.008	AHRI	<p><b>4. Legal Summary</b></p> <p>In conclusion, the Proposed Revisions are attempting to set stricter energy standards than those prescribed by EPCA and are thus preempted. Both Berkeley and Albuquerque provide helpful guidance regarding the proposed prescriptive codes. These provisions, as written, do not provide the necessary flexibility nor do they align with the minimum federal requirements, and fail to qualify for a building code exempt under EPCA. If these Proposed Revisions are enacted as written, they would be legally invalid.</p>	The CEC disagrees with the commenter's interpretation and application of the law, as described above. Therefore, this summary does not hold and no changes have been made because the CEC has determined the Energy Code meets all seven criteria of EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3) and is not preempted.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.009	AHRI	<p><b>New Metrics for Evaluation of Measures and Compliance with Energy Code Raise Concerns</b></p> <p>AHRI is concerned about the implementation of new metrics for proposed measures and code compliance. The CEC has proposed using a new metric, Long-term System Cost (LSC), to evaluate cost-effectiveness for proposed measures, including impactful changes to the heat pump (HP) Baseline, and within Title 24’s compliance software (Section 10-109), in the performance approach.<sup>9</sup></p> <p>If adopted, LSC will also be used for code compliance with the performance path. Software, developed by the Energy Code, implements simulation and compliance rules to simulate the energy use of a proposed residential or nonresidential building and compares it to a standard design energy budget to determine if the building complies with the Energy Efficiency Standards.</p> <p>Since the two pre-rulemaking presentations were made regarding metric changes in 2022, the CEC has released the “2025 Energy Code Accounting Methodology Report”<sup>10</sup> This report “documents the technical methods and tools used to assess energy efficiency proposals for the 2025 California Building Energy Efficiency Standards.”<sup>11</sup> However, the report lacks important details on the fundamental approach and assumptions being used to cost justify measures for the Energy Code.</p>	<p>Thank you for your comment. Although the name of the metric has changed to Long-Term System Cost (LSC), and the units have changed to dollars, the methodology for calculating LSC values is identical to the methodology for calculating Time Dependent Valuation (TDV) factors used for previous code cycles.</p> <p>Historically, an extra step was conducted at the end of the metrics update process to convert the net present value cost from a cost per unit of energy (\$/kWh and \$/therm) to an energy-only unit (kBtu/kWh and kBtu/therm). For the 2025 code cycle, this step has been removed, and LSC units remain in \$/kWh and \$/therm.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.01	AHRI	<p>The report also highlights important gaps between statutory requirements and the CEC’s interpretation. In the Accounting Methodology Report, the CEC acknowledges that cost effectiveness is defined relative to the consumer. 12 California Public Resource § 25402 (c)(1)(A)(i) states that “standards or other cost-effective measures shall be drawn so that they do not result in any added total costs for consumers over the designed life of the appliances concerned.” However, in the new metrics, the CEC has extended statutory requirement of “lifecycle cost of complying”<sup>13</sup> to a measure period of 30 years.<sup>14</sup> Additionally, LSC is a metric created to determine the dollar value of energy efficiency measures relative to the state, not the consumer. Using a 30-year period of analysis, even if it includes multiple product purchases, distorts life-cycle cost beyond what is intended by the plain language of the authorizing statute. Measures proposed must be analyzed relative to the consumer and over the design life of the appliance concerned. The CEC must reevaluate the use of metrics, including the proposed LSC, that do not accomplish this simple mandate.</p>	<p>Thank you for your comment. Long-Term System Cost (LSC) is defined as the CEC-projected present value of costs to California’s energy systems over a period of 30 years. LSC does not represent a prediction of individual utility bills.</p> <p>The methodology for calculating LSC values is identical to the methodology for calculating TDV factors used for previous code cycles.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.011	AHRI	<p>In addition to LSC, the CEC uses the Source Energy metric for energy accounting. The CEC states these two metrics enable it to evaluate hourly system cost and hourly marginal source energy of the 30-year period of analysis.<sup>15</sup> Per the report, the primary purpose in updating the metrics is to better correlate the cost-effectiveness with greenhouse gas impacts. The CEC explains that to establish cost-effectiveness it uses forecast energy demand in California and weather data. Energy demand is created by forecasts of construction floor area by prototype and climate zone. Energy consumption of prototype building models is calculated operating in a climate that has also been forecast over 30-years. While AHRI appreciates the additional information explaining the new metrics, the report does not answer questions AHRI asked during the pre-rulemaking, including: 16</p> <p>“How does the LSC and source energy forecast account for the variables involved with the eventual power plant closure? How are other long-term changes addressed within the 30-year period? How accurate are these forecasts? How sensitive is the analysis? What alternatives were analyzed in the scenario selection process for the 2025 hourly factors?”<sup>17</sup></p>	<p>Thank you for your comment. To develop the LSC (and for previous cycles, TDV) factors, one specific demand scenario is selected to represent a realistic future aligned with forecasted load growth and existing and anticipated future policy. This scenario is used to determine capacity resources and renewable generation procurement. In the 2022 code cycle, the demand scenario that was selected was developed for a CEC-funded study on Natural Gas Distribution in California’s Low Carbon Future, named the “Slower Building Electrification” scenario. For the 2025 code cycle, a number of different scenarios were evaluated from publicly available scenario analysis, including the CEC Demand Scenarios Project, CARB Scoping Plan, Integrated Energy Policy Report (IEPR), and Low Carbon Future study. Ultimately, the CEC chose a scenario from the CEC Demand Scenarios Project named the “High Electrification Policy Compliance” scenario, which has relatively high economy-wide electrification. The scenarios chosen for both the 2022 and 2025 code cycles are aligned with current policy and targets including the 80x50 emissions target and SB100 goals of 100% RPS by 2045. These targets, combined with the load forecast, drive the generation capacity resources within the model.</p> <p>Generation capacity avoided costs are calculated based on the estimated value of a marginal generation capacity resource. For the 2022 TDVs, three phases of the capacity market were considered, with the following marginal capacity resources:</p> <ol style="list-style-type: none"> <li>1. A near-term capacity need driven by planned retirements of existing generation, that sticks to the historical framework. In this period, the marginal capacity resource is assumed to be the net cost of a combustion turbine.</li> <li>2. By the late 2020s, the marginal capacity resource is assumed to become a combination of renewable generation and energy storage. The cost of this marginal capacity resource is calculated in the selected RESOLVE scenario, as the shadow price of generation capacity. RESOLVE is E3’s proprietary capacity expansion model, that selects an optimal resource portfolio based on resource costs and statewide renewable generation targets.</li> <li>3. Beyond 2030, the marginal capacity resource shifts to firm dispatchable generation. The 2022 analysis conservatively assumed that the firm generation would be met by keeping</li> </ol>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>



256352.012	AHRI	<p>The CEC also must explain why it “uses eight percent annual growth rate for residential gas price models to forecast future residential gas retail rates,” but it does not address residential electric retail rate forecasting. In a recent California Public Utility Commission (CPUC) report, “the average annual rate increases between the first quarter of 2023 and fourth quarter of 2026: [Pacific Gas and Electric] PG&amp;E 10.4 percent, [Southern California Edison] SCE 6.0 percent, and [San Diego Gas &amp; Electric] SDG&amp;E 10.4 percent.”<sup>18</sup> Additionally, CPUC states that “by 2026, bundled [residential average rates] RARs are forecast to be approximately 65 percent (PG&amp;E), 30 percent (SCE), and 100 percent (SDG&amp;E) higher than they would have been if rates for each IOU had grown at the rate of inflation since 2013.”<sup>19</sup> What residential electric price models does CEC use for its analysis? How has the CEC forecast increases in electric rates?</p>	<p>Thank you for your comment. A statewide retail rate forecast for residential and nonresidential customers is developed for the electricity LSCs. The electricity rate forecasts for previous cycles of LSC were developed directly from the IEPR. The 2021 IEPR includes retail rate forecasts for a mid-demand load and current policy mandates. The IEPR calculates average residential and commercial rates for PG&amp;E, SCE, SDG&amp;E, LADWP, and SMUD through 2035. For the 2025 LSCs, the utility-specific rates are combined into a statewide weighted average using electricity consumption forecasts from 2021 IEPR Form 2.3. After 2035, the rate forecasts (modified by the multipliers described above) are escalated using the compound average growth rate observed from 2030 through 2035 (3.1%/yr nominal increase for residential and 3.0%/yr for non-residential).</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.013	AHRI	<p>As AHRI noted in pre-rulemaking comments, California receives a sizable amount of zero-carbon emissions energy from the Diablo Canyon nuclear generator – it generates 8.5% of all California’s in-state generation.<sup>20</sup> The current operating licenses for Diablo Canyon power plant Units 1 and 2, expire on November 2, 2024, and August 26, 2025,<sup>21</sup> but there are no publicly available plans for replacement – zero emissions or other. Diablo Canyon is also the subject of ongoing petition to shutter the power plant.<sup>22</sup> There is much volatility in Diablo Canyon’s future and no plans on renewables to replace it in 2025, or 2030. How is this important uncertainty reflected in CEC’s analysis?</p>	<p>Thank you for your comment. The existing resource portfolio was supplemented with additional renewable generation resources that are consistent with statewide renewable capacity expansion modeling and also correlated to the TMY weather files. To remain consistent with the over-arching economy-wide emissions scenario, along with specific renewable energy targets, E3 determined an optimal policy compliant generation portfolio, using RESOLVE. RESOLVE is E3’s proprietary capacity expansion model, that selects an optimal resource portfolio based on resource costs and statewide renewable generation targets. The RESOLVE model used in this analysis is based on the version used in the electricity sector analysis for the CPUC’s Load Serving Entity (LSE) Filing Requirements. Load forecast inputs were updated using data from the CEC’s Demand Scenario Project, High Electrification Policy Compliance Scenario. Cost inputs were updated using data derived from NREL’s 2021 Annual Technology Baseline and Lazard’s Levelized Cost of Storage Version 6.0.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.014	AHRI	<p>LSC appears to modify the hourly source energy (HSE), and likewise, AHRI expects LSC to be forecasted differently for electricity, gas, and propane consumption, based on planned changes for each fuel.<sup>23</sup> But these details have not been made public, despite the presentation of LSC for the first time over one year ago. If LSC is like HSE, why is the CEC now making efforts to fully replace it? HSE was contemplated by the CEC to “complement the time dependent valuation (TDV) metric.”<sup>24</sup></p>	<p>Thank you for your comment. Hourly Source Energy or simply Source Energy is not being replaced. The 2025 code will continue to use both Source Energy and Long-term System Cost (LSC) for compliance evaluation.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.015	AHRI	<p>AHRI also requests the CEC clarify how HSE was used in measure development and code compliance Title 24-2022. The California 2021 Integrated Energy Policy Report (IEPR) states that, “to comply with the Energy Code, the TDV and HSE target budgets must be met independently by the building design” but AHRI finds no reference to HSE in the Express Terms document.</p> <p>TDV is used in Title 24-2022, for comparing proposed building design to their energy budget when using the performance compliance approach. TDV is based on the concept that the energy impacts of a building energy feature should be valued when energy is consumed and has been described by CEC as being, reflective of the “actual cost of energy to consumers and to the grid.”<sup>25</sup> The CEC has proposed that the 2025 energy code state,</p> <p>“The Energy Budget for newly constructed, low-rise residential buildings are expressed in terms of the Long-Term System Cost (LSC) and Source Energy. Additionally for newly constructed single-family buildings, the energy budget includes peak cooling energy. The Energy Budget for additions and alterations are expressed in terms of LSC.”<sup>26</sup>.</p>	<p>Thank you for your comment. Comments regarding the 2022 code cycle are out of scope of this rulemaking. Hourly Source Energy or simply Source Energy is defined in the 2025 Energy Code as “the long run hourly marginal source energy of fossil fuels that are combusted as a result of fossil fuels that are combusted as a result of building energy consumption either directly at the building site or caused to be consumed to meet the electrical demand of the building considering the long-term effects of Commission-projected energy resource procurement. For a given hour, the value in that hour for each forecasted year is averaged to establish a lifetime average source energy.”</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.016	AHRI	<p>LSC is defined in Section 100.1 of the draft 2025 Express Terms as, “the present value of costs over a 30-year period related to California’s energy system.” Like HSE, LSC factors are used to convert predicted site energy use to long-term dollar costs to California’s energy system. LSC is used in conjunction with “long run marginal source energy of fossil fuels following the long-term effects of any associated changes in resource procurement, focusing on the amount of fossil fuels that are combusted in association with demand-side energy consumption.”<sup>27</sup> It is unclear why the 2025 Energy Code has proposed only using source energy for fossil fuel, when the CEC has in the past acknowledged that, source energy is the, “total system input energy (in the form of fuel including both natural gas and electricity) that is required to serve building loads.”<sup>28</sup> AHRI requests the CEC confirm that source energy is being accounted for all energy sources.</p>	<p>Thank you for your comment. Hourly Source Energy or simply Source Energy is defined in the 2025 Energy Code as “the long run hourly marginal source energy of fossil fuels that are combusted as a result of fossil fuels that are combusted as a result of building energy consumption either directly at the building site or caused to be consumed to meet the electrical demand of the building considering the long-term effects of Commission-projected energy resource procurement. For a given hour, the value in that hour for each forecasted year is averaged to establish a lifetime average source energy.”</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.017	AHRI	<p>AHRI also requests the CEC explain how the 30-year period that LSC captures applies to the energy use of covered products, which have a markedly shorter average lifetime. The CEC should be aware of the timing disconnect between products and LSC. In heat pump baseline presentations, the cost of replacement products has been accounted for, but the energy use aspect has not been explained.</p>	<p>Thank you for your comment. The methodology for calculating LSC values is identical to the methodology for calculating TDV factors used for previous code cycles. Reports supporting each measure detail how costs are calculated. For a hypothetical product with lifetime of 15 years, the product would be replaced once over the 30 year life of a building.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.018	AHRI	<p>Any calculation procedure must provide an equitable comparison between products, be technically accurate, and fully documented. As AHRI has requested in the pre-rulemaking, CEC must provide a technical support document for the LSC and for the HP Baseline. The docketed reports<sup>29</sup> are insufficient for this purpose, as it does not allow for a complete stakeholder analysis. The changes are so significant, AHRI questions if the multipliers used in both TDV and LSC to convert lifecycle dollars per unit of energy (\$/kWh, \$/therm) to code compliance units of kBTU/kWh and kBTU/therm have changed.</p>	<p>Thank you for your comment. The methodology for calculating Long-term System Cost (LSC) values is identical to the methodology for calculating Time Dependent Valuation (TDV) factors used for previous code cycles.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.019	AHRI	CEC must also explain how the use of the new metrics meet the statutory requirement that “performance standards shall be promulgated in terms energy consumption per gross square foot of floorspace.” <sup>30</sup> AHRI notes that neither TDV nor LSC can be used by the energy code community to establish building energy intensity performance targets or be used to track energy reductions. In other words, these metrics do not support building performance standards.	Comment acknowledged and no change made. The CEC establishes performance standards based on energy consumption measured in terms of the metrics LSC and Source Energy, and this energy consumption (LSC and Source Energy) is represented in the compliance software in energy consumption per square foot. The CEC uses building energy prototypes to establish energy consumption budgets using these metrics. To determine the energy consumption budget for the building, a Commission-approved calculation method is required that meets all CEC calculation and modeling requirements, as specified in the ACM reference manual [see 10-109(c)]. This process is described in more detail in the 2025 Energy Code Accounting Methodology and is consistent with the requirements of the Warren-Alquist Act.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.02	AHRI	Another example of the need for more robust technical documentation is to explain why LSC splits out energy differently from TDV. In the pre-rulemaking presentations, LSC has two factors, the “efficiency LSC, which is the sum of LSC energy for space-conditioning, water heating, and mechanical ventilation,” and the “total LSC, which includes efficiency LSC and LSC energy from photovoltaic, battery systems, lighting, demand flexibility, and other plug loads.” <sup>31</sup> The TDV energy budget included the sum of the energy for space-conditioning, indoor lighting, mechanical ventilation, photovoltaic (PV) and battery storage system, and service water heating and covered process loads. However, there is no mention of “efficiency LSC” in the Accounting Methodology report.	<p>Thank you for your comment. The methodology for calculating LSC factors is identical to the methodology for calculating TDV factors. Fundamentally, LSC and TDV represent the same thing using different units.</p> <p>Efficiency LSC and Total LSC are the same as Efficiency TDV and Total TDV in 2022, respectively, and vary depending on building type as follows.</p> <p>In a nonresidential building, the Efficiency LSC energy is the sum of the LSC energy for space conditioning, water heating, mechanical ventilation and lighting. The Total LSC energy is the sum of the Efficiency LSC energy and LSC energy from the photovoltaic system, battery energy storage systems (BESS), and demand flexibility.</p> <p>In a single-family residential building, the Efficiency LSC energy is the sum of the LSC energy for space conditioning, water heating, mechanical ventilation, and the self-utilization credit. The Total LSC energy is the sum of the Efficiency LSC energy and LSC energy from the photovoltaic system, battery energy storage systems (BESS), lighting, demand flexibility and other plug loads.</p> <p>In a multifamily building, the Efficiency LSC energy is the sum of the LSC energy for space conditioning, water heating, mechanical ventilation, lighting and the self-utilization credit. The Total LSC energy is the sum of the Efficiency LSC energy and LSC energy from the photovoltaic system, battery energy storage systems (BESS), and demand flexibility.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.021	AHRI	<p>In the 2022 Energy Code, a building designed using the performance path is required to separately comply with the source energy budget and the TDV energy budget. AHRI notes that ASHRAE Standard 90.1's performance path includes the cost of energy used for components of the building with requirements in Sections 5 through 10 of the standard in the regulated energy cost. This includes the cost of energy used for HVAC, lighting, service water heating, motors, transformers, vertical transportation, refrigeration equipment, computer-room cooling equipment, and other building systems, components, and processes with requirements prescribed in Sections 5 through 10. Unregulated energy cost is the cost of energy used for all other end uses in the building, mostly covered processes. The CEC must explain why changes were made to the package of energy-using equipment when calculating the objective for LSC compared to TDV. Confirming how accounting is being done for required on-site renewables is unclear. Is LSC being compared on a net basis or only grid-based electrical energy? The CEC must also explain the divergence from the approach adopted by ASHRAE Standard 90.1, the national model energy code.</p>	<p>Thank you for your comment.</p> <p>The methodology for calculating LSC factors is identical to the methodology for calculating TDV factors. Fundamentally, LSC and TDV represents the same thing using different units. There is no change in the way the Standard calculates regulated and unregulated loads. The only difference is that the results are presented in LSC rather than TDV.</p> <p>Please refer to the technical report "Photovoltaic and Battery Storage System Update and Expansion" TN#256201 for accounting for the on-site renewable requirement.</p> <p>The Energy Code is not required to align with ASHRAE 90.1, as long as the commercial specifications of the Energy Code result in the same or less energy use as compared to ASHRAE 90.1.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.022	AHRI	<p>EPCA requires credits be awarded for compliance on a "one-for-one equivalent energy use or equivalent cost basis."<sup>32</sup> This issue was discussed in <i>Buildings Industry Ass'n of Washington v. Washington State</i>,<sup>33</sup> where the court held that EPCA recognized that a perfect 1:1 credit ratio is impossible given the different types of technologies, building types, and climate zones at play, but EPCA requires that credit ratios not be so skewed that they effectively discriminate between products and building methods. The Washington State Code did not fail the preemption test because that code assigned credits that are even-handed and not unfairly weighted. To avoid preemption, "Subsection C [of EPCA's statutory conditions] provides that where a building code grants credits for reducing energy use, the code must give credit in proportion to energy use savings, without favoring certain options over others."<sup>34</sup></p>	<p>The CEC acknowledges the comment, and no changes have been made. The Energy Code is designed to meet EPCA's seven-part building code exception, which includes the requirement to award credits on a "one-for-one equivalent energy use or equivalent cost basis."</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.023	AHRI	<p>EPCA also requires that the estimated energy use of any covered product permitted or required in the code, or used in calculating the objective, is determined using the applicable test procedures prescribed under Section 6293, except that the State may permit the estimated energy use calculation to be adjusted to reflect the conditions of the area where the code is being applied, if such adjustment is based on the use of the applicable test procedures prescribed under section 6293 of this title or other technically accurate documented procedure.<sup>35</sup> The term "energy use"<sup>36</sup> means the quantity of energy directly consumed by a consumer product at point of use, determined in accordance with test procedures under 42 USC § 6293. [emphasis added]</p>	<p>The CEC acknowledges the comment, and no changes have been made because no changes were suggested.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.024	AHRI	<p>AHRI questions whether the adjustments proposed by the CEC to modify the estimated energy use of covered products may stray too far from adjustment required to reflect California conditions. Modifying the source energy metric to include forecasted long-term changes in powerplant capacity drastically skews proportionality of credit ratios and may go beyond the necessity outlined in EPCA.<sup>37</sup></p>	<p>The CEC acknowledges the comment and no changes have been made. The CEC's adjustments are reasonable adjustments given California's unique geography and climate zones.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.025	AHRI	Comparing the little information available on LSC to methodology used by DOE during Appliance Standards rulemakings, is very stark. As part of the National Energy Savings (NES) Analysis DOE takes estimated energy consumption and savings based on site energy and converts the energy consumption and savings to primary and full-fuel-cycle (FFC) energy using annual conversion factors derived from the most recent version of the National Energy Modeling System (NEMS). <sup>38</sup> This is not unlike what the CEC requires of a metric for evaluation of costeffectiveness, for proposed measures, and for use within Title 24's compliance software for the performance approach.	The CEC acknowledges the comment and no changes have been made. The CEC appreciates DOE's methodology, but notes DOE and CEC have different statutory mandates and rulemaking processes. The CEC's methodology and rulemaking process is consistent with California's statutory requirements regarding building standards development.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.026	AHRI	DOE's procedures for converting site to FFC energy are detailed in robust Technical Support Document (TSD) and supported by policy statements. <sup>39</sup> In the NES Analysis, DOE calculates the cumulative energy savings as the sum of the annual NES. Inputs to the NES analysis include annual energy consumption per unit and site-to-power-plant, FFC conversion factors, shipments, and stock. DOE's FFC calculations incorporate the energy consumed in extracting, processing, and transporting or distributing source fuels (upstream activities), DOE developed FFC multipliers using the data and projections generated by the NEMS used for AEO2023. <sup>40,41</sup> As an example, recently published Commercial Water Heaters Final Rule TSD, provides FFC multipliers are provided for the 2026-2050, nearly the full 30-year analysis period. It is held constant after 2050, as that is the last year in the AEO2023 projections. Beyond that, there is likely too much uncertainty for forecasting. The FFC multiplier for electricity reflects the shares of various primary fuels in total electricity generation throughout the forecast period. The complete methodology associated with this approach is in the thorough TSD, but it provides a technically accurate documented procedure to shift from estimated site energy use determined using the applicable test procedure to a metric more reflective of emissions and energy cost. Comparatively, CEC's documentation of LSC in the Title 24-2025 Docket is lacking in detail and justification of need.	The CEC acknowledges the comment and no changes have been made. The CEC appreciates DOE's methodology, but notes DOE and CEC have different statutory mandates and rulemaking processes. The CEC's methodology and rulemaking process is consistent with California's statutory requirements regarding building standards development.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.028	AHRI	In the 2022 Energy Code Impact Analysis, the CEC estimated a 5% replacement rate for HVAC measures. CEC estimated the shares of gas and electric appliances for water heating and space heating of single-family and multifamily buildings: 82.8% of single-family space heating is served by gas appliances; 94.9% of single-family water heating is served by gas appliances; 46.6% of single-family space heating is served by gas appliances; and 97.0% of multifamily water heating is served by gas appliances. <sup>43</sup> The costs associated with code required measures for alterations do not seem to be accounted for in the 30-year analysis period in the CEC's proposal. The CEC must account for replacement costs in the cost methodology because it is substantial and may be impactful to California home and business owners	Thank you for your comment. Incremental costs for all measures include both initial and replacement costs, as well as operational costs, during the 30 year period of analysis. Energy use of proposed measures are simulated over the 30 year period of analysis.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.029	AHRI	<b>Modifications to the Heat Pump Baseline for Residential and Nonresidential Buildings</b> The CEC is proposing prescriptive requirements to install both heat pump space and water heaters in single and multifamily residential and nonresidential buildings. AHRI disagrees with the removal of technology options in the prescriptive path. It is imperative that the CEC preserve the flexibility for equipment to use any energy source when it is economically and environmentally beneficial to do so within the prescriptive path. <sup>44</sup>	Thank you for your comment. Staff has published the analysis demonstrating that the prescriptive heat pump baseline requirements are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.  Staff notes that the Energy Code preserves fuel choice and the ability to use all federally covered products.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.03	AHRI	As outlined in the 2025 Multifamily Individual Heat Pump Water Heater Baseline Report, 45 CEC proposed to modify prescriptive water heater options by removing the option for water heaters serving individual dwelling units to comply with this subsection under Subsection 170.2(2)1.C, a gas or propane instantaneous water heater with an input under 200,000 Btu/hr. 46 The proposed regulations also add an exception which allows gas or propane instantaneous water heaters to meet the requirements when installed in buildings of four habitable stories or greater. These proposed establish heat pump water heaters as the baseline for performance path compliance for multifamily buildings of four or more stories.	Thank you for your comment. Staff clarifies that the 2025 proposal sets a heat pump water heater performance baseline for multifamily buildings 3 stories or less where each dwelling unit is served by an individual water heater. For high-rise multifamily buildings, the performance baseline is proposed to remain the same as in 2022, with separate baselines for electric and gas equipment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.031	AHRI	As outlined in the 2025 Single-Family Two Heat Pump Baseline Report, 47 the CEC has proposed change for the 2025 baseline is to utilize heat pumps for both space heating and water heating in all climate zones. 48 Section 4.4 Cost Effectiveness analysis (over 30 years) appears to combine both measures (HP for space conditioning, and a HPWH for service water heating). Why has the CEC combined these two measures for the analysis? In the current code, Exception 1 to Section 150.1(c)8 allows for climate zones 3, 4, 13 and 14, to prescriptively install a gas or propane instantaneous water heater with an input of 200,000 Btu per hour or less and no storage tank may be installed. Why does the benefit-cost-ratio change to greater than 1 in 2025, when in the 2022 code cycle the HPWH benefit analysis did not support such a conclusion for climate zones 3, 4, 13, and 14?	Thank you for your comment. Staff clarifies that heat pump water heaters (HPWH) would have been cost effective in the 2022 code cycle for climate zones 3, 4, 13, and 14. The goal of the 2022 Energy Code was to set either a heat pump space heater or heat pump water heater as the baseline.  The 2022 rulemaking record showed that staff set a heat pump space heater as the baseline for climate zones 3, 4, 13, and 14, and excepted these same climate zones from the heat pump water heater baseline.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.032	AHRI	In multi-family buildings, the total installed cost of the instantaneous gas water heater and the 55-gallon HPWH are \$1,636 and \$2,034, respectively, with an incremental first cost of \$398. Table 11 presents a summary of the California state-average first cost for the instantaneous gas water heater and the HPWH. For single family buildings, the incremental first of the gas instantaneous water and a 65-gallon storage HPWH for the 500 ft <sup>2</sup> and 2100/2700 ft <sup>2</sup> homes are \$1,708 and \$765 respectively (by home size). 49 It is unclear why the CEC has used different costs for water heaters in single and multifamily homes.	Thank you for your comment. Multifamily dwelling units are typically smaller than single family homes, and therefore Staff assumed a larger 65-gallon heat pump water heater (HPWH) for the single family case. A 65-gallon HPWH for multifamily dwelling units is also cost effective.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.033	AHRI	For nonresidential buildings, AHRI opposes proposed strict prescriptive standards that limit appropriate, energy-saving system choices. These business-level decisions are made on a case-by-case basis, and the CEC should not exclude energy efficiency-improving technologies. The proposed changes for offices and schools in Section 140.4 – Prescriptive Requirements for Space Conditioning Systems limit consumer choice to an unsuitable degree. There are also technical issues with this section, discussed below.	Thank you for your comments. Staff notes that the Energy Code preserves fuel choice and the ability to use all federally covered products.  Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.  Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.034	AHRI	Likewise, AHRI opposes the proposed prescriptive requirement that offices use either a variable refrigerant flow (VRF) and dedicated outdoor air system (DOAS) or a four-pipe fan coil (FPFC) with heating hot water supplied by an air-to-water heat pump (ATWHP) and DOAS for ventilation for all climate zones. For schools, only one prescriptive system choice exists – an FPFC with ATWHP and DOAS –which is even worse. The system proposed to be prescribed is extremely uncommon for schools. Why were VRF or commercial packaged heat pumps, both commonly installed in schools, not considered?	Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.035	AHRI	<p><b>Technical Review of the Express Terms</b>  AHRI reviewed the Express Terms and developed recommendations to address concerns, below.</p> <p>A. Section 110.2(a) – Minimum Efficiency Tables  The CEC has proposed modifications to minimum efficiency requirements for mechanical equipment. First, regarding federal minimum efficiencies, CEC has proposed to remove the entire table if federal minimum requirements were entirely the same as listed in the table so references to Tables 110.2-A through Table 110.2-N are proposed to be Tables 110.2-A through Table 110.2-L. CEC has proposed to remove <b>Table 110.2-E</b> Package Terminal Air Conditioners and Packaged Terminal Heat Pump – Minimum Efficiency Requirements, <b>Table 110.2-J</b> Gas- and Oil-Fired Boilers, Minimum Efficiency Requirements, <b>Table 110.2-L</b> Floor-Mounted Air Conditioners and Condensing Units Serving Computer Rooms – Minimum Efficiency Requirements, and <b>Table 110.2-M</b> Ceiling-Mounted Air Conditioners and Condensing Units Serving Computer Rooms – Minimum Efficiency Requirements. While we agree it is difficult to maintain equipment efficiency tables, AHRI does not support deleting tables. At the very least, particularly while equipment is subject to MAEDbS and federal database requirements, there is value in referencing the equipment types that follow the federal standards in an accompanying document. A compendium to Title 24 with federal standards would provide designers with relevant information quickly and would be easier to maintain by CEC staff, as it may not be subject to the same regulatory requirements for updates.</p>	Comment acknowledged, no change made. Staff understands the need for a separate accompanying document that identifies federal and state requirements, which will allow for updates outside of the regulatory process. Staff will consider developing this document in the next code update.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.036	AHRI	Second, where the federal minimum efficiency requirements were the same as the 2022 version of ASHRAE 90.1, CEC has proposed the table to reference federal minimum requirements. AHRI appreciates modifications to <b>Table 110.2-FG</b> Electrically Operated VR) Air Conditioners Minimum Efficiency Requirements and <b>Table 110.2-GH</b> Electrically Operated Variable Refrigerant Flow Air-to-Air and Applied Heat Pumps - Minimum Efficiency Requirements in response to AHRI pre-rulemaking comments. We have one additional suggestion. For both tables, the minimum efficiency of air-cooled VRF equipment <65,000 Btu/h, should cite the AHRI 210/240-2023 as the applicable test procedure. Additionally, for <b>Table 110.2-GH</b> , the relevant HSPF2 adopted in ASHRAE 90.1-2022 for three-phase equipment, and later by the DOE, is 7.5. Federal standards for this equipment are effective January 1, 2025 (Table 19 to 10 C.F.R. § 431.97(h)). AHRI also notes that several categories of commercial air-conditioners and heat pump equipment that need to be included in <b>Tables 110.2-A and 110.2-B</b> including three-phase space constrained and small-duct high velocity systems, also included in ASHRAE 90.1- 2022 and in Table 19 to 10 C.F.R. § 431.97(h).	Staff agrees with the comment, and changes have been made. Specifically, the applicable test procedure for air-cooled VRF equipment <65,000 Btu/h has been updated to AHRI 210/240-2023. Staff will consider adding efficiency requirements for additional federally-regulated equipment such as three-phase equipment and small-duct high velocity systems to supporting documents of the Energy Code.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>



256352.037	AHRI	<p>Third, where the 2022 version of ASHRAE 90.1 was different from existing federal minimum requirements, the 2022 version of ASHRAE 90.1 efficiencies are being evaluated for inclusion in Title 24. These tables include Table 110.2-F Electrically Operated VRF Air Conditioners Minimum Efficiency Requirements, and <b>Table 110.2-H DX-DOAS Units, Single Package and Remote Condenser – Minimum Efficiency Requirements</b>. AHRI supports CEC harmonizing with ASHRAE 90.1. AHRI supports harmonizing with ASHRAE 90.1-2022, except in the case of DX-DOAS, where the addendum to modify efficiencies were not approved in time for publication. Tables for DX-DOAS equipment should be harmonized federal standards in Table 14 to § 431.97— Minimum Efficiency Standards for Direct Expansion-Dedicated Outdoor Air Systems and effective May 1, 2024.</p>	<p>Comment acknowledged, no change made. Staff has reviewed Table 110.2-H and ensured that the efficiency values match CFR 10 Section 431.97.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.038	AHRI	<p>Lastly, ASHRAE Standard 90.1 added adiabatic fluid cooler minimum efficiencies and test procedures to Table 6.8.1-7 (Heat Rejection Equipment) in the 2022 edition.50 AHRI recommends adding these minimum efficiencies and test procedures to <b>Table 110.2-E</b> in Title 24-2025.</p>	<p>Comment acknowledged, no change made. Staff will consider adding efficiency requirements for additional federally-regulated equipment to supporting documents of the Energy Code.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.039	AHRI	<p>B. Section 110.2(e) – Open and closed-circuit cooling towers.  AHRI appreciates the reduction in the required minimum efficiency for axial fan open circuit cooling towers utilized on water cooled chiller plants over 300 tons from a maximum of 120 gpm/hp to 80 gpm/hp. This modification to the prescriptive cooling tower efficiency <b>Sections 140.4(h)5 and 170.2(c)4Fv</b> helps to minimize many of our concerns over the significant increases originally proposed as described in our memo to Docket 22-BSTD-01 dated July 18, 2023. However, there is evidence that further study of the minimum efficiency values by climate zone should be performed to evaluate if additional reductions are warranted. This is a result of flawed control strategies for cooling towers contained in many energy modeling programs which have the potential to overestimate fan energy usage.</p> <p>AHRI has also reviewed the 45-day language for the blowdown control requirements (<b>Section 110.2(e)</b>) and generally agrees with the changes. These requirements will help to reduce water usage by cooling towers in the State of California by helping to ensure more consistent control of the necessary blowdown while minimizing the risk of scaling. AHRI appreciates the CEC reaching out and consulting with water treatment experts from both ASHRAE and the Cooling Technology Institute for guidance on the development of these requirements. As such, AHRI looks forward to reviewing blowdown control section modifications suggested by these organizations included in the 15-day Express Term package.</p>	<p>Comment acknowledged, no change made. Staff will continue to review how compliance software represents these systems. Staff notes that revisions to the software is implemented in compliance software updates which are out of scope of this rulemaking.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>



256352.04	AHRI	<p>C. Section 110.3 – MANDATORY REQUIREMENTS FOR SERVICE WATERHEATING SYSTEMS AND EQUIPMENT</p> <p>In new <b>Section 110.3(c)7B</b>, Ventilation for HPWH Installations, CEC has proposed, <u>“the installation space shall have a volume equal to the greater of 100 cubic feet per kBtu per hour of compressor capacity, or the minimum volume provided by the manufacturer for this method.”</u> If the calculation method yields a smaller net-free air requirement than the manufacturer requirements, AHRI is concerned that the proposal is overly prescriptive. While AHRI does not object to the inclusion of a calculation method, in no case should HPWH ventilation net-free air be less than as specified by the manufacturer and designers should be provided with additional flexibility for space planning. AHRI recommends modifying the language as follows, shown in <b>red text</b>:</p> <p><u>“the installation space shall have a volume <del>not less equal to</del> than the greater of 100 cubic feet per kBtu per hour of compressor capacity, or the minimum volume provided by the manufacturer for this method.”</u></p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.041	AHRI	<p>D. Section 110.4 – MANDATORY REQUIREMENTS FOR POOL AND SPA SYSTEMS AND EQUIPMENT</p> <p>AHRI supports proposed <b>Exception 2</b>, <u>“Alterations to existing pools and/or spas with existing heating systems or equipment”</u> and <b>Exception 4</b>, <u>“Heating systems which are used exclusively for permanent spa applications in existing buildings with gas availability”</u> to <b>Section 110.4(c)</b>. These two exceptions allow for consumer flexibility in replacing equipment and altering existing buildings. AHRI also supports proposed <b>Exception 5 to Section 110.4(c)</b>, <u>“Heating systems which are used exclusively for permanent spa applications where there is inadequate solar access for a solar pool heating system to be installed,”</u> which recognizes that locations may not always have adequate access to install a solar heater in accordance with sizing requirements and provides consumer flexibility.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.042	AHRI	<p>E. SECTION 120.1 – REQUIREMENTS FOR VENTILATION AND INDOOR AIR QUALITY</p> <p>Recent editions of the Energy Code have sought to align California nonresidential ventilation requirements with ASHRAE Standard 62.1. AHRI notes that equations and minimum occupant load densities in Section 120.1 diverge from ASHRAE 62.1. The 2025 Energy Code is still citing the 2019 edition of ASHRAE 62.1. AHRI requests CEC consider modifying the reference to ASHRAE 62.1-2022 and adopt into TABLE 120.1-A– Minimum Ventilation Rates, Minimum occupant load density (# persons / 1000 ft<sup>2</sup>) and Area-based minimum ventilation rate (cfm / ft<sup>2</sup>) values in Table 6–1 of ASHRAE 62.1–2022. AHRI also requests that CEC adopt ASHRAE 62.1–2022 equation 6-1 to maximize harmonization.</p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Staff agrees with the comment regarding referencing the 2022 version of ASHRAE 62.1, and changes have been made.</p> <p>Staff acknowledges the request to adopt ASHRAE 62.1-2022, no change made. Staff notes that changes made to the ventilation section are meant to be non-substantive and does not diverge from previous codes of minimum ventilation. The intent is to clarify that the ventilation rate design is based on the same minimum ventilation rates since 2016.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.043	AHRI	<p>F. SECTION 120.6 – MANDATORY REQUIREMENTS FOR COVERED PROCESSES</p> <p>In mandatory sections, the 2022 Energy Code erroneously includes prescriptive requirements for commercial refrigeration systems and equipment that are federally and state regulated. In the Code of Federal Regulations, covered equipment, by definition, includes commercial refrigerator, freezer, or refrigerator-freezer, as defined in 10 CFR §431.62 and walk-in cooler and walk-in freezers, as defined in 10 CFR § 431.302. California Code of Regulations, Title 20, Section 1605.1 and 1605.2 includes standards for Refrigerated Warehouses. Title 24 includes additional prescriptive requirements for mechanical systems serving refrigerated spaces is inappropriate, regardless of size. While the spaces may have size limitations, the equipment does not. AHRI recommends CEC add two exemptions to resolve this issue:</p> <ul style="list-style-type: none"> <li>• Exception 4 to Section 120.6(a)3B: Evaporators covered by California Code of Regulations, Title 20, Sections 1605.1 and 1605.2</li> <li>• Exception 1 to Section 120.6(a)4: Condensing units covered by California Code of Regulations, Title 20, Sections 1605.1 and 1605.2</li> </ul>	Staff agrees with the comment, and changes have been made. Specifically, additional exceptions were added to Section 120.6(a)4.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.044	AHRI	<p>G. SECTION 140.4 – PRESCRIPTIVE REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS</p> <p>The CEC should not prescriptively limit appropriate system choices that provide important energy efficiency improvements. These business-level decisions are made on a case-by-case basis, and the CEC should not exclude energy efficiency-improving technologies. The proposed changes for offices and schools in <b>Section 140.4</b> – Prescriptive Requirements for Space Conditioning Systems limit consumer choice to an unsuitable degree. There are also technical issues with this section, discussed below.</p> <p>First, in Section 140.4(a)2.D, CEC has proposed mandating prescriptively that for schools in “Climate Zones 1 and 16, the space-conditioning system shall be a dual-fuel heat pump.” AHRI recommends that CEC instead offer designers the option to meet the prescriptive code by specifying either a dual-fuel heat pump or a heat pump. As heat pump technology continues to advance, it may meet the load requirements of Climate Zones 1 and 16 without being a “dual fuel heat pump.” Specifying a mandatory dual fuel heat pump would prevent the most efficient and advanced cold climate heat pumps from being prescriptively specified in California Climate Zones 1 and 16.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback.</p> <p>Staff will consider expanding the options in Section 140.4(a)2.D in the 2028 code cycle.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.045	AHRI	<p><b>Section 140.4(a)3.B</b>, Multizone zone space-conditioning system types for Schools proposes to allow for only a single space conditioning system type to be used for prescriptively designing school buildings. The FPFC terminal units with a DOAS providing ventilation is an uncommon system type for offices and schools and should not be the only choice. There should be several compliance options available to contractors and designers. VRF plus a DOAS is a viable option for an all-electric solution, but such a system is prohibited in the prescriptive compliance path. Rooftop units and variable air volume systems are also commonly used in schools today. To remove options, particularly for smaller schools in disadvantaged communities, is not appropriate. Designing a building prescriptively saves \$10,000-\$20,000 on performance modeling costs. Supporting documentation analyzes "large schools;" however, there is no distinction between large and small schools in the Energy Code.<sup>51</sup> Further comments that infer that air-to-water heat pump (AWHP) are a more cost-effective solution ignore the fact that the costs assumed do not include the pump operational costs. Generally, AHRI found the supporting documents to lack technical justification and system-type analysis to justify the severe prescriptive limitations proposed.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff highlights that the requirements in Section 140.4(a)3 only apply to buildings with multizone systems. Many small to medium-sized schools can comply prescriptively with single-zone HVAC systems.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.046	AHRI	<p>In <b>Section 140.4(a)3.A</b>, Multizone zone space-conditioning system types for Office, the CEC proposes offices designed prescriptively must use either a VRF and DOAS or a FPFC with heating hot water supplied by an AWHP and DOAS for ventilation for all climate zones. AHRI opposes limiting the prescriptive path to such a degree.</p> <p>There are no broadly accepted industry definitions of AWHP in the U.S. AWHPs can provide space heating, space heating and cooling, space heating and domestic hot water, or space heating, cooling, and domestic hot water. There are a variety of space heating applications, including in-floor (radiant) heating, heating through radiators, preheating domestic hot water using an indirect tank with hydronic coil, and heating using hydronic air handlers. The temperature of water for end-uses can be high, medium, or low temperature, depending on the application.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating. Staff is also committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.047	AHRI	<p>Air-to-water heat pump units designed to heat potable water are federally regulated commercial or consumer water heaters. Regarding commercial heat pump water heaters: applications are more challenging than consumer applications, but commercial HPWH technologies are advancing.<sup>52</sup> The minimum efficiency requirements outlined in <b>Section 140.0(a)3.C</b> cannot be applied to those federally regulated products. Even for equipment that may be outside the scope of federal regulation, there are no industry consensus test procedures and no industry certification programs.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.048	AHRI	<p>Several questions arise for AHRI and its members when considering proposed requirements for air-to-water heat pumps: What assurance will California consumers have when sourcing this equipment? How are these products being modeled? What market research has California conducted that indicates that there is sufficient availability of air-to-water heat pumps with rated capacities exceeding 20-ton?</p>	<p>AWHP products are now available from a number of larger manufacturers (Trane, Daikin, AO Smith) as well as from manufacturers of smaller, modular equipment (Aermec, Climacool, Multistack). Larger system capacity AWHPs are available exceeding 120 tons.</p> <p>For modeling, performance curves were developed from regressions of data provided by three separate manufacturers of AWHP products.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.049	AHRI	<p>AHRI is concerned that Californian building owners may struggle to comply with these overly prescriptive requirements, especially as they apply to additions and alterations of nonresidential buildings. To address concerns, AHRI proposes the following modifications to <b>Section 140(a)3.A and B</b> show in <b>red text</b>:</p> <p>A. Offices <b>and Schools</b>. Office buildings <b>and Schools</b> shall use space conditioning systems complying with one of the following requirements:</p> <p>i. The space conditioning system shall be a variable refrigerant flow (VRF) heat pump system with a dedicated outdoor air system (DOAS) providing ventilation. Indoor fans shall meet the requirements of Section 140.4(a)3D. The DOAS shall comply with Section 140.4(a)3E; or</p> <p>ii. The space conditioning system shall be a four-pipe fan coil (FPFC) system with a DOAS providing ventilation. The FPFC hot water coils shall be supplied by an air-to-water heat pump (AWHP) space-heating hot water loop which complies with Section 140.4(a)3C. The DOAS shall comply with Section 140.4(a)3E; or</p> <p>iii. The space conditioning system shall utilize heating supplied through a hot water loop served by an AWHP which complies with Section 140.4(a)3C. Ventilation systems shall include DCV in all zones. All air systems shall be equipped with a heat recovery system in compliance with Section 140.4(q). A hydronic recirculated-air heating system complying with Section 140.4(a)3F shall be used in climate zone 16.</p> <p><b>iv. Commercial packaged air conditioners and heat pumps</b></p> <p><b>v. Variable Air Volume Systems</b></p> <p><b><del>B. Schools.</del></b></p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating. Staff is also committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p> <p>Staff notes that Sections 140.4(a)2 and 140.4(a)3 do not apply to new or replacement space conditioning systems or components in alterations to existing buildings, see Exception 1 to Section 141.0(b)2C.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.05	AHRI	<p>AHRI is also concerned with the unnecessarily redundant language proposed in new <b>Sections 140.4(a)3.D and 140.4(a)3.E</b>.</p> <p>Outside of setting a power limitation for indoor fan requirements, these new sections are slightly less refined requirements already established in <b>Section 140.4(p)</b>, that must be followed in the prescriptive path regardless. While the new language may help align the intent with the case studies performed, it creates unnecessary complexity in communicating requirements to users, addressing compliance with software verification tools and creates challenges in keeping requirements up to date in future code versions. There is no definition of Indoor Fan in Title 24 and loose interpretations of the requirement may inadvertently reduce the required ventilation rates below levels acceptable for indoor environmental quality (IEQ) established by ASHRAE 62.1. Section 140.4(p)2 already defined this requirement with more precise and helpful language. For these reasons, AHRI recommends striking Sections 140.4(a)3.D and 140.4(a)3.E from the proposed changes and encourages the CEC to use existing prescriptive requirements already set forth in Title 24.</p>	<p>Thank you for your comment. The indoor fan power requirements in Section 140.4(a)3.D and DOAS requirements in Section 140.4(a)3.E are developed as part of the proposed requirement in Section 140.4(a)3 and are limited to multizone systems. Indoor fan power requirements apply to fan coil units and indoor fan coils that do not provide ventilation, so there is no risk of comprised IAQ.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.051	AHRI	<p>If a fan power limitation is necessary for VRF and FPFC equipment, a better approach for the industry would be to create overarching requirements in <b>140.4(c) Fan Systems</b> when the indoor fans fall below the 1kW threshold for evaluation to the current fan power budget method.</p>	<p>Thank you for your comment. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.052	AHRI	<p>Furthermore, with the transition to lower flammability refrigerants, some additional verbiage is required to address required leak mitigation strategies that may require indoor fans to operate continuously or when a refrigerant leak is detected. AHRI proposes the following exception to <b>Section 140.4(p)(2)</b>:</p> <p><b>Exception 4 to Section 140.4(p)(2):</b> Zone heating and cooling fans shall be allowed to operate when required by mechanical code to provide the required refrigerant mitigation strategy.</p>	<p>Thank you for your comment. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.053	AHRI	<p>D. Fan Requirements</p> <p>Additionally, AHRI questions the cost effectiveness justifying DOAS to be equipped with heat recovery systems in mild climate zones, as proposed in new <b>Section 140.4(a)3.E</b>, Multizone zone space-conditioning system types, DOAS. It is expected that even with fan system requirements, heat recovery system requirements, in accordance with Section 140.4(a)3E, would lead to higher energy expended on fan power than saving expected from heat recovery with a small outdoor and indoor temperature differential.</p> <p>DOAS are also required to comply with prescriptive requirements in Section 140.4(p) Dedicated outdoor air systems (DOAS), which includes total combined fan power requirements and compliance with Section 140.4 (c), Fan Systems. AHRI also suggests that overlapping fan system and energy recovery requirements should be reviewed and streamlined.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. The proposed DOAS systems do not include active DX cooling or active heating, but rely on heat recovery to temper the outdoor air. The systems include a requirement for bypass when the outside air temperature does not require heat recovery.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.054	AHRI	<p><b>Sections 140.4(c)2Bii,53 140.4(d)2v,54 140.4(e)2D, 55 140.4(f)3, and 140.4(r)</b> are all new prescriptive requirements for control sequences of operation in nonresidential buildings. AHRI appreciated CEC staff clarifications during the public hearings that these requirements are for building-level controls and do not apply to equipment-level controls. We recommend adding language to ensure that applicability to building-level controls is clear in Title 24. Language in Exception 5 to Section 141.0(b)2C also makes it unclear that Guideline 36 applies to the building management system rather than the equipment. Lastly, while AHRI is supportive of ASHRAE Guideline 36, we generally caution against requiring non-mandatory guidelines.</p>	<p>Comment acknowledged, no change made. Staff feels the language in the code is clear on applicability of Guideline 36 to buildings that have building level controls that have DDC. Staff will further clarify requirements in the 2025 compliance manuals as needed.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.055	AHRI	<p>H. SECTION 141.0 – ADDITIONS, ALTERATIONS, AND REPAIRS TO EXISTING NONRESIDENTIAL, AND HOTEL/MOTEL BUILDINGS</p> <p>Proposed requirements in Section 141.0 – Additions, Alterations, and Repairs to Existing Nonresidential, and Hotel/Motel Buildings, specifically section 141.0(b)2.C.ii detail extreme limitations on replacement equipment. The prescriptive path no longer benefits a building owner to replace a piece of equipment not on the list, in kind. Instead, performance modeling would need to be undertaken, and extensive energy tradeoffs would be required to replace equipment not explicitly listed in Section 141.0(b)2.C.ii, which is likely to result in delays and significant additional expense that CEC has not justified. What will happen to economically disadvantaged school systems that cannot easily replace broken space heating equipment in the winter?</p>	<p>Thank you for your comment. Table 141.0-E-1 provides alternative options to account for project limitations.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.056	AHRI	<p><b>Section 141.0(b)2C</b> is applicable to nonresidential alterations, designed prescriptively, where new or replacement space-conditioning systems or component are required. Subsection ii, requirements for new or replacement single zone packaged rooftop systems with a direct expansion cooling with rated cooling capacity less than 65,000 Btu/hr, are overly prescriptive. These requirements may not be able to be met with a package terminal heat pump or single package vertical heat pump, which would create difficulties, particularly for hotels/motels and schools. Additionally, extending economizer requirements to SZAC1, 2, 356 and SZHP157 to rated cooling capacity less than 65,000 Btu/hr are excessive. There should be a lower limit of rated cooling capacity of 33,000 Btu/hr in the prescriptive economizer requirements section.</p>	<p>Thank you for your comment. The measure only applies to alterations with new or replacement single zone packaged rooftop systems with DX cooling capacity &lt;65,000 Btu/hr. It is not applicable to packaged terminal heat pump horizontal or vertical configurations. Table 141.0-E-1 specifies the building types where the alterations requirements from Section 141.0(b)2C apply. Hotels/motels are not included. The applicable occupancies are retail and grocery, school, office and financial institution, and library.</p> <p>SZACs listed in Table 141.0-E-1 will need to have economizers in accordance with Section 140.4(e) when specified with capacity is less than 65,000 Btu/h. Section 140.4(e) excepts economizers for systems with design total mechanical cooling capacity less than 33,000 Btu/hr. In summary, SZACs listed in Table 141.0-E-1 are required to have economizers when specified with capacity in the range of 33,000 to 65,000 Btu/h.</p> <p>This measure begins to encourage existing building rooftop alterations to move away from like-for-like replacements. Table 141.0-E-1 provides alternative options to account for project limitations.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.057	AHRI	<p>In addition, there appears to be capacities of systems not accounted for in Section <b>141.0(b)2.C.ii</b>, New or replacement of single-zone packaged rooftop systems. The preamble to section 141.0(b)2.C.ii specifies a cooling capacity limit of 65,000 Btu/h when scoping the section. An alternate compliance path when installing an airconditioner and furnace is Table 141.0–E–1, which only addresses units with rated capacity &lt;54,000 Btu/h. What requirements are applicable to packaged rooftop systems with a rated cooling capacity ≥54,000 Btu/h but &lt;65,000 Btu/h? AHRI stresses the need to maintain like-for-like replacements, particularly in emergency replacement scenarios.</p>	<p>Thank you for your comment. The requirements listed in Section 141.0(b)2Cii apply to equipment with cooling capacity less than 65,000 Btu/hr. Staff notes that Table 141.0-E-1 provides alternative options to account for project limitations.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.058	AHRI	<p>I. SECTION 150.0 – SINGLE-FAMILY RESIDENTIAL BUILDINGS – MANDATORY FEATURES AND DEVICES</p> <p>AHRI opposes proposed changes to <b>Section 150.0(h)</b>, Space conditioning systems. The reference to California Building Code is effectively a reference to section 150(h)1.A on how to calculate cooling and heating load. The language has been moved from §150(h)1B to new §150(h)5 and amended to disallow supplementary heating to meet heating demand. This may lead to extremely oversized systems, especially in cooling mode, causing systems to constantly cycle. Additionally, the CEC addressed backup heat during the 2022 cycle. In response to AHRI comments to the 2022 energy code development, CEC revisited the language proposed in EXCEPTION 1 to Section 150.2(b)1G (and 180.2(b)2Av in the new multifamily section). Language proposed in the 15-day Express Terms, and ultimately adopted into the 2022 code, made clear that electric resistance heating in heat pumps is excluded, avoiding the inadvertent elimination of back-up and supplementary heat. It is common for strip heat to be installed as emergency backup in the event the heat pump becomes inoperable during the heating season. Especially in freezing temperatures, emergency strip heat would prevent pipes from bursting, while continuing to provide human comfort.</p>	<p>Thank you for your comment. Staff has reviewed the suggested edits related to equipment sizing and supplementary heating, and no changes have been made.</p> <p>Staff notes that NIST's study on Sensitivity Analysis of Installation Faults on Heat Pump Performance shows no energy impact associated with cooling oversizing, if airflow is adequate as is required by the Energy Code.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.059	AHRI	<p>AHRI is also concerned that Sections 150.0(h)6 (and 160.3(b)7), Defrost, imparts a federally preempted design requirement on equipment that impacts equipment ratings. Ratings for equipment are based on default settings. Requiring the defrost delay timer to be set to greater than or equal to 90 minutes, as required in subsection A, may change the default setting for defrost used by some manufacturers. Additionally, some equipment is programmed to defrost on demand, rather than a set schedule. Demand defrost includes use of measured performance parameters to aid in determining when defrost is required. Implementing a set delay timer requirement of 90 minutes would negatively impact equipment performance for these highly efficient products. AHRI recommends striking requirements that impact equipment ratings and limit allowable controls technologies or adding the exception below for equipment using demand defrost controls.</p> <p>Exception 3 to Section 150.0(h)6: Equipment that uses demand defrost controls.</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>Staff has incorporated edits to ensure that the defrost delay timer requirements are only applicable to installer-adjustable defrost delay timers.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.06	AHRI	<p>J. SECTION 150.1 – PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES FOR SINGLE-FAMILY RESIDENTIAL BUILDINGS</p> <p>As detailed above, AHRI is concerned about the prescriptive requirements that new space and water heating systems be heat pumps.</p>	Summary remarks - responses provided to detailed comments.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.061	AHRI	<p>K. SECTION 150.2 – ENERGY EFFICIENCY STANDARDS FOR ADDITIONS AND ALTERATIONS TO EXISTING SINGLE-FAMILY RESIDENTIAL BUILDINGS</p> <p>AHRI supports the proposal to permit additions to extend existing space heating systems.</p> <p>For alterations, AHRI is concerned with the proposal that new water heating systems must be heat pumps via prescriptive path. AHRI recommends the CEC to reconsider this approach. AHRI is concerned with the proposed deletion of "Exception 7 to Section 150.2(a): Space heating system. New or replacement space heating system serving an addition may be a heat pump or gas heating system." Prescriptively, CEC has proposed removing an option for additional water heaters, 150.2(a).1.D.iii. "A gas or propane instantaneous water heater with an input of 200,000 Btu per hour or less and no storage tank."</p>	Thank you for your comment. The removal of the gas option for water heaters in additions aligns with the changes for newly constructed buildings. Gas water heaters can comply through the performance compliance path.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.062	AHRI	<p>Lastly, in 2022, the CEC also made edits to EXCEPTION 2 to Section 150.2(b)1G to permit the in-kind replacement of electric resistance heating systems in alterations. Nearly all manufactured housing heating systems are electric furnaces. Duct work in mobile homes is too small to allow a regularly sized furnace to be installed or safely used. As complicated ties exist between Title 24 and CCR Title 25 - Housing and Community Development, the 2022 code will continue to allow the replacement of electric resistance heating systems in manufactured housing. AHRI recommends that these provisions remain in 2025.</p>	Comment acknowledged, no changes have been made because staff was not proposing changes to any of the exceptions to 150.2(b)1G.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>



256352.063	AHRI	<p>L. SECTION 160.9 – MANDATORY REQUIREMENTS FOR ELECTRIC READY BUILDINGS</p> <p>AHRI is concerned with certain provisions proposed in <b>Section 160.9(e)</b>. AHRI opposes new <b>Sections 160.9(e)3 and 4</b> because they present several issues. The new section proposes to reserve an additional space of 39" x 39" for a future HPWH which is quite significant for smaller dwelling units. If a homeowner goes through the performance path to select a gas or electric instantaneous water heater for a small dwelling unit, to also be mandated to reserve additional floor space is excessive for the homeowner. <b>Section 160.9(e)4.C</b> requires two 8" capped ducts, venting to the building exterior. Though the ducts are capped, these requirements would seem to compromise the envelope by creating an unnecessary thermal bridge. Also, future generations of HPWHs may need different infrastructure. AHRI suggests the CEC revisit these provisions.</p>	<p>Thank you for your comment. This requirement ensures a space for a future HPWH, and may be used for other purposes in the meantime.</p> <p>The capped ducts are one of the options to meet the ventilation requirement for a future HPWH. Designers may choose a different option.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.064	AHRI	<p>AHRI has significant concerns with the central heat pump water heater ready requirements in <b>Section 160.9(f)</b>. Again, the CEC is mandating expensive additional requirements further penalizing gas or propane water heating systems. These requirements are extensive and should be stricken. Regarding the technical analysis, it is unclear what life cycle the CEC used for Central Water Heaters. The CEC should note that Central HPWH are new equipment and technologies are changing rapidly.</p>	<p>Thank you for your comment. Despite the moderate added construction costs associated with improvements to the building standards, these ready requirements are reasonable based on the economic and environmental benefits that will be derived from the building standards for building owners in the future. Ready requirements install infrastructure at the time of building construction when construction costs are the lowest. Having this infrastructure in place, gives building owners an affordable path to upgrading to electric appliances without needing to incur significant retrofit costs.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.065	AHRI	<p>Central HPWH systems are typically more complex than individual systems and require more effort to specify, layout, and install. For example, see Ecosizer (ecotope.com), a free tool for sizing central water heating systems based on commercial heat pump water heaters in multifamily and commercial buildings. The Ecosizer shows the tradeoff between storage volume and heating capacity. A designer could choose to have a larger compressor kBTU/hr to tradeoff a smaller storage tank size; and vice-versa the designer could choose a smaller compressor kBTU/hr to tradeoff a larger storage tank size. These differences illustrate choices which will be made in the future; trying to determine the proper floor space for a future HPWH and storage tank(s) is a guess. Ecosizer also demonstrates a return to primary installation, and this is also noted in EnergyTrust of Oregon Central Heat Pump Water Heater Design Guide; a parallel temperature maintenance tank is not required in those scenarios. There could be concerns that requiring Central Heat Pump Water Heater Ready will be obsoleted, similar to the Title 24-2019 Section 150.0(n) Water Heating System which required systems using gas or propane water heater to serve individual dwelling units to include a Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; and a gas supply line with a capacity of at least 200,000 Btu/hr. Such measures did not have direct impacts to building energy conservation, and one could argue that if these assets are 'lost,' 'stranded,' or unused, the manufacturing, shipping, handling of additional building materials which were not needed, contributed Greenhouse Gas which could have been avoided.</p>	<p>Background remarks - no response needed.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>



256352.067	AHRI	<p>Also, the Central Heat Pump Water Heater Ready space requirements in Section 160.9(e)3 conflict with Individual heat pump water heater ready requirements and the requirements in Joint Appendix JA15. <b>Section 160.9(e)3</b> requires that “the construction drawings shall designate a space at least 39 inches by 39 inches and 96 inches tall for the future location of heat pump water heater,” or 84.5 ft3 . JA15.2.1(a), states that “If the gas water heating system has an input capacity less than 200,000 Btu per hour, the minimum space reserved for the heat pump shall be 2.0 square feet per 10,000 Btu per hour input of the gas or propane water heating system, and the minimum linear dimension of the space reserved shall be 48 linear inches.” For example, a 200,000 Btu per hour water heater would require 2 ft2 x 20 x 4ft or 80 ft3 using JA15 calculations. A 12 kW HPWH, which is approximately 40,946 Btu/hr, would require 2 ft2 x 4 x 4ft or 32 ft3 .</p>	<p>Staff disagrees with the comment, and no changes have been made. Individual HPWHs and central HPWHs are fundamentally different and therefore the ready requirements cannot be exactly the same.</p> <p>Staff notes that Reference Appendices, Joint Appendix JA15 is not the only method to meet the central heat pump water heater ready requirement in Section 160.9(f). Staff expects most projects will meet these requirements by calculation and documentation by the responsible person associated with the project. JA15 is intended to provide a conservative backstop if the responsible person is not available.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.068	AHRI	<p>AHRI recommends striking Section 160.9(e)3, as proposed,58 and replacing with “Central water heating systems using gas or propane to serve multiple dwelling units may consider providing space requirements and electrical requirements to serve a future heat pump water heater system as calculated and documented by the responsible person associated with the project.”</p>	<p>Staff acknowledge the concerns from the commenter. JA15 is not the only method to meet the central heat pump water heater ready requirement in 160.9(f). Staff expects most projects will meet these requirements by calculation and documentation by the responsible person associated with the project, which should address the commenter's concerns. No changes made.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.069	AHRI	<p>M. SECTION 170.2 – PRESCRIPTIVE APPROACH FOR MULTIFAMILY BUILDINGS</p> <p>Exception 1 to Section 170.2(d)1: Multifamily buildings four habitable stories or greater may install a gas or propane instantaneous water heater with an input of 200,000 Btu per hour or less and no storage tank.</p> <p>What analysis did CEC provide to recommend the exemption to multifamily buildings be only for those four habitable stories or greater? TN#255318-2 2025 Multifamily Individual Heat Pump Water Heater Baseline Report analysis is for individual heat pump water heaters. A three-story multifamily building can easily exceed the square footage and number of apartments of a four-story multifamily building. Rather than use an arbitrary four habitable stories or greater, we suggest CEC refer to the low-rise loaded corridor multifamily prototype model in the 2025 Energy Code Accounting Methodology, with a floor area of 39,372 ft2. Accordingly, we recommend the following edits for Section 170.2, shown in <b>red text</b>:</p> <p>Exception 1 to Section 170.2(d)1: Multifamily buildings <b>four habitable stories with a floor area of 40,000 ft2</b> or greater may install a gas or propane instantaneous water heater with an input of 200,000 Btu per hour or less and no storage tank.</p>	<p>Staff disagrees with the comment, and no changes have been made. The proposed change would greatly expand the exception to larger low-rise multifamily projects where this requirement is still technically feasible and cost effective.</p> <p>Staff evaluated the four standard design prototypes for multifamily buildings. The analysis found pathways for federally compliant equipment in low-rise multifamily (3 stories and below) and not for high-rise multifamily (4 stories or greater). Additionally available data shows that most high-rise multifamily projects uses central hot water system rather than individual water heaters in each dwelling, making individual water heater a rare system design choice for high-rise multifamily. Therefore limiting this exception for high-rise multifamily represents a logical breakpoint.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.07	AHRI	<p>AHRI has several concerns related to proposed modifications to <b>Section 170.2(d).2</b>. This alternate compliance pathway provides a prescriptive path for products meeting the requirements of Version 8.0 Tier 2 (or higher) of the Northwest Energy Efficiency Alliance (NEEA) Advanced Water Heater Specification for commercial heat pump water heaters and the cites the associated qualified products list. First, the NEEA specification includes design requirements for products beyond performance, including sound/warranty. Does the CEC intend to limit consumer choice in this way? Second, unlike the AHRI Directory, the NEEA database is unaudited. What assurance do consumers have that products are meeting the specification? Third, this specification is in the process of being updated. Once a specification is updated, it is not typical for a previous version's qualified product list to be maintained. Has the CEC received assurance from NEEA that this is not the case for version 8.0? If this qualified product list becomes unavailable, the Energy Code option will cease to be relevant. It will also block products qualifying to more recent versions.</p>	<p>Thank you for your comment. This proposal is similar to the current alternative pathway for unitary heat pump water heaters, which references Northwest Energy Efficiency Alliance's (NEEA) Advanced Water Heating Specification (AWHS). The Standard necessitates adoption of the current version of AWHS. Based on current practice, we expect that products previously certified would be grandfathered in that Tier.</p> <p>The CEC will stay in communication with NEEA to ensure that future AWHS versions will not present an issue for manufacturers to meet the requirements of Section 170.2(d)2.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.071	AHRI	<p>The requirements in Section 170.2(d).2 are geared towards split systems and inadvertently ban integrated systems from complying through this pathway. There are no compliance pathways outlined that would allow an integrated product to be installed via the performance pathway given that integrated products are not included in the NEEA specification. This forces the products to fit into the architecture of a split system, which would most closely be characterized as a multi-pass return to primary design. Given the requirement that a central water heater cannot be configured as a multi-pass or a return to primary system, effectively bans integrated systems from complying. AHRI requests that CEC add a compliance pathway or add an exception to this section to allow for integrated systems to comply.</p>	<p>Thank you for your comment. Staff recognizes that the prescriptive requirement is currently limited to single-pass systems, and notes that other system types can be modeled in the performance compliance path.</p> <p>The CEC is planning to evaluate additional central heat pump water heater system types in the 2028 code cycle.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.072	AHRI	<p>Lastly, Section 170.2(d).2 is also referenced by Section 140.5(b) for hotel/motel occupancies, however the case reports and supporting documentation only looked at the multifamily housing. If hotels and motels were not examined as a building-type, how is the CEC justifying these new requirements? AHRI expects that the proposed changes will have a substantial and different impact than what was considered by the case team and these additional occupancy types need to be evaluated for cost effectiveness.</p>	<p>Thank you for your comment. Requirements for hotel/motel occupancies have referenced the multifamily water heating requirement for many code cycles. Both central heat pump water heaters (CHPWH) and gas systems are allowed prescriptively. The requirements in Section 170.2(d)2A are only applicable when a CHPWH is used as an alternative to a gas central system, therefore cost effectiveness analysis was not needed.</p> <p>The core requirements for a gas central system remain unchanged for 2025.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256352.073	AHRI	<p>N. Fan Efficiency Index Requirements</p> <p>AHRI recommends the CEC review definitions, Section 120.10 and Section 140.4(a)3D related to new Department of Energy (DOE) test procedures adopted federally for commercial fans. CEC should cite the new federal procedures, where applicable. For example, 120.10(a)1 cites fan energy index (FEI) for fan arrays. AHRI recommends the test procedure citation remain ANSI/AMCA 208-18 Annex C, as the federal test procedure is only applicable to single, stand-alone fans. However, it is appropriate to cite the federal test procedure in section 120.10(a)2. For Section 140.4(a)3D, Multizone Prescriptive Requirements, CEC should be cognizant of the DOE FEI efficiencies being considered. If CEC's requirement of 0.35 W/cfm exceeds minimum efficiencies set by the DOE, CEC may be preempted.</p>	<p>Comment acknowledged, no change made. Staff will update Section 120.10 in the next code update to ensure clarity and consistency with DOE.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>

256352.074	AHRI	<p>O. Low Global Warming Potential (GWP) Refrigerants</p> <p>In response to several comments that have been submitted to the 45-day Express Terms, it should be noted that the HVAC industry has worked extensively for years to develop a clear path to low GWP refrigerants. Significant efforts by industry have been expelled to update building codes, and product safety standards must allow for use of these low GWP refrigerants. Suggestions that these new refrigerants may not be safe is simply inaccurate. They are already available and have been used for several years in Europe and Asia.</p> <p>AHRI appreciates the opportunity to provide these comments. If you have any questions regarding this submission, please do not hesitate to contact me.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256352&amp;DocumentContentId=92164</a>
256353.001	Hassan Fawaz	<p>Per 2025 CEC 160.1(b).2, the upcoming code change will have the metal-framed mandatory U-factor increase from 0.151 to 0.148.</p> <p>While the change might seem minor at a glance, this will cause major issues with typical multifamily projects.Â</p> <p>Firstly, corridor walls are typically 2x4-framed and unconditioned. These spaces are adjacent to the conditioned dwelling units and common spaces and thus will need thermal insulation per CEC 160.1(b).2. Typically, corridors barely meet the insulation as 2HR walls with 4 layers of 5/8 gyp and 24 O.C. framing.</p> <p>The best U-factor for metal-framed corridor walls that only meet the current 2022 mandatory measures: 4 layers of 5/8 gyp with 24 O.C. R-15 cavity [0.151 U-factor] Â</p> <p>Note that exterior walls that are structurally sound 16 O.C. for 2x6 R-21 16 O.C. will have an issue meeting these requirements with no stucco but just a metal clip exterior: 3 layers of 5/8 gyp with R-21 cavity [0.150 U-factor] Â</p> <p>Please reconsider this change, as this will have a minor change to energy efficiency but will cause drastic issues for structural support with typical fire rating assemblies.</p>	<p>Staff agrees with the comment, and changes have been made.</p> <p>The U-factor for metal framed walls was reverted back to U-0.151.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256353&amp;DocumentContentId=92163">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256353&amp;DocumentContentId=92163</a>
256354.001	ARXCIS	<p>ARXCIS respectfully submits these comments on the 2025 Building Energy Efficiency Standards, Express terms, 45-Day Language (“45-Day Language”), issued on March 28, 2024. ARXCIS has been actively engaged throughout this rulemaking process, both by submitting comments and meeting with Commission staff in the pre-rulemaking phase on the proposed changes to the Field Verification and Testing Program (HERS). The 45-Day Language includes several significant improvements to key portions of the proposed rulemaking language and we appreciate the responsiveness to our prior comments. As described further below, ARXCIS supports many of the changes in the 45-Day Language, but does believe that several areas could be clarified and that a small number are not justified.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>

256354.002	ARCXIS	<p><b>A. Comments on the 45-Day Language</b></p> <p><b>1. Conflicts of Interest</b></p> <p>ARCXIS shares the Commission’s goal to make the HERS program a consumerfocused program. Robust prohibitions on conflicts of interest are an essential part of meeting this goal and we have supported common-sense restrictions and requirements throughout this proceeding. The 45-Day Language appropriately balances the need to prevent conflicts of interest while not inhibiting the ability of companies to provide valuable and innovative services to consumers. ARCXIS agrees with the conclusion in the Initial Statement of Reasons (ISOR) that the proposed Section 103.3(b)1Aii would effectively prevent builders, designers, and subcontractors from influencing the field verification and diagnostic testing. We also agree with the ISOR’s conclusion that the declaration process established by Section 103.3(f)2Diii ensures that ECC-Raters will not experience undue pressure from the builder or designer, and is sufficient to maintain a reputable ECC Program. ARCXIS urges the Commission to adopt this language as currently proposed.</p>	Thank you for your comment of support.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>
256354.003	ARCXIS	<p><b>2. Signature Authority</b></p> <p>We support the changes in the proposed rules that allow certain managing/supervising raters the ability to sign compliance documents. ECC-Rater Companies may have centralized document submission processes that are streamlined to reduce costs and reduce delays. Allowing the ECC-Raters to delegate signing authority to ECC-Rater Companies supports this streamlining. We believe proposed change in the 45-Day Language strikes the right balance of ensuring consumer protection and allowing us operational flexibility to keep consumer prices low. However, ARCXIS recommends that the 45-Day Language be amended to avoid any ambiguity in order to ensure that ECC-Rater Companies have the ability to sign on behalf or individual ECC-Raters to the same extent and subject to same restrictions as other entities covered by these regulations.</p> <p><i>See docketed comment for proposed code language.</i></p>	Comment acknowledged, no changes made. Staff clarifies that the proposed regulations in Title 24, Part 1, Section 10-103.3 do NOT allow the ECC-Rater Company to sign as the ECC-Rater on certificates of verifications (commonly referred to as CF3Rs). However, the Energy Commission will consider this option in the next code update.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>
256354.004	ARCXIS	<p><b>3. Separation of Services</b></p> <p>The Commission’s April 16, 2024 workshop provided additional details on the proposed requirements for the separation of services. We appreciate and support the Commission’s goal to allow raters and rating companies the ability to offer several services (with assurances rating work isn’t being directed) that benefit consumers. As ARCXIS has previously commented, it is in the consumer’s interest to integrate the design and the testing functions because it allows the designer to ensure that the system was installed and working as per their design. Any issues can be more quickly pinpointed to one of either faulty equipment or poor design, with any installation issues having been identified and rectified during construction. This creates greater accountability for the designs on the part of the designers and reduces homeowner complaints. This also speeds up complaint resolution, resulting in positive outcomes for the consumer.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>

256354.005	ARCXIS	<p><b>4. Homeowner Bill of Rights</b>          ARCXIS appreciates the 45-Day Language's inclusion of a homeowner bill of rights, which will provide consumers with much needed information about the HERS program and the complaint process. The proposal makes the process between the ECC-Rater and ECC-Provider in developing this document clear, but it should also expressly state that the homeowner must receive a copy of this document. ARCXIS also recommends that the ECC-Provider should be required to approve the template for this document.</p> <p><i>See docketed comment for proposed code language.</i></p>	Staff agrees with the comment, and the changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>
256354.006	ARCXIS	<p><b>5. Rating Company Qualifications</b>          We support the clear creation of rating companies and their requirements to be certified by a provider. The rules specify that at least one "principal" of an ECC-Rater Company must be an ECC-Rater. We believe the term "principal" should be defined to avoid any misunderstanding about this requirement.</p> <p><i>See docketed comment for proposed code language.</i></p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>
256354.007	ARCXIS	<p><b>6. Challenge Exam</b>          The proposal to allow experienced professionals to take a challenge exam to meet rater requirements recognizes the work of many rating professionals over the years and allows a seamless transition into these new requirements. However, ARCXIS shares the concerns expressed by CalCERTS in comments on the 45-Day Language submitted on April 17, 2024 that requiring "in-person" exams would delay the testing process and add costs and administrative burdens, while not providing any benefit. Therefore, ARCXIS supports the CalCERTS proposal to delete the "in person" requirements for Challenge Exams.</p> <p><i>See docketed comment for proposed code language.</i></p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>
256354.008	ARCXIS	<p><b>7. Shadow Audits</b>          Several providers have requested greater operational flexibility to schedule shadow audits. We agree that allowing a provider and rater to communicate about scheduling the audit will ease administrative burden on both sides. One key improvement to the shadow audit process would be to provide more advanced notice that a shadow audit will occur so that the ECC-Rater or ECC-Rater Company can appropriately adjust their schedule as well as notify the building owner. ARCXIS proposes the ECC-Rater be given notice five business days prior to the shadow audit.</p> <p><i>See docketed comment for proposed code language.</i></p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>

256354.009	ARCXIS	<p><b>8. Data</b> We remain concerned about the cost implications to raters of several new data/registry requirements. However, we are more concerned that the registry maintains functionality. We agree with the comments submitted by CalCERTS in the prerulemaking docket on December 13, 2023 that recommends limiting search parameters and the rationale required for data requests. To ensure the integrity of the system, ECC-Providers should have authority over the parameters of queries and for what purposes. ARCXIS urges the Commission to adopt the change recommended by CalCERTs, which is repeated below.</p> <p><i>See docketed comment for proposed code language.</i></p>	Staff agrees with the comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>
256354.01	ARCXIS	<p><b>9. Registration of Consumer Information Form With ECC-Provider</b> As stated above, ARCXIS supports the requirement for ECC-Raters to provide a Consumer Information Form to owners in advance of any field verification and diagnostic testing. However, ARCXIS remains concerned about the cost and burden associated with requiring ECC-Raters to register the Consumer Information Form with the ECC-Provider. ARCXIS recommends that the Commission consider whether this requirement is justified by the benefits that it provides. Alternatively, the Commission could consider ways to reduce the burden of this reporting obligation, such as by requiring the ECC-Provider to augment their database systems to facilitate ECC-Raters registering these documents.</p>	Staff agrees with the comment, and changes have been made. Specifically, Staff has added the following text: For the purposes of a Consumer Information Form, "register" is defined as submitting the information outlined in this paragraph to the ECC-Provider.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>
256354.011	ARCXIS	<p><b>10.Rater Company List of Employees.</b> ARCXIS supports the ability of consumers to readily identify individual raters qualified and certified to work. However, we still fail to understand the rationale for having a list of all ECC-Rater Company certified ECC-Raters made public or who would potentially request this information. The ECC-Providers are the entities that determine ECC-Rater eligibility/certification and should be able to confirm an individual rater's certification similar to other consumer facing boards and commissions (e.g., bar association, contractors state licensing board). ARCXIS recommends that the Commission delete the proposed requirement in Section 10-103.3(f)2A for ECC-Rater Companies to maintain a publicly available list of all its ECC-Raters.</p>	Staff agrees with the comment, and changes have been made. Specifically, Section 10-103.3(f)2A has been deleted.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>

256354.012	ARCXIS	<p><b>11.Pricing/Cost Information.</b></p> <p>We remain concerned that giving ECC-Providers our cost information could impact the prices they charge us for their services. We rely upon providers for our training, data management, and certification. Given this business relationship, it provides an unfair advantage to providers to understand our pricing model. Providers could use this information to inform the prices we must pay them to participate in the HERS program. Lastly, we have no assurances this information can remain confidential. We remain unconvinced that this data helps consumers or improves the HERS program. We are all operating in a market to provide field verification and testing—let the market drive prices. ARCXIS recommends that the Commission delete the requirement in Section 10-103.3(f)2Fiv that ECC-Rater Companies provide annual total and average cost of service data to the ECC-Provider. If the Commission determines that the collection of this data is necessary, this cost information should be reported directly to the Commission and designated as confidential.</p> <p>We want to thank you and staff for meeting with us and receiving our comments. Please reach out to me with any questions.</p>	Staff agrees with the comment, and changes have been made. Specifically, 10-103.3(f)2F has been modified as follows: By the end of March of each year starting in 2027, each ECC-Rater Company shall submit an Annual Activity Report to the Commission.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256354&amp;DocumentContentId=92161</a>
256355.001	NORESKO	<p>Thank you for the opportunity to comment on the recently published 45-day express terms for Title 24-2025. We are pleased to see the requirement of using control sequences from ASHRAE Guideline 36.</p> <p>Our question is on section JA.18.5 Declaration. The earlier CASE report listed “Company, Product Line, and Version Number of all Libraries being certified” but the 45-day language changed it to be “Company, Model Name and Number of all devices being certified”. This is a change going from certifying a programming library (driver) to certifying a controller or control device (vessel). This change can lead to issues and confusion down the road.</p>	Staff agrees with comment, and changes have been made.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256355&amp;DocumentContentId=92160">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256355&amp;DocumentContentId=92160</a>
256355.002	NORESKO	There are equipment controllers that are pre-programmed in the factory and shipped together with the equipment (small rooftop units and some terminal units, for example), and control contractors can only configure them by accessing I/O points but not changing the programming. These controllers are listed under “Exception 1 to Section 140.4(r)3: Non-programmable (configurable-only) controllers for zone terminal units shall follow applicable ASHRAE Guideline 36 zone sequences referenced in JA18 Table 18.3-1 but are not subject to programming library requirement in Section 140.4(r)3.”	Staff agrees with comment, and changes have been made. Specifically, the sample Declaration form in Reference Joint Appendix JA.18.5 has been revised to clarify that Guideline 36 Programming Libraries are the subject of certification. Specifically, the sample form is titled "Company, Product Line, and Version Number of all Libraries Being Certified" and the columns have been updated to include "Product Line", "Guideline 36 Version" and "Library Version."	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256355&amp;DocumentContentId=92160">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256355&amp;DocumentContentId=92160</a>
256355.003	NORESKO	There are also a lot of field controllers that are furnished and installed by control contractors during construction. Control contractors will need to configure, program, and customize these controllers. It is our understanding that CEC's intent is to ensure the correct Guideline 36 programming in these controllers is completed and commissioned in the field. Certifying these field controllers does not achieve the purpose or warrant that the Guideline 36 certified programming library will be loaded, customized, and tested correctly in the field.	Background remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256355&amp;DocumentContentId=92160">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256355&amp;DocumentContentId=92160</a>

256355.004	NORESCO	In general, our comment is certification of a programming library need to be decoupled from certification of specific controllers or devices, and it will be more beneficial if the Guideline 36 certification targets control sequence programming vs. pre-programmed controllers. Please let us know if you have any questions and we would be happy to discuss more.	Staff agrees with comment, and changes have been made. Specifically, the sample Declaration form in Reference Joint Appendix JA.18.5 has been revised to clarify that Guideline 36 Programming Libraries are the subject of certification. Specifically, the sample form is titled "Company, Product Line, and Version Number of all Libraries Being Certified" and the columns have been updated to include "Product Line", "Guideline 36 Version" and "Library Version."	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256355&amp;DocumentContentId=92160">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256355&amp;DocumentContentId=92160</a>
256356.001	Hwakong Cheng	I strongly support the significant efforts and leadership that the Great State of California has provided in advancing energy efficiency since the 1974 passing of the Warren-Alquist Act. I am proud to have been a resident of and to pay taxes in California, and also to have professionally participated in Californiafunded building energy efficiency research efforts. I am deeply concerned about the environmental impact that we humans have on our planet, including climate change, and I am very much supportive of efforts that can reduce our carbon footprint, particularly within the building sector since that is my personal area of interest. The comments below reflect my personal opinions alone, and not of any organization with which I may be affiliated.	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172</a>
256356.002	Hwakong Cheng	I am not personally supportive of the proposed nonresidential multizone heat pump baselines in 140.4(a)3. When applied correctly for a particular application, heat pumps may be a great solution for energy efficiency and decarbonization. But not all heat pumps are equal, not all applications are the same, and heat pumps are not the end-all-be-all solution for decarbonizing buildings. There are a great number of supportive comments in this docket from environmental organizations and their members. I am a past or present member of many of those organizations, and align strongly with their missions. But I also have professional experience in building systems to know that heat pumps alone are not the solution to addressing the primary challenge of decarbonizing the building industry. When misapplied, heat pump systems may have higher embodied and operational carbon intensity, as well as increased first and operating costs compared to fossil fuel alternatives.	Thank you for your comment. After consideration of all comments and extensive review, we believe that the proposed baselines provide a reasonable approach to advancing our energy efficiency and decarbonization goals.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172</a>
256356.003	Hwakong Cheng	Let's use cars as an analogy. Electric cars are great. Everyone loves them. They are smart, they are sexy, they are uber green, and they are uber popular. Therefore, we should only allow electric cars on our roads, and we shall mandate that only one car be used: an all-electric GMC EV Hummer. No matter that it is expensive, weighs 4.5 tons, and is bigger than any human should ever need in civilian life. It is allelectric and has zero tailpipe emissions. But wait, it does matter, and these are not actually uber green. There is an incredible environmental and social cost somewhere far, far away associated with mining of the materials used for those batteries and electronics. There is an incredible amount of embodied energy and carbon in the manufacturing of the giant EV vehicle. There is an incredible amount of weight that we drag along with us as we humans individually drive to do all of the little things in daily life, 50 times more than an average human. And, much of the time, there is an incredible amount of carbon that is emitted somewhere far, far away to generate the electricity used to charge those batteries. I work from home, I walk my kids to school, I try to ride my bike for errands. Mandating that I do all of this instead with an EV Hummer will not reduce my energy or carbon footprint, and certainly would not be cost effective.	Background remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172</a>



256356.004	Hwakong Cheng	All-electric is not the same as energy efficient (or energy conservation), and all-electric is also not the same as zero carbon. Whether for cars or for buildings. Many people don't realize that decarbonization and electrification are not the same thing, that there are many ways to significantly reduce the operational carbon intensity of our buildings without electrifying them, and that sometimes these other ways may actually provide deeper and more cost-effective decarbonization than electrification.	Background remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172</a>
256356.005	Hwakong Cheng	Air-to-water heat pumps are very big, very heavy, and very expensive. They require a lot of copper, a lot of electricity, and a lot of refrigerant. And those refrigerants do leak and do contribute significantly to global warming. It is a tremendous amount of work to take the tiny bit of heat that exists in the cold ambient air and "push it uphill" to make moderately hot water – in other words, they are also not very efficient at heating buildings when it gets cold, which is when we need to do the most heating. They are not a great way to heat buildings and the laws of thermodynamics will not get better over time.	Background remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172</a>
256356.006	Hwakong Cheng	California generates more electricity from solar than any other state, and has strong wind, hydro, and nuclear generation as well, but our deep dark secret is that much of the dispatchable power in our grid in the winter and in the early mornings when we need to heat our buildings comes from natural gas power plants. And these natural gas power plants consume fossil fuels and generate carbon emissions, somewhere far, far away. If you turn the thermostat up or down on your heat pump in the winter or early morning, it is probably a gas-fired power plant that is responding. Someone else has probably already purchased and claimed the credits for the hydro and wind power at that hour. The late Arthur Rosenfeld would agree that a kilowatt-hour is a kilowatt-hour, and we need to conserve each and every one of them. There is significant and growing concern whether renewable energy can meet and overcome the growing demand from all-electric cars and buildings and new AI data centers. Let's get back to focusing on real energy efficiency/conservation and expanding on the Rosenfeld effect.	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172</a>
256356.007	Hwakong Cheng	I very much value the mission of California's building energy efficiency standard but it is clear to me, again personally, that it often fails to achieve its intended goal today. Title 24, Part 6 is very long and very complicated, and it gets even longer and even more complicated every three years. Even those of us who are paying attention, and are paid to pay attention, have trouble keeping track of it. Most don't keep track of it that closely, including designers, installers, plan checkers, and inspectors, and the gaps only gets wider and wider every three years. Who can blame them? With our limited resources, better to make sure a building will stay standing in an earthquake. The mandatory and prescriptive code requirements are deeply complicated, and constantly changing. The performance approach is even more so, developed with an opaque process with little opportunity for public input, and executed through clumsy software tools that most design engineers consider to be deeply flawed and severely limited in capability. Plan checkers and inspectors also generally lack the resources and/or expertise and/or will to do deep energy reviews or enforcement. And many, perhaps most, participants in the documentation process will agree that compliance and acceptance documentation do little more than to create extra busywork. And yet we are all subject to this deeply complex and onerous process that unfortunately does not always improve the energy performance outcome of our buildings.	Thank you for your comment. The CEC welcomes suggestions on how to simplify the code in the 2028 Energy Code update.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172</a>

256356.008	Hwakong Cheng	<p>Most in the trade will acknowledge a significant compliance gap, and some studies have even documented it (it is not a problem unique to California). There is a legitimate question whether real building performance improves when the code and compliance processes become more and more complex, or if the gap is simply growing wider and wider. But there are many other ways that we can improve the energy and carbon performance of our buildings.</p> <ul style="list-style-type: none"> <li>• A few years ago, a large demonstration study funded by the California Energy Commission showed the opportunity for significant HVAC energy savings associated with improving how HVAC systems are controlled. Up to about 25% HVAC energy savings were achieved when updating even recently constructed buildings to follow applicable code requirements (i.e. closing the compliance gap). Up to 60% HVAC energy savings were achieved when also addressing deferred maintenance in existing buildings. These improvements were all very feasible, had simple paybacks of less than 10 years, and represented major decarbonization opportunities.</li> <li>• Another recently completed demonstration study funded by the California Energy Commission achieved 70% natural gas and carbon savings across two buildings from simple upgrades to the boiler plant and HVAC controls (final results are still unfortunately in draft, unpublished form). The existing non-condensing boiler plants likely operated at efficiencies of 50% or lower that we now believe to be typical, and the existing HVAC controls were incorrectly implemented to achieve the intended and code-required performance. We believe these simple upgrades to raise performance up to basic design intent and code-minimum performance are broadly applicable to a large portion of the commercial building stock.</li> <li>• Other states and jurisdictions have or are in the process of establishing building performance standards that focus on how buildings are operated, not just designed. That a theoretical and unrealistic (and deeply flawed) compliance model shows energy savings on paper is worthless if it is not reflective of the actual building performance in real operation. Energy benchmarking presents an opportunity for transparent monitoring of real building energy performance and BPS's may</li> </ul>	Thank you for your comments. The proposal for a building performance standard is out of scope of this rulemaking.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172</a>
256356.009	Hwakong Cheng	<p>We have a lot of work to do to reduce the energy and carbon intensity of our new and existing building stock. Creating onerous prescriptive requirements for heat pumps is not the way, particularly ones that are so misaligned with market forces. With the utmost respect for those who are trying to make better buildings, thanks for your consideration.</p>	Closing remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256356&amp;DocumentContentId=92172</a>

256357.001	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	<p>On behalf of Heating, Air-conditioning &amp; Refrigeration Distributors International (HARDI), I would like to thank you for the opportunity to provide feedback and offer comments on the proposed updates to the "2025 Building Energy Efficiency Standards."</p> <p>HARDI is a trade association comprised of over 800 member companies, more than 450 of which are U.S.-based wholesale distribution companies, including 60 companies operating in California. Over 80 percent of HARDI's distributor members are classified as small businesses that collectively employ more than 60,000 U.S. workers, representing more than \$40 billion in annual sales and an estimated 70 percent of the U.S. wholesale distribution market of heating, ventilation, air-conditioning, and refrigeration (HVACR) equipment, supplies, and controls.</p> <p>HARDI respectfully asks that the California Energy Commission's proposed updates for the "2025 Building Energy Efficiency Standard" be revised to not prescriptively ban the installation of fossil fuel systems. If enacted as currently proposed, the "2025 Building Efficiency Standards" would remove consumer choice for water and space heating, create an adverse economic impact for California's citizens, and violate the Environmental Policy and Conservation Act (EPCA).</p>	The CEC acknowledges the comment and no changes have been made. The Energy Code is designed to provide options for builders, installers, and homeowners. It has also been developed to meet each of the seven criteria in EPCA's seven-part building code exception.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>
256357.002	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	<p><b>Proposed space and water heating requirements remove consumers' choice for HVACR systems.</b></p> <p>HARDI believes in protecting consumers' right to purchase and install whichever style of HVACR products they prefer. Sections 140.4(a) and 150.1(c)(6) and Table 150.1-A contain heat pump requirements for space conditioning systems that remove consumer choice for offices, schools, and residential buildings. By eliminating all options from the building owners, even other options that may contain better efficiency and financial savings, the CEC ties the hands of consumers into only using the technologies the CEC deems appropriate. Ironically, section 160.9 contains proposed changes requiring buildings to be "electric ready," which would protect a future consumer's choice to transition to an electric appliance. However, the unnecessary costs to buildings that would not improve the energy use or energy efficiency of the space or water heating for the home effectively drive consumers away from their initial choice due to the high cost. As currently written, the California Energy Commission (CEC) would remove consumer choice by forcing heat pumps onto initial construction and pricing out natural gas installations with unreasonable standards that the consumers could not afford to comply with. Thus, HARDI believes the CEC needs to revise the proposed standard.</p>	The CEC disagrees with the comment and no changes have been made. The Energy Code is designed to preserve consumer choice. However, changes were made to Section 140.4(a) in response to other stakeholder feedback, and the final language provides for additional consumer choice.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>

256357.003	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	<p><b>The proposed updates would create a significant statewide adverse economic impact on businesses and residents.</b></p> <p>The CEC initially determined “no significant statewide adverse economic impact on businesses, including ability of California to compete with other states.” HARDI disagrees with this determination, given that the proposed changes directly increase expenses for those who wish to use natural gas HVACR systems. This would then indirectly stress the already high heat pump market and the businesses serving the market.</p> <p>In Section 150.1(c)(6), the CEC limits the heating system type to heat pumps unless a different system can meet the energy budget requirements outlined in Section 150.1(b)(1). Additionally, Table 150.1-A prohibits the use of natural gas furnaces. The requirement to use heat pumps for space heating will have a dramatic economic impact in California based on the comparison of energy prices between gas and electricity.</p>	The CEC disagrees with the comment and no changes have been made. The CEC's economic determinations are detailed in the rulemaking and the Energy Code preserves consumer choice and provides cost-effective compliance pathways for all building types.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>
256357.004	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	The CEC creates new natural gas water heating system requirements in sections 160.9(e) and 160.9(f). Generally, the proposed requirements would mandate additional electrical work that is unnecessary for the operation of a natural gas water heater, amend home designs that go beyond installation scope requirements for a natural gas water heater's dimension, add ventilation volume beyond the needs of a natural gas water heater and apply condensate draining sized for a heat pump (not sized for the natural gas system being installed). The requirements are not necessary for properly operating a natural gas water heater. The requirements are unnecessary additional costs that make implementing a natural gas water heater system unobtainable for the average citizen. Leaving the only heating system option to be an electric heat pump.	Comment acknowledged, no changes have been made. Staff believes that despite the moderate added construction costs associated with improvements to the building standards, these electric-ready requirements are reasonable based on the economic and environmental benefits that will be derived from the building standards for homeowners in the future, especially for low-income and first-time home buyers. Electric-ready requirements install infrastructure at the time of building construction when construction costs are the lowest. Having this infrastructure in place, gives homeowners an affordable path to upgrading to electric appliances without needing to incur significant retrofit costs	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>
256357.005	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	This increased required expense for a natural gas system makes the application unaffordable for the average citizen. By design, the CEC leaves electric heat pumps as the only space and water heating option. Leading to an increase in heat pump demand, a demand that distributors are struggling to manage as is. The market would increase, so waitlists, delays, and backlogs of orders and installations would likely occur. The CEC proposal could force citizens to live without space and water heating while they wait for their heat pumps. Additionally, the change in demand for natural gas systems caused by the change in affordability would leave natural gas systems on the shelves of HVACR manufacturers and distributors. This would create a massive dead inventory since the natural gas systems could not be sold in California. Businesses would incur a loss on each of these products, causing significant economic harm to the industry. Thus, HARDI believes that the proposed regulation would have a significant statewide adverse economic impact on businesses, and the CEC needs to revise it.	The CEC acknowledges the comment and no changes have been made. The comment is speculative and no evidentiary support is offered. The rulemaking record provides analysis that demonstrates a reasonable basis for the CEC's determination that the Energy Code revisions would not have a significant adverse economic impact on businesses.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>

256357.006	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	<p><b>The proposed updates would force the electrification of all new construction and indirectly ban natural gas systems, preempting the Environmental Policy and Conservation Act (EPCA).</b></p> <p>The U.S. Court of Appeals for the Ninth Circuit set a precedent by recently invalidating a Berkeley, California prohibition on natural gas infrastructure in new construction buildings (California Restaurant Association v. City of Berkeley). The court applied EPCA's preemption clause, which states, "Once a federal energy conservation standard becomes effective for a covered product, no State regulation concerning the energy efficiency, energy use, or water use of such covered product shall be effective with respect to such product." Id. EPCA defines "energy use" as "the quantity of energy directly consumed by a consumer product at point of use." Id. "[E]nergy" refers to "electricity" or "fossil fuels," such as natural gas. Id. A "consumer product" is "any article" which "consumes, or is designed to consume," energy or water and is distributed for personal use. Id. The preemption clause applies to any "covered product," which is defined as certain "consumer products," like refrigerators. Id. Therefore, EPCA preempts regulations that relate to "the quantity of [natural gas] directly consumed by" certain consumer appliances at the place where those products are used. Id.</p>	The CEC disagrees with the commenter's application of the law, and no changes have been made. The self-described "limited" and "narrow" holding of <i>CRA v. Berkeley</i> is not applicable to a state building code that meets EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3). The Energy Code has been specifically developed to meet these federal criteria and, therefore, it is not preempted.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>
256357.007	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	Energy Use. A regulation prohibiting consumers from using appliances impacts the "quantity of energy directly consumed by [the appliances] at point of use." Id. In section 160.9(a), the CEC places central and individual heat pump water heater-ready requirements onto new construction buildings using natural gas water heater systems. The requirements are unnecessary for properly operating a natural gas water heater and create additional costs that an average citizen cannot afford. Although the CEC technically allows the natural gas system, the prescriptive requirements being mandated would essentially be a ban on natural gas water heaters because of the inability of an average citizen to afford the requirements. Therefore, the CEC violates EPCA's preemption provision by prohibiting consumers from using home appliances through unnecessary, unaffordable requirements to implement a natural gas water heater system.	The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. Builders have multiple compliance pathways that are not preempted, and any single prescriptive compliance pathway that may be preempted in isolation, if it exists, would not result in a legal requirement for the builder to choose that specific pathway. The builder is free to choose among different compliance pathways of varying costs. The Energy Code is specifically designed to meet all seven criteria of EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3).	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>
256357.008	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	Energy Use (cont.). Additionally, in section 150.1(c)(6), the CEC attempts to circumvent EPCA's energy use preemption by the proposed changes in table 150.1-A. Table 150.1-A lists the requirements for all heating system installations in a standard single-family building. The proposed changes to Table 150.1-A do not allow natural gas installations for space heating systems in a standard single-family building, no matter the climate zone. Therefore, the CEC preempts EPCA by proposing a restriction on natural gas installations that would prohibit consumers from using appliances at the point of energy use in California.	The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. Builders have multiple compliance pathways that are not preempted, and any single prescriptive compliance pathway that may be preempted in isolation, if it exists, would not result in a legal requirement for the builder to choose that specific pathway. The builder is free to choose among different compliance pathways of varying costs. The Energy Code is specifically designed to meet all seven criteria of EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3).	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>

256357.009	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	Energy Efficiency. EPCA defines energy efficiency as the “ratio of useful output of services ... to the energy use” of the product. Id. Per the energy efficiency definition, EPCA preempts regulations relating to the “ratio of useful output of services ... to the energy use” of certain consumer appliances where those products are used. In section 150.1(c)(6), California attempts to circumvent EPCA by requiring a non-heat pump space heating system to meet heat pump energy efficiency standards. Under the energy budget requirements of 150.1(b)(1), a hydronic heat home would need to use no more energy than a heat pump to provide the same heating capacity. This would require a water heating appliance to exceed the federal minimum energy efficiency requirements to meet the energy budget limitation. By forcing the appliance to meet a higher energy efficiency minimum to meet the energy budget, the proposal violates the preemption provisions of EPCA.	The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. Builders have multiple compliance pathways that are not preempted, and any single prescriptive compliance pathway that may be preempted in isolation, if it exists, would not result in a legal requirement for the builder to choose that specific pathway. The builder is free to choose among different compliance pathways of varying costs. The Energy Code is specifically designed to meet all seven criteria of EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3).	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>
256357.01	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	Energy Efficiency (cont.). In Table 150.1-A, the CEC classifies gas furnaces as “not allowed” in all climate zones, saying that no energy efficiency level is high enough to meet the state’s requirement. Therefore, the CEC’s proposal has violated EPCA’s preemption prohibition with the proposed Building Energy Efficiency Standards by controlling the use of natural gas systems beyond the federal energy efficiency requirements	The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. Builders have multiple compliance pathways that are not preempted, and any single prescriptive compliance pathway that may be preempted in isolation, if it exists, would not result in a legal requirement for the builder to choose that specific pathway. The builder is free to choose among different compliance pathways of varying costs. The Energy Code is specifically designed to meet all seven criteria of EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3).	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>
256357.011	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	Water Use. “No State regulation concerning the ... water use of such covered product shall be elective with respect to such product.” Id. In sections 140.4(a)(3)(A) and 140.4(a)(3)(B), new requirements are placed for office and schools’ space-conditioning systems. The updates create new requirements for variable refrigerant flow (VRF) heat pumps, air-to-water heat pumps (AWHP), and four-pipe fan coil (FPFC) systems. AWHP systems are designed to heat potable water, and as such, they are federally regulated as commercial and consumer products of energy use, energy efficiency, and water use. Therefore, the CEC violates EPCA’s preemption provision by controlling water use through AWHP requirements.	Comment acknowledged and no changes have been made. Section 140.4(a)3 was ultimately amended in response to technical comments from stakeholders, but the prescriptive requirement is not preempted because it is part of a state building code that meets all seven criteria of EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3).	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>
256357.012	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	The CEC disclosed “that the proposed standards are neither inconsistent nor incompatible with existing state or federal regulations.” However, as explained above, California preempts EPCA in the 2025 Building Energy Efficiency Standards by adding requirements beyond federal guidelines. The EPCA preemption clause uses “or” language, meaning that only one of the violations of energy use, energy efficiency, or water use must occur for there to be preemption. The CEC’s multiple attempts to circumvent the EPCA preemption are so severe throughout the California Building Energy Efficiency Standards that all three categories of preemption are present. Thus, due to the precedent set by the U.S. Court of Appeals for the Ninth Circuit’s ruling, HARDI believes the entire California Building Energy Efficiency Standard should be reviewed for violations of EPCA’s preemption prohibition and revised to follow federal requirements.	The CEC disagrees with the commenter's application of the law, and no changes have been made. The self-described “limited” and “narrow” holding of <i>CRA v. Berkeley</i> is not applicable to a state building code that meets EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3). The Energy Code has been specifically developed to meet these federal criteria and, therefore, it is not preempted.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>

256357.013	Heating, Air-Conditioning, & Refrigeration Distributors International (HARDI)	<p>Conclusion HARDI and California share the goal of moving consumers to more environmentally friendly technologies, however we strongly disagree on the method of achieving this goal. Additionally, the proposed standard would hurt our members; as an industry, we operate nationally, and having a patchwork of state-level regulations will make it impossible to serve consumers. For this reason, and the reasons above, we encourage the CEC to review and revise the proposed and currently enacted building energy efficiency standards to follow the federal guidelines that the Environmental Policy and Conservation Act enforces.</p>	<p>Comment acknowledged and no changes have been made. The Energy Code complies with all state and federal laws, including EPCA.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256357&amp;DocumentContentId=92171</a>
256358.001	Trane	<p>Thank you for the opportunity to submit comments in response to the proposed changes to the Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 6.</p> <p>Trane Technologies is a world leader in creating comfortable, sustainable, and efficient environments and leading our industry in sustainability practices. Through our strategic brands Trane and Thermo King, and our portfolio of environmentally responsible products and services, we bring efficient and sustainable climate solutions to buildings, homes and transportation. Our bold 2030 Sustainability Commitments are central to our business strategy and include a pledge to reduce our customers' carbon emissions by one gigaton (2% of the world's annual emissions) and to bring our own operations to carbon neutral. Our ambitious greenhouse gas (GHG) emissions reduction targets challenge us to lead by example, collaborate with our customers to drive sustainable innovation and create opportunity for all in our workplace and our communities.</p>	<p>Introductory remarks - no response needed.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256358&amp;DocumentContentId=92170">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256358&amp;DocumentContentId=92170</a>
256358.002	Trane	<p>We are aligned with CEC's mission to reduce carbon emissions from new buildings in support of the State's climate goals and encourage CEC to reconsider the mandatory prescriptive requirements for space conditioning systems in Section 140.4. The proposal prescriptively requires that offices and schools that use multizone systems must install either variable refrigerant flow (VRF) systems, or four-pipe fan coil (FPFC) systems served by air-to-water heat pumps for space heating. To use, for instance, a VAV system instead, either with VAV RTUs or with CHW AHUs, one would have to show compliance using the Performance Approach, which is a significant cost burden for many buildings. This limits consumer choice and prevents the most efficient equipment for a particular building and climate. We encourage CEC to consider both the energy and emission impact of this proposal, as certain systems limited by the proposal have the potential to use less energy and have fewer environmental emissions.</p>	<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256358&amp;DocumentContentId=92170">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256358&amp;DocumentContentId=92170</a>

256358.003	Trane	<p><u>Modeled versus Actual Energy Performance:</u> If this proposed change is motivated by a belief that it will save energy, CEC should note that VRF system modeling within most commercially available building simulation software is incorrectly optimistic. The full load performance and the part load performance curves optimistically represent actual equipment performance because their default control settings do not operate like they are tested for certification. AHRI 1230 was recently changed to better reflect actual performance but remains optimistic. Most simulation tools use these test results. Additionally, most building simulation software including EnergyPlus and approved California Title 24 tools, like EnergyPro, IES VE, and CBECC, improperly represent the impact of the heat recovery mode, commonly perceived as an energy efficiency feature, by failing to calculate the substantial system efficiency penalty of this mode. Heat recovery is not free. This mode requires an elevated condenser temperature/pressure resulting in a 50-80% energy use increase compared to cooling only mode depending on operating conditions. The energy efficiency impact of these issues should be considered as they can be substantial when aggregated over an entire year of operation, and may not meet energy efficiency expectations</p>	<p>Thank you for your comment. Updates to AHRI 1230 and ongoing refinements are closing the gap between modeled and actual performance. We understand that heat recovery mode impacts efficiency; however, when optimized, we believe that VRF systems offer substantial energy savings.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256358&amp;DocumentContentId=92170">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256358&amp;DocumentContentId=92170</a></p>
256358.004	Trane	<p>Refrigerant Emissions: Heating and cooling systems with lower volumes of refrigerants and less connections may reduce possible greenhouse gas emissions over the lifespan of the equipment. [1] The significant refrigerant charge of systems in CEC's prescriptive proposal can cause increases in environmental emissions due to leakage and improper handling. In addition, the design engineering community may not be ready to ensure that systems are designed properly and ensure small rooms do not exceed the maximum refrigerant charge limitations in ASHRAE Standard 15 and as adopted into local codes. This is a safety issue for the children and staff in school if improper system design occurs.</p>	<p>Thanks you for your comment. Staff notes that modern VRF technology has significantly improved in terms of leak prevention and detection. ASHRAE 15 and CARB's requirements in installation practices (brazing), materials, and leak detection technologies are expected to reduce leakage from VRF systems. Staff also notes that the safety standards governing refrigerant use in air conditioning equipment in the US, ANSI/ASHRAE Standard 15 and UL 60335-2-40, have been updated to allow use of A2L refrigerants. These updated standards have been adopted both for ICC 2024 (including IBC, IMC and IFC changes) and for the California Building Code. Further, Staff notes that new air-conditioning equipment installed in California is subject to the California's Air Resources Board's Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End-Uses, which requires use of low GWP refrigerants as of January 1, 2025, and January 1, 2026 for VRF.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256358&amp;DocumentContentId=92170">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256358&amp;DocumentContentId=92170</a></p>
256358.005	Trane	<p>CEC may wish to consider removing the prescriptive requirements that restrict technologies that could reduce CO2 emissions and energy consumption. As always, we appreciate your time and consideration of this feedback. Trane Technologies is happy to provide more information as CEC continues to improve the efficiency of buildings in California.</p>	<p>Thank you for your comment.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256358&amp;DocumentContentId=92170">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256358&amp;DocumentContentId=92170</a></p>



256359	Cooling Technology Institute (CTI)	<p>Thank you for the opportunity to provide comments on the 45-Day Title 24 language related to cooling towers informed by both the 2025 Staff Supplement to the 2025 Case Report on Cooling Towers issued March 28, 2024, and the CA Utility CASE Team and Compliance Improvement Team Comment on 45-Day Express Terms dated May 3, 2024. The Cooling Technology Institute (CTI) continues to understand and support the California Energy Commission's goals to improve building energy efficiency and reduce overall water use, while also decreasing carbon emissions. As per our Mission statement, the CTI supports all environmentally friendly, sustainable heat rejection technologies including evaporative heat rejection which continues to be one of the most energy efficient cooling methods available.</p> <p>The Cooling Technology Institute (www.CTI.org), based in Houston, Texas, is an independent, not-for-profit organization dedicated to advocating and promoting, for the benefit of the public, the use of all environmentally responsible and energy efficient cooling technologies, such as wet cooling towers, air-cooled condensers, dry coolers, adiabatic coolers and condensers, indirect cooling, and hybrid wet/dry systems by encouraging education, research and development, independent performance verification and certification programs, the exchange of technical information and technology and dialog with government agencies and organizations. The CTI has a broad based, global membership of individuals and organizations interested in environmentally responsible heat transfer systems, including owner/operators, manufacturers and suppliers to the industry.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256359&amp;DocumentContentId=92169">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256359&amp;DocumentContentId=92169</a>
256359	Cooling Technology Institute (CTI)	<p>We thank the CEC Staff for responding to Industry feedback on the Final Case Report on Cooling Towers and recognize the changes that were made to accommodate our input. Based on the 45-Day Language and the Supplemental Case Report, we would like to provide the following additional input on the two measures relative to cooling towers:</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256359&amp;DocumentContentId=92169">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256359&amp;DocumentContentId=92169</a>

256359	Cooling Technology Institute (CTI)	<p><b>Cooling Tower Minimum Efficiency</b></p> <p>The CTI appreciates the reduction in the minimum efficiency of axial fan open circuit cooling towers used on chiller plants over 300 tons from a level of 90 gpm/hp to a maximum of 80 gpm/hp in the 45-Day Language. This change will definitely help to minimize potential negative consequences as detailed in our previous letter of September 5, 2023, including intended market shifts to less energy efficient cooling technologies, increased cooling system costs, potential market shifts to less efficient cooling systems, and difficulty in applying these larger, heavier cells per manufacturer's guidelines on many sites.</p> <p>Because of the issues recently identified with the proper control of cooling tower fan speed (and hence energy) per code requirements in many energy modeling programs, the CTI suggests that further study be undertaken on this subject in the future once these issues have been corrected. As we are sure you are aware, the vast majority of cooling towers utilize variable speed fan control which significantly reduces the annual fan energy usage, and we believe this is not properly reflected in the energy models. Additionally, the modelling programs appear not able to model staging of multiple cell cooling tower installations per ASHRAE Standard 90.1. This also has a significant impact on energy efficiency on an annual basis. Further, there are relatively few single cooling tower cell installations over 300 tons, making the lack of staging in the single cell modelling that was performed even more in error as compared to actual installations.</p> <p>We also request that the minimum efficiency for all Climate Zones be checked for proportionality as some have increased from the values shown in the First Draft of the Case Study. No justification has been offered in the subsequent reports for these increases.</p>	<p>Comment acknowledged, no change made. The cooling tower efficiencies in the 2025 Energy Code are based on the Final CASE Report proposal. For Climate Zones 2, 4, 5, and 13, the analysis showed that higher efficiencies of 70 or 80 GPM/hp were cost effective.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256359&amp;DocumentContentId=92169">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256359&amp;DocumentContentId=92169</a></p>
256359	Cooling Technology Institute (CTI)	<p><b>Cooling Tower Slowdown Controls</b></p> <p>As stated in our previous comments, the CTI believes in the "wise use of the world's water resources." As part of this, the minimization of slowdown is a key goal of our water treatment members, while keeping scale, fouling, corrosion and microbial growth under control. Increasing cycles of concentration and reducing slowdown must be done carefully to avoid negative, unintended consequences which can detrimentally impact the performance and energy efficiency of not just the evaporative heat rejection unit, but the entire cooling system.</p> <p>We offer the following comments on this section:</p> <ol style="list-style-type: none"> <li>1. The CTI agrees with the change to the metric for conductivity, micro-siemens/crn,</li> <li>2. Additionally, we suggest the following changes for clarity (our markup of the language in underline and strikethrough in red):</li> </ol> <p><i>See docketed comment for proposed changes to code language.</i></p>	<p>Staff agrees with part of the comment and disagrees with part of the comment, some changes have been made.</p> <p>Staff agrees with the comment related to CTI's address, and updates were made.</p> <p>Staff disagrees with the suggested edits to Section 110.2(e), and no changes have been made. Staff will consider the suggested edit in the next code update.</p> <p>Specifically, Staff notes that Table 110.2-A-1 lists the units of the recirculating water properties. Also, Staff added an equation for the Langelier Saturation Index (LSI) in Section 110.2(e)2I to to more clearly specify how to determine the LSI.</p>	5/13/2024	45 day	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256359&amp;DocumentContentId=92169">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256359&amp;DocumentContentId=92169</a></p>

256359	Cooling Technology Institute (CTI)	<p><b>Summary</b></p> <p>The CTI appreciates the opportunity to provide further input to the CEC and will continue to monitor the 2025 Development Process closely through publication. Our members would be happy to assist with additional input to the CEC Staff, as well as answer any specific questions that may arise relative to our comments or cooling towers in general.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256359&amp;DocumentContentId=92169">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256359&amp;DocumentContentId=92169</a>
256360.001	California Building Industry Association (CBIA)	<p><b>Introduction</b></p> <p>The California Building Industry Association (CBIA) is a statewide trade association representing over 3,000 member companies involved in residential and light commercial construction. CBIA member companies are responsible for over 85% of the new single-family homes built in California annually.</p>	Introductory remarks - no response needed.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256360&amp;DocumentContentId=92168">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256360&amp;DocumentContentId=92168</a>
256360.002	California Building Industry Association (CBIA)	<p><b>Residential Solar and Battery Storage</b></p> <p>CBIA strongly supports the May 10, 2024, comments submitted by SUNPOWER regarding the proposed changes to Joint Appendix JA 12 and the California Flexible Installation (CFI-3) measure.</p>	Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256360&amp;DocumentContentId=92168">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256360&amp;DocumentContentId=92168</a>
256360.003	California Building Industry Association (CBIA)	<p><b>Non-Residential Solar</b></p> <p>The California Public Utilities Commission (CPUC) approved a modified proposed decision (R20-08-020) in December, which effectively eliminated virtual net energy metering benefits for multi-tenant non-residential buildings. Recognizing that this decision negatively affects the costeffectiveness of solar PV for many of these non-residential occupancies, the CEC Staff and the solar industry developed a partial "exception" to the PV mandate that accounts for this unfortunate change in photovoltaic energy benefits.</p> <p>CBIA supports the staff's proposed language in Section 140.10(a) Exception 5. However, given the updated language's technical complexity, CBIA urges the CEC to publish several compliant examples of this Exception in the Energy Conservation Manual (ECM) that can be expected to be encountered in the field. This would greatly reduce confusion in the field as we transition to the new energy efficiency standards.</p>	Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. We will provide additional guidance in the 2025 compliance manuals about the calculation of non-residential tenant space PV sizing.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256360&amp;DocumentContentId=92168">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256360&amp;DocumentContentId=92168</a>
256360.004	California Building Industry Association (CBIA)	<p>Lastly, CBIA will continue to support efforts to have the CPUC revisit this issue and provide appropriate virtual net energy benefits to multi-tenant, non-residential buildings with solar.</p>	Thank you for your comment.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256360&amp;DocumentContentId=92168">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256360&amp;DocumentContentId=92168</a>

256361.001	Statewide CASE Team and Compliance Improvement Team	<p><b>Introduction</b></p> <p>The California Statewide Utility Codes and Standards Enhancement (CASE) Team and utility Compliance Improvement (CI) Team appreciate the opportunity to review the 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 45- day Language (45- Day Express Terms). We commend the California Energy Commission (CEC) for encouraging public participation in the proceeding and value the opportunity to offer suggestions to refine the draft code language.</p> <p>The CASE initiative presents recommendations in support of the CEC’s efforts to update the Energy Code with new or updated requirements for various technologies. The three California Investor-Owned Utilities (IOUs) — Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison — and two Publicly Owned Utilities — Los Angeles Department of Water and Power and Sacramento Municipal Utility District— sponsored this effort. The program goal is to submit proposals that result in cost-effective enhancements to improve energy efficiency, energy performance, and GHG emissions reductions in California buildings.</p> <p>CI Team subject matter experts work closely with the CASE proposal authors to address compliance and enforcement goals in Title 24, Part 6. The CI Team’s goal is to reduce roadblocks for industry professionals in the compliance supply chain. Through the IOUs’ sponsorship, the CI Team focuses on bridging the gaps between development and implementation of the energy code.</p>	Introductory remarks – no response needed. Staff will respond to the itemized comments/concerns below.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256361&amp;DocumentContentId=92166">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256361&amp;DocumentContentId=92166</a>
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256361.002	Statewide CASE Team and Compliance Improvement Team	<p>Comments on the 45-Day Express Terms On May 3, 2024 the Statewide CASE Team and the CI Team submitted comments to the docket (TN # 256172) that recommended a number of revisions to the 45-Day Express Terms.1 This comment offers additional recommendations, corrections, and clarifications to the comments docketed on May 3, 2024. Each revision is summarized below:</p> <ul style="list-style-type: none"> <li>• Substantive Remark #2: In the comments docketed on May 3, Table 1 inadvertently repeated the contents of remark 1 in the remark 2 row. We provided the correct recommendation.</li> <li>• Substantive Remark #14: In Appendix A of this comment, we provided additional justification for substantive remark 14.</li> <li>• Non-substantive Remark #73: In Appendix B of this comment, we provided additional justification for #73.</li> <li>• Non-substantive Remarks #78 and 79: We added two recommendations.</li> </ul> <p>Recommended revisions to the 45-Day Express Terms are provided in Table 1: Substantive Recommendations – 45-Day Express Terms and Table 2: Non-Substantive Recommendations – 45-Day Express Terms along with a justification for each change. We presented the remarks that have been revised or added since submitting comments on May 3, 2024.</p> <p>For the marked-up language, revisions to the 2022 code language that appear in the 45-Day Express Terms are delineated with additions in black underlining and deletions in black strikeouts. Our proposed revisions to the 45-Day Express Terms are delineated with additions in red underlining and deletions in red strikeouts. In some instances it was not feasible to provide marked-up code language within the body of the tables, so marked-up language is provided in the appendices.</p> <p>For each suggested edit and identified the member of the CASE Team or CI Team that developed the suggested edit. We welcome collaborative discussions between CEC staff and the individuals who recommended each revision so we can offer further descriptions,</p>	Thank you for your comment – Staff will respond to the itemized comments/concerns below.	5/13/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256361&amp;DocumentContentId=92166">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256361&amp;DocumentContentId=92166</a>
256368.001	3C-REN	<p>3C-REN appreciates the CEC’s revisions to the PV and energy storage proposed changes. Overall, 3C-REN supports the direction of the changes being made for solar PV and battery storage requirements. 3C-REN appreciates that the CEC has updated the solar sizing calculations and multipliers since pre-rulemaking, and the CEC’s proposed expansion of building types impacted by PV system requirements. In future code cycles, 3C-REN hopes to see more models that assume all-electric buildings rather than mixed-fuel buildings as the baseline. Especially given the additional heat pump requirements proposed for the 2025 Energy Code, it follows that models should use increasingly all-electric buildings as the baseline.</p>	Thank you for your comment of support. Your feedback regarding baseline buildings will be considered in the next code update.	5/14/2024	45 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256368&amp;DocumentContentId=92177">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256368&amp;DocumentContentId=92177</a>

Comment Number	Commenter	Comment(s)
256842.001	Bronte Payne, SunPower	<p>California Flexible Interconnection Definition</p> <p>In Appendix JA1-Definitions, the definition of the California Flexible Interconnection (CFI) only includes the specifications for CFI-1 and does not include the azimuth and tilt allowed under CFI-2. I propose the following changes to the definition to better align with the CFI options. Details about the options for modeling under the CFI can be found in JA11.2.2 and including the azimuth and tilts in the definition is duplicative.</p> <p>CALIFORNIA FLEXIBLE INSTALLATION (CFI) is a set of criteria that allows a PV system to be modeled under the performance method without providing more specific orientations and tilts. In order to meet the requirements of CFI, the PV system must be installed with an azimuth ranging from 150 to 270 degrees from true north, with all modules at the same tilt as the roof pitches between 0:12 and 7:12. There are three options for modeling under the CFI with azimuth and tile requirements in JA11.2.2. Additionally, each system must also meet minimal shading criterion outlined in JA11.3</p> <p>I also want to reiterate our support for a CFI-3 option for the 2025 Energy Code. This will help to reduce the cost of compliance with the code for homes that may need to be oriented in a specific direction or designed in specific ways to maximize the number of homes that can be built</p>

256858.001	Jeffrey Lockner	<p>The newly created section JA8.9 Elevated Temperature Life Test Method seems to be missing a reference to an actual procedure. There is a reference to ANSI/IES LM-65 for life testing of CFL's but a more appropriate test method would be ANSI/IES LM-84 which is the "life" testing of LED Lamps, luminaires, and light engines.</p> <p>The original elevated temperature test method within the ENERGY STAR(R) Lamps specification required that the ambient temperature be 45C for the "life" testing portion. The ambient temperature in section 8.9 is not specified but should be.</p> <p>Since the DOE already requires a LED General Service Lamp (GSL) to be tested to LM84 as per Appendix BB in Subpart B of part 430. It might be best to completely align with the DOE procedure except that the ambient temperature should be increased to 45C. Â</p> <p>By aligning with the DOE procedures lamps that meet the definition of a GSL per the DOE would already have to conduct the applicable life test. A manufacturer could then utilize the same procedure and testing to also comply with the marking requirements of JA8 and by conducting the long term testing at 45C they could then meet the JA8-2025- E marking requirements concurrently.</p>
256891.001	Climate Action California	<p>Passive House standard reach-code in Title 24</p> <p>California's building code, while steadily improving, is not moving fast enough in adapting to future climate change and electric-grid demand. To accommodate this need, CEC should, as a first step, implement an alternate compliance pathway to an acknowledged high-performance standard, such as Passive House. See the attached document describing a legislative proposal for an alternate compliance pathway for Passive House. This can be used as an exemplar for CEC's rule-making.</p> <p>Additional submitted attachment is included below.</p>

256891.002	Climate Action California	<p>This document describes a two-step legislative agenda for accelerating establishment of a low-energy-demand, high-performance green building standard in California. Building types will include all of the following: single family residential buildings, multi-family residential buildings, and commercial buildings.</p> <p>The two steps are: 1) define an alternate compliance pathway to high-performance buildings and 2) offer incentives for developers and builders to follow the pathway.</p> <p>The new standard can be introduced legislatively during Title 24's upcoming 2024 code revision window. This is preferable to going through the agencies (CEC, CPUC) since their mandates are guided by existing legislation.</p>
256897.001	The Division of the State Architect	<p>The Division of the State Architect (DSA) appreciates the opportunity to comment on the classroom exception for multilevel lighting controls. LED luminaires account for nearly all installed luminaires in public K-12 school and community college classrooms in California. LED luminaires can easily meet the controls requirements for multi-level dimming in the California Energy Code. DSA supports removal of the exception to Section 130.1(b)1.</p>
257097.001	CalCERTS, Inc.	<p>10-103.3(d)5B  CalCERTS recommends: Striking "one non QII shadow audit, one in-lab audit". This was intended to be removed from the code language per previous discussions.</p>
257097.002	CalCERTS, Inc.	<p>10-103.3(d)5C  CalCERTS recommends: Striking "Additionally, Onsite Audits shall be performed for every 100 dwelling units or single family residences (or both in combination) in a single development constructed by a single developer that make use of the sample-group provisions (Building Energy Efficiency Standards Reference Appendix RA 2.6)"</p> <p>This language already appropriately exists in 10-103.3(d)5Cf, and can cause confusion duplicated here.</p>



257097.003	CalCERTS, Inc.	<p>10-103.3(d)5Ce</p> <p>CalCERTS recommends: Adding the language “except when the installation has substantially changed since the original ECC inspection.” There are many examples where the installation has been altered by a contractor, homeowner, or other party after the original ECC inspection and the original inspection results can no longer be audited. Also, it is documented that complaints are sometimes submitted to Providers many years after an ECC inspection. It would be both wasteful and problematic to inspect a home that has substantially changed since the original inspection. This language helps prevent wasteful and unproductive audits.</p>
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257097.004	CalCERTS, Inc.	<p>10-103.3(d)5Cf</p> <p>CalCERTS recommends: Adding the language “beginning with the 100th dwelling unit or single family residence. As the language is currently written in the 15-Day Express Terms, it would require Providers to conduct 2% Onsite Audits on every development in the state that utilizes sampling. The number of Onsite Audits required might likely number in the thousands and would greatly increase the overall cost of the ECC/HERS program. We don’t believe this is the intent of the CEC as the 15-Day language was re-written to address the unfeasibility of conducting Onsite Audits on every seventh sample group.</p> <p>Adding CalCERTS proposed language of “beginning with the 100th dwelling unit or single family residence” would still result in a significant increase of Onsite Audits from the existing requirements; however, this edit would provide additional clarity for this mandate.</p> <p>Overall, it is clear that the Commission is not prepared to understand the impact of this new mandate on the Providers or the Builders. The changes to this section over this rulemaking indicate the Commission is guessing at what it wants to accomplish, at great expense to the program. This mandate should be better reviewed and understood before being adopted, and carefully drafted for the next code cycle, rather than guessing at this juncture. As the Commission is aware, changes to sampling on the national marketplace are significant, as it is being eliminated. It is impossible to predict the impacts in California and to overall project costs. The revisions in the 15-day language, although attempting to be collaborative and conciliatory, are still deeply problematic.</p>
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257097.005	CalCERTS, Inc.	<p>10-103.3(d)7Aii A.</p> <p>CalCERTS requests clarification on bolded language: In section 10-103.3(d)5Diii, the language states that the Remedy for a Flawed Field Verification and Diagnostic test is that the Rater or Rater Company is responsible for providing an additional field verification and diagnostic test to the hiring party that corrects the untrue or inaccurate reporting.</p> <p>Later in 10-103.3(d)7Aii, the disciplinary language states that in addition to providing necessary retesting, the Rater must also “be responsible for the costs to the property owner for the original field verification and diagnostic test and any necessary retesting because of the violations.”</p> <p>Is this additional language intentional or meant to be struck from the code? Is the Rater responsible for the costs as the remedy, or a corrective FVDT as the remedy? It would be inappropriate to require both.</p> <p>As written implies they must refund the costs to the homeowner and conduct additional inspections. This would be a windfall to any homeowner and could open the floodgates to folks seeking free inspections by gaming this code language and harassing ECC Raters for ministerial errors.</p> <p>In 10-103.3(d)7 states “In the event of a severe violation, however, the ECC-Provider shall proceed immediately to the suspension step for the first severe violation”. This suggests the Notice of Violation is for non-severe violations. The remedy needs to be reasonable. Please clarify.</p>
257111.001	CHEERS	<p>10-103.3(b)1Avii</p> <p>CHEERS Reasoning: “Register” in other sections of the regulation indicates submittal to the Report Generator, validating against schema, and issuing a registration number. That is not practical in this context from both a schema and Rater workflow standpoint. This paragraph should be reworked to remove the term “register” or define it as provided in our addition above.</p>

257111.002	CHEERS	10-103.3(d)5Ce CHEERS Reasoning: We agree with CalCERTS' recommended change. CHEERS has also experienced many projects where the home or installation was meaningfully changed AFTER it was inspected by a Rater. In those cases, an onsite audit would add cost without providing useful information. CalCERTS suggestion will prevent unproductive time spent.
257111.003	CHEERS	10-103.3(d)5Cf CHEERS Reasoning: We agree with CalCERTS' recommended change. This was discussed and understood in a meeting with CEC Staff, the Providers, and HERS Rater representatives. Requiring onsite audits for EVERY project that utilizes sampling presents substantial new staffing, travel, and coordination costs without obtaining meaningful quality assurance data.

257150.001	ELEM3NTS	<p>We have been in the field for more than 10 years, conducting HERS tests and energy assessments for private homeowners and contractors. Through our experience, we have identified four major actors in this process: public agencies (e.g., CA Energy Commission, city, counties, etc.), homeowners, contractors, and raters. Attempting to remove the responsibilities of one of these actors and redistribute them to another is fundamentally flawed and will likely result in project failure.</p> <p>For existing houses, the clear solutions are as follows:</p> <ul style="list-style-type: none"><li>- Public agencies should prepare informative material to educate all actors involved, particularly the homeowners, not just the raters.</li><li>- If the duct system is altered, the contractor should be accountable for the job performed under the current standards, whether it is 10% or 5%.</li><li>- If the homeowner opts out of duct replacement, a HERS test should be conducted to inform them about the condition of the duct system. Based on the rater's findings, the homeowner can make an informed decision regarding duct replacement.</li><li>- The building inspector, being the final point of contact with the homeowners, should leverage their experience and the HERS test results to guide homeowners in their duct system decisions.</li><li>- The California Energy Commission should create a one-page flyer to be distributed to homeowners, clearly explaining the process.</li></ul> <p>Simplicity and teamwork are the keys to success.</p>
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257154.001	Engineers	<p>Insulation is a cheap and essential component in the performance efficiency of a building. Even today with all the insulation R-Value and installation requirements, insulation is one of the worst features in new buildings, additions, and retrofits. It costs utility customers hundreds of unnecessary electric and gas demands. I am inundated with people asking why their buildings are uncomfortable. Often a contractor or building owner calls me wanting a HERS verification, and the walls and cathedral ceiling is already closed up making it impossible to verify without going to the expense of tearing down sheathing, re-installing, and repainting which makes everyone unhappy, so I decline the verification. One of the best ways for verification is infrared technologies, but it is difficult to gauge the R-values. We need to improve the method of infrared verifications so that not only can building owners get a true evaluation or find a way to ensure that contractors are made responsible to obtain the verifications prior to installation of sheathing.</p> <p>Additional submitted attachment is included below</p>
257350.001	Avery Ray Colter	<p>I have one small item for the report generation phase for CBECC. Up till the 2019 code cycle, PRF-E reports had the line for the Input File Name, and the single-family CF1RPRF-01E report in the 2022 CBECC-Res has this line, but it has gone missing from the reports generated by the 2022 CBECC. I often spawn many variants of files (in some cases to determine changes necessary to so much as run a calculation to completion in the new software!), and it is thus easy to lose track of which file generated which report, and therefore I would like to publicly lobby the CBECC coders to return the Input File Name line to the NRCC-PRF-E and LMCC-PRF-E report generation in the 2025 software (and the 2022 software as well if possible).</p>
257281.001	Steven Winstead (NEMI)	<p>1) §10-102 Comment The change from HERS to ENERGY CODE COMPLIANCE (ECC) PROGRAM is not appropriate and will create confusion. The Acceptance Test Technician (ATT) program also covers ENERGY CODE COMPLIANCE (ECC). The proposed name change should be adjusted to cover represent the program's limited scope. ("residential construction"). Proposed change for all locations containing "ECC". While multiple organizations, including the CEC (Joe Loyer), have acknowledged confusion with the proposed ECC name change, the 15-Day language did not address this concern</p>

257281.002	Steven Winstead (NEMI)	<p>2) 10-103.2(c)Fii &amp; iii</p> <p>Comment</p> <p>The suggestion to conduct shadow audits at a training center is a positive step forward. However, it is crucial that such audits do not impose excessive burdens on Acceptance Test Technician Certification Providers (ATTCPs) who are responsible for their implementation. While the idea of executing random mechanical audits at job sites could be effective under certain conditions, it will prove impractical for widespread implementation due to challenges related to access, security, safety, and legal considerations.</p> <p>Therefore, ATTCPs should be afforded the flexibility to carry out shadow audits either on-site or at a training center, depending on the specific situation. Consequently, the regulations and objectives governing shadow audits should be consistent, irrespective of the location where they are conducted. Furthermore, there is a need for clarification on the general requirement for 1% audit frequency to ensure uniform compliance across all ATTCPs. The proposed amendment to the existing 45-day rule aims to address these concerns.</p> <p>Where we appreciate the CEC addressing how many tests the training center must be equipped to handle in the 15-day language (The ATTCP training facility shall be set up to allow auditing of all functional tests for which the ATT is certified.) The 15-day language does provide clarification ON what “1%” is based on, outside of an ATE’s total projects, or provide equitable flexibility to carry out shadow audits either on-site or at a training center, depending on the specific situation. It is also unclear what an ATTCP should do if they provide both on-site audits and audits in training centers since one would require only 1% of an ATE’s projects while training centers would require all of an ATTCP’s ATT’s be shadow audited in each code cycle. We strongly encourage the CEC to address these concerns with the proposed changes.</p>
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257281.003	Steven Winstead (NEMI)	<p>3) 160.2(b)2.A.iv.b.2 (Compartmentalization Testing Comment The alternative procedure provides for an unfair market advantage as sampling would not be allowed. Compartmentalization Testing in multifamily buildings with four or more habitable stories should remain under the scope of the ATT until an equitable option for sampling can be provided. The 15-day language does not address the unfair market advantage created by not allowing and ATT to perform sampling while allowing ECC raters that ability for the same requirement. (NA1.9.1 Field Verification by the Acceptance Test Technician – "...Systems verified under this procedure are not eligible for use of the sampling procedures described in NA1.6.") As previously recommended, Compartmentalization Testing in multifamily buildings with four or more habitable stories should remain under the scope of the ATT until an equitable option for sampling can be provided.</p>
257281.004	Steven Winstead (NEMI)	<p>4) 160.2(b)2.B.iv No change for 15-day language. Comments The alternative procedure provides for an unfair market advantage for HERS (ECC) testers as sampling would not be allowed by an ATT certified individual or company. Dwelling unit field verification and diagnostic testing in multifamily buildings with four or more habitable stories should remain exclusively under the scope of the ATT until an equitable option for sampling can be provided. Per NA1.9.1 Field Verification by the Acceptance Test Technician "Systems verified under this procedure are not eligible for use of the sampling procedures described in NA1.6."</p>
257281.005	Steven Winstead (NEMI)	<p>5) NA1.9.1 Field Verification by the Acceptance Test Technician Comment- The alternative procedure provides for an unfair market advantage for HERS (ECC) testers as sampling would not be allowed by an ATT certified individual or company. Systems verified under the alternative procedure should be permitted to utilize the sampling procedures described in NA1.6. Not allowing sampling for an ATT will impede competitiveness and create a market disadvantage for the ATT. The CEC needs either provide an equal opportunity for sampling under NA 1.6 or remove the sampling option altogether. The 15-day language does not address the issue of market inequality. Sampling needs to be allowed for all technicians or none at all.</p>



257281.006	Steven Winstead (NEMI)	<p>6) 140.9(c)1.C/ NA7.16 No change for 15-day language. Comment The section specifically states that a certificate of acceptance be submitted to the enforcement agency. "...a certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.16" The associated acceptance forms should be dedicated to a Mechanical Acceptance Testing technician to ensure that the intent of this requirements was achieved. We request that the CEC make clear in the Energy Code that this requirement must be completed by a certified Mechanical Acceptance Testing technician to ensure that its intent was achieved.</p> <ul style="list-style-type: none"> <li>• "Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance..."</li> <li>• "...a certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.16"</li> </ul> <p>The associated acceptance forms should be dedicated to a Mechanical Acceptance Testing technician to ensure that the intent of this requirements was achieved.</p>
257281.007	Steven Winstead (NEMI)	<p>7) SECTION 140.9(b)3 – PRESCRIPTIVE REQUIREMENTS FOR COVERED PROCESSES Comment The section clearly calls out for an acceptance requirement and that a certificate of acceptance be submitted to the enforcement agency.</p> <ul style="list-style-type: none"> <li>• "the following equipment and systems shall be certified as meeting the acceptance requirements for code compliance..."</li> <li>• "...A certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.11"</li> </ul> <p>The associated acceptance forms should be dedicated to a Mechanical Acceptance Testing technician to ensure that the intent of this requirements was achieved.</p> <p>No change in the 15-day language. Qualifications for this work should be assigned to achieve intent of NA7.11.</p>

257281.008	Steven Winstead (NEMI)	<p>8) 140.9(c)4B /NA7.17          No change for 15-day language.          Comment          The section clearly calls out for an acceptance requirement and that a certificate of acceptance be submitted to the enforcement agency.</p> <ul style="list-style-type: none"> <li>• “Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance...”</li> <li>• “...a certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA...” The associated acceptance forms should be dedicated to a Mechanical Acceptance Testing technician to ensure that the intent of this requirements was achieved.</li> </ul>
257281.009	Steven Winstead (NEMI)	<p>9) 140.3 (a) 9 C &amp; NA5.5 Enclosure Measurement Procedures          (15 Day Language corrected NA5.7 to NA5.9 but not the workforce standards)</p> <p>Comment The testing should include fundamental workforce standards for these tasks which would include certification as an ATT.</p>

257281.01	Steven Winstead (NEMI)	<p>10) 140.4 (a) 3.A&amp;B Comment While we appreciate the CEC making several crucial changes and additions to this proposed section, we continue to have concerns about the constraints that are presented to design professionals by limiting the options for space conditioning systems. Maintaining flexibility, within reason, for designers will help keep costs down for schools with budget constraints while maintaining the intention of the Energy Code.</p> <p>The proposal presents significant constraints primarily targeted at design professionals, potentially inflating costs for end users without clear evidence of universal energy savings across all building types. While a performance option exists for designers to explore alternative approaches, its adoption may be hindered by increased expenses and intricate requirements, discouraging the utilization of established, effective technologies. It's crucial to consider the diverse needs of rural and smaller facilities, granting them the flexibility to select from a wider array of design options tailored to meet regional energy standards and indoor air quality objectives.</p>
257281.011	Steven Winstead (NEMI)	<p>11) 140.4(c)2Biii Comment The inclusion of ASHRAE Guideline 36 in the 15-day language necessitates the expansion of functional performance tests detailed in the existing NRCA-MCH-07A Mechanical form. These critical tests should also be performed by certified ATTs to ensure compliance with the new guidelines and maintain the highest standards of energy efficiency and system reliability.</p>
257281.012	Steven Winstead (NEMI)	<p>12) 140.4 (d)2.A No change for 15-day language. Comment We propose the integration of a requirement for certified Acceptance Test Technicians (ATTs) to conduct construction inspections and functional verification of temperature resets in conjunction with NRCA-MCH-16A. Additionally, the inclusion of ASHRAE Guideline 36 in the code necessitates the expansion of functional performance tests detailed in the existing NRCA-MCH-016A Mechanical form. These critical tests should also be performed by certified ATTs to ensure compliance with the new guidelines and maintain the highest standards of energy efficiency and system reliability.</p>

257413.001	Bradford White	<p>BWC appreciates the CEC modifying the mandatory heat pump water heaters (HPWH) ventilation standards in section 110.3(c)7B to prioritize manufacturer prescribed methods. We however would like to restate concerns we submitted in our 45-day letter surrounding HPWH space requirements for installations and electric-ready provisions, as well as questions around the use of 120-volt HPWH product.</p>
257413.002	Bradford White	<p>HPWH space requirements  The code language specifies that individual unitary HPWH's must be installed in a minimum physical space, or that same space must be provided if a builder chose to use gas technology. The space requirement for single family homes and multifamily apartment dwellings is not consistent in the code sections, even though it affects the same equipment, residential duty unitary HPWHs. The following Table outlines the discrepancies:</p> <p>Our recommendation is to make the requirements for physical space in these sections the same, using the current language in section 160.9(e), which prescribes a larger space (39" x 39" x 96"). Furthermore, section 150.0(n) has no provisions in place for ventilation. We recommend including ventilation provisions in section 150.0(n). Our proposed edits to section 150.0(n) are shown below:</p>

257413.003	Bradford White	<p>240-volt and 120-volt HPWH product requirements</p> <p>In our 45-day letter, BWC raised the following questions to the CEC regarding their intent on having different requirements for 240-volt and 120-volt HPWHs:</p> <ol style="list-style-type: none"><li>1. Was it the intent of the CEC to only allow “240 Volt” NEEA Tier 3 or better products to be used in new construction?</li><li>2. For additions and alterations, was it the intent of the CEC to allow any HPWH meeting NEEA Tier 3 (including 120-volt) to be used to comply?</li><li>3. Barring differences in HPWH voltage, is there a specific reason that 120-volt HPWHs are limited to 1 bedroom or less homes in the new construction prescriptive approach?<ol style="list-style-type: none"><li>a. If a 120-volt HPWH meets the required First Hour Rating (FHR) of the California Plumbing Code, why would it not be allowed in any building?</li></ol></li></ol> <p>The requirements and our questions pertain to the following code sections:</p> <ol style="list-style-type: none"><li>1) 150.1(8)</li><li>2) 150.2(a)1D</li><li>3) 150.2(b)1Hiii</li><li>4) 170.2(d)1 and</li><li>5) 180.2(b)3C</li></ol> <p>BWC would appreciate further discussion with the CEC regarding these questions and clarifying the code language where applicable.</p>
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257414.001	Taylor Engineers	<p>140.4(a)3Aiii</p> <p>The requirement for an AWHP system to produce no more than 105F leaving water temperature is not cost effective and leads to low deltaT systems with large piping and pump energy. The details of the supplemental LSC analysis provided are sparse and do not align with our analyses. Additionally, the requirement that most climate zones use only parallel fan-powered boxes cannot possibly be cost effective</p>
257414.002	Taylor Engineers	<p>140.4(a)3Cii</p> <p>The term “rated” is somewhat unclear in this new language, but it is also unclear what the point of this requirement is. A manufacturer is not going to allow their equipment to operate above the maximum leaving water temperature the product is capable of producing, so why is this requirement in the code? What is this statement intended to achieve? It is also overlapping and less stringent than the language in 140.4(a)3Aiii which limits the leaving water temperature to 105F.</p>
257414.003	Taylor Engineers	<p>140.4(a)3Ciii</p> <p>The point of buffer tanks and increased system loop volume is to limit equipment cycling and the associated poor efficiency and temperature control, along with potential increased wear on the AWHP related to that cycling. Ultimately though, this is a function of the equipment installed and the building it is installed in. There is equipment out in the market that has very good turndown as well as potential applications within office buildings (e.g. large constant data center load) where sufficient turndown can be handled with modular or multiple equipment approaches. The requirement should refer to the turndown capability rather than a specific gal/ton of system loop volume. As AWHP technology improves and turndown improves, this prescriptive requirement will continue to be out of step, forcing owners to purchase buffer tanks that are doing little more than wasting energy and money.</p>

257414.004	Taylor Engineers	<p>140.4(a)3Civ  It is unclear where the supporting analysis is provided for this new language. It contradicts the longstanding prohibition on electric resistance heating limits and allows for a significant portion of heating capacity to be handled by a system with a COP of 1. Additionally, it is inconsistent that there is no allowance for electric resistance heating at the zone level, which is significantly more efficient than central electric resistance boilers because there are no associated hydronic loop thermal losses.</p>
257414.005	Taylor Engineers	<p>140.4(a)3D  The requirement for DOAS and zonal systems that shut off in deadband means it will be impossible for the HVAC system alone to meet the equivalent clean air rates in ASHRAE Standard 241 “Control of Infectious Aerosols”. Separate systems, like portable air cleaners, will be required, which are expensive, noisy, high maintenance, and architecturally problematic, particularly in schools. The prescribed systems are the worst possible from a disease transmission standpoint.</p>
257414.006	Taylor Engineers	<p>Exception 8 to Section 140.4(e)1  VRF and FPFCs no longer have any economizer requirement nor do they have to compensate for this lack. This exception needs justification. Prior LCCA has shown that you need the enhanced DOAS (same section, Exception 6) to offset the lack of economizer. Furthermore, this enhanced DOAS requires that ventilation zones have pressure independent air valves (to perform the partial economizer logic). Without this air valve, DCV would not be required except on zones with huge outdoor air needs &gt;3000 cfm of which there are fe</p>

257241.001	Cooling Technology Institute	<p><b>Cooling Tower Minimum Efficiency</b>  In our comments on the 45-Day language, we noted that there were increases in minimum efficiencies in certain climate zones as compared to original values in the Draft Case Team Report on Cooling Towers. These increases have not been explained nor justified in subsequent analyses. We therefore request that the minimum efficiency for these Climate Zones (Climate Zones 2, 4, 5, and 13) be checked for proportionality and if not justified, rolled back to the minimum efficiency values contained in the Draft Case Team Report.</p> <p>Additionally, as we are sure you are aware, the vast majority of cooling towers utilize variable speed fan control which significantly reduces the annual fan energy usage, and we believe this is not properly reflected in the energy models. Additionally, the modelling programs appear not to be able to model staging of multiple cell cooling tower installations per ASHRAE Standard 90.1. This also has a significant impact on energy use on an annual basis. Since there are relatively few single cooling tower cell installations over 300 tons, the lack of staging of cells by the use of single cell modelling is significantly in error as compared to actual installations. Thus before undertaking any future cooling tower evaluations, these energy modeling issues need to be corrected.</p>
257241.002	Cooling Technology Institute	<p><b>Cooling Tower Blowdown Controls</b>  As stated in our previous comments, the CTI believes in the “wise use of the world’s water resources.” As part of this, the minimization of blowdown is a key goal of our water treatment members, while keeping scale, fouling, corrosion and microbial growth under control. Increasing cycles of concentration and reducing blowdown, while saving water, must be accomplished carefully to avoid negative, unintended consequences which can detrimentally impact the performance and energy efficiency of not just the evaporative heat rejection unit, but the entire cooling system. The changes for Title 24 2025 in the 15-Day Language will facilitate compliance with the requirements of the proper water treatment program for each site while minimizing the potential for scaling, fouling, and corrosion of the evaporative heat rejection equipment.</p>



257241.003	Cooling Technology Institute	<p>Adiabatic Fluid Cooler Minimum Efficiency</p> <p>We have noticed in the 15-Day Language that a minimum efficiency for adiabatic fluid coolers has not been added in the Heat Rejection Table. This minimum efficiency is supported by the CTI ATC-105 Adiabatic test code. Complete details for adding this equipment type can be found in Addendum “q” to ASHRAE Standard 90.1. This will help to keep Title 24 and Standard 90.1 in alignment as well as cover a growing class of heat rejection which is more energy efficient than dry coolers while saving water compared to cooling towers. Note also that the CTI currently has a Task Group charged with developing a Rating Standard for adiabatic fluid coolers in support of a future certification program. We expect to have this program implemented during the next Code cycle, joining our current certification programs for open circuit cooling towers, closed circuit cooling towers, and dry coolers.</p>
257241.004	Cooling Technology Institute	<p>Reference to CTI Standards and Codes</p> <p>Thank you for updating the publication dates of the listed CTI Codes and Standards as well as the address of the CTI in the 15-Day Language.</p> <p>Summary</p> <p>The CTI again appreciates the opportunity to provide input to the CEC and will continue to monitor the 2025 Development Process closely through publication. Our members would be happy to assist with additional input to the CEC Staff, as well as answer any specific questions that may arise relative to our comments or evaporative heat rejection in general.</p>

257459.001	Lutron	<p>Subchapter 1-100.0 Section 100.1 –Definitions and Rules of Construction.</p> <p>Lutron comments: We recommend that the definition of Multilevel Lighting Control be amended to clarify that multilevel does not just include ON and OFF. The intention of the requirement is that a dimmer, scene control, or similar manual control allows occupants to choose different lighting levels beyond only full-on and full-off. Without this proposed definition change, a standard on/off toggle switch would meet the definition but would not fulfill the requirement.</p> <p>Changes: Multilevel Lighting Control enables the intensity of lighting to be adjusted upward and downward <u>in addition to ON and OFF.</u></p>
257460.001	Daikin U.S. Corporation	<p>Daikin appreciates CEC’s modification to Sections 150.0(h)6 and 160.3(b)7) regarding defrost. The clarification that the requirement for a 90-minute delay timer is only applicable to products including an “installer-adjustable” defrost delay timer ensures that equipment that uses demand defrost controls that initiate defrost based on measured performance parameters will not be negatively impacted. However, we continue to have concerns related to overly prescriptive compliance options for schools and offices and the use of the Energy Efficiency Ratio 2 (“EER2”) for sizing Photovoltaic (“PV”) systems with Variable Speed Heat Pumps(“VSHPs”), explained below. We also wish to comment on the changes to the Efficiency Tables within this rule.</p>

257460.002	Daikin U.S. Corporation	<p>Section 140.4 – Prescriptive Requirements for Space Conditioning Systems</p> <p>Daikin reiterates that the proposed requirements are overly prescriptive and limit consumer choice that may provide important energy efficiency improvements. The choice of equipment is a business level decision which should be made on a case-by-case basis, and the CEC should not exclude energy efficiency improving technologies.</p> <p>The CEC continues to exclude a variety of equipment types from the Prescriptive approach as previously explained in our prior comments. Daikin had proposed a modification to Section 140.4(a)3.A. to include Schools and to then remove Section 140.4(a)3.B. This modification would have made clear the ability to use VRF and DOAS for offices and schools. CEC appears to have attempted to address this concern by adding Section 140.4(a)3G where; “A space-conditioning system determined by the Executive Director to use no more energy than the systems specified in Section 140.3(a)3.”.</p> <p>Daikin does not support this approach. Building owners will struggle to comply with this section as it will create additional work and add delay as designers prepare, submit and wait on the Executive Director approval. This will ultimately discourage use of VRF/DOAS and other effective equipment that is not clearly included as being Prescriptively allowed.</p> <p>The need to obtain approval from the Executive Director does not provide any certainty for the application of other highly efficient equipment. The process for submittal, the specific information which needs to be provided, and the metrics for acceptance need to be included in this Rule. Clarification is required on whether approvals are project specific or may convey to similar projects, and what is the process that will be determined. The Executive Director must respond within a specific timeline from submittal to response to provide some level of certainty to stakeholders. That timeline cannot be left open ended. CEC must consider how they will process a potentially high demand for approvals for use of alternate equipment types</p>
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257460.003	Daikin U.S. Corporation	<p><b>EER2 and PV Sizing Concerns</b></p> <p>Daikin appreciates the CEC returning Equation 150.1 to the rule that was mistakenly stricken in the initial 45-Day language.</p> <p>Daikin’s other comments related to the topic of EERs and PV Sizing do not seem to have been addressed. Daikin reiterates that we believe that EER2 is an irrelevant peak power management metric for Variable Speed Heat Pump technology. We believe that prescribing EER2 thresholds of 11.7 for sizing PV Systems, as currently proposed in Table 110.2-A, would be counterproductive to the adoption of VSHP technology and the attainment of the state’s heat pump and decarbonization targets.</p> <p>As explained in detail in the Daikin comments submitted to the CEC on September 7, 2023, and again on May 9, 2024, EER2 is not a metric that in any way captures the benefits and performance of VSHPs. Daikin believes that requiring EER2 for VSHP PV System integration may slow their adoption and fail to recognize and capitalize on their inherent benefits. EER2 requirements as written could exclude VSHP, especially the cost-effective product models with moderate EER2 rating, from eligibility in this program and limit their potential to deliver greater annual energy savings and reduce energy bills.</p> <p>EER2 is a metric measured at high ambient (i.e. 95F) conditions. High ambient conditions, however, represent only a small portion of time in a year across most locations in the US, albeit an important timeperiod from a load management perspective. The average duration that cities experienced temperature conditions between 93-97F was 1.2% of the annual hours.</p> <p>As previously referenced, in California, across its 16 climate zones, based on weather data from 2017, the average number of hours over 95F is estimated to be 189 hours annually, which is about 4.4% of total cooling load hours. Some of the hotter California climate zones experience over 30% of cooling operating hours above 90F with over 20% of cooling</p>
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257460.004	Daikin U.S. Corporation	<p>Table 110.2-A AIR CONDITIONING AND CONDENSING UNITS – MINIMUM EFFICIENCY REQUIREMENTS</p> <p>Daikin has concerns in Sections 110.2 relative to the proposed changes to the efficiency tables that will cause confusion, and that are in some cases technically incorrect.</p> <p>CEC is proposing to remove entire tables if the requirements for all products within that table are to meet federal minimums. CEC further proposes to remove efficiency ratings and replace with “Federal Minimum” where appropriate. While we understand the difficulty CEC is trying to address in maintaining these tables as Federal requirements change, Daikin does not support their removal. We believe there is a value in referencing the actual rating requirement for the equipment to provide designers with relevant information quickly and to avoid their needing to search other locations for the data, which may be difficult to locate. Alternately, a compendium that includes all efficiency ratings could be a useful tool and be more easily updated by CEC as needed.</p> <p>In the 15-day language, there remains a glaring error. In Table 110.2-A, the Condensing Unit sections incorrectly reference Federal Minimum in place of IEER. We believe that there is no Federal Minimum for this product and, as such, the prior IEER numbers should remain. Below are the line items in question.</p>
257460.005	Daikin U.S. Corporation	<p>Conclusion</p> <p>Daikin believes that Section 140.4 continues to be of concern and that our proposed modification will provide more certainty for building owners and designers. EER2 for VSHP PV System integration may slow their adoption and fail to recognize and capitalize on their inherent benefits. Lastly, we believe that the 4 removal of the efficiency tables and their metrics will be problematic. At a minimum, corrections are required to the tables.</p>

257466.001	Natural Resources Defense Council	<p>The Natural Resources Defense Council (NRDC), Earthjustice, Rewiring America, Peninsula Clean Energy Authority, and Sierra Club submit the following comments on the California Energy Commission’s (CEC) 15-Day Language Express Terms for the 2025 Title 24 Building Energy Efficiency Standards (“2025 Building Code”) published June 13, 2024.<sup>1</sup> We appreciate the CEC’s work in developing the 15-Day Language for the 2025 Building Code. The Building Code is instrumental in decarbonizing buildings throughout the state and helping achieve California’s climate and air quality objectives.</p> <p>As submitted in our comments on the 45-Day Language,<sup>2</sup> we continue to strongly support critical advances to the Building Code in the 15-Day Language that further building electrification, including expanded heat pump baselines for residential and non-residential new construction and provisions that strongly encourage replacement of single-zone packaged rooftop units (“RTUs”) used in commercial buildings with heat pumps. These and other energy efficiency and electricready updates will save Californians money, increase comfort, and reduce the state’s dependency on fossil fuels.</p> <p>However as noted in our comments on the 45-Day Language, there are also major missed opportunities in the 15-Day Language, including the absence of previously considered provisions for replacement of existing central air conditioning (“A/C”) units in residential buildings with heat pumps and use of solar and heat pumps for pool heating in existing non-residential and multi-family buildings, which have now been proposed in Part 11 instead. While we continue to be disappointed about these omissions, the following comments focus on areas that have changed since the 45-Day Language. To the extent that provisions have not changed since the 45-Day Language, our previously submitted comments remain.</p>
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257466.002	Natural Resources Defense Council	<p>Non-Residential New Construction Baselines: Support for expanded compliance options and development of additional pathways prior to implementation of the 2025 Building Code.</p> <p>The CEC has proposed to expand on the existing heat pump space heating prescriptive baselines established in the 2022 Building Code for single zone systems in non-residential buildings by setting heat pump space heating baselines for large, multi-zone systems in schools and offices in Section 140.4(a)(3). In general, we strongly support this expansion, which will encourage building electrification while continuing to allow designers options under the performance path. In our comments on the 45-Day Language we recommended that the CEC expand the prescriptive options available to better match the system types typically used in all-electric schools and offices. We appreciate the edits the CEC has made in the 15-Day Language and in particular support the additional option provided under Section 140.4(a)(3)(G), which allows for any space-conditioning system determined by the Executive Director that uses no more energy than the systems specified prescriptively. We strongly recommend that the CEC develop additional options under this pathway in collaboration with the design community in advance of the implementation of the 2025 code to create additional prescriptive pathways for commonly used all-electric systems, such as water-source systems (with and without radiant heat), which will be critical to ensure that these systems can continue to be easily installed. We also recommend that the CEC create a clear process for identifying additional options under this pathway going forward.</p>
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257466.003	Natural Resources Defense Council	<p>Nonresidential HVAC Retrofits: The 15-day language makes helpful modifications to Rooftop Unit replacement requirements.</p> <p>We strongly support the proposed requirements in Section 141.0(b)(2)(C) that encourage new or replacement single-zone packaged rooftop units (RTUs) under 65,000 Btu/hr to be heat pumps at the time of equipment replacement or failure. As submitted in previous comments on the docket, these equipment changeouts represent a critical opportunity to encourage the adoption of heat pumps, which are essentially drop-in replacements for the existing equipment. As written, the proposed requirements offer flexibility by requiring a heat pump RTU or gas RTU with additional efficiency options under the prescriptive path, depending on the climate zone. We support the edits to this section in the 15-Day Language which help clarify the requirements and expand the options to include dual-fuel heat pumps.</p>
257466.004	Natural Resources Defense Council	<p>Residential HVAC Design and Control: Remove exemption for Climate Zones 7 and 15 and for buildings with floor area less than 500 square feet.</p> <p>As submitted in our comment on the 45-Day Language overall we strongly support the edits to Section 150.0(h) relative to residential space conditioning equipment design and control, which will help ensure proper sizing and field performance of heat pumps. In our comments on the 45- Day Language, we commented on Section 150.0(h)(7) specifically which contains language limiting the use of electric resistance or gas supplementary heat, but exempted climate zones 7 and 15, as well as buildings with conditioned floor space less than 500 square feet.<sup>3</sup> We stated that this exception was unnecessary given the low cost of these controls and the high potential energy use if supplementary heat is not controlled effectively. The CEC has proposed a new exception<sup>4</sup> for these climate zones and building sizes that will require controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone and where the cut on and off temperatures of the heat pump are higher than those of the supplementary heater or that only allow supplementary heat operation during defrost and transient periods. We appreciate the edits to this exception, which are an improvement to the 45- Day Language. However, there is still no need for this exception and as written would be difficult to enforce. We continue to recommend that the CEC strike this exception entirely.</p>



257466.005	Natural Resources Defense Council	<p>Heat pump water heater ventilation requirements: Additional modifications are necessary to strike the correct balance between feasibility and water heater performance.</p> <p>The CEC has proposed requirements to ensure that integrated heat pump water heaters are installed with adequate ventilation to achieve optimum performance (Section 110.3(c)(7)). While helpful modifications were made in the 15-Day Language, we remain concerned that this section does not strike the right balance between feasibility and water heater performance. We support the edit in the 15-Day Language to Section 110.3(c)(7)(B)(i) which allows for the manufacturer to issue installation guidance that provides ventilation performance that meets or exceeds that provided by the provisions of Section 110.3(c)(7)(B). However, our comments from the 45-Day language on Sections 110.3(c)(7)(B)(4)(iv) related to net free area on the inlet duct and 110.3(c)(7)(B) related to compressor capacity test point remain.</p> <p>With regard to Section 110.3(7)(b)(4)(iv), the ducted inlet configuration should only require a net free area (NFA) of 20 square inches (same as ducted exhaust). Requiring the NFA to be the same size as the duct is not supported by the research and is significantly more than what is needed for adequate ventilation. In addition, references to AHRI 540 Table 4 reference conditions in Section 110.3(7)(B) should be removed as there is no way for a contractor to document the compressor capacity to calculate the installation space required.</p>
257468.001	LG Electronics, USA, Inc.	<p>LG Electronics U.S.A., Inc. (“LG”) is supportive of the updates made to §JA5.3 in the California Energy Commission’s Title 24, Part 6 15-day language. We believe these updates will help increase flexibility for compliance and further eliminate barriers to high efficiency heat pump installations. We look forward to continued collaboration with the Commission in the future</p>

257469.001	Baltimore Aircoil Company	<p>Cooling Tower Efficiency:</p> <ul style="list-style-type: none"> <li>o As mentioned in our previous comments on the 45-Day language, we are disappointed in the 33% increase in minimum efficiency for axial fan, open-circuit cooling towers used in chiller plants over 300 tons in certain climate zones, particularly as no other class of HVAC equipment is being challenged to this degree for the 2025 Edition. However, we do appreciate the reduction in the required minimum efficiency, as compared to what was originally proposed in the CASE Report, in response to stakeholder comments, including those from BAC.</li> </ul>
257469.002	Baltimore Aircoil Company	<p>Blowdown Controls:</p> <ul style="list-style-type: none"> <li>o We are supportive of the final blowdown control requirements, helping ensure water use from cooling towers is minimized, which is a primary goal of all water treatment programs.</li> </ul> <p>We look forward to working with the CEC in the future and welcome agency officials to visit our manufacturing facility in Madera, California, to showcase BAC's sustainable cooling technologies. Please contact us to arrange a visit and see firsthand the heat rejection and thermal storage equipment we manufacture in California for both the U.S. and export markets.</p>
257467.001	CA Statewide Utility Codes and Standards Enhancement Team	<p>Substantive Remark #1:</p> <p>Exception 1 to Section 160.3(b)5Liii</p> <p>The language changes to Exception 1 to Section 150.0(m)13C were not incorporated into the multifamily language. This proposed update maintains consistency with single family.</p>
257467.002	CA Statewide Utility Codes and Standards Enhancement Team	<p>Substantive Remark #2:</p> <p>150.1(c)3A</p> <p>As written the exception for 16ft2 of skylight area only applies to CZs 2,4,6-15. Proposed change clarifies the 16ft2 and max U-factor exception apply to all CZs. Without this change the skylight exception does not apply in CZs 1, 3, 5, &amp; 16.</p>

257467.003	CA Statewide Utility Codes and Standards Enhancement Team	<p>Substantive Remark #3:  150.0(h)2C,  160.3(b)2C and  170.2(c)2C</p> <p>The CASE Team recommends reverting to the current 2022 code language and only referencing the Heating Winter Median of Extremes to not introduce confusion about which temperature represents the allowable minimum. Adding the 99.0% percentage level leads to confusion since JA2 Table 2-3 does not have 99.0% data and cannot be interpolated. See details from the CASE Team's docketed comments to the 45-Day Language on May 13th, 2024.</p>
257467.004	CA Statewide Utility Codes and Standards Enhancement Team	<p>Substantive Remark #4:  150.0(h)2C/D,  160.3(b)2C/D</p> <p>The CASE Team recommends requiring that the design temperatures used be the referenced values rather than "no lower than" the referenced values. Allowing for heating design temperatures that are greater than the referenced values can lead to undersizing the compressor in conflict with 150.0(h)5</p>
257467.005	CA Statewide Utility Codes and Standards Enhancement Team	<p>Substantive Remark #5:  150.0(h)2B,  160.3(b)2B and  170.2(c)2C</p> <p>The CASE Team recommends reverting to the current 2022 code language and requiring that design conditions be based on JA2. The added listed sources (with the exception of ASHRAE Fundamentals Handbook) do not have design conditions. The CASE Team has concerns with the use of ASHRAE 2021 Fundamentals Handbook data due to values that are substantially more mild than JA2 in certain locations. See details from the CASE Team's docketed comments to the 45-Day Language on May 13th, 2024.</p>

257467.006	CA Statewide Utility Codes and Standards Enhancement Team	<p>Substantive Remark #6: 150.2(b)10 (new section) The new limits on sizing proposed by the CASE Team and included in the 15-day language in Section 150.2(a)1E were intended to apply to both additions and alterations. As the 15-day language reads, these limits only apply to additions. The suggested language change extends it for alterations</p>
257467.007	CA Statewide Utility Codes and Standards Enhancement Team	<p>Substantive Remark #7: 130.1(d)Ci The recommendation is to roll back to the 2022 language, which better captures the intent. In the 15-day language, the use of the word "allow" is not enforceable. Additionally, the 15-day language suggests that multilevel lighting controls would take over (i.e. override) daylight responsive controls to adjust the light level via continuous dimming. Section 130.1(b) specifies that multilevel lighting controls shall "provide" and "enable" continuous dimming from 100 percent to 10 percent or lower of lighting power. So "provide" and "enable" continuous dimming means that multilevel lighting controls do not have an inherent control logic for determining how the light level should be adjusted, and a manual dimmer can "provide" and "enable" continuous dimming. Therefore, it should be daylight responsive controls, not multilevel lighting controls, that adjust the light level via continuous dimming.</p>
257467.008	CA Statewide Utility Codes and Standards Enhancement Team	<p>Substantive Remark #8: 141.0(a) This clarification of scope for additions for a new mandatory provision was requested by the Compliance Improvement team and was included in the 45-Day comments, but is not included in the 15-Day language.</p>
257467.009	CA Statewide Utility Codes and Standards Enhancement Team	<p>Substantive Remark #9: 141.0(b) This clarification of scope for alterations for a new mandatory provision was requested by the Compliance Improvement team and was included in the 45-Day comments, but is not included in the 15-Day language.</p>

257467.01	CA Statewide Utility Codes and Standards Enhancement Team	Substantive Remark #10: Table 150.1A Table 150.1A Option C doesn't specify whether the requirement for radiant barrier differ between vented attics and cathedral ceilings. Radiant barriers will have no affect if the insulation in cathedral ceiling roofs are installed directly underneath the roof sheathing.
257467.011	CA Statewide Utility Codes and Standards Enhancement Team	Substantive Remark #11: Exception 5 to 110.4(c) Clarification that the exception is where there is insufficient roof area. The proposed language below excerpts the roof area requirements that CEC proposed in the 15- day language in a clearer format to improve compliance. Also expand scope of exception to pools as this seems to be the intended scope of the exception by CEC and was left out inadvertently.
257467.012	CA Statewide Utility Codes and Standards Enhancement Team	Non-substantive Remark #1: 160.4(e) These are corrections of grammar.
257467.013	CA Statewide Utility Codes and Standards Enhancement Team	Non-substantive Remark #2: 110.3(c)7A "Cutout" or "cut-out" is the correct term.
257467.014	CA Statewide Utility Codes and Standards Enhancement Team	Non-susbstantive Remark #3: 110.3(c)7B3ii The "equal area" should refer to the NFA.

257467.015	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #4: 140.4(r) The 15-day language moved Exception 3 to Section 140.4(r) to be an exception to just 140.4(r)3. This exception for non-programmable zone controllers is intended to apply to the entire Section 140.4(r). In particular, it also applies to 140.4(r)1 , which would otherwise exempt non-programmable controllers. This exception provides a special case to expand applicability to non-programmable (configurable-only) zone controllers so that they must follow Guideline 36 logic, even if that logic cannot come from a certified programming library. We recommend reverting this exception to apply to the entire Section 140.4(r) as it was arranged in the 45-day language.</p>
257467.016	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #5: 150.2(a)1Aiii The revised language should reference additions and not alterations since this is in the additions subsection. Also adding the subsection iii to separate this from ii and iv.</p>
257467.017	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #6: 150.2(b)1A Revisions to correct minor grammatical typos changing "increases" to "increase" and adding ":" after Exception title.</p>
257467.018	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #7: Table 120.1-A Updates to Table 120.1-A includes typographical mistakes that impact ventilation requirements to several space types. Affected space types include: general manufacturing, shipping/receiving, sorting, auditorium, places of religious worship</p>
257467.019	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #8: RA3.6.3 Incorrect section reference in RA3.6.3</p>
257467.02	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #9: Section 160.1(g) Item #2 incorrectly lists "ASTM C272" instead of "ASTM E96", which is the correct test for water vapor permeance.</p>

257467.021	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #10: 170.1(b)2F</p> <p>This allows energy savings credit in the performance path for lower dwelling unit enclosure leakage rate in multifamily buildings. The CASE team proposes to remove 170.1(b)2F. It's not possible to determine the fraction of leakage from the exterior vs interior, without complicated blower testing. And our energy modeling found little savings in most climate zones from compartmentalization that is tighter than the mandatory requirement.</p>
257467.022	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark # 11: JA1</p> <p>Update definition of "air leakage" in JA1 to strike through that air must come from exterior. Air leakage can also be from the neighboring spaces of the building in multifamily dwelling units.</p>
257467.023	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #12: 150.0(o)1Gvi, 150.0(o)1I, 180.2(b)5Bib</p> <p>Sound Rating of fans in ASHRAE 62.2 - 2022 changed to section 7.3 from Section 7.2 in 62.2 2019 version. This reference needs to be updated. (it has been appropriately updated in other sections)</p>
257467.024	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #13: Table 170.2-K</p> <p>Table 170.2-K and footnotes need updates for consistency with other changes (balanced or supply ventilation, HRV/ERV FID). To correct a typo: moving footnote 2 from Table 170.2-K to 150.1-A. This footnote is about allowing supplemental heating that uses gas less than the specified thermal capacity</p>

257467.025	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #14:  160.2(b)2Biii,  160.3(b)5K  ECC-Rater or ATT terminology should be consistent with other field verification requirements instead of just saying field verification. "Field verification" may or may not include ECC-Rater or ATT field verification. The updated language is vague and difficult to enforce by requiring field verification but not identifying who is qualified to do this verification.</p>
257467.026	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #15:  Table 150.1-A  (continued on the third page)  Footnote 10 is not reference anywhere. It should be referenced in the row "Space Heating - If gas, AFUE". Current reference of footnote 2 should be removed.</p>
257467.027	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #16:  160.2(b)2Aiv  160.2(b)2Aiv Title omits the important requirement of compartmentalization under this subsection. CASE team proposes to change the title to "Whole-dwelling unit mechanical ventilation and compartmentalization"</p>
257467.028	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #17:  NA 1.9.1  In 160.2(b)2Aivb2, CEC has added new language to allow Certified Acceptance Test Technician (ATT) to perform compartmentalization in multifamily buildings with four or more habitable stories. However, NA 1.9.1 states Certified Acceptance Test Technician (ATT) are not eligible to use sampling procedures for field verification and diagnostics. For buildings with large number of dwelling units, this restriction makes testing by ATTs impractical (time consuming and expensive), thus making the addition to section 160.2(b)2Aivb2 unusable. The CASE team proposes to allow ATTs to use sampling for compartmentalization testing similar to ECC-Raters.</p>



257467.029	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #18:  100.1 JA1,NA2.3.3, RA  CEC added a new definition for COMPARTMENTALIZATION to 100.1 and JA1 that includes description of dwelling unit enclosure area and removed the note defining compartmentalization boundary area in NA2.3.3 and RA3.8.3. CASE team recommends cleaning up language for consistency.</p>
257467.03	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #19:  JA15.2.1(a),  JA15.2.1(b),  JA15.2.2(a),  JA15.2.2(b),  JA15.2.3(a),  JA15.2.3(b),  JA15.2.4(a),  JA15.2.4(b),  JA15.2.5(a),  JA15.2.5(b),  JA15.2.5(c),  JA15.2.5(d)  This change improves language clarity since the code language intends to apply to gas or propane water heating systems.</p>
257467.031	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #20:  JA15.1  The code section was updated to 160.9(f). This reference was not updated and no longer works</p>
257467.032	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #21:  170.2(a)3A  Table 170.2-A  The table should be cleaned up to consolidate rows delineating requirements based on number of stories of multifamily building. The footnotes should be rearranged to be in increasing sequential order.</p>

257467.033	CA Statewide Utility Codes and Standards Enhancement Team	Non-substantive Remark #22: 150.2(a)1Bvii The CASE Team proposes that the new allowance for additions 700 sqft and greater in 150.2(a)1Aiii should also apply to smaller additions
257467.034	CA Statewide Utility Codes and Standards Enhancement Team	Non-substantive Remark #23: 140.4 References to newly added sections (r) and (s) should be included as applicable prescriptive sections.
257467.035	CA Statewide Utility Codes and Standards Enhancement Team	Non-substantive Remark #24: Table JA.18.4-1 Put building relief, return fan control, and fan/filter/pressure alarms criteria on separate lines for clarity and for consistency with the rest of the table.
257467.036	CA Statewide Utility Codes and Standards Enhancement Team	Non-substantive Remark #25: JA.18.5, third table Revise table heading to allow any company to certify library.
257467.037	CA Statewide Utility Codes and Standards Enhancement Team	Non-substantive Remark #26: 140.4(s) CEC changed the alphanumeric identifiers in its list from A and B to 'i' and 'ii' but neglected to revise the sentence prior to align. This markup addresses this inconsistency.
257467.038	CA Statewide Utility Codes and Standards Enhancement Team	Non-substantive Remark #27: 120.1(d)5A Occupied Standby is a huge energy saver and highly cost effective but compliance is very poor because the code is very unclear where it is required. This is a clarification that does not change the requirement. These are all the spaces that meet this criteria. Including the list here will greatly improve compliance and enforcement because 120.1-A and 130.1(c) use different language and cross-referencing the two sections is tedious process. For the same reasons the IECC just added this same list to C403.7.8 Occupied Standby Controls and 90.1 is working on an addendum to also add a similar list. See the Appendix for more information.

257467.039	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #28: 110.2(e)2I The equation is the cycles of concentration based on an LSI of 2.5, not a calculation of LSI as currently indicated.</p>
257467.04	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #29: 140.9(b)1B Reference correction, as there is no Table 140.9-A in the code language and the referenced table is 140.9-C.</p>
257467.041	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #30: 140.4(c)1 Without the exception, the fan power consumption section for labs is implicit rather than explicitly required. This exception clearly states that labs fan power consumption needs to meet either this 140.4(c) or 140.9.</p>
257467.042	CA Statewide Utility Codes and Standards Enhancement Team	<p>Non-substantive Remark #31: 120.6(a)3 Consistency.</p>
257480.001	TC 8.6 Subcommittee on Standards	<p>Minimum Efficiency by Climate Zone for Cooling Towers</p> <p>The TC continues to be grateful for the reduction in the minimum efficiency of axial fan open circuit cooling towers used on chiller plants over 300 tons. This change from a maximum of 90 to 80 gpm/hp will help to minimize potential negative impacts on the water-cooled marketplace going forward. As pointed out in our comments on the 45-day language, we continue to note that while the minimum efficiency has been lowered in California Climate Zones 8, 10, and 15, the minimum efficiency values have been increased in California Climate Zones 2, 4, 5, and 13 as compared to the initial Draft Case Report as illustrated in the Table below:</p> <p>These increases were not explained in the Final Case Report nor the CEC Staff Supplement. Can these increases be explained, especially the substantial increase in CZ13 from 60 to 80 gpm/hp? If not justified, the TC requests that the minimum efficiencies in CZ2, CZ4, CZ5, and CZ13 be rolled back to the original values in the first draft of the Case Report.</p>

257480.002	TC 8.6 Subcommittee on Standards	<p>Adiabatic Fluid Cooler Minimum Efficiency (addition to Title 24)</p> <p>The TC 8.6 Standards Subcommittee proposed the addition of a minimum efficiency and test code for pad-type Adiabatic Fluid Coolers for the 2022 Edition of ASHRAE 90.1. This addition was approved by the SSPC, received no comments during public review, and adopted in the 2022 Edition with the publication of Addendum “q” (link attached below). As mentioned in our 45-day comments, we again recommend that these requirements be added to Title 24, specifically in Table 110.2-E PERFORMANCE REQUIREMENTS FOR HEAT REJECTION EQUIPMENT, as follows:</p> <p>Add the following Test Code to Appendix 1-A:</p> <p>This addition will:</p> <p>Add the following in Section 10-102 DEFINITIONS:</p> <ul style="list-style-type: none"> <li>• include a growing category of heat rejection devices in the Code</li> <li>• help to build awareness of a heat rejection category that offers lower energy use than dry coolers (already covered in the Table 110.2-E) with lower water use than cooling towers, both of which are important goals of the CEC and</li> <li>• lastly will harmonize Title 24 2025 with Standard 90.1.</li> </ul> <p>Reference the Addendum to ASHRAE Standard 90.1 using the link below for additional details and justification. Note that not adding the minimum efficiency and test code for adiabatic fluid coolers to Title 24 this cycle would truly be a lost opportunity for California.</p>
257480.003	TC 8.6 Subcommittee on Standards	<p>Cooling Tower Blowdown Controls</p> <p>The TC continues to believe that the requirement for a confirmation test for the blowdown controls and the high-water alarm will add cost and effort when using watercooled systems. However, we feel that these requirements will help to ensure that water treatment systems are in place and functioning properly. Overall, the modified proposal will save water while helping to protect water-cooled systems from unintended scaling and corrosion and the associated loss of both cooling tower and associated system thermal efficiency. On this basis, we support the changes in the 15-day language. The Subcommittee will continue to follow the changes in this section through publication of the 2025 Code</p>

257481.001	Fenestration & Glazing Industry Alliance	<p>FGIA appreciates the opportunity to provide comments on the proposed 15-day language for the 2025 California Energy Code. We first want to thank the California Energy Commission (CEC or Commission) for addressing several of our 45-day language comments, specifically, adding in the exception for fire-resistance rated products and making the editorial fix to section 150.1(c)3A to address any possible interpretation issues.</p> <p>However, FGIA was disappointed our other two suggestions were not positively considered and want to reiterate our concerns and objections to what remain in the 15-day language, as follows:</p>
257481.002	Fenestration & Glazing Industry Alliance	<p>Table 150.1-A Component Package – Single Family Standard Building Design Fenestration Maximum U-factor</p> <p>FGIA recommends that for the 0.27 Maximum U-factor being proposed in Climate Zones 1-5, 11-14 and 16, that the Commission consider changing that U-factor to 0.28. Doing so will better align those climate zones with the 0.28 U-factor being proposed in Table 170.2-A for Multifamily Standard Building Design.</p> <p>Having climate zones better align between single family and multifamily are beneficial for several reasons. First, the slightly improved U-factor of 0.28 for any climate zone used to justify the proposal for multifamily, should also justify the requirement for single-family projects. It provides for greater product availability for in-state businesses/dealers, making it easier to offer these products that get installed into the same types of openings (i.e. punched) for either multifamily or single family projects. In turn, that larger product availability makes it easier for businesses/dealers, contractors, and homeowners to comply, and for the code official to enforce the requirements.</p>

257481.003	Fenestration & Glazing Industry Alliance	<p>Fenestration – Maximum SHGC</p> <p>In review of the proposed language and documentation for both the 15 and 45 day language, FGIA still cannot find any documentation providing the rationale as to why, for Climate Zone 15, the Solar Heat Gain Coefficient (SHGC) is changing from 0.23 to 0.20. It is important to understand that with current triple silver low-e technology on the market today, when put into a fixed window, it is already difficult to meet the existing 0.23 SHGC. By dropping the SHGC to 0.20, it would require the consumer to purchase a more expensive tinted glass window.</p> <p>We ask the Commission to provide what justification was used to make the change, when the result would mean homeowners in this climate zone would now be required to purchase higherpriced windows. To provide consistency with the other climate zones, FGIA urges the Commission to change this back to 0.23. To do otherwise would require this small area to have a different SHGC from the surrounding areas, making product availability difficult and more costly.</p>
257483.001	Michael Little HERS Rating	<p>I am the sole proprietor of a HERS Rating Company. It is a small business with no employees. I would like to address the issue of conflict of interest in regards to attaining permits, creating CF1Rs, etc. I understand the potential for abuse by these measures, but I do not have, nor do I want, the volume to hire an employee to pull permits and produce CF1Rs and energy modeling reports. Would it be possible to allow small business like mine to pull a permit, perform the energy analysis and/or create the CF1R with a signed waiver? As long as the author does not sign as designer? I created my business model to cater to clients and provide a seamless process to encourage compliance. I would appreciate any consideration to HERS Raters that provide additional services that are a "one man/woman show".</p> <p>Thank you for your time and for addressing these issues with tenacity. I think I can say on behalf of the entire community that we appreciate what you are trying to accomplish.</p>

257488.001	Window & Door Manufacturers Association	<p>However, WDMA has two remaining concerns that have not been addressed by the Energy Commission:</p> <p>SHGC Change in Table 150.1-A for Climate Zone 15</p> <ul style="list-style-type: none"> <li>• Page 484 of Table 150.1 shows a change in SHGC for Climate Zone 15 from 0.23 to 0.20.</li> <li>• This change was introduced in the March 28th 45-day Language and no calculations justifying the change appear in any presentations made by the CEC or the CASE Team.</li> <li>• Having a separate requirement for one, relatively unpopulated, climate zone is confusing and potentially problematic.</li> <li>• For the sake of uniformity and the economies associated with a single SHGC requirement statewide, WDMA recommends retaining the 0.23 SHGC for Climate Zone 15.</li> </ul>
257488.002	Window & Door Manufacturers Association	<p>Fenestration U-Factors in Table 150.1-A</p> <ul style="list-style-type: none"> <li>• The October CASE Report further reduced the U-factor to 0.27, and these updated values have been maintained in the current 45-day draft language.</li> <li>• The Environmental Protection Agency (EPA) developed a cost and energy savings analysis (EPA Final Draft Data Package 1b- Savings Data) to justify the revised specifications for ENERGY STAR V7.0 requirements. When using the EPA cost and savings values with a 0.28 U-factor baseline compared to an incremental change to a 0.27 U-factor window, the payback periods vary from 35 to 71 years.</li> <li>• WDMA encourages the California Energy Commission to perform a similar incremental cost-effectiveness analysis comparing a baseline window with a 0.28 U-factor to one with a 0.27 U-factor.</li> </ul>

257492.001	National Electrical Manufacturers Association	<p>Members of NEMA’s Lighting Systems Division have reviewed the 15-day language and identified the Commission’s proposed changes to JA8.5 Marking and JA8.9.1 Methods of Measurement and Reference Documents. With our thanks for your attention to these matters, we would like to clarify that ANSI/IES LM-79 is not an elevated temperature life test. A far more appropriate method of measurement – which normatively references LM-79 for electrical and photometric testing – is ANSI/IES LM-84, with the additional requirement of separate testing at 45°C. This proposal would also align CEC regulations with the Department of Energy’s energy conservation standards for general service lamps.</p> <p>We believe this request is reasonable and aligned with everyone’s best interests. If CEC does not agree with this proposed correction, we request a meeting immediately to understand the Commission’s concerns and work towards an equitable solution.</p>
257494.001	Rheem Manufacturing Company	<p>General Comments</p> <p>In our review of the 2025 Building Energy Efficiency Standards, Express Terms, 15-Day Language, we appreciate the changes made to the code language based on stakeholder input to the 45-Day Language and Rheem supports the CEC’s activity to encourage heat pump space and water heaters in residential and nonresidential buildings. However, we urge CEC to preserve a greater degree of flexibility when selecting a mechanical system to use any energy source as primary or back-up when it is economically beneficial to do so while remaining in line with CEC’s energy efficiency goals and request additional consideration of the language identified below to assist with understanding the code language and thereby aiding adoption.</p>



257494.002	Rheem Manufacturing Company	<p>Nonresidential Occupancies—Mandatory Requirements</p> <p>SECTION 140.4 – PRESCRIPTIVE REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS</p> <p>Rheem strongly disagrees with the overly prescriptive requirements proposed for offices and schools using multi-zone systems, significantly limiting appropriate system choices by local system designers looking to make energy efficiency improvements in their projects. In the wake of input from many stakeholders with the same concerns, Rheem is disappointed with the minimal changes CEC has made to this section. Maintaining some degree of system flexibility for the specifier is critical to ensure comfort requirements are met without imposing undue burdens caused by prescriptively requiring multizone space-condition system types that are not widely installed today and unfamiliar to many HVAC professionals in the field.</p> <p>Furthermore, Rheem recognizes that Section 140.4(a)3G was added to allow for the use of alternatives to the systems prescribed in Section 140.4(a) in response to multiple stakeholders' concerns. However, the processes for obtaining approval from the Executive Director through Exceptional Designs in §10-104 or Alternative Component Packages (ACPs) in §10-109(d) is difficult to distinguish from the performance method of compliance, imposes additional costs to school districts and businesses that are not adequately quantified and puts excessive burdens on the equipment specifier when designing for schools and offices. Rheem requests CEC consider adding system types to section 140.4 to improve the prescriptive requirements for multi-zone space conditioning systems in commercial applications.</p>
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257494.003	Rheem Manufacturing Company	<p>Single-Family Residential Buildings SECTION 150.0 — MANDATORY FEATURES AND DEVICES Section 150.0(h)9 and 160.3(b)8 – Capacity variation with third-party thermostats in both sections contain language that states “the space conditioning system and thermostat together shall be capable of responding to heating and cooling loads by modulating system compressor speed”. We have received additional clarification that CEC’s intent with this language is to ensure the installer selects an appropriate thermostat for the space conditioning system during installation and does not intend to compel space conditioning systems manufacturers to make their systems compatible with all thermostats. We appreciate the clear response, but no changes have been made to the code language in these sections to clarify this intent.</p> <p>Rheem believes it would be beneficial to clearly communicate this within the code language in sections 150.0(h)9 and 160.3(b)8 to aid in proper adoption and field implementation. Rheem would also like to note that while the language in 160.3(b)8 was updated to read “The installer shall certify on the Certificate of Installation that the control configuration has been tested in accordance with the testing procedure found in the Certificate of Installation,” the language in Section 150.0(h)9 still refers to “the testing procedure found in the CF2R.” Rheem requests clarity in both sections to identify the correct document that contains the pertinent testing procedure. Rheem believes CEC should consider compatibility with third-party thermostats holistically and should avoid near-term requirements that preclude long-term demand response goals.</p>
257494.004	Rheem Manufacturing Company	<p>Multi-Family Buildings SECTION 160.3 – MANDATORY REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS IN MULTIFAMILY BUILDINGS Please refer to above comments for Section 150.0</p>

257495.001	Western Riverside Council of Governments / I-REN	<p>I-REN supports updates to the solar heat gain coefficient (SHGC) for fenestration but seeks clarity on the language around exceptions in Section 150.2(b)1B.</p> <p>The replacement fenestration updates in Section 150.2(b)1B is limited to a SHGC of 0.23 in CZ 15 in Exception 3. However, Exception 1 currently allows for a SHGC of 0.35 for replacement of vertical fenestration less than or equal to 75 square feet in Climate Zones 2, 4, and 6 through 15. This presents a discrepancy between Exception 1 and Exception 3, and I-REN believes that Exception 1 should apply to CZs 6-14, not CZs 6-15.</p> <p>We appreciate the opportunity to review the proposed code 15-day language and provide comment and thank the CEC for their significant efforts.</p>
257498.001	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>AHRI is disappointed to see many key elements unchanged from the 45-day Express Terms draft language despite overwhelmingly persuasive comments submitted to the docket. In particular, the extreme limitation CEC proposed on permissible mechanical systems when complying with the prescriptive path raised significant concern for a diverse group of stakeholders. Manufacturers, utility representatives, building designers, and building owners all objected to changes proposed for schools and offices. Additionally, AHRI has questions and concerns regarding the proposed new metric, Long Term System Cost, which is used both to analyze the cost effectiveness of proposed updates to the Energy Code and for compliance when comparing proposed building design to their energy budget when using the performance compliance approach. Lastly, AHRI's legal concerns regarding proposed revisions to the Energy Code were ignored. AHRI supports taking a measured, transparent approach to Energy Code improvements and urges CEC to reconsider our most important recommendations, outlined below.</p>
257498.002	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>Modifications to the Heat Pump Baseline for Residential and Nonresidential Buildings</p> <p>The CEC is proposing prescriptive requirements to install both heat pump space and water heaters in single and multifamily residential and nonresidential buildings. AHRI disagrees with the removal of technology options in the prescriptive path. It is imperative that the CEC preserve the flexibility for equipment to use any energy source when it is economically and environmentally beneficial to do so within the prescriptive path.</p>

257498.003	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>Modifications to the Heat Pump Baseline for Residential and Nonresidential Buildings</p> <p>The CEC is proposing prescriptive requirements to install both heat pump space and water heaters in single and multifamily residential and nonresidential buildings. AHRI disagrees with the removal of technology options in the prescriptive path. It is imperative that the CEC preserve the flexibility for equipment to use any energy source when it is economically and environmentally beneficial to do so within the prescriptive path. 1</p> <p>As outlined in the 2025 Multifamily Individual Heat Pump Water Heater Baseline Report,2 CEC proposed to modify prescription water heater options by removing the option for water heaters serving individual dwelling units to comply with this subsection under Subsection 170.2(2)1.C, agas or propane instantaneous water heater with an input under 200,000 Btu/hr. 3 The proposed regulations also add an exception which allows gas or propane instantaneous water heaters to meet the requirements when installed in buildings of four habitable stories or greater. These proposed establish heat pump water heaters (HPWH) as the baseline for performance path compliance for multifamily buildings of four or more stories.</p> <p>As outlined in the 2025 Single-Family Two Heat Pump Baseline Report, 4 the CEC has proposed changes for the 2025 baseline is to utilize heat pumps for both space heating and water heating in all climate zones.5 Section 4.4 Cost Effectiveness analysis (over 30 years) appears to combine both measures heat pump for space conditioning, and a HPWH for service water heating). Why has the CEC combined these two measures for the analysis? In the current code, Exception 1 to Section 150.1(c)8 allows for climate zones 3, 4, 13 and 14, to prescriptively install a gas or propane instantaneous water heater with an input of 200,000 Btu per hour or less and no storage tank may be installed. Why does the benefit-cost-ratio change to greater than 1 in 2025, when in the 2022 code cycle the HPWH benefit analysis did not support such a conclusion for climate zones 3, 4, 13, and 14?</p> <p>In multi-family buildings, the total installed cost of the instantaneous gas water heater and</p>
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257498.004	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>Technical Review of the Express Terms          AHRI reviewed the Express Terms and developed recommendations to address concerns, below.</p> <p>A. Section 110.2(a) – Minimum Efficiency Tables</p> <p>A new concern is that CEC has proposed to add “Federal Minimum IEER” for equipment that is not federally regulated. Condensing units rated to AHRI 365 in Table 110.2-A Air Conditioners and Condensing Units – Minimum Efficiency Requirements are unable to obtain an IEER by testing to AHRI 365. AHRI recommends striking “Federal Minimum IEER” from the Efficiency column for air-, water-, and evaporatively cooled condensing units <math>\geq 135,000</math> Btu/h in Table 110.2-A.</p> <p>AHRI reaffirms all comments made in 45-day comments regarding CEC proposed modifications to minimum efficiency requirements for mechanical equipment. AHRI does not support deleting tables.</p> <p>AHRI also reiterates our request to add adiabatic fluid cooler minimum efficiencies and test procedures to Table 110.2-E in Title 24-2025. This is consistent with additions to Table 6.8.1-7 (Heat Rejection Equipment) made in the 2022 edition of ASHRAE Standard 90.1.7. Not adding this equipment is a lost savings opportunity.</p>
257498.005	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>B. Section 110.2(e) – Open and closed-circuit cooling towers.</p> <p>AHRI also reiterates the importance of all comments made in response to the 45-day Express Terms. We were disappointed that CEC failed to make changes to blowdown control requirements (Section 110.2(e)) supported by AHRI, ASHRAE, and Cooling Technology Institute. These requirements will help to reduce water usage by cooling towers in the State of California by helping to ensure more consistent control of the necessary blowdown while minimizing the risk of scaling. AHRI requests CEC modify blowdown control section as suggested by these organizations.</p>

257498.006	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>C. SECTION 140.4 – PRESCRIPTIVE REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS</p> <p>AHRI is disappointed with the minimal changes CEC has made in response to concern from many stakeholders regarding prescriptive limitations proposed for mechanical system choices for offices and schools in Section 140.4 – Prescriptive Requirements for Space Conditioning Systems. To moderate commenters, CEC proposed adding new Section 140.4(a)G, “A space-conditioning system determined by the Executive Director to use no more energy than the systems specified in Section 140.4(a)3.” No information has been provided for stakeholders to understand the process of submitting determinations to the Executive Director. Specifically, there is no guidance provided as to what information is needed for Executive Director review, nor what mechanism would be used to collect that information. Would this be a portal that generates an automatic response, or would the system rely entirely on staff review? The Executive Director may quickly become delayed by the potentially overwhelming number of requests. CEC should provide parameters for the review and response timeline. Furthermore, specification of a system that uses no more energy than systems identified in the prescriptive path is the performance path. Adding a prescriptive option to use the performance path is wholly unacceptable.</p> <p>At the April 16, 2024, Lead Commissioner Hearing on 2025 Building Energy Efficiency Standards CEC staff stated, “in the time that we've had and in the analysis that we had, these are the systems that we've identified that are cost-effective and that are technically feasible and that can achieve the targets that we're seeing.” 8 And later, CEC staff stated, “we recognize that there are multiple strategies to achieve energy efficiency and to achieve our general long term goals, you know, and we're looking to try and -- step one is get one that meets our rulemaking criteria and then, you know, the next step will be to continue to see what we can do to iterate, and hopefully capture other strategies that meet the same criteria. It's just, I think the system that we have is what we can do in the time that we have right now.” 9 Not having sufficient time to conduct thorough and exhaustive testing is an unacceptable justification for prohibitive regulations.</p>
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257498.007	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>D. SECTION 160.9 – MANDATORY REQUIREMENTS FOR ELECTRIC READY BUILDINGS</p> <p>AHRI reiterates concern with certain provisions proposed in Section 160.9(e). AHRI opposes new Sections 160.9(e)3 and 4 because they present several issues. The new section proposes to reserve an additional space of 39" x 39" for a future HPWH which is quite significant for smaller dwelling units. If a homeowner goes through the performance path to select a gas or electric instantaneous water heater for a small dwelling unit, to also be mandated to reserve additional floor space is excessive for the homeowner.</p> <p>Section 160.9(e)4.C requires two 8" capped ducts, venting to the building exterior. Though the ducts are capped, these requirements would seem to compromise the envelope by creating an unnecessary thermal bridge. Also, future generations of HPWHs may need different infrastructure. AHRI suggests the CEC revisit these provisions.</p> <p>AHRI has significant concerns with the central heat pump water heater ready requirements in Section 160.9(f). Again, the CEC is mandating expensive additional requirements further penalizing gas or propane water heating systems. These requirements are extensive and should be stricken. Regarding the technical analysis, it is unclear what life cycle the CEC used for Central Water Heaters. The CEC should note that Central HPWH are new equipment and technologies are changing rapidly.</p> <p>Central HPWH systems are typically more complex than individual systems and require more complicated to specify, layout, and install. For example, see Ecosizer (ecotope.com), a free tool for sizing central water heating systems based on commercial heat pump water heaters in multifamily and commercial buildings. The Ecosizer shows the tradeoff between storage volume and heating capacity. A designer could choose to have a larger compressor kBTU/hr to tradeoff a smaller storage tank size; and vice-versa the designer could choose a smaller compressor kBTU/hr to tradeoff a larger storage tank size. These differences illustrate choices which will be made in the future; trying to determine the proper floor space for a future HPWH and storage tank(s) is speculation.</p>
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257498.008	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>E. SECTION 170.2 – PRESCRIPTIVE APPROACH FOR MULTIFAMILY BUILDINGS</p> <p>The 2022 Energy Code reorganized low-rise (three or fewer stories) and high-rise (four or more stories) multifamily buildings into one building type and moved requirements for multifamily buildings to their own subchapters. AHRI asks if there is analysis that justifies CEC’s proposed Exception 1 to Section 170.2(d)1 be limited to multifamily buildings be only for those four habitable stories or greater?14 AHRI provided extensive comments on this topic in response to 45-day comments. AHRI suggests CEC refer to the low-rise loaded corridor multifamily prototype model in the 2025 Energy Code Accounting Methodology, with a floor area of 39,372 ft2. Accordingly, AHRI recommends the following edits for Section 170.2, shown in red text:</p> <p>Exception 1 to Section 170.2(d)1: Multifamily buildings four habitable stories with a floor area of 40,000 ft2 or greater may install a gas or propane instantaneous water heater with an input of 200,000 Btu per hour or less and no storage tank.</p> <p>AHRI reiterates several concerns related to proposed modifications to Section 170.2(d).2. This alternate compliance pathway provides a prescriptive path for products meeting the requirements of Version 8.0 Tier 2 (or higher) of the Northwest Energy Efficiency Alliance (NEEA) Advanced Water Heater Specification for commercial heat pump water heaters and the cites the associated qualified products list. First, the NEEA specification includes design requirements for products beyond performance, including sound/warranty. Does the CEC intend to limit consumer choice in this way? Second, unlike the AHRI Directory, the NEEA database is unaudited. What assurance do consumers have that products are meeting the specification? Third, this specification is in the process of being updated. Once a specification is updated, it is not typical for a previous version’s qualified product list to be maintained. Has the CEC received assurance from NEEA that this is not the case for version 8.0? If this qualified product list becomes unavailable, the Energy Code option will no longer be relevant. This would also block products qualifying to more recent versions of the specification.</p>
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257498.009	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>F. Fan Efficiency Index Requirements</p> <p>AHRI recommends the CEC review definitions, Section 120.10 and Section 140.4(a)3D related to new Department of Energy (DOE) test procedures adopted federally for commercial fans. CEC should cite the new federal procedures, where applicable. For example, 120.10(a)1 cites fan energy index (FEI) for fan arrays. AHRI recommends the test procedure citation remain ANSI/AMCA 208-18 Annex C, as the federal test procedure is only applicable to single, stand-alone fans. However, it is appropriate to cite the federal test procedure in section 120.10(a)2. For Section 140.4(a)3D, Multizone Prescriptive Requirements, CEC should be cognizant of the DOE FEI efficiencies being considered. If CEC's requirement of 0.35 W/cfm exceeds minimum efficiencies set by the DOE, CEC may be preempted.</p>
257498.01	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>G. Low Global Warming Potential (GWP) Refrigerants</p> <p>In response to several comments that have been submitted to the 45-day Express Terms, it should be noted that the HVACR and water heating industry has worked extensively for more than a decade to develop a clear path to low GWP refrigerants. Significant efforts by industry have been taken to update building codes, and product safety standards must allow for use of these low GWP refrigerants. Suggestions that these new refrigerants may not be safe are simply inaccurate. Low GWP refrigerants are already available today and have been used for several years in Europe and Asia.</p>
257498.011	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>Title 24 Proposed Revisions Preempted by EPCA</p> <p>AHRI raised the issue of EPCA preemption in its 45-day comments and reiterates them below, as the prescriptive path remains unchanged in the 15-day Express Terms. The Proposed Revisions in Title 24 are preempted by the Energy Policy and Conservation Act (EPCA), 42 U.S.C. § 6291 et al. EPCA prevents states and their political subdivisions from enacting laws, regulations, and building codes that concern the energy use of EPCA-covered products and equipment. Limited exemptions exist under EPCA, including for building codes, but no exemptions apply here. On</p> <p>January 2, 2024, the Ninth Circuit Court of Appeals upheld its April 2023 decision in California Restaurant Association v. City of Berkeley, ruling that building codes concerning energy use are preempted by EPCA. Case law on prescriptive and performance compliance paths indicates that EPCA preempts the Title 24 Proposed Revisions, making them legally vulnerable if enacted, as written.</p>

257498.012	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>1. EPCA Preemption Provision</p> <p>EPCA grants the U.S. Department of Energy (DOE) to set national energy conservation standards for appliances and equipment, preventing states from imposing conflicting rules. EPCA does allow for exceptions in limited circumstances, including certain building codes. However, the exceptions for building codes do not apply to the Proposed Revisions. Under EPCA, state regulations “concerning” the “energy efficiency” or “energy use” of covered products “shall [not] be effective.”<sup>15</sup> Courts interpret this provision broadly, which indicates that Congress intended for EPCA to have a wide preemptive reach.</p> <p>The Proposed Revisions to the prescriptive compliance path in Table 150.1-A, which prohibit gas space or water heating for Single-Family Standard Building Design in climate zones 1-16, fall under EPCA’s preemption. These revisions concern the energy use of covered products, regardless of exceptions or the availability of performance path for compliance. Although the Proposed Revisions do not impose a mandatory ban, the performance path imparts significant cost barriers to installing fossil fuel space and water heaters.</p>
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257498.013	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>2. Relevant EPCA Preemption Cases</p> <p>There are two relevant cases that address aspects of the Proposed Revisions: (1) California Restaurant Association v. City of Berkeley (Berkeley); and (2) Air Conditioning, Heating, and Refrigeration Institute v. City of Albuquerque (Albuquerque).</p> <p>In Berkeley, the Ninth Circuit Court of Appeals stated that EPCA preempts regulations, including building code requirements, that relate to the energy use of consumer appliances. The court ruled that EPCA preempts the City of Berkeley’s 2019 ordinance banning natural gas piping in new buildings, emphasizing that EPCA covers regulations addressing product energy use and building codes related to natural gas use. This ruling is binding in the Ninth Circuit, which includes California, implying that any building codes concerning EPCA-covered products may face legal scrutiny if enacted. Therefore, AHRI recommends CEC consider revising the Proposed Revisions.</p> <p>In Albuquerque, AHRI challenged the 2007 Albuquerque Energy Conservation Code for imposing energy efficiency standards preempted by EPCA. The court held that revisions to a prescriptive compliance path are subject to EPCA’s preemption, regardless of performance path availability. State and local codes which set energy standards that exceed federal minimums are preempted under EPCA.</p> <p>The applicable case law reaffirms the notion that Congress intended for EPCA to have broad preemptive scope. This means that regulations “concerning” energy use of EPCAcoversed products are preempted if they impose specific equipment requirements like heat pumps and prohibit gas-fired appliances under the prescriptive path. Both Berkeley and Albuquerque reinforce the necessity for CEC to modify the Proposed Revisions as they are legally invalid, as written.</p>
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257498.014	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>3. Building Codes Exemption</p> <p>EPCA allows building codes to be exempt from its preemption provisions if they meet a seven-factor test outlined in 42 USC 6297(f)(3). The Proposed Revisions have not been shown to meet this test. In particular, the fourth factor is not satisfied. 16</p> <p>The fourth factor states that a state’s energy code cannot require that “a covered product have an energy efficiency exceeding the applicable energy conservation standard established in or prescribed under” 42 U.S.C. § 6295 unless the DOE Secretary grants a waiver. The Proposed Revisions fail to meet this factor by mandating specific equipment like heat pumps and banning gas-fired equipment in all climate zones (Table 150.1-A), effectively banning EPCA-covered products. This reduces their energy use to zero, exceeding federal standards without a DOE waiver.</p> <p>The Proposed Revisions aim to set stricter energy standards than EPCA and are preempted. Both the Berkeley and Albuquerque cases indicate that the proposed prescriptive path lacks flexibility, does not align with federal requirements, and fails to qualify for an exemption under EPCA. If enacted as written, these Proposed Revisions would be legally invalid.</p>
257498.015	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>New Metrics for Evaluation of Measures and Compliance with Energy Code Raise Concerns</p> <p>AHRI is concerned about the implementation of new metrics for proposed measures and code compliance. The CEC has proposed using a new metric, Long-term System Cost (LSC), to evaluate cost-effectiveness for proposed measures, including impactful changes to the heat pump (HP) Baseline, and within Title 24’s compliance software (Section 10-109), in the performance approach.<sup>17</sup> If adopted, LSC will also be used for code compliance with the performance path. Software, developed by the Energy Code, implements simulation and compliance rules to simulate the energy use of a proposed residential or nonresidential building and compares it to a standard design energy budget to determine if the building complies with the Energy Efficiency Standards.</p>

257498.016	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	Since the two pre-rulemaking presentations were made regarding metric changes in 2022, the CEC has released the “2025 Energy Code Accounting Methodology Report” <sup>18</sup> This report “documents the technical methods and tools used to assess energy efficiency proposals for the 2025 California Building Energy Efficiency Standards.” <sup>19</sup> However, the report lacks important details on the fundamental approach and assumptions being used to cost justify measures for the Energy Code.
257498.017	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	The report also highlights important gaps between statutory requirements and the CEC’s interpretation. In the Accounting Methodology Report, the CEC acknowledges that costeffectiveness is defined relative to the consumer. <sup>20</sup> California Public Resource § 25402 (c)(1)(A)(i) states that “standards or other cost-effective measures shall be drawn so that they do not result in any added total costs for consumers over the designed life of the appliances concerned.” However, in the new metrics, the CEC has extended statutory requirement of “lifecycle cost of complying” <sup>21</sup> to a measure period of 30 years. <sup>22</sup> Additionally, LSC is a metric created to determine the dollar value of energy efficiency measures relative to the state, not the consumer. Using a 30-year period of analysis, even if it includes multiple product purchases, distorts life-cycle cost beyond what is intended by the plain language of the authorizing statute. Measures proposed must be analyzed relative to the consumer and over the design life of the appliance concerned. The CEC must reevaluate the use of metrics, including the proposed LSC, that do not accomplish this simple mandate.

257498.018	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>In addition to LSC, the CEC uses the Source Energy metric for energy accounting. The CEC states these two metrics enable it to evaluate hourly system cost and hourly marginal source energy of the 30-year period of analysis.<sup>23</sup> Per the report, the primary purpose in updating the metrics is to better correlate the cost-effectiveness with greenhouse gas impacts. The CEC explains that to establish cost-effectiveness it uses forecast energy demand in California and weather data. Energy demand is created by forecasts of construction floor area by prototype and climate zone. Energy consumption of prototype building models is calculated operating in a climate that has also been forecast over 30-years. While AHRI appreciates the additional information explaining the new metrics, the report does not answer questions AHRI asked during the pre-rulemaking, including: <sup>24</sup></p> <p>“How does the LSC and source energy forecast account for the variables involved with the eventual power plant closure? How are other long-term changes addressed within the 30-year period? How accurate are these forecasts? How sensitive is the analysis? What alternatives were analyzed in the scenario selection process for the 2025 hourly factors?”</p> <p><sup>25</sup></p>
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257498.019	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>The CEC also must explain why it “uses eight percent annual growth rate for residential gas price models to forecast future residential gas retail rates,” but it does not address residential electric retail rate forecasting. In a recent California Public Utility Commission (CPUC) report, “the average annual rate increases between the first quarter of 2023 and fourth quarter of 2026: [Pacific Gas and Electric] PG&amp;E 10.4 percent, [Southern California Edison] SCE 6.0 percent, and [San Diego Gas &amp; Electric] SDG&amp;E 10.4 percent.”<sup>26</sup> Additionally, CPUC states that “by 2026, bundled [residential average rates] RARs are forecast to be approximately 65 percent (PG&amp;E), 30 percent (SCE), and 100 percent (SDG&amp;E) higher than they would have been if rates for each IOU had grown at the rate of inflation since 2013.”<sup>27</sup> What residential electric price models does CEC use for its analysis? How has the CEC forecast increases in electric rates?</p> <p>As AHRI noted in pre-rulemaking comments, California receives a sizable amount of zero-carbon emissions energy from the Diablo Canyon nuclear generator – it generates 8.5% of all California’s in-state generation.<sup>28</sup> The current operating licenses for Diablo Canyon power plant Units 1 and 2, expire on November 2, 2024, and August 26, 2025,<sup>29</sup> but there are no publicly available plans for replacement – zero emissions or other. Diablo Canyon is also the subject of ongoing petition to shutter the power plant.<sup>30</sup> There is much volatility in Diablo Canyon’s future and no plans on renewables to replace it in 2025, or 2030. Is this uncertainty reflected in CEC’s analysis?</p> <p>The current hourly source energy (HSE) metric was contemplated by the CEC to “complement the time dependent valuation (TDV) metric.”<sup>31</sup> LSC appears to modify HSE, and likewise, AHRI expects LSC to be forecasted differently for electricity, gas, and propane consumption, based on planned changes for each fuel.<sup>32</sup> These details, however, have not been made public, despite the presentation of LSC for the first time over one year ago. If LSC is like HSE, why is the CEC replacing the HSE metric?</p>
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257498.02	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>AHRI also requests the CEC clarify how HSE was used in measure development and code compliance Title 24-2022. The California 2021 Integrated Energy Policy Report (IEPR) states that, “to comply with the Energy Code, the TDV and HSE target budgets must be met independently by the building design” but AHRI finds no reference to HSE in the Express Terms document.</p>
257498.021	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>TDV is used in Title 24-2022, for comparing proposed building design to their energy budget when using the performance compliance approach. TDV is based on the concept that the energy impacts of a building energy feature should be valued when energy is consumed and has been described by CEC as being, reflective of the “actual cost of energy to consumers and to the grid.”<sup>33</sup> The CEC has proposed that the 2025 energy code state,</p> <p>“The Energy Budget for newly constructed, low-rise residential buildings are expressed in terms of the Long-Term System Cost (LSC) and Source Energy. Additionally for newly constructed single-family buildings, the energy budget includes peak cooling energy. The Energy Budget for additions and alterations are expressed in terms of LSC.”<sup>34</sup></p> <p>LSC is defined in Section 100.1 of the draft 2025 Express Terms as, “the present value of costs over a 30-year period related to California's energy system.” Like HSE, LSC factors are used to convert predicted site energy use to long-term dollar costs to California’s energy system. LSC is used in conjunction with “long run marginal source energy of fossil fuels following the long-term effects of any associated changes in resource procurement, focusing on the amount of fossil fuels that are combusted in association with demand-side energy consumption.”<sup>35</sup> It is unclear why the 2025 Energy Code has proposed only using source energy for fossil fuel, when the CEC has in the past acknowledged that, source energy is the, “total system input energy (in the form of fuel including both natural gas and electricity) that is required to serve building loads.”<sup>36</sup> AHRI asks the CEC to confirm that source energy is being accounted for all energy sources.</p>



257498.022	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	AHRI also asks the CEC to provide information about how the 30-year period that LSC captures applies to the energy use of covered products, which have a significantly shorter average lifetime. There is a timing disconnect between products and LSC. In heat pump baseline presentations, the cost of replacement products has been accounted for, but the energy use aspect has not been explained.
257498.023	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	Any calculation procedure must provide an equitable comparison between products, be technically accurate, and fully documented. As AHRI has requested in the pre-rulemaking, CEC should provide a technical support document for the LSC and for the HP Baseline. The docketed reports <sup>37</sup> are insufficient for this purpose, as it does not allow for a complete stakeholder analysis. Given the significance of these changes, AHRI questions if the multipliers used in both TDV and LSC to convert lifecycle dollars per unit of energy (\$/kWh, \$/therm) to code compliance units of kBtu/kWh and kBtu/therm have changed.
257498.024	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	CEC must also explain how the use of the new metrics meet the statutory requirement that “performance standards shall be promulgated in terms energy consumption per gross square foot of floorspace.” <sup>38</sup> AHRI notes that neither TDV nor LSC can be used by the energy code community to establish building energy intensity performance targets or be used to track energy reductions, therefore, these metrics do not support building performance standards.

257498.025	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	Another example of the need for more robust technical documentation is to explain why LSC splits out energy differently from TDV. In the pre-rulemaking presentations, LSC has two factors, the “efficiency LSC, which is the sum of LSC energy for space-conditioning, water heating, and mechanical ventilation,” and the “total LSC, which includes efficiency LSC and LSC energy from photovoltaic, battery systems, lighting, demand flexibility, and other plug loads.” <sup>39</sup> The TDV energy budget included the sum of the energy for space-conditioning, indoor lighting, mechanical ventilation, photovoltaic (PV) and battery storage system, and service water heating and covered process loads. However, there is no mention of “efficiency LSC” in the Accounting Methodology report.
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257498.026	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>In the 2022 Energy Code, a building designed using the performance path is required to separately comply with the source energy budget and the TDV energy budget. AHRI notes that ASHRAE Standard 90.1's performance path includes the cost of energy used by components of the building (requirements in Sections 5 through 10) in the regulated energy cost. This includes the cost of energy used for HVAC, lighting, service water heating, motors, transformers, vertical transportation, refrigeration equipment, computer-room cooling equipment, and other building systems, components, and processes with requirements prescribed in Sections 5 through 10. Unregulated energy cost is the cost of energy used for all other end-uses in the building, mostly covered processes. The CEC should explain why changes were made to the package of energyusing equipment when calculating the objective for LSC compared to TDV. Confirming how accounting is being done for required on-site renewables is unclear. Is LSC being compared on a net basis or only grid-based electrical energy? The CEC should also explain the divergence from the approach adopted by ASHRAE Standard 90.1, the national model energy code.</p>
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257498.027	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>EPCA requires credits be awarded for compliance on a “one-for-one equivalent energy use or equivalent cost basis.”<sup>40</sup> This issue was discussed in <i>Buildings Industry Ass’n of Washington v. Washington State</i>,<sup>41</sup> where the court held that EPCA recognized that a perfect 1:1 credit ratio is impossible given the different types of technologies, building types, and climate zones at play, but EPCA requires that credit ratios not be so skewed that they effectively discriminate between products and building methods. The Washington State Code did not fail the preemption test because that code assigned credits that are even-handed and not unfairly weighted. To avoid preemption, “Subsection C [of EPCA’s statutory conditions] provides that where a building code grants credits for reducing energy use, the code must give credit in proportion to energy use savings, without favoring certain options over others.”<sup>42</sup></p> <p>EPCA also requires that the estimated energy use of any covered product permitted or required in the code, or used in calculating the objective, is determined using the applicable test procedures prescribed under Section 6293, except that the State may permit the estimated energy use calculation to be adjusted to reflect the conditions of the area where the code is being applied, if such adjustment is based on the use of the applicable test procedures prescribed under section 6293 of this title or other technically accurate documented procedure.<sup>43</sup> The term “energy use”<sup>44</sup> means the quantity of energy directly consumed by a consumer product at point of use, determined in accordance with test procedures under 42 USC § 6293. [emphasis added]</p> <p>AHRI questions whether the adjustments proposed by the CEC to modify the estimated energy use of covered products may stray too far from adjustment required to reflect California conditions. Modifying the source energy metric to include forecasted long-term changes in powerplant capacity drastically skews proportionality of credit ratios and may go beyond the necessity outlined in EPCA.<sup>45</sup></p>
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257498.028	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>Comparing the little information available on LSC to methodology used by DOE during Appliance Standards rulemakings, is very stark. As part of the National Energy Savings (NES) Analysis DOE takes estimated energy consumption and savings based on site energy and converts the energy consumption and savings to primary and full-fuel-cycle (FFC) energy using annual conversion factors derived from the most recent version of the National Energy Modeling System (NEMS).<sup>46</sup> This is not unlike what the CEC requires of a metric for evaluation of costeffectiveness, for proposed measures, and for use within Title 24’s compliance software for the performance approach.</p> <p>DOE’s procedures for converting site to FFC energy are detailed in robust Technical Support Document (TSD) and supported by policy statements.<sup>47</sup> In the NES Analysis, DOE calculates the cumulative energy savings as the sum of the annual NES. Inputs to the NES analysis include annual energy consumption per unit and site-to-power-plant, FFC conversion factors, shipments, and stock. DOE’s FFC calculations incorporate the energy consumed in extracting, processing, and transporting or distributing source fuels (upstream activities), DOE developed FFC multipliers using the data and projections generated by the NEMS used for AEO2023. <sup>48,49</sup> As an example, recently published Commercial Water Heaters Final Rule TSD, provides FFC multipliers are provided for the 2026-2050, nearly the full 30-year analysis period. It is held constant after 2050, as that is the last year in the AEO2023 projections. Beyond that, there is likely too much uncertainty for forecasting. The FFC multiplier for electricity reflects the shares of various primary fuels in total electricity generation throughout the forecast period. The complete methodology associated with this approach is in the thorough TSD, but it provides a technically accurate documented procedure to shift from estimated site energy use determined using the applicable test procedure to a metric more reflective of emissions and energy cost. Comparatively, CEC’s documentation of LSC in the Title 24-2025 Docket is lacking in detail and justification of need.</p>
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257498.029	Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	<p>LSC is also intended to prove measures to be cost effective. While AHRI understands the importance of time that energy is used is as important as the amount of energy used, AHRI questions whether the forecasting over 30 years, and multiple equipment purchases, is accurate or technically correct. For each Energy Code cycle, the cost of construction has increased. In some code editions, the increase in cost has been substantial. For example, the 2019 Energy Code increased the initial cost of a single-family house average cost, which ranges, depending on climate zone it is built in, between \$8,205 and \$17,511.50 In the 2022 Energy Code, a group of measures is required when performing alterations to single-family and low-rise multifamily buildings: cool roofs, low-sloped roof insulation, electric replacement heating equipment, duct sealing, duct insulation, and attic insulation. Nonresidential alterations are impacted by the new 2022 Energy Code approach to calculate the fan power allowance. This measure affects fan systems in all prototypes and affects nearly the entire nonresidential building stock.</p> <p>In the 2022 Energy Code Impact Analysis, the CEC estimated a 5% replacement rate for HVAC measures. CEC estimated the shares of gas and electric appliances for water heating and space heating of single-family and multifamily buildings: 82.8% of single-family space heating is served by gas appliances; 94.9% of single-family water heating is served by gas appliances; 46.6% of single-family space heating is served by gas appliances; and 97.0% of multifamily water heating is served by gas appliances.<sup>51</sup> The costs associated with code required measures for alterations do not seem to be accounted for in the 30-year analysis period in the CEC’s proposal. The CEC must account for replacement costs in the cost methodology because it is substantial and may be impactful to California home and business owners.</p>
257501.001	Silicon Valley Mechanical, Inc.	<p>Our comments include assessments of the proposed changes and offer suggestions that aim to enhance the efficiency, effectiveness, and practical application of the Building Energy Efficiency Standards. The primary focus of our concerns center on the requirements of §140.4 pertaining to prescriptive requirements of nonresidential mechanical systems. We have separated our comments in the following pages with the hope that it simplifies the review process for your team.</p>

257501.002	Silicon Valley Mechanical, Inc.	<p>Subject: Space heating hot water temperature limits in §120.2(l) and §140.4(a)3Aiii We have concerns with the space heating hot water (HHW) temperature restrictions of 130°F in §120.2(l) and 105°F in §140.4(a)3Aiii.</p> <p>The energy models that surveyed these options do not account for a major factor of heat exchanger efficiencies: as the HHW temperature decreases, the log mean temperature difference of heat exchangers/coils drops drastically. Simply put, reducing HHW coil temperature decreases energy efficiency and heating efficacy regardless of the type of unit in which they are employed.</p> <p>To compensate for the heat exchanger deficiency, corresponding fan systems will be required to adjust in either of the following ways to continue to meet the space load:</p> <ol style="list-style-type: none"><li>1. The coil depth will need to increase to allow more area for the heat exchange to take place. An increase to coil depth adds pressure drop to the fan system, even during periods of non-use on the coil. This pressure loss increase will contribute to increased energy usage of the building. Further, the current fan power budget allowances in §140.4(c) do not account for this increase of pressure drop for its hot water coil components.</li><li>2. The other option to overcome ineffective coils at the lower water temperature is to increase the amount of CFM required to heat the space to keep the same coils as before. Increasing the CFM raises the energy usage as the fans will be required to run at a higher speed due to an inefficient coil. We recommend removing the new HHW temperature restrictions from §120.2(l) and §140.4(a)3Aiii entirely and instead changing them to the manufacturer's requirements for the heat pump.</li></ol>
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257501.003	Silicon Valley Mechanical, Inc.	<p>Subject: Fan coil unit four-pipe configuration requirements in §140.4(a)3Aii</p> <p>The proposed specifications in §104.4(a)3Aii neglect to factor that many zones do not require space heating. Necessitating a four-pipe configuration in non-heated zones would create extraneous air pressure loss of the fan. For zones that do require heating, design engineers often use changeover coils to mitigate air pressure loss to the fan system.</p>
257501.004	Silicon Valley Mechanical, Inc.	<p>Subject: Required loop fluid volume in §140.4(a)3Ciii</p> <p>§140.4(2)3Ciii states: “The loop fluid volume shall not be less than 8 gallons per nominal ton of heating capacity of the loop”</p> <p>There are three primary concerns with this restriction as written:</p> <ol style="list-style-type: none"> <li>1. The 8 gal/ton requirement contradicts typical manufacturer installation manual requirements of providing ~6 gallons/ton for two-pipe AWHPs, and ~9 gal/ton for four-pipe simultaneous AWHPs. Most design engineers do not size the primary loop volume for all the equipment capacity in the plant and only size it for the minimum design condition to prevent short cycling and wear on the equipment.</li> <li>2. The code language is also unclear whether the entire loop fluid volume shall be considered in the requirement or if only the primary side of the bypass fluid volume is required to be considered.</li> <li>3. We have concerns around the clarity of whether additional modular units provided for defrost de-rate, any redundant AWHPs, or any electric resistance boilers required by §140.4(a)3Civ also needs to be included in the requirement.</li> </ol> <p>We suggest the following language for §140.4(a)3Ciii:</p>



257501.005	Silicon Valley Mechanical, Inc.	<p>Subject: VRF fan coil unit efficiency in §140.4(a)3D</p> <p>Restrictions in §140.4(a)3D will heavily limit the application of VRF fan coil units due to the following factors:</p> <ol style="list-style-type: none"><li>1. The efficiency requirement of 0.35 W/cfm is not attainable on most major manufacturer's smaller sized VRF fan coil units which are typically closer to 0.4 W/cfm.</li><li>2. Most available VRF fan coil units do not have listed partial power draw values with cfm values divided into exact thirds such as to meet the power draw limits at 66% and 33% of air flow. For example, a 1.25 ton ducted fan coil unit will have three speeds, and the cfm values of those speeds are 580, 530 &amp; 500.</li><li>3. Depending on their size, many non-ducted VRF fan coil units only have two speeds, not the proposed three speeds.</li></ol> <p>Further, as larger sized units more typically meet the §140.4(a)3D requirements than smaller units, design engineers are likely to select larger units than under previous code cycles to comply with the prescriptive requirements – which will increase overall building energy usage and demand.</p> <p>Lastly, fan efficiency is addressed in §140.4(m), so eliminating the following language will reduce redundancy and minimize conflicting standards. In light of the above listed real-world limitations, we recommend the following changes to §140.4(a)3D:</p>
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257501.006	Silicon Valley Mechanical, Inc.	<p>Subject: Clarification of intent for §140.4(a)3</p> <p>§140.4(a)3 is currently titled “Multi-zone space conditioning system types” but includes single-zone spaceconditioning systems. Four pipe fan coils are single-zone air handling units served by a central plant hot water and central chiller plant. We identified three possibilities for the intent of the code section. Depending on the CEC intention of the section, we have outlined recommended corresponding changes for clarification and application.</p> <p>I. If the intent of §140.4(a)3 is meant to address the requirements of single-zone air handling units served by a central plant or central condensing unit, we recommend this clarifying language:</p> <p>In the above circumstance, we also recommend adding the following compliance option in section §140.4(a)3A for office spaces:</p>
257501.007	Silicon Valley Mechanical, Inc.	<p>II. If the intent of §140.4(a)3 is to address DX mulθ-zone condensing unit systems that serve single-zone DX fan coil units or other single-zone DX cooling units, we recommend this clarifying language:</p> <p>For this intent, we also recommend entirely removing options §140.4(a)3Aii and §140.4(a)3Aiii as they are hydronic systems and do not fall under the DX category.</p>

257501.008	Silicon Valley Mechanical, Inc.	<p>III. If the intent of §140.4(a)3 is to cover both single-zone air handlers served by a central condensing unit (VRF Systems) AND multi-zone air handlers served by a multi-zone condensing unit (package units):  We suggest removing requirement 140.4(a)3Aii entirely and editing §140.4(a)3Aiii. Our primary justification for these suggestions is that our proposed language allows for systems capable of airside economizing.</p> <p>1. Unlike VRF which cannot airside economize, VAV systems and other traditional systems that airside economize will be subject to the economizing requirements of §140.4 (e). The benefits of airside economizing include improved indoor air quality and system efficiency.</p> <p>2. If §140.4(a)3Aii were to be removed, two-pipe and four-pipe fan coil units – which are single zone systems served by a central plant – will still be subject to the requirements of:  a. §140.4(e) to ensure usage of airside economizing per system requirements or the heat recovery DOAS requirements of Exception 6,  b. §140.4(m) for indoor fan efficiency  c. §140.4(p) for DOAS requirements  d. §140.4(q) requirements for exhaust air heat recovery.</p>
257505.001	California Energy Alliance	<p>The California Energy Alliance (CEA) is a leading advocacy organization for California’s energy stakeholders. CEA and its Members had the opportunity to provide comment letters on the 45-Day Energy Code Language (Docket No: 24-BSTD-01, TN#s 256329, 256330, &amp; 256331). CEA is grateful to see the CEC adopt many of the recommendations from these comments and applaud you for listening to industry stakeholders and making the necessary updates to the Energy Code to continue reducing greenhouse gas emissions by maximizing efficiency.</p> <p>While the above recommendations were generally accepted, CEA would like to comment on and address continued areas of concern in the 2025 Energy Code Express Terms, 15-Day Language. CEA is submitting (3) separate comment letters to address distinct areas of the Energy Code (Lighting/Electrical Sections, Mechanical Sections, and Supplementary Sections/Reports).</p>

257505.002	California Energy Alliance	<p>1) CEA encourages the CEC to reconsider comments submitted in the 2025 Title 24 Lighting Language Cleanup Initiative (Docket No: 22-BSTD-01, TN# 250676) report regarding useability and functionality of the Energy Code.</p> <p>a) The Energy Code Structure Subcommittee from the Title 24 Cleanup Initiative looked beyond the lighting sections of the code and focused recommendations on the entire framework of the Energy Code.</p> <p>i) Create an online version of the Energy Code on the CEC’s website and add modern digital features in compliance with ADA requirements to improve accessibility and compliance.</p> <p>ii) Reorganize Energy Code to improve accessibility and reduce lookup time. (1) Move Tables to follow the language where it is first introduced. (2) Capitalize (maybe Italicize) defined terms.</p> <p>iii) Add periods after sub-section letters and numerals, for example, Section 170.2(c)4Niv would change to Section 170.2(c)4.N.iv. By updating the subsection naming convention, it will support moving the code to an online format and help with the incorporation of regulations into software.</p> <p>iv) Update/add a better reference to Healthcare Facility(ies) throughout the Energy Code to properly reference this exempted space type to reduce ambiguity related to the code sections that reference healthcare facilities.</p>
257505.003	California Energy Alliance	<p>2) 2025 Energy Code, 15-Day Language - PDF Bookmark Issues</p> <p>i) It appears the CEC tried to bookmark more sections of the Energy Code to support easier navigation, however, the 45-Day Language PDF had bookmarks for countless subsections and lines in the Energy Code. This made the PDF bookmarks unnavigable.</p> <p>ii) The 15-Day Language PDF removed all of the 45-Day Language bookmarks except for Section 10-101 through 10-116.</p> <p>iii) CEA recommends addressing these bookmark issues in the release of the Final 2025 Building Energy Efficiency Standards.</p>

257505.004	California Energy Alliance	<p>3) Section 10-102 – Concerns with Naming of Energy Code Compliance Program</p> <p>a) The change from HERS to ENERGY CODE COMPLIANCE (ECC) PROGRAM is not appropriate and will create confusion. The Acceptance Test Technician (ATT) program also covers ENERGY CODE COMPLIANCE (ECC). The proposed name change should be adjusted to represent the program’s limited scope ("residential construction"). This proposed change is for all locations containing "ECC". While multiple organizations, including CEC staff (Joe Loyer), have acknowledged confusion with the proposed ECC name change, the 15-Day Language did not address this concern that many stakeholders expressed in 45-Day Language comment letters.</p> <p>b) CEA highly recommends the CEC address this naming concern with the proposed name “RESIDENTIAL ENERGY CODE COMPLIANCE (RECC) PROGRAM”, and we suggest that the CEC implement this proposed name for all locations/references containing "ECC".</p>
257505.005	California Energy Alliance	<p>4) Section 100.0, Table 100.0-A</p> <p>a) Demand response is not an occupancy type. Instead of adding rows for 110.12, CEA recommends inserting 110.12 in the existing row where applicable.</p>
257505.006	California Energy Alliance	<p>5) Sections 160, 170, 180 - Noted Discrepancies in Multifamily Building Requirements</p> <p>a) CEA aims to develop and advocate for measure proposals for building energy code improvements that will deliver energy savings, reduce costs, increase code compliance, and move California closer to its energy and environmental goals. We feel Sections 160, 170, and 180 in the energy code regarding multifamily buildings create more complexity and repetition. This increasing complexity translates into more significant challenges understanding and implementing the code which will surely reduce code compliance. As noted by many CEA Members, there are discrepancies between information in the multifamily sections and other parts of the code from which it has been assembled. Additionally, this is not consistent with other standards such as ASHRAE 90.1 and IECC.</p> <p>b) We recognize and appreciate all the work the CEC has done to create this multifamily section, but the CEA requests this multifamily language be removed or refer to previous code sections where applicable. This will allow CEA and its Members to thoroughly review the changes and support in educating energy stakeholders on these updates to ensure code compliance.</p>

257506.001	Thomas Culp	<p>Re: exception for fire-rated fenestration Thank you for attempting to address the unique attributes fire-rated fenestration and how they intersect with the energy code. However, the proposed exemption in Sections 120.7, 150.0, and 160.1 does not match the proposed language we submitted in May (and also supported by WDMA and FGIA), and it only addresses part of the problem – in WUI fire-areas only. It does not address fire situations in normal non-WUI areas, such as an exception for fire-rated products in close lot-line conditions.</p> <p>We are supportive of the exception being in 120.7, 150.0, and 160.1 instead of 110.6, but believe it needs to be changed to address fire-rated conditions in non-WUI areas. To not lose the specifics of the WUI code, we suggest combining both exceptions for 120.7, 150.0, and 160.1:</p> <p>We believe this would improve the code while preserving the intent of both the fire, WUI, and energy codes. Thank you again for the opportunity to comment, and please contact me with any questions.</p>
257507.001	California Energy Alliance	<p>1) Sections 10-103.2(c)3Fii &amp; iii</p> <p>a) While we appreciate the CEC addressing how many tests the training center must be equipped to handle in the 15-Day Language (The ATTCP training facility shall be set up to allow auditing of all functional tests for which the ATT is certified.) The 15-Day Language does provide clarification ON what “1%” is based on, outside of an ATE’s total projects, or provide equitable flexibility to carry out shadow audits either on-site or at a training center, depending on the specific situation. It is also unclear what an ATTCP should do if they provide both on-site audits and audits in training centers since one would require only 1% of an ATE’s projects while training centers would require all of an ATTCP’s ATTs be shadow audited in each code cycle. We strongly encourage the CEC to address these concerns with the proposed changes.</p> <p>b) The following underlined and strikethrough amendments to Section 10- 103.2(c)3Fii and new language added for iii, iv, and v in the 2025 Energy Code, 15-Day Language aims to address these concerns:</p>

257507.002	California Energy Alliance	<p>2) Section 140.3(a)9Cia and NA5.5</p> <p>a) The testing should also include fundamental workforce standards for these tasks, which would include certification as an ATT.</p> <p>b) CEA recommends the following new proposed requirements to Section 140.3(a)9Cia: “An air leakage rate not exceeding 0.40 cfm/ft<sup>2</sup> at a pressure differential of 0.3 in. of water (1.57 psf) (2.0 L/m<sup>2</sup> at 75 Pa). when the entire building is tested, after completion of construction, performed by an ATT in accordance with NA 5, or another test method performed by an ATT and approved by the Commission; or”</p>
257507.003	California Energy Alliance	<p>3) Section 140.4(a)3A and B</p> <p>a) While we appreciate the CEC making several crucial changes and additions to this proposed section, we continue to have concerns about the constraints that are presented to design professionals by limiting the options for space conditioning systems. Maintaining flexibility, within reason, for designers will help keep costs down for schools with budget constraints while maintaining the intention of the Energy Code.</p>
257507.004	California Energy Alliance	<p>4) Section 140.4(c)2B</p> <p>a) The inclusion of ASHRAE Guideline 36 in the 15-day language necessitates the expansion of functional performance tests detailed in the existing NRCAMCH-07A Mechanical form. These critical tests should also be performed by certified ATTs to ensure compliance with the new guidelines and maintain the highest standards of energy efficiency and system reliability.</p> <p>b) CEA recommends adding the following underlined language and create subsection 140.4(c)2Biii:</p>

257507.005	California Energy Alliance	<p>5) Section 140.4(d)2A</p> <p>a) CEA proposes the integration of a requirement for certified Acceptance Test Technicians (ATTs) to conduct construction inspections and functional verification of temperature resets, in conjunction with NRCA-MCH-16A. Additionally, the inclusion of ASHRAE Guideline 36 in the code necessitates the expansion of functional performance tests detailed in the existing NRCAMCH-016A Mechanical form. These critical tests should also be performed by certified ATTs to ensure compliance with the new guidelines and maintain the highest standards of energy efficiency and system reliability.</p> <p>b) CEA recommends adding the following underlined language and create subsection 140.4(d)2Avi:</p>
257507.006	California Energy Alliance	<p>6) Section 140.9(b)3</p> <p>a) The section clearly calls out for an acceptance requirement and specifies that a certificate of acceptance be submitted to the enforcement agency.</p> <p>i) “Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance...”</p> <p>ii) “...A certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.11”</p> <p>b) The associated acceptance forms should include a requirement for a certified Mechanical Acceptance Testing technician to perform this task to ensure that the intent of this requirement is achieved.</p> <p>c) CEA recommends adding the following underlined language to Section 140.9(b)3:</p>



257507.007	California Energy Alliance	<p>7) 140.9(c)1C and NA7.16</p> <p>a) The section clearly calls out for an acceptance requirement and specifies that a certificate of acceptance be submitted to the enforcement agency.</p> <p>i) “Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance...”</p> <p>ii) “...A certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.16”</p> <p>b) The associated acceptance forms should include a requirement for a Mechanical Acceptance Testing Technician to perform this task to ensure that the intent of this requirement is achieved.</p> <p>c) We request that the CEC make clear in the Energy Code that this requirement must be completed by a certified Mechanical Acceptance Testing technician to ensure that its intent was achieved.</p> <p>d) CEA recommends adding the following underlined language to Section 140.9(c)1C: “C. <u>Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance, as specified by the reference Nonresidential Appendix NA7.16. A certificate of acceptance shall be completed by a certified ATT and submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.16.</u>”</p>
257507.008	California Energy Alliance	<p>8) Section 140.9(c)4B and NA7.17</p> <p>a) This section clearly calls out for an acceptance requirement and specifies that a certificate of acceptance be submitted to the enforcement agency.</p> <p>i) “Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance...”</p> <p>ii) “...A certificate of acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA...”</p> <p>b) The associated acceptance forms should include a requirement for a Mechanical Acceptance Testing Technician to perform this task to ensure that the intent of this requirement is achieved.</p> <p>c) CEA recommends adding the following underlined language and <del>strikeout</del> to Section 140.9(c)4B:</p>

257507.009	California Energy Alliance	<p>9) Section 160.2(b)2Aivb2</p> <p>a) The 15-Day Language does not address the unfair market advantage created by not allowing an ATT to perform sampling while allowing ECC raters that ability for the same requirement (NA1.9.1 Field Verification by the Acceptance Test Technician – “...Systems verified under this procedure are not eligible for use of the sampling procedures described in NA1.6.”). As previously recommended, Compartmentalization Testing in multifamily buildings with four or more habitable stories should remain under the scope of the ATT until an equitable option for sampling can be provided.</p> <p>b) CEA recommends amending Section 160.2(b)2Aivb2 with the following strikeouts and underlined language:</p>
257507.01	California Energy Alliance	<p>10) Section 160.2(b)2Biv</p> <p>a) The alternative procedure provides for an unfair market advantage for HERS (ECC) testers as sampling would not be allowed by an ATT certified individual or company. Dwelling unit field verification and diagnostic testing in multifamily buildings with four or more habitable stories should remain exclusively under the scope of the ATT until an equitable option for sampling can be provided. Per NA1.9.1 Field Verification by the Acceptance Test Technician “Systems verified under this procedure are not eligible for use of the sampling procedures described in NA1.6.”.</p> <p>b) CEA recommends amending Section 160.2(b)2Biv with the following strikeouts and underlined language:</p>
257507.011	California Energy Alliance	<p>11) NA1.9.1 Field Verification by the Acceptance Test Technician</p> <p>a) The 15-day language does not address the issue of market inequality. Sampling needs to be allowed for all technicians or none at all.</p> <p>b) CEA recommends amending this section with the following strikeouts:</p>

257508.001	California Energy Alliance	<p>1) CEA submitted an energy savings measure proposal to the CEC (Docket Number: 22-BSTD-01, TN# 252270) regarding the expansion of Subsection 130.1(b) requirements for nonresidential Multilevel Lighting Controls.</p> <p>a) Using the CEC’s measure proposal template, CEA showed that lowering the connected lighting load threshold along with removing of certain exceptions meets the cost-effectiveness criteria set forth by the CEC. The changes to Subsection 130.1(b) were workshopped with CEA stakeholders and during numerous meetings with stakeholders taking part in the Lighting Language Cleanup Initiative (Docket No: 22-BSTD-01, TN# 250676) referenced above. While many of the recommendations from the Cleanup Initiative were included in the 2025 Energy Code Express Terms, the lowering of the connected lighting load threshold from 0.5 W/sf to 0.4 W/sf was omitted.</p> <p>b) CEA respectfully asks the CEC to reconsider this Multilevel Lighting Controls measure proposal and include in the 2025 Energy Code Express Terms, 15-Day Language. This energy savings measure proposal supports the CEC’s goal of reducing wasteful, uneconomical, and unnecessary uses of energy for the state.</p> <p>c) If the CEA proposal is rejected by the CEC, we request an explanation to why this proposal is rejected.</p> <p>i) If the CEA measure proposal is omitted, then we recommend removing the “100 square feet” language.</p>
257508.002	California Energy Alliance	<p>2) Section 130.1(b) Exception 1</p> <p>a) Strike “indoor”. Not needed as this whole section is for indoor lighting.</p>

257508.003	California Energy Alliance	<p>3) Sections 130.1(c)6</p> <p>a) Correct and/or clarify “parking areas” term used in 130.1(c)6. and 130.1(c)6E.</p> <p>i) CEA is confused by the spaces “parking garages and parking areas” being called out versus the terms used in the definitions Section 100.1 which are “parking garage buildings”, “parking garage areas”, and “parking zone and ramps”.</p> <p>(1) CEA recommends updating this terminology throughout the Energy Code to maintain consistency across sections.</p>
257508.004	California Energy Alliance	<p>4) Sections 130.1(d) and 160.5(b)4D</p> <p>a) CEA feels there is a typographical error in Exception 3 to Sections 130.1(d) and 160.5(b)4D. The 45-Day Language states less than “85” watts when the requirement threshold is “75” watts. To be consistent with the new wattage threshold noted in the section, the exception should reference the same threshold.</p> <p>i) Exception 3 to Section 130.1(d): Where daylight responsive controls are not required for the primary sidelit daylit zones, and where the total wattage of general lighting luminaires in the secondary sidelit daylit zones is less than 875 watts, daylight responsive controls are not required for the secondary sidelit zone.</p> <p>ii) CEA would also like to note that if the exception should be 75 watts, then the Exception should be stricken as it's already called out in the secondary daylit zone section above.</p> <p>iii) Also note that all recommendations and comments apply to Section 160.5(b)4D.</p>

257508.005	California Energy Alliance	<p>5) Section 130.1(d)2Biii</p> <p>a) CEA recommends the Exception to Section 130.1(d)2Biii should be struck in its entirety as the primary use of solid-state technology now means that the manufacturer can provide any number of control zone requests within the assembled structure no matter the length. An existing example of this problem is one where a 16' linear luminaire was totally controlled as the primary daylight zone in a classroom, even though it extended 8' into the secondary daylight zone. This causes issue with the daylight sensor no longer providing adequate daylight adjustment to the secondary daylit zone.</p>
257508.006	California Energy Alliance	<p>6) Section 130.4(a)1</p> <p>a) Reinstating Plan Review Requirements for Enhanced Title 24, Part 6 Compliance in Section 130.4(a)1 per Docket 22-BSTD-01, TN# 252276. This proposal is essential for ensuring Energy Code compliance while introducing a more collaborative approach with the Authority Having Jurisdiction (AHJ). CEA respectfully asks the CEC to reconsider the TN#252276 proposal with the following update:</p> <p>i) Change “Certifies” to “Review”</p> <p>ii) Reinstating these requirements allows the Acceptance Test Technician to be involved earlier in the design phase to help the responsible parties, such as the lead architect or engineer, with compliance by alerting them of any gaps in energy code requirements prior to construction.</p>

257508.007	California Energy Alliance	7) Section 150.0(k)3 a) This requirement should be for all permanently installed outdoor lighting not just outdoor lighting that is mounted to a building. The current requirement leaves out lighting poles and other hardwired lighting. Permanently does not include solar lights or plugged in lights.
257508.008	California Energy Alliance	8) Section 100.1 Definitions a) Multilevel Lighting Control: Recommend adding “in addition to ON and OFF to the definition.

257518.001	Charles Knuffke	<p>Having previously voiced strong support for the second sentence in this section, which makes it clear that a daylighting system may have the ability to temporarily be overridden, we are alarmed that the 15-Day language suggests that sentence now be deleted from the final 2025 code.</p> <p>We do believe there are small changes that should be made to that sentence but agree with the overall intent as previously stated – for sites where it is desired, allow occupants to temporarily override the max level set by their daylighting systems. (Regarding our suggested changes: We believe the words “shall be permitted” should be changed to “may be permitted” so sites do not have to allow this temporary overrides should they wish, and that the wording of that second sentence would be better handled by eliminating the phrase “or reduced”.)</p> <p>Looking to better understand why the CEC decided to remove that sentence, the “Notice of 15- Day Comment Period, 2025 Building Energy Efficiency Standards and Reference Appendices” was no help, as it simply said in its table for 130.1(d)2F that the second sentence was deleted but no reason was provided. That such a substantiative change to the language, especially at this late date, was made without any given reason is especially concerning, and puts us at a disadvantage as we don’t know how to argue against a non-statement.</p> <p>When educating lighting professionals on the Energy Code, we have shown designers that a temporary daylighting override is allowed, based on language we have found in the Compliance Manual. However, it would be beneficial to make this allowance absolutely clear to anyone who reads the code language itself, so we’ve advocated that it needs to be brought into the body of the Title 24 Energy Code. As a result, we were pleased that this was going to happen based on the previous 2025 draft proposals. And especially pleased that this opinion was included in the CLTC’s “2025 Title 24 Lighting Language Cleanup Initiative” which was developed through consultation with many individuals.</p>
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257519.001	A.O. Smith Corporation	<p>Overview</p> <p>On February 17, 2023, the CASE team presented proposed modifications to the California Title 24 requirements for Multifamily Domestic Hot Water. Inclusive of the proposals was a proposed modification to the prescriptive pathway for commercial heat pump water heaters (“CHPWH”) systems that would require that single pass HPWH system design not utilize hot water return to primary. In addition, the CASE team added an alternative compliance pathway for CHPWHs which would allow a CHPWH to be installed so long as it meets the Northwest Energy Efficiency Alliance (“NEEA”) Advanced Water Heating Specification (“AWHS”) Version 8.0 Tier 3. As drafted, those proposals would present an uneven playing field as CO2 based CHPWH systems would be significantly advantaged over non-CO2 based CHPWHs. The Company raised concerns with this overly prescriptive requirement to the CASE team during the pre-rulemaking comment period. In August 2023, the CASE team published their final CASE report, in which it amended the NEEA AWHS V8.0 requirement from tier 3 to tier 2 under the alternative compliance pathway. In comments submitted in May to the California Energy Commission (“CEC” or “Commission”) 45-day express terms, the Company reiterated our concern with the prescriptive requirements in Section 170.2(d).2, which would arbitrarily excluding highly efficient commercially available CHPWHs due to a ban on multi-pass design. Additionally, the Company raised concern that the AWHS is in the process of being updated from Version 8.0, which is listed in the title-24 requirements, to Version 8.1. The change in version will also affect NEEA’s Qualified Product’s List (“QPL”) and essentially obsolete the current compliance pathway of being listed as NEEA Tier 2 to version 8.0 of the AWHS.</p>
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257519.002	A.O. Smith Corportation	<p>Section 170.2(d).2: Prescriptive System Design for CHPWHs</p> <p>The Company has consistently raised concerns throughout this process over adding the prescriptive requirement for all CHPWHs to be single-pass systems. This requirement creates an uneven playing field that favors split systems over integrated systems without a proper consideration of the energy use and efficiency of the products. The Company recognizes that the Commission lacks the necessary data to update this requirement during the express terms phase of this process. Given this, the company recommends that the Commission reevaluate the prescriptive requirements of Section 170.2(d).2 for CHPWHs in the next revision of Title 24. Since the initial work was done on this section, the market has grown and evolved with many new and highly efficient products entering the market that are currently being excluded through this compliance pathway.</p>
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257519.003	A.O. Smith Corporation	<p>Section 170.2(d).2: Alternative Compliance Pathway</p> <p>The Company has throughout this process been supportive of the alternate compliance pathway of meeting the requirements of NEEA tier 2. This alternative pathway still allows for multi-pass systems to comply with the prescriptive pathway. However, with the forthcoming update to the AWHs and QPL, this pathway is in jeopardy of becoming obsolete as the AWHs V8.0 QPL referenced in the Express Terms will become obsolete on July 1, 2024, before this updated code goes into effect. The Company outlined its concerns on this issue in its comments to the 45-day express terms. Suffice it to say, the Company is disappointed to see that this issue has not been addressed in the Express Terms and closes the door on this compliance pathway, which would take a step in the right direction of basing the code on product efficiency and not a set of overly restrictive prescriptive requirements. The Company again urges CEC to engage with NEEA to proffer an agreement such that the current version (i.e., V8.0) of the AWHs and QPL referenced in Title 24 remain maintained in perpetuity as long as the code references them. This would allow for a stable baseline and would not preempt NEEA from further developing new versions of the AWHs and QPL. In lieu of this approach CEC should adopt a prescriptive measure of CHPWH performance to allow for a level playing field which does not exclude systems based on their configuration and affords specifying engineers the necessary flexibility to install products in a manner that is consistent with their project goals and objectives. Title 24 is a minimum efficiency code and should remove, not add hurdles for high efficiency heat pumps to enter the California market and help the state reach its ambitious goal to install 6 million new heat pumps by 2030.</p>
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257521.001	JCEEP, WSC SMART, CAL SMACNA, & NEMIC	<p>In our comments on the 45-Day Language, we expressed three major concerns with the audit procedures set forth in Section 10-103.2(c)3F. First, the number of audits required under the newly added alternative shadow audit option at ATTCP training facilities is not equivalent to the existing jobsite option and would impose significantly greater costs and burdens on an ATTCP choosing that option. Second, the existing and proposed language fails to clarify the required frequency of paper and shadow audits. Third, the training facility option would unnecessarily require that all ATTCP facilities can perform shadow audits on acceptance tests that acceptance test technicians (“ATTs”) are not certified to perform.</p> <p>The 15-Day Language corrects only the third concern, now only requiring a testing facility to have the ability to test the acceptance tests that the ATTs being tested are certified to perform. We respectfully request that the Commission modify the 15-Day Language to address the remaining deficiencies with the shadow audit option to provide equivalency and eliminate unnecessary costs.</p>
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257521.002	JCEEP, WSC SMART, CAL SMACNA, & NEMIC	<p>At the workshop on these changes, staff indicated its intent to make the alternative shadow audit procedure equivalent to the existing procedure. Indeed, the alternative shadow audit procedure is intended to provide options that could reduce the administrative costs of the acceptance test program, while maintaining a generally equivalent level of oversight. Unfortunately, the 15-Day Language maintains significant differences between the two that would make compliance under the alternative shadow audit procedure almost seven times more expensive and burdensome than compliance under the existing procedure.</p> <p>These differences are in how the minimum number of audits are determined under each audit procedure. Instead of using the same method of calculation, the proposed language sets forth a different method depending on what procedure is selected. This creates two issues.</p> <p>First, it requires an ATTCP to use one procedure or the other, rather than allowing them to select the procedure that makes the most sense, and is the most efficient, for the type of project being audited. There may be some projects where it is easy to send someone out to the project to perform a shadow audit at the time of installation; and there may be other projects where a timely and complete on-site audit is not practical. By creating different audit triggers for each procedure, the Commission is essentially locking an ATTCP into one method or the other. Second, by utilizing different audit triggers for each procedure, the Commission is creating a substantial and inequitable disparity in burdens and costs between the methods.</p>
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257521.003	JCEEP, WSC SMART, CAL SMACNA, & NEMIC	<p>The audit trigger for the on-site option requires conducting a jobsite audit of 1% of each acceptance test employer's ("ATE") overseen projects, following the assigned ATT and observing their performance. This scope is project-based, meaning the minimum number of audits required to be performed under this option is determined based on the percentage of each ATE's overseen projects. Jobsite audits are performed continuously and proportionally to the volume of projects overseen by each ATT.</p> <p>The alternative option involves an off-site audit of each ATT at a training facility at least once per code cycle. The alternative off-site audit option sets the minimum number of audits required to be performed based on the total number of ATTs certified by an ATTCP, rather than on the number of projects performed by an ATE. Under this procedure, training center audits must be performed at least once per code cycle for each ATT.</p>
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257521.004	JCEEP, WSC SMART, CAL SMACNA, & NEMIC	<p>For example, NEMIC currently has 85 mechanical ATEs and 588 mechanical ATTs. Since 2022, NEMIC's ATEs have completed 524 projects, with only one ATE exceeding 100 cumulative projects over that time. Under the jobsite option, NEMIC would need to perform 86 shadow audits (2 audits for the ATE that exceeded 100 cumulative projects, and 1 audit for each other ATE under 100 projects). Under the off-site training facility option, NEMIC would need to perform 588 shadow audits, which is almost seven (7) times more audits than required under the on-site audit option. Moreover, the current language of this procedure would require an ATT to be audited even if that ATT only worked on 1 or two projects, or even no projects at all.</p> <p>This would result in significantly more costs and burdens under the off-site option – to both the ATTCPs and their certified ATTs. Not only are there significant costs for performing these audits, but there are also costs for administrative coordination, travel and downtime for technicians who are pulled away from their regular duties.</p> <p>If the number of audits is identical between the two options, an ATTCP can make an informed determination of which option is most efficient when audit requirements are triggered. Given the intent of this alternative option to provide reductions in the administrative costs of this program, it is critical that the minimum number of audits required to be performed under both options be the same, no matter which audit method is selected. Without amendments to the current 15-Day Language, the alternative audit method will not only fail to provide relief from administrative costs, but it is also unlikely that it would ever be used.</p>
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257521.005	JCEEP, WSC SMART, CAL SMACNA, & NEMIC	<p>To make the two shadow audit options truly equivalent, adjustments need to be made to align the scope and timing of feedback. We recommend the following language be inserted into Section 10-103.2(c)3Fiii, which combines the audit trigger for the two options into a single, identical provision:</p> <p>The ATTCP shall randomly select and shadow audit no less than 1 percent of each ATE’s overseen projects per code cycle, following the assigned ATT and observing their performance on the job site or at an ATTCP training facility. If the shadow audit occurs at an ATTCP training facility, the ATTCP shall observe the performance of the ATT on at least five functional tests for which the ATT is certified. The shadow audit must replicate field conditions for installed equipment and controls in a building. The ATTCP training facility shall be set up to allow auditing of all functional tests for which the ATT is certified. The shadow audits must be in addition to any testing used for ATT recertification.</p> <p>This proposed language synchronizes the audit scopes by retaining the project-based methodology, allowing ATTCPs to choose whether the audit occurs onsite or at a training facility. It also clarifies audit frequency by requiring that 1 percent of each ATE’s overseen projects be calculated based on the number of projects completed in each code cycle. This hybrid approach leverages both options to maintain audit efficacy and cost-effectiveness.</p>
257527.001	ARCXIS	<p>ARCXIS respectfully submits these comments on the 2025 Building Energy Efficiency Standards, Express terms, 15-Day Language (“15-Day Language”), issued on June 13, 2024. ARCXIS has been actively engaged throughout this rulemaking process, both by submitting comments and meeting with Commission staff in the pre-rulemaking phase on the proposed changes to the Field Verification and Testing Program. The 15-Day Language includes several significant improvements to key portions of the proposed rulemaking language and we appreciate the responsiveness to our prior comments. We specifically support the changes to the definition of a company principal, the ability to utilize a live proctor for challenges exams, more clarity regarding notification to raters on shadow audits that are scheduled, and clearer guidelines around the Commission’s request of data.</p>

257527.002	ARCXIS	<p>1. Delegation of Signature Authority for Certificates of Verification</p> <p>The 15-Day Language clarifies that ECC-Raters or ECC-Rater Companies may sign a Certificate of Installation on behalf of the responsible person if they have complied with the delegation of signature authority requirements set forth in Section 10-103(a)3A. 1 ARCXIS supports this authority, but recommends that the same flexibility be provided for signing Certificates of Verification. ECC-Rater Companies may have centralized document submission processes that are streamlined to reduce costs and reduce delays. Allowing the ECC-Raters to delegate signing authority to ECC-Rater Companies would support this streamlining and help to reduce costs. Therefore, ARCXIS recommends that the 15-Day Language be amended to provide ECC-Rater Companies the ability to sign on behalf of individual ECC-Raters to the same extent and subject to same restrictions as is provided for Certificates of Installation.</p> <p>Proposed Redline of 15-Day Language:</p>
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257527.003	ARCXIS	<p>2. Consumer Information Template</p> <p>ARCXIS supports the 15-Day Language change that directs the ECC-Provider to develop the Consumer Information Template, subject to review and input by the Commission. This document will provide consumers with much needed information about the ECC program and the complaint process. ARCXIS encourages both the ECC-Providers and the Commission to seek input from the public and ECC-Raters on the content and form of these templates.</p> <p>However, the current language regarding the requirements applicable to ECC-Raters and ECC-Rater Companies is still unclear and needs refinement. First, the content of the Consumer Information Template is dictated by the ECC-Provider. However, as currently worded, it appears that it is the ECC-Rater or ECC-Rater Company that must ensure that the Consumer Information Template includes the required information. The 15-Day Language should be modified to clarify that the ECC-Rater or ECC-Rater Company must simply utilize the most current template developed by the ECC-Provider. Second, nowhere in the 15-Day Language is there a requirement for the ECC-Rater or ECC-Rater Company to provide the Consumer Information Template to the owner or owner representative. As that is the essential purpose of this document, that obligation should be expressly stated. Finally, it is unclear what is meant by “register” in this context, and ARCXIS recommends that the simpler term “submit” be used.</p> <p>Proposed Redline of 15-Day Language:</p>
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257527.004	ARCXIS	<p>3. Penalty for Inaccessibility for Providers to Access Homes</p> <p>Section 10-103.3(d)5Cig of the proposed regulations would subject the ECC-Rater or ECC-Rater Company to penalties if the ECC-Provider is refused access to a development for an onsite audit. The 15-Day Language makes a minor improvement to this provision by clarifying that any potential penalty is at the discretion of the ECCProvider. However, ECC-Raters and ECC-Rater Companies do not have site control of the buildings that are tested. In new construction settings, that access is solely determined by the developer. For existing buildings, that access is controlled by the building owner. In either case, the ECC-Raters/ECC-Rater Companies should not be subject to penalties for access issues that are completely outside of their control. If there is some form of penalty for a lack of access, it should be directed at an entity with the ability to grant access. ARCXIS recommends deleting this penalty provision.</p> <p>Proposed Redline of 15-Day Language:</p>
257527.005	ARCXIS	<p>4. Quality Assurance Onsite Audits</p> <p>ARCXIS supports the 15-Day Language modification that changes the sample group for onsite audits to 1 in 100 dwelling units or single family residences. However, we are concerned about a new provision that would require a failed onsite audit of an untested unit to be recorded in the ECC-Provider's quality assurance database. We support the inclusion of failed tested units in the database, but ECC-Raters and ECC-Rater Companies should not be held accountable for units were never tested. ECC-Raters and ECC-Rater Companies should not be punished for a failure that they had no ability to impact. ARCXIS does support the prompt notification of any failures to developers, ECC-Raters, and ECC-Rater Companies.</p> <p>Proposed Redline of 15-Day Language:</p>

257527.006	ARCXIS	<p>5. Rater Company List of Employees.</p> <p>ARCXIS strongly supports the ability of consumers to readily identify individual ECCRaters that are qualified and certified to work. However, we still fail to understand the rationale for having a publicly available list of all ECC-Rater Company certified raters. It is not clear who would request this information or benefit from its availability. ARCXIS does understand that there is a public interest in identifying which ECC-Raters have been found in violation of the ECC program requirements by the ECC-Provider. To reduce cost and administrative burden, the public list should be limited to any raters that have been found in violation by an ECC-Provider.</p> <p>Proposed Redline of 15-Day Language:</p>
257527.007	ARCXIS	<p>6. Pricing/Cost Information</p> <p>Section 10-103.3(f)2Fiv of the proposed regulations would require that ECC-Rater Companies provide annual total and average cost of service data to the ECC-Provider. We remain concerned that giving ECC-Providers our cost information could impact the prices they charge us for their services. We rely upon ECC-Providers for our training, data management, and certification. Given this business relationship, it provides an unfair advantage to ECC-Providers to understand our pricing model. ECC-Providers could use this information to inform the prices we must pay them to participate in the ECC program. Lastly, we have no assurances this information can remain confidential. We remain unconvinced that this data helps consumers or improves the ECC program. We are all operating in a market to provide field verification and testing—let the market drive prices. ARCXIS recommends that the Commission delete this provision.</p> <p>Proposed Redline of 15-Day Language:</p>

27536.001	Carrier Corp	<p>Section 110.2(a) – Minimum Efficiency Tables</p> <p>Carrier understands that the CEC intends to keep the proposed approach from the 45-day language for the efficiency tables of administering the specific metrics that are required by Title 24 and differentiating those required by a federal energy conservation standard. However, there are inconsistencies that exist in the table as proposed relating to categorization of these metrics.</p> <p>Specific comments to the minimum efficiency tables to increase consistency and accuracy:</p> <p>Table 110.2-A Air Conditioners and Condensing units: CEC has once again labeled the IEER for Condensing Units as a “Federal Minimum.” DOE does not have an Energy Conservation Standard for standalone commercial condensing units and does not reference AHRI 365 as a test procedure. Carrier proposes that these values should be aligned with ASHRAE 90.1.</p> <p>Table 110.2-B Heat Pumps, Minimum Efficiency Requirements</p> <p>CEC has prescribed a 3.2 COP requirement for Split System and Single Packaged heat pumps with a capacity <math>\geq 240,000</math> Btu/h and <math>&lt; 760,000</math> Btu/h. COP at 47°F is a federally controlled metric for a heat pump with this capacity. Carrier recommends modifying to show a federal minimum to stay consistent with the rest of the table.</p> <p>Tables 110.2-F and G: VRF Minimum Efficiency Requirements</p> <p>In the case of VRF equipment <math>&lt; 65,000</math> Btu/h, CEC has prescribed minimum efficiency requirements for all types. These metrics are federally controlled, and Carrier feels that it adds undue complexity to continue to have the separate metrics for before 1/1/2023 and after 1/1/2023.</p>
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27536.002	Carrier Corp	<p>Section 140.4(a)3: Multizone Space-Conditioning System Types</p> <p>In the 45-day comments, Carrier was concerned with CEC prescribing a fixed product type to be used in a specific application. In the 15-day express terms, CEC added in Subclause G as an alternative option, “A space-conditioning system determined by the Executive Director to use no more energy than the systems specified in Section 140.4(a)3.” Carrier argued in the 45-day comments that not all design firms would have the ability to model these buildings to utilize the performance approach to opt for a different technology option. The additional option of subclause G does not change this situation or argument. Carrier is concerned that a design firm would still be required to run a full energy model of the building in order to justify a determination from the Executive Director that the alternative space-conditioning system uses less energy than the prescribed technology option.</p>
257537.001	SunPower	<p>Battery Energy Storage System (BESS) Definition</p> <p>In the definition of BESS in Joint Appendix JA1, it should be clarified that the systems do not need to provide backup or emergency power. There are BESS that have load shifting capabilities, which support the goals of the Building Energy Efficiency Standards but may not provide backup power.</p>
257537.002	SunPower	<p>California Flexible Interconnection Definition</p> <p>We support the revised definition for California Flexible Installation (CFI) in Joint Appendix JA1. We continue to recommend that the CEC provide a CFI3 option for PV installed in the azimuth range between 90 to 300 degrees from true north and with all modules at the same tilt as the roof for pitches up to 8:12 to help reduce the cost of code compliance.</p>
257537.003	SunPower	<p>Joint Appendix JA12</p> <p>We appreciate the work by CEC staff to improve the clarity of section JA12 and believe that the revision to the language succeeds in making the reference appendix easier to understand. We support the proposal to remove the labeling requirement for single-family residential buildings.</p>



The Commission's Response to Comment	Date of Comment	Phase of Comment	Link to Comment
<p>The details about azimuth and tilts have been removed from the CF11 definition in Reference Joint Appendix JA1 to avoid duplication. Adding a CF13 option is out of the scope of this rulemaking. Staff may consider adding CF13 as a performance option.</p>	6/13/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256842&amp;DocumentContentId=92655">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256842&amp;DocumentContentId=92655</a>

<p>Staff agrees with the comment, and changes have been made. Staff has updated Reference Joint Appendix JA8 to refer to the "time of failure" portion of the DOE test procedure in Appendix BB to Subpart B of 10 CFR Part 430 instead of referring to the ENERGY STAR Elevated Temperature Life Test method.</p>	<p>6/14/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256858&amp;DocumentContentId=9267">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256858&amp;DocumentContentId=9267</a> <u>1</u></p>
<p>Thank you for your comment. This proposal is out of scope of this rulemaking. Staff may revisit this topic in the next code update.</p>	<p>6/17/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256891&amp;DocumentContentId=9270">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256891&amp;DocumentContentId=9270</a> <u>4</u></p>



<p>Thank you for your comment. This proposal is out of scope of this rulemaking. Staff may revisit this topic in the next code update.</p>	<p>6/17/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256891&amp;DocumentContentId=92704">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256891&amp;DocumentContentId=92704</a></p>
<p>Thank you for your comment.</p>	<p>6/17/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=256897&amp;DocumentContentId=92714">https://efiling.energy.ca.gov/GetDocument.aspx?tn=256897&amp;DocumentContentId=92714</a></p>
<p>Staff agrees, and changes have been made. Specifically, the phrase "one non QII shadow audit, one in-lab audit" has been removed from Section 10-103.3(d)5B.</p>	<p>6/19/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257097&amp;DocumentContentId=92928">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257097&amp;DocumentContentId=92928</a></p>
<p>Staff agrees with the comment, and changes have been made. Specifically, Section 10-103.3(d)5C has been restructured.</p>	<p>6/19/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257097&amp;DocumentContentId=92928">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257097&amp;DocumentContentId=92928</a></p>

<p>Staff disagrees with the comment, and no changes have been made. Staff agrees that there are instances where an installation has been substantially modified in the intervening time since the ECC-Rater's field verification and diagnostic testing. However, in Staff's opinion, these instances tend to have little impact on audit results.</p>	<p>6/19/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257097&amp;DocumentContentId=92928">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257097&amp;DocumentContentId=92928</a></p>
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Staff agrees with the comment, and changes have been made. Specifically, Section 10-103.3(d)5Cf has been restructured.

6/19/2024

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<https://efiling.energy.ca.gov/GetDocument.aspx?tn=257097&DocumentContentId=92928>

<p>Staff disagrees with the comment, and no changes have been made. The intention is that the ECC-Rater is responsible for both a re-test and any costs incurred by the homeowner as a direct result of the non-compliant actions by the ECC-Rater. Staff disagrees that the ECC-Rater should be held to only providing a re-test or cost incurred by the homeowner.</p>	6/19/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257097&amp;DocumentContentId=92928">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257097&amp;DocumentContentId=92928</a>
<p>Staff agrees with the comment, and changes have been made. Specifically, Staff has added the following text: For the purposes of a Consumer Information Form, register is defined as submitting the information outlined in this paragraph to the ECC-Provider.</p>	6/19/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257111&amp;DocumentContentId=92970">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257111&amp;DocumentContentId=92970</a>

<p>Staff disagrees with the comment, and no changes have been made. Staff agrees that there are instances where an installation has been substantially modified in the intervening time since the ECC-Rater's field verification and diagnostic testing. However, in Staff's opinion, these instances tend to have little impact on audit results.</p>	<p>6/19/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257111&amp;DocumentContentId=92970">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257111&amp;DocumentContentId=92970</a></p>
<p>Staff agrees with the comment, and changes have been made. Specifically, Section 10-103.3(d)5Cif has been restructured.</p>	<p>6/19/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257111&amp;DocumentContentId=92970">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257111&amp;DocumentContentId=92970</a></p>

<p>Thank you for your comment. Staff will consider these comments in future code updates.</p>	<p>6/20/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257150&amp;DocumentContentId=93007">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257150&amp;DocumentContentId=93007</a></p>
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<p>Thank you for your comment. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.</p>	<p>6/20/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257154&amp;DocumentContentId=93012">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257154&amp;DocumentContentId=93012</a></p>
<p>Comment acknowledged, no change made. This comment pertains to compliance software functions, and is outside of scope of this rulemaking.</p>	<p>6/23/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257350&amp;DocumentContentId=93242">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257350&amp;DocumentContentId=93242</a></p>
<p>Comment acknowledged, no change made. Several names for the residential program were considered as part of this rulemaking. Staff chose Energy Code Compliance (ECC) for several reasons documented in the rulemaking record.</p>	<p>6/21/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a></p>

<p>Comment acknowledged, no change made. The proposed language does not preclude the ATTCP from implementing a quality assurance program that makes use of either a Training Facility Audit or an Onsite Audit. Additionally, the proposed requirements allow for a clear interpretation to be fully explained in the forthcoming ATTCP Application Manual. Staff notes that:</p> <ul style="list-style-type: none"><li>o Job-site audits set a higher standard compared to laboratory training audits. Job-site audits represent actual field conditions, varying installation conditions, and other factors that will affect the ATTs acceptance testing performance. Job-site audits are more rigorous in ensuring ATT competency .</li><li>o The training facility audit is provided as an alternative in response to comments received to provide flexibility because job-site audits may not always be practical in the field.</li><li>o The training facility audit ensures all ATT get audited over a set time period. Staff views the training facility audit to occur once every code cycle (3 years) as a minimum requirement.</li><li>o Staff will consider modifying the 1% criteria in the 2028 code cycle once there is more information and data for the ATTCP program.</li></ul>	6/21/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a>
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<p>Staff disagrees with the comment, and no changes have been made. The sampling requirements are exclusively for working with ECC-Raters. For a space or installation to be placed in a sample-group, the installer/builder must perform the testing required by the Energy Code upon completion of work. Then the installation/space may be placed in a sample-group. The ECC-Rater may then test one member of that sample-group, performing the same test as required by the Energy Code. Allowing ATTs to perform sampling as if they were Raters would create no time or cost savings. Staff will consider modification to the sampling process for future rulemakings.</p>	6/21/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a>
<p>Staff disagrees with the comment, and no changes have been made. The sampling requirements are exclusively for working with ECC-Raters. For a space or installation to be placed in a sample-group, the installer/builder must perform the testing required by the Energy Code upon completion of work. Then the installation/space may be placed in a sample-group. The ECC-Rater may then test one member of that sample-group, performing the same test as required by the Energy Code. Allowing ATTs to perform sampling as if they were Raters would create no time or cost savings. Staff will consider modification to the sampling process for future rulemakings.</p>	6/21/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a>
<p>Staff disagrees with the comment, and no changes have been made. The sampling requirements are exclusively for working with ECC-Raters. For a space or installation to be placed in a sample-group, the installer/builder must perform the testing required by the Energy Code upon completion of work. Then the installation/space may be placed in a sample-group. The ECC-Rater may then test one member of that sample-group, performing the same test as required by the Energy Code. Allowing ATTs to perform sampling as if they were Raters would create no time or cost savings. Staff will consider modification to the sampling process for future rulemakings.</p>	6/21/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a>

<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	<p>6/21/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a></p>
<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	<p>6/21/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a></p>

<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	<p>6/21/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a></p>
<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification of envelope by certified acceptance testing technicians is not required. Expanding the ATT program to envelope may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	<p>6/21/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a></p>

<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.</p>	6/21/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a>
<p>Comment acknowledged, no changes have been made. While there may eventually be benefit to requiring ATTs to verify compliance with Guideline 36 or the exceptions, there is insufficient time to setup the necessary documentation to allow ATTs to perform this type of check on a project site. Staff may consider this issue for the 2028 code cycle.</p>	6/21/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a>
<p>Comment acknowledged, no changes have been made. While there may eventually be benefit to requiring ATTs to verify compliance with Guideline 36 or the exceptions, there is insufficient time to setup the necessary documentation to allow ATTs to perform this type of check on a project site. Staff may consider this issue for the 2028 code cycle.</p>	6/21/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257281&amp;DocumentContentId=93142</a>

Thank you for your comment.	6/26/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257413&amp;DocumentContentId=93286">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257413&amp;DocumentContentId=93286</a>
Comment acknowledged, no change made. Staff agrees that it would be ideal for the single family and multifamily designated space requirements to be consistent. Staff will revisit this topic in the next code update.	6/26/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257413&amp;DocumentContentId=93286">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257413&amp;DocumentContentId=93286</a>

Thank you for your comment. The intent is for newly constructed buildings to prescriptively use 240V HPWH, and to allow both 240V and 120V HPWH for additions and alteration. Our data shows that generally buildings with 1 bedroom or less are used small households, and a 120V HPWH should be sufficient to meet the hot water load. A 120V HPWH that meets the first hour rating would still likely have a long recovery time, and that can result in potential consumer dissatisfaction. In summary, Staff believe that while 120V HPWH is a good solution for additions and alterations, for newly constructed buildings 240V is the safer choice that works in all climate zones. Staff will continue to monitor new 120V HPWH products and will revisit this topic in the next code update.

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<https://efiling.energy.ca.gov/GetDocument.aspx?tn=257413&DocumentContentId=93286>

<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	6/25/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284</a>
<p>Staff agrees with the comment, changes have been made. The term "rated" has been removed from Section 140.4(a)3Cii.</p>	6/25/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284</a>
<p>Comment acknowledged, changes have been made. The hydronic loop volume requirement for air to water heat pumps in Section 140.4(a)3Ciii was removed from the adopted language.</p>	6/25/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284</a>

<p>Comment acknowledged, no changes have been made. Staff's analysis of the AWHP+ FPFC system does not show a significant heating load handled by the central supplemental electric resistance boiler. Supplemental heating is expected to operate less than 10% of operating hours. The proposed system option with electric resistance heating at the zone level can be reviewed via the performance compliance path.</p>	<p>6/25/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284</a></p>
<p>Thank you for your comment. DOAS systems of the scale required to meet the requirements include direct airflow measurement and are designed to deliver the required ventilation. Systems with economizers can provide increased ventilation under certain outdoor conditions. Staff disagrees that DOAS systems provide insufficient IAQ. The proposed baseline system assumes ventilation requirements are met.</p> <p>ASHRAE Standard 241 is meant to be implemented to control aerosol-based infections during pandemics. ASHRAE Standard 241 has not been adopted by California, and this Standard describes procedures other than increased ventilation for mitigating the risk of infectious disease spread. The proposed baseline delivers ventilation in compliance with Table 120.1-A in Title 24, Part 6-2025.</p>	<p>6/25/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284</a></p>
<p>Comment acknowledged, changes have been made. Specifically, Exception 8 to Section 140.4(e)1 is limited to systems complying with Sections 140.4(a)3Ai, or 140.4(a)3Aii. Section 140.4(a)3Ai is a VRF/DOAS system. Section 140.4(a)3Aii is an AWHP/FPFC system. Applicable building occupancies are specified in Section 140.4(a)3 and are limited to office buildings and school buildings, except for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7.</p> <p>Staff notes that the loss of airside economizer benefits are offset by large reductions in fan energy with zonal, low-static fans, and with the elimination of reheat. DOAS systems ensure that indoor air quality requirements are met, often through direct airflow monitoring.</p>	<p>6/25/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257414&amp;DocumentContentId=93284</a></p>



<p>Comment acknowledged, no change made. The cooling tower efficiencies in the 2025 Energy Code are based on the Final CASE Report proposal. For Climate Zones 2, 4, 5, and 13, the analysis showed that higher efficiencies of 70 or 80 GPM/hp were cost effective.</p>	<p>6/26/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257421&amp;DocumentContentId=93299">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257421&amp;DocumentContentId=93299</a></p>
<p>Thank you for your comment of support.</p>	<p>6/26/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257421&amp;DocumentContentId=93299">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257421&amp;DocumentContentId=93299</a></p>

<p>Comment acknowledged, no changes have been made. Staff will need to review the proposed minimum efficiency requirements to determine if additional analysis or supporting documents are required and may include in future versions of the Energy Code. For the 2025 Energy Code, Staff will explore including these minimum efficiencies in any relevant supporting documents.</p>	6/26/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257421&amp;DocumentContentId=93299">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257421&amp;DocumentContentId=93299</a>
<p>Thank you for your comment.</p>	6/26/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257421&amp;DocumentContentId=93299">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257421&amp;DocumentContentId=93299</a>

<p>Staff disagrees with the comment, and no changes have been made. The mandatory requirements for multilevel lighting controls are in Section 130.1(b). These requirements include that "The multilevel lighting controls shall provide and enable continuous dimming from 100 percent to 10 percent or lower of lighting power." A standard on/off toggle switch does not meet the requirements of Section 130.1(b).</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257459&amp;DocumentContentId=93334">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257459&amp;DocumentContentId=93334</a></p>
<p>Summary remarks - responses to detailed comments included below.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257460&amp;DocumentContentId=93335">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257460&amp;DocumentContentId=93335</a></p>

Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.

Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.

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<https://efiling.energy.ca.gov/GetDocument.aspx?tn=257460&DocumentContentId=93335>

Comment acknowledged and changes have been made. Staff is restoring the original 2022 PV sizing equation for single-family and low-rise multifamily buildings. EER2 will no longer be a factor affecting the PV sizing.

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<https://efiling.energy.ca.gov/GetDocument.aspx?tn=257460&DocumentContentId=93335>

<p>Comment acknowledged, some changes have been made. The efficiency requirements for condensing units in Table 110.2-A have been reverted to match the requirements in the 2022 code. Staff plans to release a compendium to Title 24 containing federal standards.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257460&amp;DocumentContentId=93335">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257460&amp;DocumentContentId=93335</a></p>
<p>Summary remarks - no response needed.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257460&amp;DocumentContentId=93335">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257460&amp;DocumentContentId=93335</a></p>

Thank you for your comment. CEC staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.

6/27/2024

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<https://efiling.energy.ca.gov/GetDocument.aspx?tn=257466&DocumentContentId=93346>

Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.

Staff notes that we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.

6/27/2024

June 15 day

<https://efiling.energy.ca.gov/GetDocument.aspx?tn=257466&DocumentContentId=93346>



<p>Thank you for your comment of support.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257466&amp;DocumentContentId=93346">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257466&amp;DocumentContentId=93346</a></p>
<p>Comment acknowledged, no changes have been made. Staff notes that the proposed language in Exception 1 to Section 150.0(h)7 is similar to language in Section 110.2(b), which has been in place for several code cycles.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257466&amp;DocumentContentId=93346">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257466&amp;DocumentContentId=93346</a></p>

<p>Staff disagrees with the comments, and no changes have been made.</p> <p>Regarding using reference conditions with the "high" rating test point from AHRI 540, Table 4: Compressor capacity is already being provided by some manufacturers in their specification sheets, and Staff understands that manufacturers plan to include this information in their specification sheets in the future.</p> <p>Regarding lowering the net free area (NFA) requirement to 20 square inches for ducted inlets: There is insufficient research to support this change. Additionally, manufacturer instructions/methods may be used where they meet or exceed the requirements described in Section 110.3(c)7B2 though 4.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257466&amp;DocumentContentId=93346">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257466&amp;DocumentContentId=93346</a></p>
<p>Thank you for your comment of support.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257468&amp;DocumentContentId=93343">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257468&amp;DocumentContentId=93343</a></p>

Thank you for your comment of support.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257469&amp;DocumentContentId=93342">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257469&amp;DocumentContentId=93342</a>
Thank you for your comment of support.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257469&amp;DocumentContentId=93342">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257469&amp;DocumentContentId=93342</a>
Thank you for your comment. Staff has reviewed suggested edits from the CASE team and has incorporated them. Specifically, changes made to Exception 1 to Section 150.0(m)13C have also been incorporated into Exception 1 to Section 160.3(b)5Liii	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff disagrees with the comment, and no changes have been made. As written, the exception already applies to CZs 1, 3, 5, and 16.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>

<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Staff believes both values should be included to account for all sources used to obtain outdoor design conditions, some of which may only contain one of options of the 99.0 percent Heating Dry Bulb value or the Heating Winter Median of Extremes value.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Thank you for your comment. Staff intends to indicate in the compliance manual that "no lower than" does not refer to the design temperature itself, but rather to the "99.0%" value. This would mean that the 99.6% and 99.0% dry bulb heating values would be allowed when sizing systems, while drybulb heating values below 99.0%, like the 97.5% drybulb heating value, would not be allowed.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Staff has removed the reference to the SMACNA Residential Comfort System Installation Standards Manual. Staff has also changed "The ASHRAE Handbook, Equipment Volume, Applications Volume and Fundamentals Volume" to say "The ASHRAE Handbook Fundamentals Volume" to account for the relevant climactic data in these documents. The ACCA manual J reference will remain in the language because it contains relevant climactic data.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>

<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Language for system capacity requirements and infiltration assumptions related to load calculations has already been included in sections 150.2(a)1E and 150.2(a)2D for additions only. These requirements have been intentionally left out of sections related to single-family residential alterations because the increased stringency and costs associated with these changes would likely lead to higher levels of noncompliance with the Energy Code.</p>	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Section 130.1(d)Ci conveys that where Section 130.1(b) requires multilevel lighting controls, those multilevel lighting controls are permitted to over-ride daylight responsive controls to adjust the light level up or down with continuous dimming.</p>	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
<p>Staff agrees with the proposed suggestion and changes have been made. Instead of adding this as an exception, this distinction was made within the code language.</p>	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
<p>Staff agrees with the proposed suggestion and changes have been made. Instead of adding this as an exception, this distinction was made within the code language.</p>	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>

<p>Staff agrees with the comment, and changes have been made - language was added to the 'Option C - Radiant Barrier' row to specify "for vented attics".</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Comment acknowledged, no changes have been made. Adoption of the proposed changes would require review by the public. Staff will revisit this topic in the next code update.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Comment acknowledged, no change made. Staff proposes to incorporate changes in the compliance documents to accomplish the same goal, and will make these edits in the next code update.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Comment acknowledged, no change made. Staff proposes to incorporate changes in the compliance documents to accomplish the same goal, and will make these edits in the next code update.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Comment acknowledged, no change made. Staff proposes to incorporate changes in the compliance documents to accomplish the same goal, and will make these edits in the next code update.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>

Comment acknowledged, no change made. Staff has reviewed the suggested edits regarding Exception 3 to Section 140.4(r) and propose to incorporate changes in the compliance documents to accomplish the same goal.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff agrees with the comment, and changes have been made.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff agrees with the comment, and changes have been made.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff agrees with the comment, and changes have been made.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff agrees with the comment, and changes have been made.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff agrees with the comment, and changes have been made.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>

<p>Comment acknowledged, no change made. Staff proposes to incorporate changes in the compliance documents to accomplish the same goal, and will consider these edits in the next code update.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Comment acknowledged, no change made. Staff proposes to incorporate changes in the compliance documents to accomplish the same goal, and will consider these edits in the next code update.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Staff agrees with the comment, and changes have been made.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Comment acknowledged, some changes have been made. The reference to footnote 3 in the table has been added. Staff proposes to incorporate changes in the compliance documents to accomplish the same goal, and will consider these edits in the next code update.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>



<p>Staff disagrees with the comment, no changes have been made.</p> <p>The codified sections refer to relevant field verification and diagnostic testing as well as the procedural requirements in the relevant Residential and Nonresidential Reference Appendices for ECC-Raters and ATTs respectively.</p>	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
<p>Staff agrees with the comment, and changes have been made.</p>	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
<p>Comment acknowledged, no change made. Staff proposes to incorporate changes in the compliance documents to accomplish the same goal, and will consider these edits in the next code update.</p>	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
<p>Staff disagrees with the comment, and no changes have been made. The sampling requirements are exclusively for working with ECC-Raters. For a space or installation to be placed in a sample-group, the installer/builder must perform the testing required by the Energy Code upon completion of work. Then the installation/space may be placed in a sample-group. The ECC-Rater may then test one member of that sample-group, performing the same test as required by the Energy Code. Allowing ATTs to perform sampling as if they were Raters would create no time or cost savings. Staff will consider modification to the sampling process for future rulemakings.</p>	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>

<p>Comment acknowledged, no change made. Staff proposes to incorporate changes in the compliance documents to accomplish the same goal, and will consider these edits in the next code update.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Comment acknowledged, no change made. Staff proposes to incorporate changes in the compliance documents to accomplish the same goal, and will consider these edits in the next code update.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Staff agrees with the comment, and changes have been made.</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>
<p>Comment acknowledged, no changes have been made. Staff will consider these edits in the next code update</p>	<p>6/27/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a></p>

Staff acknowledge the exception should have been extended to additions 700 square feet or less and staff will evaluate options for addressing this after the regulations are published.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Comment acknowledged, no changes have been made. Staff will make these edits in the 2028 code cycle.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff agrees with the comment, and changes have been made.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff disagrees with comment, no changes have been made. The declaration as written as is already allows any company, "the certifying company," to declare that a library meets the requirements for certification. If the certifying company is a parent entity filing on behalf of a subsidiary entity, a subsidiary entity filing on behalf of a parent entity, or an affiliate entity filing on behalf of an affiliate entity, then contact information must be provided for the additional entities.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff agrees with the comment, and changes have been made.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Comment acknowledged, no changes have been made. Stakeholder feedback indicated that the language and examples in Sections 130.1(c)5 and 6 were confusing, since they were in conflict with Section 120.1-A.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>

Comment acknowledged, no changes have been made. The addition of the equation for the Langelier Saturation Index (LSI) in Section 110.2(e)2l was meant to simplify how to determine the LSI. The maximum cycles of concentration, which is included in Table 110.2-A-1, is unchanged at 2.5(LSI).	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff agrees with the comment, and changes have been made.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Comment acknowledged, no changes have been made. Section 140.9(c)3 specifies fan power requirements for laboratory systems. Staff will incorporate changes in the compliance documents to provide additional clarification.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Staff agrees with the comment, and the appropriate numbers were changed to subscripts to remain consistent with other references to carbon dioxide.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257467&amp;DocumentContentId=93345</a>
Comment acknowledged, no change made. The cooling tower efficiencies in the 2025 Energy Code are based on the Final CASE Report proposal. For Climate Zones 2, 4, 5, and 13, the analysis showed that higher efficiencies of 70 or 80 GPM/hp were cost effective.	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257480&amp;DocumentContentId=93359">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257480&amp;DocumentContentId=93359</a>

<p>Comment acknowledged, no changes have been made. Staff will need to review the proposed minimum efficiency requirements to determine if additional analysis or supporting documents are required and may include in future versions of the Energy Code. For the 2025 Energy Code, Staff will explore including these minimum efficiencies in any relevant supporting documents.</p>	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257480&amp;DocumentContentId=93359">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257480&amp;DocumentContentId=93359</a>
<p>Thank you for your comment of support.</p>	6/27/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257480&amp;DocumentContentId=93359">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257480&amp;DocumentContentId=93359</a>

Summary remarks - responses to detailed comments included below.	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257481&amp;DocumentContentId=93360">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257481&amp;DocumentContentId=93360</a>
Comment acknowledged, no changes have been made. The proposed U-factor of 0.27 is based on analysis by the CASE team using LSC, which showed a B/C ratio between 1.56 and 3.79. Staff confirmed that product availability supports the proposed U-factor.	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257481&amp;DocumentContentId=93360">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257481&amp;DocumentContentId=93360</a>

<p>Comment acknowledged, no changes made. This change was proposed in the 2025 Single-Family Two Heat Pump Baseline Report, which found that there is a negligible cost impact associated with the change from an SHGC of 0.23 to 0.20. Additionally, Staff found that projects containing windows with an SHGC of 0.20 already make up around 25% of residential new construction projects in Climate Zone 15 according to the CEC's data.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257481&amp;DocumentContentId=93360">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257481&amp;DocumentContentId=93360</a></p>
<p>Staff disagrees with the comment, and no changes have been made. The sampling requirements are exclusively for working with ECC-Raters. For a space or installation to be placed in a sample-group, the installer/builder must perform the testing required by the Energy Code upon completion of work. Then the installation/space may be placed in a sample-group. The ECC-Rater may then test one member of that sample-group, performing the same test as required by the Energy Code. Allowing ATTs to perform sampling as if they were Raters would create no time or cost savings. Staff will consider modification to the sampling process for future rulemakings.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257483&amp;DocumentContentId=93362">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257483&amp;DocumentContentId=93362</a></p>

<p>Comment acknowledged, no changes made. This change was proposed in the 2025 Single-Family Two Heat Pump Baseline Report, which found that there is a negligible cost impact associated with the change from an SHGC of 0.23 to 0.20. Additionally, Staff found that projects containing windows with an SHGC of 0.20 already make up around 25% of residential new construction projects in Climate Zone 15 according to the CEC's data.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257488&amp;DocumentContentId=93366">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257488&amp;DocumentContentId=93366</a></p>
<p>Comment acknowledged, no changes have been made. The proposed U-factor of 0.27 is based on analysis by the CASE team using LSC, which showed a B/C ratio between 1.56 and 3.79. Staff confirmed that product availability supports the proposed U-factor. Staff notes that incremental cost is relative to the existing requirement, which is a U-factor of 0.30.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257488&amp;DocumentContentId=93366">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257488&amp;DocumentContentId=93366</a></p>



<p>Staff agrees with the comment, and changes have been made. Staff has updated Reference Joint Appendix JA8 to refer to the "time of failure" portion of the DOE test procedure in Appendix BB to Subpart B of 10 CFR Part 430 instead of referring to the ENERGY STAR Elevated Temperature Life Test method.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257492&amp;DocumentContentId=93370">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257492&amp;DocumentContentId=93370</a></p>
<p>Comment acknowledged, no changes have been made. Staff notes that the Energy Code preserves fuel choice and the ability to use all federally covered products.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257494&amp;DocumentContentId=93372">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257494&amp;DocumentContentId=93372</a></p>

<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257494&amp;DocumentContentId=93372">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257494&amp;DocumentContentId=93372</a>
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<p>Thank you for your comment. Staff will incorporate changes in the compliance documents to clarify that the intent of the requirement is that installers select an appropriate thermostat for the installed space conditioning system</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257494&amp;DocumentContentId=93372">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257494&amp;DocumentContentId=93372</a></p>
<p>Introductory remarks - no response needed.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257494&amp;DocumentContentId=93372">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257494&amp;DocumentContentId=93372</a></p>

Staff agrees with the comment, and changes have been made.	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257495&amp;DocumentContentId=93374">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257495&amp;DocumentContentId=93374</a>
Summary remarks - responses to detailed comments included below.	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>
Thank you for your comment. Staff notes that the Energy Code preserves fuel choice and the ability to use all federally covered products.	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>

Staff clarifies that heat pump water heaters (HPWH) would have been cost effective in the 2022 code cycle for climate zones 3, 4, 13, and 14. The goal of the 2022 Energy Code was to set either a heat pump space heater or heat pump water heater as the baseline. The 2022 rulemaking record showed that staff set a heat pump space heater as the baseline for climate zones 3, 4, 13, and 14, and excepted these same climate zones from the heat pump water heater baseline.

The analysis used different costs for multifamily dwelling units and single family homes because multifamily dwelling units are typically smaller than single family homes, and therefore Staff assumed a larger 65-gallon heat pump water heater (HPWH) for the single family case. A 65-gallon HPWH for multifamily dwelling units is also cost effective.

Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.

Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.

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<p>Comment acknowledged, some changes have been made. The efficiency requirements for condensing units in Table 110.2-A have been reverted to match the requirements in the 2022 code. Staff plans to release a compendium to Title 24 containing federal standards.</p> <p>In regards to adiabatic fluid cooler minimum efficiencies and test procedures, staff will need to review the proposed minimum efficiency requirements to determine if additional analysis or supporting documents are required and may include in future versions of the Energy Code. For the 2025 Energy Code, Staff will explore including these minimum efficiencies in any relevant supporting documents.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>
<p>Thank you for your comment. Please refer to responses to 45-day comments TN256311 and TN256539. Staff did not remove the calculation for Langelier Saturation Index. Staff wanted to avoid any confusion on how to perform the calculation for setting the cycles of concentration. Staff also wanted to avoid referencing a separate calculator.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>

<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>
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Thank you for your comment. This requirement ensures a space for a future HPWH, and may be used for other purposes in the meantime.

The capped ducts are one of the options to meet the ventilation requirement for a future HPWH. Designers may choose a different option.

Staff notes that Reference Appendices, Joint Appendix JA15 is not the only method to meet the central heat pump water heater ready requirement in Section 160.9(f). Staff expects most projects will meet these requirements by calculation and documentation by the responsible person associated with the project. JA15 is intended to provide a conservative backstop if the responsible person is not available.

Despite the moderate added construction costs associated with improvements to the building standards, these ready requirements are reasonable based on the economic and environmental benefits that will be derived from the building standards for building owners in the future. Ready requirements install infrastructure at the time of building construction when construction costs are the lowest. Having this infrastructure in place, gives building owners an affordable path to upgrading to electric appliances without needing to incur significant retrofit costs.

Staff notes that since ready requirements do not require installation of an appliance, the cost effectiveness analysis does not consider the cost of an appliance. The cost effectiveness analysis is based on the incremental cost of the electric-ready infrastructure.

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<p>Staff disagrees with the comment, and no changes have been made. The proposed change would greatly expand the exception to larger low-rise multifamily projects where this requirement is still technically feasible and cost effective.</p> <p>Staff evaluated the four standard design prototypes for multifamily buildings. The analysis found pathways for federally compliant equipment in low-rise multifamily (3 stories and below) and not for high-rise multifamily (4 stories or greater). Additionally available data shows that most high-rise multifamily projects uses central hot water system rather than individual water heaters in each dwelling, making individual water heater a rare system design choice for high-rise multifamily. Therefore limiting this exception for high-rise multifamily represents a logical breakpoint.</p> <p>The proposal for Section 170.2(d)2 is similar to the current alternative pathway for unitary heat pump water heaters, which references Northwest Energy Efficiency Alliance's (NEEA) Advanced Water Heating Specification (AWHS). The Standard necessitates adoption of the current version of AWHS. Based on current practice, we expect that products previously certified would be grandfathered in that Tier.</p> <p>The CEC will stay in communication with NEEA to ensure that future AWHS versions will not present an issue for manufacturers to meet the requirements of Section 170.2(d)2.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>
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Staff agrees with the comment, and changes have been made. Specifically, staff has referenced Department of Energy's test procedures.	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>
Thank you for your comment	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>
Summary remarks - responses to detailed comments included below.	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>

<p>The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. Builders have multiple compliance pathways that are not preempted, and any single prescriptive compliance pathway that may be preempted in isolation, if it exists, would not result in a legal requirement for the builder to choose that specific pathway. The builder is free to choose among different compliance pathways of varying costs. The Energy Code is specifically designed to meet all seven criteria of EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3).</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a></p>
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The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. Both cases are distinguishable from the Energy Code: (1) *CRA v. Berkeley* did not analyze EPCA's seven-part building code exception and (2) *Albuquerque* is a decision from the District Court in the Tenth Circuit. California is located in the Ninth Circuit, and the Ninth Circuit Court of Appeals has not accepted or extended the logic or conclusions of *Albuquerque* to building codes that meet all seven criteria of EPCA's seven-part building code exception.

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<p>The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. The Energy Code does not legally require the installation of products exceeding their federal minimums; rather, builders are free to choose among multiple compliance options, many of which allow for the installation of federally covered products at their federal minimum efficiency levels. The Energy Code is not inconsistent with how the Ninth Circuit has interpreted EPCA's preemption provisions, including the seven-part building code exception to preemption in 42 U.S.C. 6297(f)(3).</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a></p>
<p>Thank you for your comment. Although the name of the metric has changed to Long-Term System Cost (LSC), and the units have changed to dollars, the methodology for calculating LSC values is identical to the methodology for calculating Time Dependent Valuation (TDV) factors used for previous code cycles.</p> <p>Historically, an extra step was conducted at the end of the metrics update process to convert the net present value cost from a cost per unit of energy (\$/kWh and \$/therm) to an energy-only unit (kBtu/kWh and kBtu/therm). For the 2025 code cycle, this step has been removed, and LSC units remain in \$/kWh and \$/therm.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a></p>

<p>Thank you for your comment. Staff clarifies that the 2025 Energy Code Accounting Methodology Report provides information for the analysis used in developing the metrics used in the 2025 Energy Code cycle. However, assumptions used for specific energy measures are included in the individual measure proposal reports.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a></p>
<p>Thank you for your comment. Long-Term System Cost (LSC) is defined as the CEC-projected present value of costs to California's energy systems over a period of 30 years. LSC does not represent a prediction of individual utility bills.</p> <p>The methodology for calculating LSC values is identical to the methodology for calculating TDV factors used for previous code cycles.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a></p>

Thank you for your comment. To develop the LSC (and for previous cycles, TDV) factors, one specific demand scenario is selected to represent a realistic future aligned with forecasted load growth and existing and anticipated future policy. This scenario is used to determine capacity resources and renewable generation procurement. In the 2022 code cycle, the demand scenario that was selected was developed for a CEC-funded study on Natural Gas Distribution in California’s Low Carbon Future, named the “Slower Building Electrification” scenario. For the 2025 code cycle, a number of different scenarios were evaluated from publicly available scenario analysis, including the CEC Demand Scenarios Project, CARB Scoping Plan, Integrated Energy Policy Report (IEPR), and Low Carbon Future study. Ultimately, the CEC chose a scenario from the CEC Demand Scenarios Project named the “High Electrification Policy Compliance” scenario, which has relatively high economy-wide electrification. The scenarios chosen for both the 2022 and 2025 code cycles are aligned with current policy and targets including the 80x50 emissions target and SB100 goals of 100% RPS by 2045. These targets, combined with the load forecast, drive the generation capacity resources within the model.

Generation capacity avoided costs are calculated based on the estimated value of a marginal generation capacity resource. For the 2022 TDVs, three phases of the capacity market were considered, with the following marginal capacity resources:

1. A near-term capacity need driven by planned retirements of existing generation, that sticks to the historical framework. In this period, the marginal capacity resource is assumed to be the net cost of a combustion turbine.
2. By the late 2020s, the marginal capacity resource is assumed to become a combination of renewable generation and energy storage. The cost of this marginal capacity resource is calculated in the selected RESOLVE scenario, as the shadow price of generation capacity. RESOLVE is E3’s proprietary capacity expansion model, that selects an optimal resource portfolio based on resource costs and statewide renewable generation targets.
3. Beyond 2030, the marginal capacity resource shifts to firm dispatchable generation. The 2022 analysis conservatively assumed that the firm generation would be met by keeping

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Thank you for your comment. A statewide retail rate forecast for residential and nonresidential customers is developed for the electricity LSCs. The electricity rate forecasts for previous cycles of LSC were developed directly from the IEPR. The 2021 IEPR includes retail rate forecasts for a mid-demand load and current policy mandates. The IEPR calculates average residential and commercial rates for PG&E, SCE, SDG&E, LADWP, and SMUD through 2035. For the 2025 LSCs, the utility-specific rates are combined into a statewide weighted average using electricity consumption forecasts from 2021 IEPR Form 2.3. After 2035, the rate forecasts (modified by the multipliers described above) are escalated using the compound average growth rate observed from 2030 through 2035 (3.1%/yr nominal increase for residential and 3.0%/yr for non-residential).

The existing resource portfolio was supplemented with additional renewable generation resources that are consistent with statewide renewable capacity expansion modeling and also correlated to the TMY weather files. To remain consistent with the over-arching economy-wide emissions scenario, along with specific renewable energy targets, E3 determined an optimal policy compliant generation portfolio, using RESOLVE. RESOLVE is E3's proprietary capacity expansion model, that selects an optimal resource portfolio based on resource costs and statewide renewable generation targets. The RESOLVE model used in this analysis is based on the version used in the electricity sector analysis for the CPUC's Load Serving Entity (LSE) Filing Requirements. Load forecast inputs were updated using data from the CEC's Demand Scenario Project, High Electrification Policy Compliance Scenario. Cost inputs were updated using data derived from NREL's 2021 Annual Technology Baseline and Lazard's Levelized Cost of Storage Version 6.0.

Hourly Source Energy or simply Source Energy is not being replaced. The 2025 code will continue to use both Source Energy and Long-term System Cost (LSC) for compliance evaluation.

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<p>Thank you for your comment. Comments regarding the 2022 code cycle are out of scope of this rulemaking. Hourly Source Energy or simply Source Energy is defined in the 2025 Energy Code as "the long run hourly marginal source energy of fossil fuels that are combusted as a result of fossil fuels that are combusted as a result of building energy consumption either directly at the building site or caused to be consumed to meet the electrical demand of the building considering the long-term effects of Commission-projected energy resource procurement. For a given hour, the value in that hour for each forecasted year is averaged to establish a lifetime average source energy."</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>
<p>Thank you for your comment. Hourly Source Energy or simply Source Energy is defined in the 2025 Energy Code as "the long run hourly marginal source energy of fossil fuels that are combusted as a result of fossil fuels that are combusted as a result of building energy consumption either directly at the building site or caused to be consumed to meet the electrical demand of the building considering the long-term effects of Commission-projected energy resource procurement. For a given hour, the value in that hour for each forecasted year is averaged to establish a lifetime average source energy."</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a>

<p>Thank you for your comment. The methodology for calculating LSC values is identical to the methodology for calculating TDV factors used for previous code cycles. Reports supporting each measure detail how costs are calculated. For a hypothetical product with lifetime of 15 years, the product would be replaced once over the 30 year life of a building.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a></p>
<p>Thank you for your comment. The methodology for calculating Long-term System Cost (LSC) values is identical to the methodology for calculating Time Dependent Valuation (TDV) factors used for previous code cycles.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a></p>
<p>Comment acknowledged and no change made. The CEC establishes performance standards based on energy consumption measured in terms of the metrics LSC and Source Energy, and this energy consumption (LSC and source energy) is represented in the compliance software in energy consumption per square foot. The CEC uses building energy prototypes to establish energy consumption budgets using these metrics. To determine the energy consumption budget for the building, a Commission-approved calculation method is required that meets all CEC calculation and modeling requirements, as specified in the ACM reference manual [see 10-109(c)]. This process is described in more detail in the 2025 Energy Code Accounting Methodology and is consistent with the requirements of the Warren-Alquist Act.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a></p>

Thank you for your comment. The methodology for calculating LSC factors is identical to the methodology for calculating TDV factors. Fundamentally, LSC and TDV represent the same thing using different units.

Efficiency LSC and Total LSC are the same as Efficiency TDV and Total TDV in 2022, respectively, and vary depending on building type as follows.

In a nonresidential building, the Efficiency LSC energy is the sum of the LSC energy for space conditioning, water heating, mechanical ventilation and lighting. The Total LSC energy is the sum of the Efficiency LSC energy and LSC energy from the photovoltaic system, battery energy storage systems (BESS), and demand flexibility.

In a single-family residential building, the Efficiency LSC energy is the sum of the LSC energy for space conditioning, water heating, mechanical ventilation, and the self-utilization credit. The Total LSC energy is the sum of the Efficiency LSC energy and LSC energy from the photovoltaic system, battery energy storage systems (BESS), lighting, demand flexibility and other plug loads.

In a multifamily building, the Efficiency LSC energy is the sum of the LSC energy for space conditioning, water heating, mechanical ventilation, lighting and the self-utilization credit. The Total LSC energy is the sum of the Efficiency LSC energy and LSC energy from the photovoltaic system, battery energy storage systems (BESS), and demand flexibility.

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<p>Thank you for your comment.</p> <p>The methodology for calculating LSC factors is identical to the methodology for calculating TDV factors. Fundamentally, LSC and TDV represents the same thing using different units. There is no change in the way the Standard calculates regulated and unregulated loads. The only difference is that the results are presented in LSC rather than TDV.</p> <p>Please refer to the technical report "Photovoltaic and Battery Storage System Update and Expansion" TN#256201 for accounting for the on-site renewable requirement.</p> <p>The Energy Code is not required to align with ASHRAE 90.1, as long as the commercial specifications of the Energy Code result in the same or less energy use as compared to ASHRAE 90.1.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a></p>
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The CEC acknowledges the comment, and no changes have been made. The Energy Code is designed to meet EPCA's seven-part building code exception, which includes the requirement to award credits on a "one-for-one equivalent energy use or equivalent cost basis." Furthermore, the CEC's adjustments are reasonable adjustments given California's unique geography and climate zones.

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The CEC acknowledges the comment and no changes have been made. The CEC appreciates DOE's methodology, but notes DOE and CEC have different statutory mandates and rulemaking processes. The CEC's methodology and rulemaking process is consistent with California's statutory requirements regarding building standards development.

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<p>Thank you for your comment. Incremental costs for all measures include both initial and replacement costs, as well as operational costs, during the 30 year period of analysis. Energy use of proposed measures are simulated over the 30 year period of analysis.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257498&amp;DocumentContentId=93377</a></p>
<p>Introductory remarks - no response needed.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382</a></p>

Comment acknowledged, some changes have been made. Specifically, §140.4(a)3Aiii no longer includes the 105°F restriction. Staff notes that designers and manufacturers can mitigate efficiency loss in the selection and design of the coils for the application. Other aspects of the system design can limit the efficiency loss, such as varying fan speed can optimize airflow demand. The concern of increase in coil depth may be addressed with integrated design approaches.

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<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff agrees that using a changeover coil for non-heated, or minimally heated zones, would improve cost effectiveness, but this design option was not analyzed in this code cycle.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382</a></p>
<p>Comment acknowledged, changes have been made. The hydronic loop volume requirement for air to water heat pumps in Section 140.4(a)3Ciii was removed from the adopted language.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382</a></p>

<p>Comment acknowledged, no changes made.</p> <p>For units greater than 1 ton (which would serve approximately 400 sf), indoor VRF units are available to meet the 0.35 W/cfm. Unducted VRF units less than 1 ton can meet the fan requirement, or SZHP can also be used to comply prescriptively.</p> <p>While fan power draw is specified in Section 140.4(a)3D, the code does not require that the fan operate at those limits. In other words, the section is only specifying that if the indoor fan operates at the given speed, then the power draw must meet these requirements. Staff will incorporate changes in the compliance documents to clarify this requirement.</p> <p>Fan coil units with two speeds will not meet the requirements. Major manufacturers have indoor units less than 1 ton with at least three speed fan options.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382</a>
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<p>Comment acknowledged, some changes have been made.</p> <p>The 2025 Energy Code definition of "Multiple zone system (or multi-zone system)" was revised to "a space conditioning system that conditions more than one space conditioning zone, each of which has one or more devices (such as dampers, cooling coils, and heating coils that regulate airflow, cooling, or heating capacity to the zone."</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382</a></p>
<p>Comment acknowledged, some changes have been made.</p> <p>The 2025 Energy Code definition of "Multiple zone system (or multi-zone system)" was revised to "a space conditioning system that conditions more than one space conditioning zone, each of which has one or more devices (such as dampers, cooling coils, and heating coils that regulate airflow, cooling, or heating capacity to the zone."</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382</a></p>

<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257501&amp;DocumentContentId=93382</a>
<p>Introductory remarks - no response needed.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387</a>

<p>Thank you for your comment. The CEC is considering options for restructuring the Energy Code for the 2028 cycle, and hopes to continue to engage with industry stakeholders as those efforts take shape.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387</a></p>
<p>Thank you for the comment. Bookmarks will be included in the final 2025 Building Energy Efficiency Standards publication, similar to the bookmarking of the 2022 Building Energy Efficiency Standards.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387</a></p>

<p>Comment acknowledged, no change made. Several names for the residential program were considered as part of this rulemaking. Staff chose Energy Code Compliance (ECC) for several reasons documented in the rulemaking record.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387</a></p>
<p>Thank you for your comment. Staff may consider this topic during future updates of the Energy Code.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387</a></p>
<p>Thank you for your comment. The CEC is considering options for restructuring the Energy Code for the 2028 cycle, and hopes to continue to engage with industry stakeholders as those efforts take shape.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257505&amp;DocumentContentId=93387</a></p>

<p>Thank you for your comment. Staff notes that The California Building Code, Scope and Administration Sections 1.8.6. and 1.8.7 authorize local building Departments to make alternates to the Codes for the purpose of health and safety on a project by project basis.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257506&amp;DocumentContentId=93386">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257506&amp;DocumentContentId=93386</a></p>
<p>Staff disagrees with the comment, no changes have been made. The 1% trigger requirement has been part of the ATTCP program requirements for some time and the interpretation of the requirement have been established by a collaborative process with the ATTCP community. Staff may consider revisiting this topic in future code updates.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385</a></p>

<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification of envelope by certified acceptance testing technicians is not required. Expanding the ATT program to envelope may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385</a></p>
<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385</a></p>
<p>Comment acknowledged, no changes made. While there may eventually be benefit to requiring ATTs to verify compliance with Guideline 36 or the exceptions, there is insufficient time to setup the necessary documentation to allow ATTs to perform this type of check on a project site. Staff may consider this issue for the 2028 code cycle.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385</a></p>



<p>Comment acknowledged, no changes made. While there may eventually be benefit to requiring ATTs to verify compliance with Guideline 36 or the exceptions, there is insufficient time to setup the necessary documentation to allow ATTs to perform this type of check on a project site. Staff may consider this issue for the 2028 code cycle.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385</a></p>
<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385</a></p>

<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385</a>
<p>Comment acknowledged, no changes have been made.</p> <p>At this time verification by certified acceptance testing technicians is not required for covered process equipment. Covered process systems typically require specific expertise to design, install and verify equipment performance. Expanding the ATT program to covered process system may be considered in future versions of the Energy Code if current verification procedures of covered process systems are demonstrated to be insufficient. The benefits and costs associated with requiring a certified ATT to perform testing would need to be assessed, and the revision would need to be demonstrated to be cost effective.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385</a>

<p>Staff disagrees with the comment, and no changes have been made. The sampling requirements are exclusively for working with ECC-Raters. For a space or installation to be placed in a sample-group, the installer/builder must perform the testing required by the Energy Code upon completion of work. Then the installation/space may be placed in a sample-group. The ECC-Rater may then test one member of that sample-group, performing the same test as required by the Energy Code. Allowing ATTs to perform sampling as if they were Raters would create no time or cost savings. Staff will consider modification to the sampling process for future rulemakings.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385</a></p>
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<p>Staff disagrees with the comment, and no changes have been made. The sampling requirements are exclusively for working with ECC-Raters. For a space or installation to be placed in a sample-group, the installer/builder must perform the testing required by the Energy Code upon completion of work. Then the installation/space may be placed in a sample-group. The ECC-Rater may then test one member of that sample-group, performing the same test as required by the Energy Code. Allowing ATTs to perform sampling as if they were Raters would create no time or cost savings. Staff will consider modification to the sampling process for future rulemakings.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257507&amp;DocumentContentId=93385</a></p>

<p>Staff disagree with these comments, and no changes have been made. The CEA measure proposal could not be included in this rulemaking because it was not cost effective.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384</a></p>
<p>Staff disagrees with the comment, and no changes have been made. Staff prefers to keep the phrase "an indoor space" to reinforce that the Exception 1 is limited to indoor spaces.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384</a></p>

<p>Staff disagrees with the comment, and no changes have been made.</p> <p>Staff notes that "Parking areas" specified in Section 130.1(c)6E are the areas on the roof of a parking structure. Parking garages, parking areas, and loading and unloading areas are defined in Section 100.1 and 130.1(c)6 as follows:</p> <ul style="list-style-type: none"> <li>- Parking garage (parking garage buildings) is a building with building floor areas used for parking vehicles.</li> <li>- Parking areas are those areas of a parking garage for the purpose of parking.</li> <li>- "Parking areas include sloping floors of a parking garage."</li> <li>- "Parking areas and ramps do not include Daylight Adaptation Zones or the roof of a Parking Garage, which may be present in a Parking Garage."</li> <li>- "Loading and unloading areas are those areas of a parking garage for the purpose of loading and unloading passengers."</li> </ul>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384</a></p>
<p>Comment acknowledged, no change made. Exceptions 3 to Sections 130.1(d) and 160.5(b)4D are correct. The "less than 85 watts" threshold of the secondary sidelit daylight zone is intended to be a less stringent requirement than the "less than 75 watts" requirement.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384</a></p>

<p>Staff disagrees with the comment, and no changes have been made.</p> <p>The Exception to Section 130.1(d)2Biii allows luminaire segments longer than 8 feet (such as a 10 foot long luminaire segment) to be controlled according to the daylit zone where the luminaire segment is primarily located. Without the exception, a 10 foot luminaire segment would not be allowed in a daylit zone unless the segment is controllable in subsegments 8 feet or less.</p> <p>Staff notes that the Energy Code does not limit the quantity or the location of daylight sensors used in daylight responsive control systems. Designers have the flexibility to optimally locate daylight sensors. For example, if one daylight sensor does not provide satisfactory performance, then two sensors may be installed - one sensor for the primary daylit zone and a second sensor for the secondary daylit zone.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384</a></p>
<p>Comment acknowledged, no changes have been made. The proposed change is outside the scope of the 2025 Energy Code Rulemaking. Staff may consider this topic in future code updates.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384</a></p>

<p>Comment acknowledged, no changes have been made.</p> <p>The current residential outdoor lighting requirements apply to outdoor lighting permanently mounted to a residential building or other building on the same lot. The requirements do not apply to landscape lighting. Light poles installed in typical residential building sites are commonly for landscape lighting and therefore are not covered by the current residential outdoor lighting regulations. To expand the scope of the Energy Code to cover light poles, the proposal would have to be cost effective and technically feasible. At this time, no such proposal has been submitted.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384</a></p>
<p>Staff disagrees with the comment, and no changes have been made. The mandatory requirements for multilevel lighting controls are in Section 130.1(b). These requirements include that "The multilevel lighting controls shall provide and enable continuous dimming from 100 percent to 10 percent or lower of lighting power." A standard on/off toggle switch does not meet the requirements of Section 130.1(b).</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257508&amp;DocumentContentId=93384</a></p>

Staff agrees with the comment, and changes have been made. Specifically, Section 130.1(d)2F is proposed to say: “The automatic daylighting control shall permit the multilevel lighting control to adjust the level of lighting.”

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<p>Comment acknowledged, no change made. CO<sub>2</sub>-based central heat pump water heating systems are not the basis of the CASE proposal, nor the Energy Code language. Staff recognize that the prescriptive requirement is currently limited to single-pass HPWH systems. Other system types can be modeled under the performance compliance path.</p> <p>Staff will evaluate additional central HPWH system types in the next code update.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257519&amp;DocumentContentId=93399">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257519&amp;DocumentContentId=93399</a>
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<p>Comment acknowledged, no change made. Staff recognize that the prescriptive requirement is currently limited to single-pass HPWH systems. Other system types can be modeled under the performance compliance path.</p> <p>Staff will evaluate additional central HPWH system types in the next code update.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257519&amp;DocumentContentId=93399">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257519&amp;DocumentContentId=93399</a></p>
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<p>Thank you for your comment. This proposal is similar to the current alternative pathway for unitary heat pump water heaters, which references Northwest Energy Efficiency Alliance's (NEEA) Advanced Water Heating Specification (AWHS). The Standard necessitates adoption of the current version of AWHS. Based on current practice, we expect that products previously certified would be grandfathered in that Tier.</p> <p>The CEC will stay in communication with NEEA to ensure that future AWHS versions will not present an issue for manufacturers to meet the requirements of Section 170.2(d)2.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257519&amp;DocumentContentId=93399">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257519&amp;DocumentContentId=93399</a>
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<p>Comment acknowledged, no change made. Staff notes that:</p> <ul style="list-style-type: none"><li>o Job-site audits set a higher standard compared to laboratory training audits. Job-site audits represent actual field conditions, varying installation conditions, and other factors that will affect the ATTs acceptance testing performance. Job-site audits are more rigorous in ensuring ATT competency .</li><li>o The training facility audit is provided as an alternative in response to comments received to provide flexibility because job-site audits may not always be practical in the field.</li><li>o The training facility audit ensures all ATT get audited over a set time period. Staff views the training facility audit to occur once every code cycle (3 years) as a minimum requirement.</li><li>o The trigger requirements as a percentage of tests performed is a well established requirement that has not been modified in this update.</li></ul>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257521&amp;DocumentContentId=93400">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257521&amp;DocumentContentId=93400</a>
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<p>Staff disagrees with the comment, no changes have been made. Staff clarifies that the new in-lab audit requirements were intended to be equivalent to the existing shadow audits in terms of their effects on quality assurance, not volume or financial impact.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257521&amp;DocumentContentId=93400">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257521&amp;DocumentContentId=93400</a></p>
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Summary remarks - no response needed.	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257521&amp;DocumentContentId=93400">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257521&amp;DocumentContentId=93400</a>
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<p>Staff disagrees with the comment, no changes have been made. Staff clarifies that the new in-lab audit requirements were intended to be equivalent to the existing shadow audits in terms of their effects on quality assurance, not volume or financial impact.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257521&amp;DocumentContentId=93400">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257521&amp;DocumentContentId=93400</a></p>
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<p>Staff disagrees with the comment, no changes have been made. Staff clarifies that the new in-lab audit requirements were intended to be equivalent to the existing shadow audits in terms of their effects on quality assurance, not volume or financial impact.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257521&amp;DocumentContentId=93400">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257521&amp;DocumentContentId=93400</a></p>
<p>Summary remarks - responses to detailed comments included below.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407</a></p>



<p>Staff disagrees with the comment, no changes have been made. The intent of a Rater signature on the Certificate of Verification is to ensure that an individual person accepts responsibility for the content on the certificate and is the same person that performed the verification. Staff will consider this issue for the 2028 Energy Code to allow time to identify and resolve associated issues.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407</a></p>
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Staff agrees with the comment, and changes have been made. Specifically, Staff has added the following text: For the purposes of a Consumer Information Form, "register" is defined as submitting the information outlined in this paragraph to the ECC-Provider.

6/28/2024

June 15 day

<https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&DocumentContentId=93407>

<p>Comment acknowledged, some changes have been made. Specifically, Section 10-103.3(d)5Cig has been modified as follows: If the ECC-Provider is refused access to the development, the ECC-Rater may be subject to investigation and disciplinary action <u>at the discretion of the ECC-Provider</u>. Staff notes that the intent of this section is to allow the ECC-Provider to investigate the refusal of access to the project site. If the ECC-Provider finds there is collusion between the Rater and Developer to circumvent the quality assurance requirement, the ECC-Provider must have the necessary tools to act against the ECC-Rater.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407</a></p>
<p>Staff disagrees with the comment, no changes have been made. Auditing an untested unit has been a long standing requirement in the HERS regulations. Unfortunately, this requirement has been largely ignored to the disbenefit of the consumer. Staff intends to enforce this requirement going forward.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407</a></p>

<p>Staff agrees with the comment, and changes have been made. Specifically, Section 10-103.3(f)2A has been deleted.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407</a></p>
<p>Staff agrees with the comment, and changes have been made. Specifically, 10-103.3(f)2F has been modified as follows: By the end of March of each year starting in 2027, each ECC-Rater Company shall submit an Annual Activity Report to the Commission.</p>	<p>6/28/2024</p>	<p>June 15 day</p>	<p><a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257527&amp;DocumentContentId=93407</a></p>

<p>Comment acknowledged, some changes have been made.</p> <p>The efficiency requirements for condensing units in Table 110.2-A have been reverted to match the requirements in the 2022 code; and the efficiency requirements for split system and single packaged heat pumps with a capacity of <math>\geq 240,000</math> Btu/h and <math>&lt; 760,000</math> Btu/h have been corrected.</p> <p>Staff prefers to keep the VRF efficiency requirements as is. We will consider removing the requirements relevant to before 1/1/2023 in the next code update.</p> <p>Staff plans to release a compendium to Title 24 containing federal standards.</p>	7/1/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257536&amp;DocumentContentId=93424">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257536&amp;DocumentContentId=93424</a>
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<p>Thank you for your comment. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path.</p>	7/1/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257536&amp;DocumentContentId=93424">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257536&amp;DocumentContentId=93424</a>
<p>Comment acknowledged, no changes have been made. As written, BESS that do not provide backup capability can satisfy Reference Joint Appendix JA12 requirements.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257537&amp;DocumentContentId=93415">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257537&amp;DocumentContentId=93415</a>
<p>Comment acknowledged, no change made. Staff will explore adding a CF13 option in the ACM.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257537&amp;DocumentContentId=93415">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257537&amp;DocumentContentId=93415</a>
<p>Thank you for your comment of support.</p>	6/28/2024	June 15 day	<a href="https://efiling.energy.ca.gov/GetDocument.aspx?tn=257537&amp;DocumentContentId=93415">https://efiling.energy.ca.gov/GetDocument.aspx?tn=257537&amp;DocumentContentId=93415</a>



<b>Comment Number</b>	<b>Commenter</b>
258683	East Bay Municipal Utility District (EBMUD)



258735.001

CA Statewide Utility  
Codes and Standards  
Enhancement Team

258735.002

CA Statewide Utility  
Codes and Standards  
Enhancement Team

258735.003	CA Statewide Utility Codes and Standards Enhancement Team
258735.004	CA Statewide Utility Codes and Standards Enhancement Team

258917.001

ASHRAE

259005.001

Western Allied  
Mechanical

259015.001

Taylor Engineers

259021.001

A.O. Smith

259021.002

A.O. Smith

259021.003

A.O. Smith

259022.001	Vanessa O'Connor
259024.001	Heating Air Conditioning Refrigeration Distributors International
	Heating Air Conditioning Refrigeration Distributors International



Heating Air  
Conditioning  
Refrigeration  
Distributors  
International

Heating Air  
Conditioning  
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Distributors  
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Heating Air  
Conditioning  
Refrigeration  
Distributors  
International

	<p>Heating Air Conditioning Refrigeration Distributors International</p>
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259028.001

Natural Resources  
Defense Council

259028.002

Natural Resources  
Defense Council

259028.003

Natural Resources  
Defense Council

259028.004

Natural Resources  
Defense Council

259028.005

Natural Resources  
Defense Council

259029.001

Northwest Energy  
Efficiency Alliance

259030.001

Western Propane Gas  
Association



259030.002

Western Propane Gas  
Association

259030.003

Western Propane Gas  
Association

259030.004

Western Propane Gas  
Association

259032.001

Laura Petrillo-Groh  
(AHRI)

259032.002

Laura Petrillo-Groh  
(AHRI)

259032.003

Laura Petrillo-Groh  
(AHRI)

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(AHRI)

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Laura Petrillo-Groh  
(AHRI)



259032.007	Laura Petrillo-Groh (AHRI)
259032.008	Laura Petrillo-Groh (AHRI)

259032.009

Laura Petrillo-Groh  
(AHRI)

259033.001	Natural Resources Defense Council
259039.001	Gurdaver Singh (Guttman & Blaevoet)

259040.001

Bradford White  
Corporation

259041.001

Daikin U.S.  
Corporation

259044.001

ASHRAE

259045.001

Rheem Manufacturing  
Company

259046.001

PAE Moana Eynau

259048.001

ARCXIS



259048.002

ARCXIS

259048.002

ARCXIS

259048.003

ARCXIS

259089.001

CA Statewide Utility  
Codes and Standards  
Enhancement Team

259089.002	CA Statewide Utility Codes and Standards Enhancement Team
259089.003	CA Statewide Utility Codes and Standards Enhancement Team
259089.004	CA Statewide Utility Codes and Standards Enhancement Team
259089.005	CA Statewide Utility Codes and Standards Enhancement Team

259089.006	CA Statewide Utility Codes and Standards Enhancement Team
259089.007	CA Statewide Utility Codes and Standards Enhancement Team
259089.008	CA Statewide Utility Codes and Standards Enhancement Team

259117

Point Energy  
Innovations

## Comment(s)

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Negative Declaration for the Proposed 2025 Revisions to the Energy Code for Residential and Nonresidential Buildings (Code; Docket No. 24-BSTD-01) applicable statewide. EBMUD has the following comments.

EBMUD FACILITIES Chapter 1 of the Initial Study states that the Code applies to newly constructed buildings, additions, and alterations to existing buildings. The application to additions and alterations is unclear. For additions, the Code should clarify that it applies only to the building addition and not the entire facility. The Code should also clarify which proposed revisions apply to building alterations.

If you have any questions concerning this response, please contact Sandra Mulhauser, Senior Civil Engineer, Major Facilities Planning Section at (510) 287-7032

The California Statewide Utility Codes and Standards Enhancement (CASE) and Compliance Improvement (CI) Teams appreciate the opportunity to review the August 2024 Express Terms for the proposed revisions to the 2025 Building Energy Efficiency Standards, Title 24, Part 6 and Part 1, Chapter 10 (August 2024 Express Terms). We commend the California Energy Commission (CEC) for encouraging public participation in the proceeding and value the opportunity to offer suggestions to refine the code language.

The CASE initiative presents recommendations in support of the CEC's efforts to update the Energy Code with new or updated requirements for various technologies. The three California Investor-Owned Utilities (IOUs) — Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison — and two Publicly Owned Utilities — Los Angeles Department of Water and Power and Sacramento Municipal Utility District — supported this effort. The program goal is to submit proposals that result in cost-effective enhancements to improve energy efficiency, energy performance, and GHG emissions reductions in California buildings.

CI Team subject matter experts work closely with the CASE proposal authors to address compliance and enforcement goals. The CI Team's goal is to reduce roadblocks for industry professionals in the compliance supply chain with a focus on bridging the gaps between the development and implementation of Title 24, Part 6.

#### Comments on the August 2024 Express Terms

We have reviewed the August 2024 Express Terms (Part 6 with Reference Appendices and Part 1, Chapter 10) and appreciate that many of the code change proposals that we have worked with the CEC and other stakeholders to develop over the last few years are incorporated into the draft language. We offer the following three comments:

1. Support updated requirements the nonresidential multi-zone heat pump baseline (Section 140.4(a)3). We acknowledge and commend CEC for the significant efforts made to revise requirements in this section between the release of the 45-day language (March 2024) and the August 2024 Express Terms to arrive at requirements that are acceptable to stakeholders. We support measures where the long-term benefits to buildings and the electric grid outweigh the initial costs to comply. The Statewide CASE Team is committed to providing assistance to CEC on this measure, if requested. As the multizone heat pump market continues to evolve, we are also available to support efforts to add more system types to the prescriptive approach through the 10-109 Executive Director approval process for the 2025 code to add system types for the 2028 code cycle.

2. Support revisions to definitions regarding Advanced Water Heater Specifications (AWHS) in Section 100.1 and the reference to AWHS in Joint Appendix 13. The updated definition references the latest advanced water heater specification published by the Northwest Energy Efficiency Alliance (NEEA) with an effective date of July 15, 2024. The revision enables Title 24, Part 6 to leverage the latest industry knowledge and reduces the burden on manufacturers to meet two different versions of the AWHS.

3. Eliminate confusion between “habitable” and “occupiable” space. Both the California Building Code (Title 24, Part 2) and the California Building Energy Efficiency Standards (Title 24, Part 6) distinguish between “habitable” and “occupiable” space. Broadly speaking, “habitable space” is space for living, sleeping, eating, or cooking, and does not include toilet rooms, hallways, or storage areas. “Occupiable space” encompasses all of “habitable space” as well as the accessory areas that support human occupancy, and includes provisions for exiting, lighting, ventilation and other code requirements for health and safety.

We do not expect that this clarification can be made throughout the code for this cycle. For the next code cycle, we will try to verify the correct use of these terms in other locations throughout the code and recommend clarifications as appropriate. In the spirit of improving clarity and consistency in the August 2024 Express Terms, we recommend the following modification to Section 140.4(a)3, Exception 1:

a. “Buildings greater than 150,000 square feet or greater than 5 ~~habitable~~ occupiable stories.”



members, including over 3,000 in California, that focuses on building systems, energy efficiency, indoor air quality, refrigeration, and sustainability. Through research, standards writing, publishing, certification and continuing education, ASHRAE shapes tomorrow's built environment today.

We appreciate the opportunity to comment on the updated August 15-day language for the 2025 Energy Code Rulemaking. ASHRAE's previous letter regarding this rulemaking, dated May 10, 2024, requested that Section 140.4(a)3, "Prescriptive Requirements for Space Conditioning Systems," be revised to remove the proposed constraints on HVAC system designs and technology options, and instead recommended an approach based on setting metrics and minimum standards for performance.

However, the most recent updates to Section 140.4(a)3 in the 15-day language are still not sufficiently clear regarding the full costs associated with the required systems, as well as the potential safety issues with the new A2L refrigerants required in VRF systems in particular. Since the issues identified in our May letter have not been fully resolved by this latest update, ASHRAE now requests that the CEC remove this section containing the prescriptive requirements from the current rulemaking proposal, until a complete cost analysis of the proposed prescriptive system options is available.

Additionally, we emphasize that ASHRAE's members and subject matter experts stand ready to assist the CEC with the analysis and technical expertise needed to find a solution to these issues. ASHRAE's California chapter members, as well as committee members and other volunteers, are willing to participate in meetings and discussions, document review, or any aspects of this process that could benefit from their objective and nonpartisan technical perspective.

Please do not hesitate to contact [GovAffairs@ashrae.org](mailto:GovAffairs@ashrae.org) with any specific questions. Thank

Day Language. We have reviewed the language and the supporting cost analysis for Schools and Medium Office of the Section 140.4(a)3.A(i) Multizone Space Conditioning System based on VRF + DOAS. In general, we expect that VRF has higher first, maintenance, and replacement costs, compared to VAV, but that is not reflected in the CEC's analysis. We feel that the factors used in arriving at a Benefit to Cost Ratio (BCR) of greater than 1 were not accurate and when corrected would result in BCRs of much less than 1 in all climates and should therefore be reconsidered.

The points highlighted below and in the excerpts illustrate the factors that are incorrect:

1. VAV: Boiler Plant Costs

- a. The boiler plant cost regression was based on boilers that are less than 90% efficient which is required in some climate zones and of the plant capacity used in the example building. Condensing boilers cost factor as used in the analysis is approximately \$25/1000 btuh versus \$16.32/1000 btuh.
- b. The costs therefore are inaccurate in all of the climate zones measures used as the Baseline.

2. VRF: Condensate Piping

- a. The costs for VRF fan coil condensate piping appears to be too low at \$317/ton. The factors that are typical in our market are approximately \$1100/ton though we would typically express this parameter as \$2500/zone.
- b. Additionally, the number of VRF zones is half the number of VAV zones (30 vs 60, respectively). We feel it is more accurate for the VRF fan coils zones to match the VAV zones.

3. VRF: Refrigerant Piping

- a. The costs for refrigerant piping at \$4.40/sf appear to be low. Based on 2020 costs, this

range of concerned stakeholders and has carefully considered feedback in revising the draft 15-day language for the multi-zone heat pump baseline in 140.4(a)3. In particular, the Staff Memo has ultimately acknowledged that the proposed FPFC system is generally not cost effective in most applications when compared to the existing baseline system. The current draft language provides more flexibility in system selection by adding the dual fan dual duct system, which can be a very efficient and cost-effective all-electric HVAC system for some applications, and by providing an exception for buildings larger than 150,000 ft<sup>2</sup> or greater than 5 stories. Taylor Engineers is strongly supportive of energy efficient and appropriate solutions for decarbonizing buildings and HVAC systems. We are appreciative of the opportunity to collaborate with the Energy Commission to advance Title 24 Part 6 and look forward to continuing to collaborate in future cycles.

Nevertheless, Taylor Engineers does have some concerns about the cost effectiveness analysis based on the proposed VRF system type for the medium office building (MOB) and small school prototypes. We believe that the determination of cost effectiveness is incorrect, compared to the existing baseline system type, based on our review of the detailed cost calculations. Our revisions and corrections to the calculations result in higher first costs, higher maintenance costs, and higher replacement costs for VRF over the 30 year period, and benefit to cost ratios (BCR) of less than 1.0 for both prototypes and in nearly all climates.

For example, for the medium office building (many of the same concerns apply to the small school):

- The MOB has an area of 53,628 sf. The baseline system assumes 60 VAV boxes at \$3245/ea installed and ~900 sf/zone, which is a reasonable average zone size. The proposed system assumes 30 VRF fan coils at \$2056/ea installed. That unit cost is far too low, it cannot be lower than that for a VAV box, and there is no reason that the number of VRF fan coils should be less than the number of VAV zones. In our suggested revisions, we

A. O. Smith Corporation, with global headquarters in Milwaukee, Wisconsin since 1874, applies technology and energy-efficient solutions to products manufactured and marketed worldwide with operations in the U.S., Canada, China, India, Mexico, the Netherlands, and the UK. Listed on the New York Stock Exchange (NYSE: AOS), the Company is one of the world's largest manufacturers of residential and commercial water heating equipment and boilers, as well as a leading manufacturer of water treatment and air purification products. Along with its wholly owned subsidiaries, A. O. Smith is the largest manufacturer and seller of residential and commercial water heating equipment, high efficiency residential and commercial boilers, and pool heaters in North America.

#### Overview

On July 15, 2024, NEEA updated their AHWS to version 8.1. A key update to the standard from version 8.0 is the requirement of a demand response certification through either (1) the OpenADR Alliance's EcoPortCM Certified Product Database; or (2) a future directory maintained by the AirConditioning Heating and Refrigeration Institute ("AHRI") to demonstrate certification to AHRI Standard 1430. Critical to this issue is that there is currently no directory at AHRI for listing compliance to AHRI Standard 1430, and currently the EcoPortCM Certified Product Database is not an industry standard for water heaters and only has nine products listed on it. By including the requirement that a product must "all requirements of the Northwest Energy Efficiency Alliance (NEEA) Advanced Water Heating Specification Tier 3 or higher" CEC would be adding additional requirements to the product above and beyond setting a minimum efficiency for compliance.

### Joint Appendix JA13.3.2: Minimum Performance Requirements

The Company requests that CEC revise the requirements of JA13.3.2(a) such that it is only requiring compliance with the efficiency requirements outlined for Tier 3 compliance with NEEA AWHs V8.1. While this requirement has always required many additional non-efficiency criteria to be met for compliance with Tier 3 through Versions, 7.0 and 8.0, many of these requirements are aligned with ENERGYSTAR® (“EnergyStar”), which every HPWH on the market is listed to, or required a nonperformance metric that was already industry standard. As a result, the requirement did not add compliance burden to the water heater manufacturing industry. However, with the recent update of the specification from version 8.0 to Version 8.1, NEEA is now requiring, prematurely in the Company’s view, that products be listed to a compliance database ahead of an industry compliance program being developed and implemented through AHRI. Additionally, these additional requirements conflict, and go beyond, the requirements set forth in JA13 for controls and verification. As the AWHs is only required in the Appendix JA13 to set efficiency minimums for products, the Company recommends that the Commission should update the requirements to state that a product must meet “all requirements of Section 2.4.2 of the Northwest Energy Efficiency Alliance (NEEA) Advanced Water Heating Specification Tier 3 or higher.” Updating the language in this way will avoid any confusion in the market of the requirements of the Appendix JA13 for energy efficiency, controls and required listing and labeling of products.

### Section 100.1 NEEA ADVANCED WATER HEATER SPECIFICATION

The Company supports CEC incorporating the most recent version of NEEA’s AWHs, however the impacts of this change could impact the stringency and the cost of compliance with the standard as compared to AWHs V8.0, which is the basis of CASE Team reports. One major issue highlighted above is the added requirement for EcoPort certification in the specification to comply with Tier 3 performance. The Company recommends that CEC should review the use of the NEEA AWHs throughout Title 24 to ensure there are no additional unintended impacts of incorporating the most recent version of the AWHs.

### Conclusion

A. O. Smith appreciates the opportunity to provide comments in response to the 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 15-day Language. Please feel free to contact me if you have questions and the Company stands ready to work with the Commission moving forward.

I appreciate the work that has been done so far, and I appreciate the push for electrification and energy efficiency.

However, based on the cost analysis and the comments from ASHRAE and Taylor Engineers, I believe the analysis supporting Section 140.4(a)3 requires further review. I support ASHRAE's request to remove this section for the time being

HARDI has reviewed the proposed amendments to the 2025 Energy Code and continues to have concerns about the proposal. Therefore, HARDI stands by and echoes the comments made during the initial study, 45-day, and 15-day public comment period. You can view those comments below, and HARDI will be attending the Adoption Hearing for the 2025 Energy Code virtually to reiterate HARDI's concerns.

ARDI apologizes for the lateness of submitted comments for the 15-day public comment period. However, HARDI was disappointed to only recently learn of the 15-day public comment period, and not to receive direct notice. Especially when HARDI submitted comments previously during the 45-day public comment period. Nevertheless, after reviewing the minor amendments made, HARDI continues to echo our previously made comments during the 45-day public comment period. You can find those comments on the pages below.

On behalf of Heating, Air-conditioning & Refrigeration Distributors International (HARDI), I would like to thank you for the opportunity to provide feedback and offer comments on the proposed updates to the “2025 Building Energy Efficiency Standards.” HARDI is a trade association comprised of over 800 member companies, more than 450 of which are U.S.–based wholesale distribution companies, including 60 companies operating in California. Over 80 percent of HARDI’s distributor members are classified as small businesses that collectively employ more than 60,000 U.S. workers, representing more than \$40 billion in annual sales and an estimated 70 percent of the U.S. wholesale distribution market of heating, ventilation, air-conditioning, and refrigeration (HVACR) equipment, supplies, and controls. HARDI respectfully asks that the California Energy Commission’s proposed updates for the “2025 Building Energy Efficiency Standard” be revised to not prescriptively ban the installation of fossil fuel systems. If enacted as currently proposed, the “2025 Building Efficiency Standards” would remove consumer choice for water and space heating, create an adverse economic impact for California's citizens, and violate the *Environmental Policy and Conservation Act (EPCA)*.

Proposed space and water heating requirements remove consumers’ choice for HVACR systems. HARDI believes in protecting consumers' right to purchase and install whichever style of HVACR products they prefer. Sections 140.4(a) and 150.1(c)(6) and Table 150.1-A contain heat pump requirements for space conditioning systems that remove consumer choice for offices, schools, and residential buildings. By eliminating all options from the building owners, even other options that may contain better efficiency and financial savings, the CEC ties the hands of consumers into only using the technologies the CEC deems appropriate. Ironically, section 160.9 contains proposed changes requiring buildings to be “electric ready,” which would protect a future consumer’s choice to transition to an electric appliance. However, the unnecessary costs to buildings that would not improve the energy use or energy efficiency of the space or water heating for the home effectively drive consumers away from their initial choice due to the high cost. As currently written, the California Energy Commission (CEC) would remove consumer choice by forcing heat pumps onto initial construction and pricing out natural gas installations with unreasonable standards that the consumers could not afford to comply with. Thus, HARDI believes the CEC needs to revise the proposed standard.

businesses and residents. The CEC initially determined “no significant statewide adverse economic impact on businesses, including ability of California to compete with other states.” HARDI disagrees with this determination, given that the proposed changes directly increase expenses for those who wish to use natural gas HVACR systems. This would then indirectly stress the already high heat pump market and the businesses serving the market. In Section 150.1(c)(6), the CEC limits the heating system type to heat pumps unless a different system can meet the energy budget requirements outlined in Section 150.1(b)(1). Additionally, Table 150.1-A prohibits the use of natural gas furnaces. The requirement to use heat pumps for space heating will have a dramatic economic impact in California based on the comparison of energy prices between gas and electricity. The CEC creates new natural gas water heating system requirements in sections 160.9(e) and 160.9(f). Generally, the proposed requirements would mandate additional electrical work that is unnecessary for the operation of a natural gas water heater, amend home designs that go beyond installation scope requirements for a natural gas water heater’s dimension, add ventilation volume beyond the needs of a natural gas water heater and apply condensate draining sized for a heat pump (not sized for the natural gas system being installed). The requirements are not necessary for properly operating a natural gas water heater. The requirements are unnecessary additional costs that make implementing a natural gas water heater system unobtainable for the average citizen. Leaving the only heating system option to be an electric heat pump. This increased required expense for a natural gas system makes the application unaffordable for the average citizen. By design, the CEC leaves electric heat pumps as the only space and water heating option. Leading to an increase in heat pump demand, a demand that distributors are struggling to manage as is. The market would increase, so waitlists, delays, and backlogs of orders and installations would likely occur. The CEC proposal could force citizens to live without space and water heating while they wait for their heat pumps. Additionally, the change in demand for natural gas systems caused by the change in affordability would leave natural gas systems on the shelves of HVACR manufacturers and distributors. This would create a massive dead



The proposed updates would force the electrification of all new construction and indirectly ban natural gas systems, preempting the Environmental Policy and Conservation Act (EPCA). The U.S. Court of Appeals for the Ninth Circuit set a precedent by recently invalidating a

Berkeley, California prohibition on natural gas infrastructure in new construction buildings (*California Restaurant Association v. City of Berkeley*). The court applied EPCA's preemption clause, which states, "Once a federal energy conservation standard becomes effective for a covered product, no State regulation concerning the energy efficiency, energy use, or water use of such covered product shall be effective with respect to such product." *Id.* EPCA defines "energy use" as "the quantity of energy directly consumed by a consumer product at point of use." *Id.* "[E]nergy" refers to "electricity" or "fossil fuels," such as natural gas. *Id.* A "consumer product" is "any article" which "consumes, or is designed to consume," energy or water and is distributed for personal use. *Id.* The preemption clause applies to any "covered product," which is defined as certain "consumer products," like refrigerators. *Id.* Therefore, EPCA preempts regulations that relate to "the quantity of [natural gas] directly consumed by" certain consumer appliances at the place where those products are used. *Id.*

Energy Use. A regulation prohibiting consumers from using appliances impacts the "quantity of energy directly consumed by [the appliances] at point of use." *Id.* In section 160.9(a), the CEC places central and individual heat pump water heater-ready requirements onto new construction buildings using natural gas water heater systems. The requirements are unnecessary for properly operating a natural gas water heater and create additional costs that an average citizen cannot afford. Although the CEC technically allows the natural gas system, the prescriptive requirements being mandated would essentially be a ban on natural gas water heaters because of the inability of an average citizen to afford the requirements. Therefore, the CEC violates EPCA's preemption provision by prohibiting consumers from using home appliances through unnecessary, unaffordable requirements to implement a natural gas water

The Natural Resources Defense Council (NRDC), Earthjustice, Rewiring America, Peninsula Clean Energy Authority, and Sierra Club submit the following comments on the California Energy Commission's (CEC) 15-Day Language Express Terms for the 2025 Title 24 Building Energy Efficiency Standards ("2025 Building Code") published June 13, 2024.<sup>1</sup> We appreciate the CEC's work in developing the 15-Day Language for the 2025 Building Code. The Building Code is instrumental in decarbonizing buildings throughout the state and helping achieve California's climate and air quality objectives.

As submitted in our comments on the 45-Day Language,<sup>2</sup> we continue to strongly support critical advances to the Building Code in the 15-Day Language that further building electrification, including expanded heat pump baselines for residential and non-residential new construction and provisions that strongly encourage replacement of single-zone packaged rooftop units ("RTUs") used in commercial buildings with heat pumps. These and other energy efficiency and electricready updates will save Californians money, increase comfort, and reduce the state's dependency on fossil fuels.

However as noted in our comments on the 45-Day Language, there are also major missed opportunities in the 15-Day Language, including the absence of previously considered provisions for replacement of existing central air conditioning ("A/C") units in residential buildings with heat pumps and use of solar and heat pumps for pool heating in existing non-residential and multi-family buildings, which have now been proposed in Part 11 instead. While we continue to be disappointed about these omissions, the following comments focus on areas that have changed since the 45-Day Language. To the extent that provisions have not changed since the 45-Day Language, our previously submitted comments remain.

Non-Residential New Construction Baselines: Support for expanded compliance options and development of additional pathways prior to implementation of the 2025 Building Code.

The CEC has proposed to expand on the existing heat pump space heating prescriptive baselines established in the 2022 Building Code for single zone systems in non-residential buildings by setting heat pump space heating baselines for large, multi-zone systems in schools and offices in Section 140.4(a)(3). In general, we strongly support this expansion, which will encourage building electrification while continuing to allow designers options under the performance path. In our comments on the 45-Day Language we recommended that the CEC expand the prescriptive options available to better match the system types typically used in all-electric schools and offices. We appreciate the edits the CEC has made in the 15-Day Language and in particular support the additional option provided under Section 140.4(a)(3)(G), which allows for any space-conditioning system determined by the Executive Director that uses no more energy than the systems specified prescriptively. We strongly recommend that the CEC develop additional options under this pathway in collaboration with the design community in advance of the implementation of the 2025 code to create additional prescriptive pathways for commonly used all-electric systems, such as water-source systems (with and without radiant heat), which will be critical to ensure that these systems can continue to be easily installed. We also recommend that the CEC create a clear process for identifying additional options under this pathway going forward.

Nonresidential HVAC Retrofits: The 15-day language makes helpful modifications to Rooftop Unit replacement requirements.

We strongly support the proposed requirements in Section 141.0(b)(2)(C) that encourage new or replacement single-zone packaged rooftop units (RTUs) under 65,000 Btu/hr to be heat pumps at the time of equipment replacement or failure. As submitted in previous comments on the docket, these equipment changeouts represent a critical opportunity to encourage the adoption of heat pumps, which are essentially drop-in replacements for the existing equipment. As written, the proposed requirements offer flexibility by requiring a heat pump RTU or gas RTU with additional efficiency options under the prescriptive path, depending on the climate zone. We support the edits to this section in the 15-Day Language which help clarify the requirements and expand the options to include dual-fuel heat pumps.

Residential HVAC Design and Control: Remove exemption for Climate Zones 7 and 15 and for buildings with floor area less than 500 square feet.

As submitted in our comment on the 45-Day Language overall we strongly support the edits to Section 150.0(h) relative to residential space conditioning equipment design and control, which will help ensure proper sizing and field performance of heat pumps. In our comments on the 45- Day Language, we commented on Section 150.0(h)(7) specifically which contains language limiting the use of electric resistance or gas supplementary heat, but exempted climate zones 7 and 15, as well as buildings with conditioned floor space less than 500 square feet.<sup>3</sup> We stated that this exception was unnecessary given the low cost of these controls and the high potential energy use if supplementary heat is not controlled effectively. The CEC has proposed a new exception<sup>4</sup> for these climate zones and building sizes that will require controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone and where the cut on and off temperatures of the heat pump are higher than those of the supplementary heater or that only allow supplementary heat operation during defrost and transient periods. We appreciate the edits to this exception, which are an improvement to the 45- Day Language. However, there is still no need for this exception and as written would be difficult to enforce. We continue to recommend that the CEC strike this exception entirely.

Heat pump water heater ventilation requirements: Additional modifications are necessary to strike the correct balance between feasibility and water heater performance.

The CEC has proposed requirements to ensure that integrated heat pump water heaters are installed with adequate ventilation to achieve optimum performance (Section 110.3(c)(7)). While helpful modifications were made in the 15-Day Language, we remain concerned that this section does not strike the right balance between feasibility and water heater performance. We support the edit in the 15-Day Language to Section 110.3(c)(7)(B)(i) which allows for the manufacturer to issue installation guidance that provides ventilation performance that meets or exceeds that provided by the provisions of Section 110.3(c)(7)(B). However, our comments from the 45-Day language on Sections 110.3(c)(7)(B)(4)(iv) related to net free area on the inlet duct and 110.3(c)(7)(B) related to compressor capacity test point remain.

With regard to Section 110.3(7)(b)(4)(iv), the ducted inlet configuration should only require a net free area (NFA) of 20 square inches (same as ducted exhaust). Requiring the NFA to be the same size as the duct is not supported by the research and is significantly more than what is needed for adequate ventilation. In addition, references to AHRI 540 Table 4 reference conditions in Section 110.3(7)(B) should be removed as there is no way for a contractor to document the compressor capacity to calculate the installation space required. We appreciate the opportunity to comment and the hard work of the CEC in preparing the 15- Day Language. We would welcome further discussion on any of our comments.

The Northwest Energy Efficiency Alliance (NEEA) submits the following comments regarding NEEA's Advanced Water Heating Specification (AWHS) in response to the 2025 Energy Code Notice of 15-day Comment Period (August 2024).

NEEA is a non-profit organization working to encourage the development and adoption of energy-efficient products, practices, and services. Funded by regional utilities, NEEA is a collaboration of 140 utilities and efficiency organizations working together to advance energy efficiency in the Northwest on behalf of more than 13 million consumers. This unique partnership has helped make the Northwest region a national leader in energy efficiency. NEEA's AWHS provides guidance to manufacturers and market actors interested in developing residential, commercial, multifamily, and industrial water heating products capable of providing high levels of consumer satisfaction and energy performance in a range of climates.

Comments: The latest 15-day language resolves previous stakeholder concerns about Title 24 not aligning with the most current version of the AWHS. NEEA offers the following comments in response to other industry stakeholder comments requesting reduction or removal of the AWHS reference:

1. The only notable change between AWHS version 8.0 and 8.1 is that load flexibility is no longer a self-certification process. It now requires a third-party certification – either EcoPort CTA-2045 or AHRI 1430 listing.
2. Compliance to AWHS 8.1 is voluntary.

the California Energy Commission's proposed changes for the 2025 Building Energy Efficiency Standards and submits these comments in addition to and in alignment with our previous letter dated May 13, 2024. Our comments focus on the following points: the draft language as presented could be construed as a violation of EPCA and be preempted by federal law, for colder climate zones, propane – especially renewable propane – can improve the energy efficiency and cost to consumers, and that our industry is working with appliance manufacturers to bring new appliances to market that maximize energy efficiency and minimize energy waste (like dual-fuel systems) and should be recognized by CEC in the rulemaking.

#### EPCA AND CURRENT CASE LAW PREEMPTS THE PROPOSED REVISIONS

As WPGA noted in its initial comments, the Ninth Circuit has made clear that “regulations that address the [appliances] themselves and building codes that concern their use” of fuels are preempted under the federal Energy Policy and Conservation Act (EPCA). *Cal. Rest. Ass’n v. City of Berkeley*, 89 F.4th 1094 (9th Cir. Jan. 2, 2024). EPCA establishes a nationally uniform system of energy conservation for appliances, and it expressly preempts state and local regulations concerning the energy use of a covered product.<sup>1</sup> The Ninth Circuit focused on the effect of a regulation on the energy use of covered appliances, and explained that states “can’t skirt the text of broad preemption provisions by doing indirectly what Congress says they can’t do directly.” *California Rest. Ass’n v. Berkeley*, 89 F.4th at 1107 (“EPCA would no doubt preempt an ordinance that directly prohibits the use of covered natural gas appliances in new buildings.”).

Here, the 2025 Prescriptive Path requires that residential new buildings use heat pump water heaters and heat pump space conditioners and that non-residential new buildings use a single heat pump appliance (water heating or space conditioning).<sup>2</sup> EPCA preempts rules requiring heat pumps because they are regulations concerning the energy use or energy efficiency of covered appliances. The effect of these provisions is to prohibit the use

The CEC's proposed Performance Path for compliance for residential and non-residential buildings is also preempted under the Ninth Circuit's holding in *Cal. Rest. Ass'n. v. Berkeley*. The Performance Path nominally sets an energy budget that a building must meet, equal to the energy consumption of the Prescriptive Path.<sup>7</sup> The Standard Design Building is a "building that is automatically simulated by Commission-approved compliance software to establish the Energy Budget that is the maximum energy consumption allowed by a Proposed Design Building to comply with the Title 24 Building Energy Efficiency Standards." The Standard Design building is simulated using the same location and having the same characteristics of the Proposed Design building, but assuming minimal compliance with the mandatory and prescriptive requirements that would otherwise be applicable to the proposed building, as specified by the Alternative Calculation Methods Approval Manual.<sup>8</sup> Because the Performance Path "energy budget" is based on the Prescriptive Path (the standard design building) that includes heat pumps, it sets the "budget" so low that in a mixed fuel building, it would require appliances more efficient than federal standards.

The energy budget that a building must meet is based on three metrics: an energy efficiency score and a total energy score (which collectively are used in the LSC), and a "source energy" score. As noted, the energy efficiency score and total energy score use a baseline from the Prescriptive Path, in effect forcing either appliances more efficient than federal standards in a mixed-fuel building or all-electric (or both). Moreover, the "source energy" score, which is a proxy for emissions based on the type of fuel,<sup>9</sup> is generally the most difficult to meet and therefore limits the permissible options. Source energy is defined as the long run marginal source energy of fossil fuels that are combusted as a result of building energy consumption considering the long-term effects of Commission-projected energy resource procurement. For a given hour, the value in that hour for each forecasted year is averaged to establish a lifetime average source energy.<sup>10</sup> The source energy metric was first added in 2022 and has been made more stringent in 2025. By basing this metric on building fuel emissions rather than energy use, the CEC puts a thumb on the scale against

In cold climate zones, many California homeowners utilize propane furnaces in their home due to propane's affordable and reliable natural as a fuel source. The 2025 Building Code Standards would obstruct new homeowners from being easily able to choose propane furnaces for their home heating needs. WPGA conducted an analysis to better understand what those obstructions would be for those consumers. The following analysis reviews the additional features necessary for a new construction home in California to maintain the use of a propane furnace in select heating dominant climate zones under the 2025 California Building Energy Efficiency Standards (BEES) as compared to the 2022 BEES. Further, this review outlines the impact on homeowner utility bills under these various scenarios.

The chart above lists the additional features and efficiency measures necessary to meet 2025 BEES compliance compared to 2022 when a propane furnace is included in the home. As the chart demonstrates, the strategies for maintaining compliance vary significantly based on climate zone. These variations are caused by how the amount of heating demand varies by climate zone; generally, an area with higher heating demand is going to require greater efficiency to maintain compliance when using a combustion appliance.

In climate zone 1, a higher efficiency furnace is expected to add roughly \$500 in cost, R10 exterior sheathing to add \$2,000 in cost, and upgraded glazing to add \$1,800 for a total of \$4,300 in additional construction costs. In climate zone 11, an upgraded furnace is expected to add \$500 in costs. In climate zones 2 and 12, only upgraded glazing is required, at a total cost of \$1,800. The R7 sheathing required in climate zone 13 is expected to add \$800, for a total added cost of \$3,000. Upgraded glazing and furnace efficiency required in climate zone 16 is expected to add \$2,300 in cost. Upgraded water heating units mentioned in climate zones 1, 11, and 13 are expected to have a negligible impact on cost. All to say that the proposed Building Code Standards for 2025 would create burdensome costs on consumers who prefer to use propane for their home heating.

The following table displays the total annual utility costs for a home meeting 2025 BEES compliance in the listed climate zones (CZ)

As the chart above demonstrates, in every case the all-electric home costs significantly



Not currently being considered in the 2025 BEES is that of dual-fuel heating systems. There are hydronic heating appliances on the market that maximize energy efficiency and minimize energy waste to the benefit of consumers. Using proprietary performance data of dual-fuel systems provided by Rinnai America, a manufacturer of space and water heaters, an analysis was conducted to understand the impacts of a high-efficiency system under the 2025 BEES.

Data from this manufacturer shows that compliance with the 2025 Building Code Standards, in its current form, could be met with hydronic heating using propane in dual-fuel systems. Based upon technical data from ConSol's analysis, we believe that the CEC should formally recognize the benefit of hydronic heating systems to meet 2025 Energy Code requirements for climate zones 1, 2, 11, 12, 13, and 16.

The next few tables<sup>17</sup> show the annual utility costs and the compliance margins, checking the comparative system performance. The conclusion being that the reduction in source energy from the max propane scenario to the hydronic one is significant enough that compliance is reasonably achievable under the 2025 code. This is what the compliance performance and cost tables look like:

The table below shows that, similarly to a home with a propane furnace, a dual-fuel gas hydronic system is also the more affordable option for homeowners, as opposed to an allelectric home in climate zones 1, 2, 11, 12, 13, and 16.

Utilizing dual-fuel technology can be beneficial to both the utility and the consumer. Such products can switch from electric to gas during times of crisis like Public Safety Power Shutoffs (PSPS) and other emergencies to reduce burden on the grid. Dual-fuel appliances can be a solution to protecting consumer cost and energy reliability, while balancing electric demand for utilities.

The Western Propane Gas Association continues to work closely with appliance manufacturers in pursuit of well-rounded performance data for comparative means and various options for consumers that utilize clean fuels and are of the highest efficiency and quality.

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) respectfully submits this letter in response to the CEC Notice regarding the Energy Code (Title 24, Part 6), published to the CEC public docket on August 22, 2024.

AHRI represents more than 330 manufacturers of air conditioning, heating, water heating, and refrigeration equipment. It is an internationally recognized advocate for the heating, ventilating, air-conditioning, and refrigeration (HVACR) and water heating industry and certifies the performance of many of the products manufactured by its members. In North America, the annual economic activity resulting from the HVACR industry is more than \$211 billion. In the United States alone, AHRI member companies, along with distributors, contractors, and technicians employ more than 704,000 people.

AHRI appreciates CEC considering the concerns raised by a diverse group of stakeholders regarding the limitation CEC had proposed on permissible mechanical systems when complying with the prescriptive path. Manufacturers, utility representatives, building designers, and building owners all objected to changes proposed for schools and offices. While AHRI appreciates CEC revisiting proposed changes for these multi-zone HVAC systems in nonresidential buildings, and agree it is a significant improvement over the June 15-Day Express Terms, AHRI supports all technology options being available to designers in the prescriptive path. AHRI has several concerns and suggested improvements, detailed herein, that we hope CEC can address by revising the 15-day Express Terms prior to the September 11th adoption hearing.

## Effects

AHRI appreciates CEC updating the definition for “Northwest Energy Efficiency Alliance (NEEA) Advanced Water Heater Specification” to reference the current version 8.1; however, there are requirements introduced with v8.1 that were optional in previous versions. These new requirements, such as the use of “EcoPort” for demand response will limit consumer choices, is counter to CEC goals, and have knock-on effects in downstream sections.

First, in addition to the requirement to use “EcoPort” for demand response, NEEA v8.1 includes design requirements for products beyond performance, such as noise requirements and number of years equipment must be warranted. NEEA v8.1 also does not include integrated HPWHs. CEC should ensure that consumers have adequate choices and cite only applicable energy efficiency provisions of the specification and provide a pathway for integrated HPWHs.

Second, Appendix JA13 includes qualification requirements for heat pump water heater (HPWH) demand management systems. Should CEC definitionally adopt NEEA v8.1, without permitting acceptable equivalent alternatives, then CTA-2045/EcoPort would also become a JA13 requirement. AHRI 1430 (I-P): Demand Flexible Electric Storage Water Heaters (with Addendum 1), available for free on AHRI’s website, “applies to communication, infrastructure, and system functionality as these relate to the implementation of energy management strategies for demand flexible water heaters (DFWH), with a nominal storage capacity greater than or equal to forty gallons and less than or equal to 120 gallons, installed in residential and small commercial applications.”<sup>1</sup> AHRI is in the process of developing and publishing a product list of HPWH’s that comply with AHRI 1430. The launch of AHRI’s 1430 product list is expected to launch in the third quarter of 2025. AHRI recommends that CEC permit alternatives to the “EcoPort” requirement of

## Section 120.10 – Mandatory Requirements for Fans

AHRI appreciates CEC staff modifying the referenced test procedure to the new federal procedure. AHRI requests CEC staff consider an additional exception to align the scope of this requirement with ASHRAE 90.1-2022. Exception 2 to Section 6.5.3.1.3 excludes “[e]mbedded fans and fan arrays with a combined motor nameplate horsepower of 5 hp or less or with a fan system electrical input power of 4.1 kW or less” from FEI requirements. Commercial and Industrial Fan regulations recently adopted into Title 20 exclude all embedded fans (as defined in AMCA 214-21), so this additional exception would also be consistent with California regulations.

AHRI has submitted extensive comments on this section, and the proposals prescriptive requirements to install both heat pump space and water heaters in single and multifamily residential and nonresidential buildings.<sup>2</sup> AHRI supports all multi-zone space-conditioning system technology options to continue to be used in the prescriptive path.

For offices and schools in Section 140.4 – Prescriptive Requirements for Space Conditioning Systems the June 15-Day Express Terms would have required offices to use either a variable refrigerant flow (VRF) and dedicated outdoor air system (DOAS) or a four-pipe fan coil (FPFC) with heating hot water supplied by an air-to-water heat pump (AWHP) and DOAS for ventilation for all climate zones. For schools, only one prescriptive system choice had been proposed – an FPFC with AWHP and DOAS. The system proposed to be prescribed is extremely uncommon for schools. This was completely untenable for designers, building owners, and equipment manufacturers, as evidenced by the overwhelming number of comments docketed opposing this proposed language.

AHRI appreciates CEC’s hard work to expand the system choices prescriptively permitted for nonresidential buildings with multi-zone systems. First, AHRI supports CEC excluding Buildings greater than 150,000 square feet or greater than 5 habitable stories and school buildings in climate zones 6 and 7, which failed the revised cost-effective test for prescriptive systems limitations. AHRI also appreciates that the August 15-Day Express Terms proposal, in Section 140.4(a)3A allow for several prescriptive compliance options:

1. The building can use a VRF heat pump system that incorporates refrigerant loop heat recovery and a DOAS for ventilation.
2. The space-conditioning system can be FPFC terminal units supplied by an AWHP space-heating hot water loop with a DOAS providing ventilation to all zones served by the space-conditioning system.
3. Office buildings in all climate zones and school buildings in climate zones 2, 4, and 8

the June 15-Day Express Terms, AHRI remains supportive of all technology options being available to designers in the prescriptive pathway. Corrections to the cost-effectiveness analysis and modeling adjustments opened several additional prescriptive options, additional time to fully vet other technology options, such as commercial package air conditioners and heat pumps, water-source heat pumps, dual fuel heat pumps, or even fossil fuel space heating equipment might also be viable solutions upon further review.

AHRI has additional feedback on the use of AWHPs for CEC to consider, based on information presented in Staff Memo – Revisions to 2025 Energy Code, Section 1404(a)3 - Variable Air Volume with AWHP and Parallel Fan-Powered Boxes. 3 Figure 1 in the Memo shows the large office LSC savings for several space-conditioning systems. The graph shows significant LSC savings in nearly every climate zone for the FPFC+AWHP+DOAS system. AHRI requests that the FPFC+AWHP+DOAS system not be used to set the prescriptive baseline (and be the benchmark system for compliance using the proposed executive director path) for three reasons.

First, AWHPs are an emerging, and highly complex equipment type in the U.S. There have been limited installations in both commercial and residential applications, in new and existing buildings. AWHPs can provide space heating, space heating and cooling, space heating and domestic hot water, or space heating, cooling and domestic hot water.<sup>4</sup> There are a variety of space heating applications, including in-floor (radiant) heating, heating through radiators, preheating domestic hot water using an indirect tank with hydronic coil, and heating using hydronic air handlers. The temperature of water for end-uses can be high, medium, or low temperature, depending on the application. The two main configurations of AWHPs are monobloc or split systems. A monobloc heat pump heats the water, and rejects cold air outside, while a split system heats water and rejects cold air within the building. Each of these aspects impacts use patterns, energy consumption, and ultimately energy efficiency. Installation type, application, and conditions have implications regarding

Second, AWHPs can be optionally certified, but only for cooling performance, under the AHRI Air-Cooled Water-Chilling Packages Using the Vapor Compression Cycle (ACCL) Certification Program.<sup>5</sup> Work is ongoing within the cognizant AHRI Committee to add heating certification to ACCL, but there is a current lack of testing capabilities, so a timeline has not been determined. There are provisions within the ACCL Certification to optionally certify to EN Standards 14511:2022, Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors, and EN Standard 14825:2022, Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling, commercial and process cooling - Testing and rating at part load conditions and calculation of seasonal performance; however, heating performance however; heat rejection capacity is excluded from the program scope.<sup>6</sup>

Third, for full-load heating performance, AHRI 550/590 defines performance with 110°F leaving water temperature. While this temperature may be appropriate for closed-loop radiant floor heating systems, it is not clear from CEC's staff report if this temperature is sufficient for use with an FPFC. AHRI urges CEC to use equipment with established test procedures and certification programs for establishing prescriptive requirements. Additionally, supporting information on how the systems were modeled is imperative. There are equipment types, such as AWHPs that Energy Plus cannot model directly. Stakeholders should be able to review the modeling used to determine LSC savings. AHRI hopes CEC will consider this feedback regarding AWHP as staff continues to work on adding additional system options.

Regarding the Executive Director pathway, CEC has added an "escape hatch" for systems not included in the prescriptive list stating, "A space-conditioning system determined by the Executive Director to use no more energy than the systems specified in Section 140.4(a)3." 7 AHRI expressed concern in 15-day comments that no process has been provided to outline the process of submitting determinations to the Executive Director. This language has been used in other sections of Title 24 to provide options, including Title 24-2019 for "a water-heating system determined by the Executive Director to use no more energy than the one specified in Item i, ii, iii, or iv." 8 CEC staff was able to point to one example where this pathway was used, for a central heat pump water heating system prior to CBECC including modeling capability for heat pump technology.9 According to CEC staff, the approval from start to finish took a couple months.10 Only the final approved design, which was narrowly focused with significant prescriptive detail due to modeling limitation, was docketed.11 AHRI is also concerned that the modeling limitation for certain equipment types in Energy Plus, such as VRF, may be insufficient for proving energy equivalence to baseline equipment. 12

AHRI appreciates that there is an option to include new and innovative equipment to be included in the prescriptive pathway; however, a process needs to be put in place to ensure it can be used and is useful. AHRI recommends a task force be formed to provide input to CEC on the process and collaboratively identify systems to be assessed for approval by the Executive Director as an additional prescriptive path to compliance. Stakeholders that should be included in the taskforce include CEC staff, code officials in California jurisdictions, design engineers, and equipment manufacturers. Additionally, packages that have been submitted for Executive Director approval but are still under consideration or were not approved should be documented to keep this process efficient and transparent. Ideally, the timeline for Executive Director approval should be no more than 5 business days, from receipt of a complete package.

Section 140.4(p)2 proposes to require DOAS supplying outdoor air to cycle off any zone heating and cooling equipment fans, circulation pumps and terminal unit fans when there is no call for heating or cooling in the zone. In response to the 45-Day Express Terms, AHRI recommended some additional verbiage to accommodate refrigerant leak mitigation strategies that may require indoor fans to operate continuously or when a refrigerant leak is detected, in accordance with ASHRAE 15-2022. ASHRAE 15-2022 addresses all the safety issues regarding the use of Group A2L refrigerants. AHRI proposes the following exception to Section 140.4(p)(2):

Exception 5 to Section 140.4(p)2: Zone heating and cooling fans shall be allowed to operate when required by mechanical code to provide the required refrigerant mitigation strategy.

Section 141.0 – Additions, Alterations, and Repairs to Existing Nonresidential, and Hotel/Motel Buildings, to Existing Outdoor Lighting, and to Internally and Externally Illuminated Signs

CEC has proposed modifications to Table 141.0-E-1 – New of Replacement Single Zone Air Conditioner or Heat Pump Requirements in the August 15-Day language. Immediately after the footnotes in Table 141.0-E-1, CEC notes it is “[Skipping Exception to Section 141.0(b)2Cii through Section 141.1].” However, there is text that is present in the June 15-Day language immediately after the table and footnotes, that is before Exception to Section 141.0(b)2Cii. AHRI requests that CEC confirm the status of “Air conditioners with furnaces or dual fuel heat pumps complying with Table 141.0-E-1 using variable speed fan and controls shall be designed to vary the indoor fan air flow rate as a function of the load and shall have a minimum of two stages of fan control. The minimum speed at stage 1 shall be set for ventilation only mode and shall be the greater of 50% or the minimum fan speed required to meet the minimum ventilation airflow rate. The indoor fan shall draw no more than 30% of the fan power at full fan speed when operating at 50% speed” 13 prior to Title 24-2025 adoption.

## Title 24 Proposed Revisions Preempted by EPCA

AHRI raised the issue of EPCA preemption in its 45-day comments and first 15-day comments. 14 reiterates that these concerns remain in this August 15-day Express Terms draft. The Proposed Revisions in Title 24 are preempted by the Energy Policy and Conservation Act (EPCA), 42 U.S.C. § 6291 et al. EPCA prevents states and their political subdivisions from enacting laws, regulations, and building codes that concern the energy use of EPCA-covered products and equipment.<sup>15</sup> Title 24-2025, as proposed, aims to set stricter energy standards for EPCA-covered products, which is preempted by EPCA. Both *California Restaurant Association v. City of Berkeley*<sup>16</sup> and *Air Conditioning, Heating, and Refrigeration Institute v. City of Albuquerque*<sup>17</sup> cases indicate that the proposed prescriptive path lacks flexibility, does not align with federal requirements, and fails to qualify for an exemption or waiver under EPCA. If enacted as written, Title 24-2025 would be legally invalid.

## New Metrics for Evaluation of Measures and Compliance with Energy Code Raise Concerns

AHRI remains concerned about the implementation of new metrics for proposed measures and code compliance. The CEC has proposed using a new metric, Long-term System Cost (LSC), to evaluate cost-effectiveness both for proposed measures and the performance approach. 18 CEC did not address AHRI's concerns regarding the new metrics or release any additional information as requested. Refer to AHRI Title 24-2025 15-day Express Terms comments submitted on June 28, 2024, and AHRI Title 24-2025 45-day Express Terms submitted on May 13, 2024, for details.

AHRI appreciates the opportunity to provide these comments. If you have any questions regarding this submission, please do not hesitate to contact me.



submit the following comments on the California Energy Commission's (CEC) August 2024 15- Day Language Express Terms for the 2025 Title 24 Building Energy Efficiency Standards ("2025 Building Code") published August 22, 2024.<sup>1</sup> We appreciate the CEC's work in developing this second set of 15-Day Language for the 2025 Building Code and in particular the CEC's work to expand the available prescriptive options for multizone space heating systems in nonresidential buildings in Section 140.4(a)3. We strongly support the CEC's proposal for multizone systems which will encourage electrification in small and medium-sized school and office buildings, while allowing multiple compliance pathways.

The Building Code is instrumental in decarbonizing buildings throughout the state and helping achieve California's climate and air quality objectives. As submitted in our comments on the 45- Day Language<sup>2</sup> and June 2024 15-Day Language,<sup>3</sup> we continue to strongly support critical advances to the Building Code as proposed for the 2025 Building Code which will further building electrification and increase energy efficiency. These changes will save Californians money, increase comfort, and reduce the state's dependency on fossil fuels.

In the August 2024 15-Day Language, the CEC has expanded the number of prescriptive options for multizone systems in non-residential buildings under Section 140.4(a)3 and also limited the applicability to buildings less than 150,000 square feet and less than 5 stories tall to address stakeholder concerns. As written, the provision makes an important step forward to encourage electrification in this building size category, expanding on the requirements in the 2022 Building Code for small buildings with single-zone systems. The CEC has included additional prescriptive options in response to stakeholder feedback (including an option that will allow further equivalent pathways to be identified in the future) and has limited the scope to smaller buildings where these systems are shown to be cost-effective. These additional prescriptive options open up multiple compliance pathways in addition to the flexibility provided by the performance path.

I have read some of the remarks made by commenters with regards to VRF system first cost. In our opinion they do not reflect what we have seen in the marketplace. We have completed multiple small, medium and large projects using different delivery methods. Under the current code and systems available the heat recovery VRF system has been a system of choice for projects pursuing all-electric with high energy efficiency and low first cost.

opportunity to comment on California Energy Commission's (CEC) Title 24, Part 6 revised 15-day language.

BWC is an American-owned, full-line manufacturer of residential, commercial, and industrial products for water heating, space heating, combination heating, and water storage. In California, a significant number of individuals, families, and job providers rely on our products for their hot water and space heating needs. We have compiled our comments to the CEC's revised 15-day language below.

#### Joint Appendix 13

BWC appreciates the CEC modifying the Joint Appendix 13 (JA-13) language to reference the most recent Northwest Energy Efficiency Alliance (NEEA) Advanced Water Heater Specification (AWHS) Version 8.1, with a listed effective date of July 15, 2024. At this time, BWC concurs with our industry partners at the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) that JA-13 should only reference the efficiency requirements contained in AWHS Version 8.1 Section 2.4.2.11 . Sections of AWHS that do not address equipment efficiency should not be included in JA-13 or in other sections of Title 24, Part 6. Along with the references to AWHS Version 8.1 contained in JA-13, BWC encourages the CEC to review the remaining sections in the 2025 proposed code which refer to AWHS, to ensure that only the efficiency requirements are referenced.

BWC would also like to bring attention to the ENERGY STAR requirement contained in AWHS version 8.1, Section 2.4.1.2. As a prerequisite for a heat pump water heater (HPWH) to qualify under AWHS Version 8.1, a HPWH must meet a minimum efficiency as defined ENERGY STAR 5.0, Section 3A2 , as shown in the table below and be listed on the ENERGY STAR website:

For future code cycles, BWC encourages the CEC to consider using ENERGY STAR as the

California Energy Commission (“CEC”) Justification for CEC-proposed Revisions to 2025 Energy Code, Section 140.4(a)3 on Multi-zone Spaceconditioning System Types to Support the August 15-day Comment Period – Variable Refrigerant Flow (VRF) Systems for Schools published on August 22, 2024.

Daikin U.S. Corporation is a subsidiary of Daikin Industries, Ltd., the world’s largest air conditioning equipment manufacturer. The Daikin Group includes Daikin Applied, Daikin North America LLC, and Goodman Manufacturing Company, L.P. We understand the amount of effort CEC has put into these updates and we appreciate the opportunity to provide these comments.

As noted in our prior comments, Daikin supports CEC’s expansion of the use of heat pumps to further California’s need for decarbonization and providing effective energy use reduction. Daikin believes that heat pumps are the proven technology to achieve substantial GHG reduction and energy savings in both residential and nonresidential buildings and appreciates the inclusion of the heat pump baselines mandating use of heat pumps.

Daikin appreciates CEC’s modification to Sections 140.4(a)3 which now includes a prescriptive allowance for use of a VRF system that incorporates a refrigerant-loop heat recovery and with a dedicated outdoor air system (DOAS) for space-conditioning in certain office buildings and schools. Although not completely inclusive as Daikin had proposed, the revised wording in this section will allow for installation of highly energy efficient VRF products in many offices and schools.

Daikin is supportive of the cost analysis conducted by CEC. We believe the Total Costs for VRF systems provided in the cost analysis are on the higher side of typical VRF systems with DOAS even for an A2L refrigerant based VRF systems.

the August 15-day language for the 2025 California Energy Code Rulemaking. ASHRAE appreciates the California Energy Commission (CEC) conducting additional analysis to address stakeholder concerns surrounding Section 140.4(a)3. As ASHRAE communicated in its May 10, 2024 letter, the requirements in this section were overly prescriptive and would unnecessarily constrain design options by preventing the use of system designs and technology options that may be a better fit for specific types of buildings such as offices and school buildings. While we appreciate the additional work that the CEC put into the analysis to revise this section, we remain concerned that due consideration has not been given to all system types and additional analysis is needed. We also want to make clear that ASHRAE does not oppose any specific system or configuration, including any named in the prescriptive requirements.

Through this supplemental letter, ASHRAE would like to clarify that the application of ASHRAE Standard 15-2022, Safety Standard for Refrigeration Systems, specifically Section 7.6, addresses safety requirements for direct-expansion (DX) refrigeration systems using lowflammability (A2L) refrigerants. ASHRAE Standard 15-2022, Safety Standard for Refrigeration Systems, specifically Section 7.6 leans heavily on the use of refrigerant detection systems to enable operation of leak mitigation strategies, such as mechanical ventilation or exhaust systems where those mitigation measures are employed. The “potential safety issues” mentioned in our September 3 letter would be addressed by ASHRAE Standard 15-2022, and our concern was that the CEC had not fully assessed the additional costs and operational complexities of VRF and other DX systems using these refrigerants if only R410A systems were analyzed, particularly in larger or more complex installations. ASHRAE’s comments in our September 3 letter were intended to express concerns about the challenges that the proposed prescriptive requirements in Section 140.4(a)3 would pose for VRF systems, not concerns about the technology itself or systems using A2L refrigerants.

following comments in response to the California Energy Commission's (CEC) August 15-Day Language.

Rheem is an industry leader in total heating, cooling, refrigeration and water heating solutions and one of the few global brands with product offerings covering residential and commercial heating, cooling, conventional and hybrid storage water heaters (HPWH), tankless water heaters, solar water heating systems, pool and spa heaters, commercial boilers, residential hydronic and geothermal systems, commercial refrigeration products, indoor air quality accessories, and replacement parts for all categories. Rheem is headquartered in Atlanta, Georgia, and has U.S. based manufacturing facilities in Alabama, Arkansas, California, Connecticut, and North Carolina. The company also operates distribution facilities throughout the US, Canada, and many other countries around the world.

Rheem recommends that the CEC move away from referencing the Northwest Energy Efficiency Alliance's (NEEA) Advanced Water Heater Specification (AWHS). The AWHS is not developed through a consensus process and adds many prescriptive requirements that go beyond efficiency and limit manufacturer's ability to make heat pump water heaters that fit all market needs. Further, Rheem recommends Joint Appendix 13 (JA13) be amended to reference AHRI 1430, the industry consensus standard for demand response in water heating.

As proposed in the August 15 day language, JA13 will be updated to reference version 8.1 of the AWHS and the reference to AWHS Appendix A will be removed. This section of JA13 is labeled "Efficiency" but reference to Tier 3 adds many requirements unrelated to efficiency, including demand response capability, maximum sound levels, ducting options, and minimum warranty.

AWHS version 8.1 demand response capability requires EcoPort or AHRI 1430 compliance,

Established in 1967 and stretching across six offices on the West Coast – from Seattle to Los Angeles – PAE is a 350-person firm providing services in mechanical, electrical, and plumbing engineering, building performance analysis, technology, and lighting design services. We work with clients to design the nation’s highest performing and most regenerative built environments that keep people comfortable, healthy, and productive inside while restoring the natural world outside.

PAE fully supports the decarbonization of building systems and recognizes the need to update the Energy codes to address all electric HVAC systems. Unfortunately, the latest proposed changes to the office and school prescriptive baseline systems are still very limiting and the supporting information provided by the CEC still appear to have gaps as highlighted by other commenters. PAE understands that the performance path would still be available, but it imposes time and cost constraints on projects and should not be the only method required to demonstrate code compliance.

We believe that the CEC should follow the latest recommendation from ASHRAE to remove the section containing the prescriptive requirements from the current rulemaking proposal, until a complete cost analysis of the proposed prescriptive system options is available (letter from ASHRAE President Dennis Knight dated September 3, 2024). We hope that the California Energy Commission will listen and consider the concerns expressed by the experts in the field and that the proposed changes to the baseline systems be postponed until in depth and verified analyses have been conducted and further clarifications have been provided.

ARXCIS respectfully submits these comments on the 2025 Building Energy Efficiency Standards, August 2024 Express terms (“August 15-Day Language”), issued on August 22, 2024. In this updated draft, the Commission adequately addresses many of the key concerns previously raised by ARXCIS, and therefore, we urge the Commission to adopt the regulations as currently proposed. As further described below, ARXCIS does recommend that the Commission provide additional guidance on two issues but recommends that the Commission provide these clarifications through an informal guidance document.

ARXCIS supports the following changes included in the August 15-Day Language:

- ECC Rater Company Cost Information: Section 10-103.3(f)2F...
- Publicly Available List of ECC-Raters: Section 10-103.3(f)2A ...
- Penalty if ECC-Provider is Refused Access: Section 10-103.3(d)5Cig ...
- Consumer Information Form: Section 10-103.3(b)1Avii ...

## I. Recommendations for Additional Commission Guidance

As stated above, ARCXIS supports the proposed regulations as amended by the August 15-Day Language. However, there are two areas where we believe that the Commission should provide more guidance. This could be accomplished through an informal guidance document that could be posted to the Commission's website. ARCXIS requests additional guidance on the following two topics:

### A. **Implementation of Consumer Information Form Requirements.**

ARCXIS supports the clarified structure for the creation of the Consumer Information Form and the proposed process for registering the forms with the ECC-Provider. However, ARCXIS requests that the Commission provide guidance on how to meet these requirements for new construction projects. In such circumstances, the building owner may still be the project developer and, with the very limited exception of homeowners building their own new homes, the future occupants may not be readily identifiable. ARCXIS recommends that the Commission develop a guidance document that provides direction for meeting these requirements for new construction. We recommend that the Commission clarify that the project developer, builder, or General Contractor can qualify as the homeowner representative for purposes of completing the Consumer Information Form. In addition, the Commission should clarify that in the case of a development of multiple homes, such as the construction of a new community or subdivision, that a combined registration form can be used.

### B. ECC-Provider Penalty Discretion

ARCXIS supports the change to Section 10-103.3(d)5Cig of the proposed regulations which clarifies that the ECC-Provider has the discretion as to whether to initiate a disciplinary action if the ECC-Provider is refused access to a development for an onsite audit. ARCXIS recommends that the Commission provide guidance to ECC-Providers regarding this discretion and specifically to not penalize an ECC-Rater if the rater has taken all necessary actions to support the audit but where the developer, builder, general contractor, or building owner has refused the ECC-Provider with access. ECCRaters should not be penalized for actions that are completely outside of their control.

## II. Recommendations for Further Changes to the Proposed Regulations

As stated above, ARCXIS believes that, on balance, the proposed regulations represent a significant improvement and support their adoption. However, if the Commission does release an additional draft of regulations, ARCXIS urges the Commission to consider making the change describe further below.

### A. Delegation of Signature Authority for Certificates of Verification

ARCXIS supports providing ECC-Rater Companies with the same authority to sign Certificates of Verification on behalf of individual ECC-Raters as they do the HVAC Contractors for signing Certificates of Installation. As we have previously described, ECC-Rater Companies may have centralized document submission processes that are streamlined to reduce costs and reduce delays. Allowing the ECC-Raters to delegate signing authority to ECC-Rater Companies support this streamlining and helps to reduce costs. If the Commission releases a subsequent draft of regulations, the Commission should amend Section 10-103.3(b)2C to provide ECC-Rater Companies the ability to sign on behalf of individual ECC-Raters to the same extent and subject to same restrictions as is provided for Certificates of Installation.

The California Statewide Utility Codes and Standards Enhancement Team (Statewide CASE Team) supports the adoption of the 2025 California Energy Code (Title 24, Part 6 and Part 1, Chapter 10).

Three California investor-owned utilities — Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison — and two publicly owned utilities — Los Angeles Department of Water and Power and Sacramento Municipal Utility District — supported the Statewide CASE Team’s participation in the 2025 code cycle.

Adoption of the 2025 code represents a significant milestone in the state’s continued efforts to meet critical energy and climate goals, demonstrated by the California Energy Commission (CEC) estimate that the 2025 code will reduce statewide energy use by 404 GWh and 34.5 million therms of natural gas savings during the first year the code is in effect. <sup>1</sup>

Throughout the 2025 code cycle, the Statewide CASE Team had the opportunity to collaborate with CEC staff and many stakeholders to develop 60 unique code change proposals; 44 of which are included in the draft language slated for adoption. Code changes led by the Statewide CASE Team account for 313 GWh and 30 million therms and of the estimated statewide energy savings. We are proud to support cost effective energy savings that will also result in lower utility bills for California’s residents and businesses. The code changes as a whole are expected to result in \$4.2 billion of net saving over 30-years.<sup>2</sup> In addition to energy savings, the 2025 code will support building decarbonization, load management, grid resiliency, and over 68 million gallons of reduced water use per year.<sup>1</sup>



The Statewide CASE Team would like to highlight the following code changes that exemplify how discrete changes to the code will allow the state to make progress on statewide energy and climate goals:

- **Controlled Environmental Horticulture Lighting Efficiency:** with an expected 112 GWh of statewide energy savings during the first year the 2025 code is in effect, this is the highest electricity savings measure of the Statewide CASE Team's 2025 cycle portfolio. Building on the newly introduced horticultural lighting efficacy requirements in the 2022 Energy Code, this change updates the mandatory photosynthetic photon efficacy (PPE) for horticultural lighting luminaires and lamps to an LED level (2.3 micromoles per joule).

- **Swimming Pool and Spa Heating:** new heating systems for pools and spas will be required to use one of five heating systems that will reduce greenhouse gas emissions and energy consumption. The requirement will apply to newly constructed pools and spas or when a heating system is added to an existing pool or spa that did not have a heating system previously. With 10.2 million therms of natural gas savings and 57,574 metric tons of CO<sub>2</sub>e reductions expected during the first year, this code change is the highest natural gas and GHG savings measure in the 2025 portfolio. The requirements offer significant design alternatives with five options available through the prescriptive approach.

- **Nonresidential HVAC Controls — Guideline 36:** this code change has the highest peak demand reductions (39 MW) of the Statewide CASE Team's 2025 cycle portfolio. It requires that when the code requires HVAC controls on direct digital control systems that sequences are in accordance with ASHRAE Guideline 36-2021, High-Performance Sequences of Operation for HVAC Systems<sup>3</sup>, which provides detailed, uniform sequences of operation for HVAC systems that maximize energy efficiency and performance, provide control stability, and allow for real-time fault detection and diagnostics. This code change is an example of how the Statewide CASE Team recognizes the value of and supports the use of national design guidelines and the energy benefits they offer. This measure also serves to offset expected peak demand growth from allelectric buildings and the importance of continuing to pursue sensible energy efficiency and load management requirements as the state continues to encourage all-electric buildings.

- **Electric Readiness Requirements:** The Statewide CASE Team supported revisions to requirements for newly constructed buildings that will remove barriers if a building owner wants to switch from gas to electric equipment in the future. Electric readiness requirements for multifamily water heating and commercial kitchens enable buildings to electrify in the future with significantly lower retrofit costs. While these proposals do not have energy or GHG savings today, the forward-looking requirements could help the state meet climate goals at a lower overall cost to building owners and the state.

- **Multifamily Restructuring:** For the 2022 code cycle, the Statewide CASE Team provided significant support to the CEC to separate requirements for multifamily into their own section of the code. Doing so simplified the code structure, clarify requirements that apply to multifamily buildings, and streamlined compliance and enforcement. For the 2025 cycle, the Statewide CASE Team continued to support the multifamily restructuring effort by addressing issues that remained unclear after the major revisions occurred for the 2022 cycle. The Statewide CASE Team's is committed to advocating for making the code easier to understand, which can lead to improved compliance.

The Statewide CASE Team is grateful to the many stakeholders who offered feedback on proposed code changes. Between January 2023 and May 2023 we hosted 17 public to discuss proposed changes; individuals representing over a hundred unique organizations attended public meetings. We also sent draft CASE Reports to more than 3,000 contacts from a diverse variety market actors inviting feedback and recommendations. The Statewide CASE Team developed and implemented a tailored outreach and engagement strategy to reach the energy equity and environmental justice (EEEJ) community and to keep equity as an integral consideration. More information about this work can be found in the 2025 Code Cycle EEEJ Summary Report.<sup>4</sup> The thoughtful feedback we received and constructive dialogue we had with stakeholders led to proposals that balance many interests, are cost effective, feasible, and enforceable.

As the state prepares for the effective date of the 2025 code, we encourage stakeholders to visit [EnergyCodeAce.com](https://EnergyCodeAce.com) for resources and tools that the utility Compliance Improvement Team offers, including the "What's new..." and "What's changed..." resources that are expected to be complete by the end of the year.

The Statewide CASE Team is committed to continued participation in the Energy Code updates. In the near term, we plan to collaborate with other HVAC stakeholders to use the process described in Section 10-109 of Title 24, Part 1, Chapter 10 to propose additional prescriptive alternatives for nonresidential multi-zone space conditioning system types (Section 140.4(a)3). The Statewide CASE Team, in collaboration with others in the HVAC industry, would appreciate guidance on how to effectively prepare and submit proposals that will result in timely approvals in advance of the effective date of the 2025 Energy Code.

Additionally, the Statewide CASE Team is developing proposals for the 2028 code cycle that will support the continued effort to improve building energy and climate performance through the evolution of the Energy Code. We look forward to continued engagement with CEC staff and all stakeholders to accomplish this.

### **Keep 3 Prescriptive Options in the Code**

Hi there, we objective as an engineering consulting company to the prescriptive compliance pathways being restricted to one single option for the multi-zone electrification baselines. Restricting our industry to one prescriptive compliance method is not appropriate, given the variety of building types and architecture that goes along with those building types. There must be multiple prescriptive compliance pathways for a Mechanical Engineering specializing in HVAC to be able to select from, in order to appropriately tailor the HVAC system to the architecture, floor to floor height and other spatial coordination issues. Please keep the multi-zone electrification baselines as is. Sincerely, Alyse Falconer, Managing Principal, PE, LEED AP BD+C; Phone 724-448- 5959 & Email: [alyse@pointenergyinnovations.com](mailto:alyse@pointenergyinnovations.com)

The Commission's Response to Comment	Date of Comment
<p>Thank you for your comment, no changes have been made because additions and alterations are already defined in the Energy Code.</p> <p>The Energy Code defines an addition as "any change to a building that increases conditioned floor area and conditioned volume. Addition is also any change that increases the floor area and volume of an unconditioned building of an occupancy group or type regulated by Part 6. Addition is also any change that increases the illuminated area of an outdoor lighting application regulated by Part 6."</p> <p>The Energy Code defines an alteration as "any change to a building's water-heating system, space-conditioning system, lighting system, electrical power distribution system, or envelope that is not an addition. Alteration is also any change that is regulated by Part 6 to an outdoor lighting system that is not an addition. Alteration is also any change that is regulated by Part 6 to signs located either indoors or outdoors. Alteration is also any change that is regulated by Part 6 to a covered process that is not an addition."</p>	<p>8/26/2024</p>

Introductory remarks - no response needed.

8/30/2024

Thank you for your comment of support.

8/30/2024

<p>Thank you for your comment of support.</p>	<p>8/30/2024</p>
<p>Thank you for your comment. Staff will clarify the differences between "habitable" and "occupiable" in the compliance documents. We will revisit this topic in the next code update.</p>	<p>8/30/2024</p>

Thank you for your comments. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.

Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.

Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.

Staff notes that the safety standards governing refrigerant use in air conditioning equipment in the US, ANSI/ASHRAE Standard 15 and UL 60335-2-40, have been updated to allow use of A2L refrigerants. These updated standards have been adopted both for ICC 2024 (including IBC, IMC and IFC changes) and for the California Building Code. Further, Staff notes that new air-conditioning equipment installed in California is subject to the California's Air Resources Board's Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End-Uses, which requires use of low GWP refrigerants as of January 1, 2025, and January 1, 2026 for VRF.

9/4/2024

Thank you for your comments. In summary, Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process. See Staff's responses to the itemized comments below:

1. All measures including federally regulated equipment use minimum efficiency equipment. As such, all boilers used are minimum efficiency boilers. Staff notes that using condensing boilers would increase the first cost of the baseline system, which would likely increase the cost-effectiveness of the VRF system.
2. Refrigerant piping costs were based on a 2050 Partners Study (2023). The assumption of 30 zones assumed that perimeter offices on a given facade and floor could be grouped together, and core zone spaces divided into open office spaces. In stakeholder interviews, one designer stated an average zone size of 1200 to 1500 sf; another source (NIST 1991. Variable Air Volume System Design Guide) indicated that open office space can be as large as 2,500 sf. CEC's subcontractors reviewed feedback on zone size and determined that even with increasing the number of zones to 60, that the VRF system remained cost effective.
3. Docketed costs show the refrigerant piping costs to be reasonable, as confirmed by stakeholder feedback during the September 11, 2024 business meeting.
4. CEC's subcontractors have documented references for indoor unit costs. The installed cost of \$2500/zone aligned with estimates from HVAC distributors, as well as a costed building for a PG&E Code Readiness project.
5. The DOAS unit costs apply referenced cost estimates for a heat recovery ventilator DOAS, including overhead and profit.

9/4/2024



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9/5/2024

Introductory remarks - no response needed.

9/6/2024

Thank you for your comment. No changes were made. As stated in the docketed comment from NEEA (TN#259029), the only notable change from version 8.0 to 8.1 is that the load flexibility function now requires third-party certification from EcoPort CTA-2045 or AHRI 1430 listing. AHRI indicated that their AHRI 1430 Qualified Product List will be available prior to the effective date of the 2025 Standard on January 1, 2026.

Reference Appendices, Joint Appendix JA13 is a voluntary compliance option, and NEEA AWHS certified heat pump water heater is a prescriptive alternative and not a requirement. Non-performance related requirements in the AWHS, such as sound levels, are important for heat pump water heater acceptance. Staff acknowledges the potential additional burden on manufacturers of various heat pump water heater certification programs, and intend to reevaluate the JA13 requirements and NEEA references in the 2028 code cycle.

9/6/2024

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9/6/2024

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<p>Thank you for the comment. Each substantive comment is addressed below. No changes were made as a result of these comments.</p>	<p>9/6/2024</p>
<p>Thank you for your comment. Staff noticed the 15-day public comment period, and all other public comment periods, in accordance with the regulatory guidelines. Staff encourages the stakeholder to sign up for our listserv.</p>	<p>9/6/2024</p>

<p>The CEC disagrees with the commenter's application of the law, and no changes have been made. The self-described "limited" and "narrow" holding of CRA v. Berkeley is not applicable to a state building code that meets EPCA's seven-part building code exception. The Energy Code has been specifically developed to meet these federal criteria and, therefore, it does not violate EPCA and is not preempted.</p>	<p>9/6/2024</p>
<p>Contrary to the comment, specifying equipment to be used for the prescriptive path does not disallow the use of gas equipment in new buildings. Gas equipment is still allowed under the performance pathway as long as the project performs equal to or better than the prescriptively designed building. The CEC disagrees with the comment and no changes made in response to this comment. The Energy Code is designed to preserve consumer choice. However, changes were made to Section 140.4(a) in response to other stakeholder feedback, and the final language provides for additional consumer choice.</p>	<p>9/6/2024</p>

The CEC disagrees with the comment and no changes have been made. The CEC's economic determinations are detailed in the rulemaking and the Energy Code preserves consumer choice and provides cost-effective compliance pathways for all building types.

9/6/2024

The CEC disagrees with the commenter's application of the law, and no changes have been made. The self-described "limited" and "narrow" holding of *CRA v. Berkeley* is not applicable to a state building code that meets EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3). The Energy Code has been specifically developed to meet these federal criteria and, therefore, it is not preempted.

9/6/2024

Thank you for your comment. Staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.



Thank you for your comment of support. Staff is committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.

9/6/2024

Thank you for the comment of support.

9/6/2024

Comment acknowledged, no changes have been made. Staff notes that the proposed language in Exception 1 to Section 150.0(h)7 is similar to language in Section 110.2(b), which has been in place for several code cycles. This exception is needed to prevent unnecessary supplementary heating operation in climate zones 7 and 15 and in buildings with conditioned floor area less than 500 square feet.

9/6/2024

Staff disagrees with the comments, and no changes have been made.

Regarding using reference conditions with the "high" rating test point from AHRI 540, Table 4: Compressor capacity is already being provided by some manufacturers in their specification sheets, and Staff understands that manufacturers plan to include this information in their specification sheets in the future.

Regarding lowering the net free area (NFA) requirement to 20 square inches for ducted inlets: There is insufficient research to support this change. Additionally, manufacturer instructions/methods may be used where they meet or exceed the requirements described in Section 110.3(c)7B2 through 4.

9/6/2024

Thank you for the comment of clarification

9/6/2024

9/6/2024

The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. The self-described "limited" and "narrow" holding of *CRA v. Berkeley* is not applicable to a state building code that meets EPCA's seven-part building code exception. Builders have multiple compliance pathways that are not preempted, and any single prescriptive compliance pathway that may be preempted in isolation, if it exists, would not result in a legal requirement for the builder to choose that specific pathway. The builder is free to choose among different compliance pathways of varying costs and there are viable pathways that include installing all federally covered products at their minimum efficiency levels. The Energy Code is specifically designed to meet all seven criteria of EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3), including the requirement to award credits on a "one-for-one equivalent energy use or equivalent cost basis."

9/6/2024

The CEC disagrees with the commenter's interpretation and application of the law, and no changes have been made. The Energy Code preserves consumer choice and is not preempted by EPCA. Builders have multiple compliance pathways that are not preempted, and builders are not required as a matter of law to install any particular products at any specific efficiency level. The builder is free to choose among different compliance pathways of varying costs and there are viable pathways that include installing all federally covered products at their minimum efficiency levels. The Energy Code is specifically designed to meet all seven criteria of EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3). Finally, the building code exception applies to building codes for "new construction", which includes new construction to existing buildings, known as additions or alterations.

Thank you for your comment. The proposed code language does not prohibit the use of propane gas in homes. If a builder/homeowner wishes to install propane gas equipment, they can do so using the performance approach where any combination of efficiency measures can be used to meet the energy budget. Furthermore, the 2025 Energy Code meets all state and federal statutory requirements; in particular, the Energy Code measures are "cost-effective when taken in their entirety and when amortized over the life of the structure".

9/6/2024

Thank you for your comment. Staff are always happy to work with stakeholders developing new technologies. For items that cannot be adequately modeled using the current compliance software, an exceptional method application can be submitted for evaluation, and if approved, the technology would then be incorporated into the compliance software.

To consider this technology as a prescriptive option within the Energy Code, a code measure proposal must be submitted for CEC evaluation and consideration as part of the next code cycle update.

9/6/2024

Introductory remarks - no response needed.

9/6/2024



<p>Thank you for your comment. No changes were made. As stated in the docketed comment from NEEA (TN#259029), the only notable change from version 8.0 to 8.1 is that the load flexibility function now requires third-party certification from EcoPort CTA-2045 or AHRI 1430 listing. AHRI indicated that their AHRI 1430 Qualified Product List will be available prior to the effective date of the 2025 Standard on January 1, 2026.</p> <p>Reference Appendices, Joint Appendix JA13 is a voluntary compliance option, and NEEA AWHS certified heat pump water heater is a prescriptive alternative and not a requirement. Non-performance related requirements in the AWHS, such as sound levels, are important for heat pump water heater acceptance. Staff acknowledges the potential additional burden on manufacturers of various heat pump water heater certification programs, and intend to reevaluate the JA13 requirements and NEEA references in the 2028 code cycle.</p>	<p>9/6/2024</p>
<p>Staff appreciates the comment in aligning with federal test procedures. Staff will consider the additional exception in the next code cycle.</p>	<p>9/6/2024</p>

Thank you for your comment of support.

9/6/2024

Thank you for your comment. Staff is committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.

Staff notes that the FPFC+AWHP+DOAS was not used to set the prescriptive baseline nor will it be the benchmark for the Executive Director path. There is no prescriptive baseline, but instead a list of systems that can be used under the prescriptive approach. The benchmark energy performance for a system to qualify for the prescriptive or Executive Director path is a VAV system with parallel fan-powered boxes.

The equipment and system types, performance parameters, and system controls that have been specified in the code are considered sufficient such that a qualified mechanical engineer would make a correct equipment selection for the space-heating application and the specific systems listed in Section 140.4(a)3, select equipment that met the required efficiency level, and design using a system loop temperature that is compliant with Section 120.2(l).

For systems that are not included in the prescriptive options, the designer has a choice of a variety of systems in the performance approach.

Neither IPLV nor NPLV.IP were used in the analysis. To characterize AWHP performance for use in hourly energy compliance models, CEC subcontractors used performance data based on AHRI 550/590 testing from several manufacturers to develop performance curves for varying outdoor air temperature, entering wet-bulb temperature, and water supply temperature, along with full-load ratings. Air-to-water heat pumps are directly modeled in the public domain software packages CBECC and EnergyPlus.

9/6/2024

Thank you for your comment. The AWHP performance is based on the various AWHP performance levels and loop temperatures listed in Table 110.2-J. These performance levels and loop temperatures are derived from AHRI 550/590 testing.

9/6/2024

Thank you for your comment The cost-effectiveness analysis for Section 140.4(a)3 is based on the various AWHP performance levels and loop temperatures listed in Table 110.2-J, which is based on AHRI 550/590 testing. The performance levels and hot water supply temperatures from this table were used for both the four pipe fan coil (FPFC) and parallel fan-powered boxes (PFPB) and were found to be sufficient for the energy savings and cost-effectiveness used to justify the proposed code language. In addition, the analyzed hot water supply temperatures are sufficient for fan coil units and PFPBs with appropriate terminal unit selection of the box size, number of coil rows and fin density.

In the analysis, air-to-water heat pumps were directly modeled in CBECC and EnergyPlus; this feature is available in the compliance software. All modeling details were made available to stakeholder requests.

9/6/2024

Thank you for your comments. Staff is committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software. Staff notes that the Executive Director path is for system types that can be used in any project in the appropriate building type and climate zone. The timeline for Executive Director approval includes the time needed for analysis to support energy equivalence, as well as time for public and internal reviews. The Executive Director path is not intended for specific projects.

9/6/2024

<p>Thank you for our comment. This comment is out of the scope of the August 2024 15-day notice. ASHRAE 15 compliance is necessary and designers must follow the requirements. Staff will incorporate language in the compliance documents to guide users on this topic.</p>	<p>9/6/2024</p>
<p>Thank you for your comment. Staff believe the adopted language is adequate. We will explore incorporating language in the compliance documents to provide additional clarity.</p>	<p>9/6/2024</p>

The CEC disagrees with the commenter's application of the law, and no changes have been made. The self-described "limited" and "narrow" holding of CRA v. Berkeley is not applicable to a state building code that meets EPCA's seven-part building code exception in 42 U.S.C. 6297(f)(3). The Energy Code has been specifically developed to meet these federal criteria and, therefore, it is not preempted.

9/6/2024

Thank you for the information and cost data.

9/6/2024

Thank you for the information and support.

9/6/2024

Thank you for your comment. No changes were made. As stated in the docketed comment from NEEA (TN#259029), the only notable change from version 8.0 to 8.1 is that the load flexibility function now requires third-party certification from EcoPort CTA-2045 or AHRI 1430 listing. AHRI indicated that their AHRI 1430 Qualified Product List will be available prior to the effective date of the 2025 Standard on January 1, 2026.

Reference Appendices, Joint Appendix JA13 is a voluntary compliance option, and NEEA AWHS certified heat pump water heater is a prescriptive alternative and not a requirement. Non-performance related requirements in the AWHS, such as sound levels, are important for heat pump water heater acceptance. Staff acknowledges the potential additional burden on manufacturers of various heat pump water heater certification programs, and intend to reevaluate the JA13 requirements and NEEA references in the 2028 code cycle.

9/6/2024



Thank you for your comment of support.

9/6/2024

Thank you for your comments. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.

Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.

Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.

Staff notes that the effects on equipment prices for transitioning to A2L refrigerants in VRF systems have not yet been announced by equipment manufacturers. There is no evidence that ASHRAE Standard 15 compliance costs will significantly increase the price of VRF equipment. Staff based the cost effectiveness analysis on currently available information, and would expect that the industry will find solutions to allow their products to remain competitively priced.

9/6/2024

Thank you for your comment. No changes were made. As stated in the docketed comment from NEEA (TN#259029), the only notable change from version 8.0 to 8.1 is that the load flexibility function now requires third-party certification from EcoPort CTA-2045 or AHRI 1430 listing. AHRI indicated that their AHRI 1430 Qualified Product List will be available prior to the effective date of the 2025 Standard on January 1, 2026.

Reference Appendices, Joint Appendix JA13 is a voluntary compliance option, and NEEA AWHS certified heat pump water heater is a prescriptive alternative and not a requirement. Non-performance related requirements in the AWHS, such as sound levels, are important for heat pump water heater acceptance. Staff acknowledges the potential additional burden on manufacturers of various heat pump water heater certification programs, and intend to reevaluate the JA13 requirements and NEEA references in the 2028 code cycle.

9/6/2024

<p>Thank you for your comments. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback, with the most recent edits published in August 2024 for a 15-day public comment period. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p> <p>Staff notes that the safety standards governing refrigerant use in air conditioning equipment in the US, ANSI/ASHRAE Standard 15 and UL 60335-2-40, have been updated to allow use of A2L refrigerants. These updated standards have been adopted both for ICC 2024 (including IBC, IMC and IFC changes) and for the California Building Code. Further, Staff notes that new air-conditioning equipment installed in California is subject to the California's Air Resources Board's Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End-Uses, which requires use of low GWP refrigerants as of January 1, 2025, and January 1, 2026 for VRF.</p>	<p>9/6/2024</p>
<p>Thank you for your comment of support.</p>	<p>9/6/2024</p>

<p>Thank you for your comment. The Energy Commission is re-drafting an Application Guidance document for the ECC-Provider and will include additional discussion regarding the new and altered requirements including the Consumer Information Form. Furthermore, it is the intent of the Energy Commission to allow Providers and other interested parties to review this guidance document prior as a draft prior to its formal release.</p>	<p>9/6/2024</p>
<p>Thank you for your comments. The Energy Commission is re-drafting an Application Guidance document for the ECC-Provider and will include additional discussion regarding the new and altered requirements including the Consumer Information Form. Furthermore, it is the intent of the Energy Commission to allow Providers and other interested parties to review this guidance document prior as a draft prior to its formal release.</p>	<p>9/6/2024</p>

Thank you for your comments. Additional stakeholder engagement is needed to adequately address the proposal. Staff will thoroughly investigate this recommendation in the 2028 Energy Code rulemaking.

9/6/2024

Thank you for your support in this process.

9/10/2024

Thank you for your comment of support.	9/10/2024
Thank you for your comment of support.	9/10/2024
Thank you for your comment of support.	9/10/2024
Thank you for your comment of support.	9/10/2024

<p>Thank you for your comment of support.</p>	<p>9/10/2024</p>
<p>Thank you for your support in this process.</p>	<p>9/10/2024</p>
<p>Thank you for your support in this process.</p>	<p>9/10/2024</p>



Thank you for your comments. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.

Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2. We also note that the performance path is an option for mechanical system designs that can be modeled by the CBECC compliance software. Further, we are committed to adding systems in advance of the effective date of the 2025 Energy Code through the Executive Director approval path, as well as exploring expanding available systems in the compliance software.

Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.

9/10/2024

Phase of Comment	Link to Comment
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Comment Number	Commenter
Sept 11 BM-1	Kelly Cunningham (PG&E) representing IOUS/CASE Team
Sept 11 BM-2	Christopher Malott (SCE)
Sept 11 BM-3	Bob Raymer (CBIA) (CBPA) (CBOA)
Sept 11 BM-4	Sam Fishman (SPUR)
Sept 11 BM-5	Krysta Wanner (WPGA)
Sept 11 BM-6	Sean Armstrong (Redw)
Sept 11 BM-7	Jenny Sivie (Norman mechanical equipment)
Sept 11 BM-8	Todd Titus (HARDI)



Sept 11 BM-9	Thomas Deary (Director of Codes AHRI)
Sept 11 BM-10	Thomas Deary (Director of Codes AHRI)
Sept 11 BM-11	Renee Eddy (Rinnai)
Sept 11 BM-12	Renee Eddy (Rinnai)
Sept 11 BM-13	David Moller (Marin Sonoma Building electrification squad in Bay Area)
Sept 11 BM-14	David Moller, Marin Sonoma Building electrification squad in Bay area
Sept 11 BM-15	David Moller, Marin Sonoma Building electrification squad in Bay area
Sept 11 BM-16	Brad Heavner CALSSA

Sept 11 BM-17	Lauren Weston (Arcterra)
Sept 11 BM-18	Dana Fischer (Mitsubishi Electric)
Sept 11 BM-19	Bronte Payne (SunPower)
Sept 11 BM-20	Anne Pernick (Safe Cities that stand at Earth)
Sept 11 BM-21	Blake Herrshafft (Peninsula Clean Energy)
Sept 11 BM-22	Ted Tiffany (BDC)
Sept 11 BM-23	Jeff Whitelaw (Daikin)
Sept 11 BM-24	Chris Bradt (LG Electronics)
Sept 11 BM-25	Brian Selby (CABEC)
Sept 11 BM-26	Melissa Yu (Sierra Club)
Sept 11 BM-27	Meg Waltner (Natural Resources Defense Council)
Sept 11 BM-28	Gina Griffiths Rodda

## Comment(s)

CASE team supports the adoption, PGE, SCE, SMUD, etc supported this effort. Utilities and partner teams are thanked for the effort and commission staff. 60 proposals, 44 being adopted.

SCE fully supports adoption. Thanks all those involved.

Supports the adoption of the 2024 Codes and is pleased to have worked with staff on resolving issues related to LSC metrics. A huge thank you to all the staff for their hard work. There are still issues with the VNEM changes made by the CPUC for non-residential projects, but this is not a CEC issue.

Supports the CEC adoption. Aligns with the bay area goals. Some missed opportunities – proposing language replacing AC units with HP. Moving forward, additional steps moving to replace AC to HP is desired.

Draft language could be construed as pre-empted and violate EPCA. Obstruct new owners from picking propane as an affordable option. Adding to states bad housing crisis. Renewable propane can improve costs to consumers. Dual fuel systems are worked on to help reduce burden on the grid. 98% efficiency. Ask that these be considered in 2025.

Support HP adoption while having double gas baseline. There is no prohibition of gas, but there are options. I've been able to do it and WPGA can do it. HP are superior products in construction. Since 2009 CCHP have been available. 2025 finally meets the market. Unfortunate that HP did not get adopted for existing buildings, however supports the adoption.

VRF Section 140.4(a)3. Supports the August 15 day comment period. Norman supports expansion use of HP for decarb and provide energy reduction. Supports amendments to VRF for office buildings and schools. Estimates for VRF costs are over stated 20-40%. 48ton costs estimate for all include \$7-9k/ton. Some comments suggest \$16k/ton. These should be excluded from consideration.

Wants revision on the standards to protect consumers to allow for more choice. HARDI will have adverse impact on businesses and consumers. HARDI disagrees with adoption approach

Thanks staff for all the efforts. AHRI wants to support expanding HVAC options prescriptively.

HRI also remains concerned about the durability of the energy code due to certain proposed revisions being preempted by the Energy Policy and Conservation Act. And additionally, we are concerned about the multiple excuse me, we are concerned about the implementation of new metrics used to cost justify proposed measures and evaluate code compliance.

Concerns new water heaters to be heat pumps. Mandate restrict choices and won't work for every and would not fit the budget. They are costly than tankless water heaters. They will end up costing more and lead to higher energy bills.

Concerned about water heaters to be HP, These conflict with federal law. This was confirmed in Berkley vs restaurants.

We strongly support the proposed provisions of the 2025 update to the California energy code.

Go further to require AC to be replace with HP.

we'd like to see the update require that all newly constructed buildings be all electric.

We strongly support the proposed provisions of the 2025 update to the California energy code.

Support of expanded heat pump baselines for residential and non residential new construction and provisions that strongly encourage the replacement of single zone

Strongly support adoption of current draft of the standards. Have supplied CA for more than 15 years with Cold Climate HP

Sunpower supports the adoption of the 2025 California energy codes.

We strongly support the proposed provisions of the 2025 update to the California energy code. Missed opportunity is the replacement of AC to HP.

We are especially supportive of the single family dual heat pump, baseline, the commercial new construction requirements and especially the existing building rooftop package unit replacement requirement, prescriptive requirement requiring electrification of those units on replacement.

Supports the adoption of the 2025 California energy codes.

Supports the adoption of the 2025 California energy codes. Daikin has submitted comments to the docket, and would like to reiterate our appreciation and support of the recent changes to section 140.4. Allowing for use of VRF with DOAS under the prescriptive pathway for schools and office buildings.

Supports the adoption of the 2025 California energy codes.

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Supports the adoption of the 2025 California energy codes.

## Staff Response to Comment During Hearing

No action needed. Comment of support.

No action needed. Comment of support.

No action needed. Comment of support.

No action needed. Comment of support. Comment regarding AC to HP replacements is out of scope of this rulemaking. Staff may revisit this topic in the next code update.

The CEC disagrees with the commenter's application of the law; EPCA does not preempt the Energy Code because the code meets EPCA's seven-part building code exception to preemption. Chief Councils Office, Michael Murza Responded during the September 11th Business meeting. Listen to transcript, timed at 2:48:44.  
[https://energy.zoom.us/rec/play/ngVeqjnz2h1wEGGA8RWKBYFQGdQzN4pR83Gj3zpscFFbGH6NoYzz-LRZiH078eDTwS6RJT\\_YLXOO3Rm5.AanhxznXDdmCOZRM](https://energy.zoom.us/rec/play/ngVeqjnz2h1wEGGA8RWKBYFQGdQzN4pR83Gj3zpscFFbGH6NoYzz-LRZiH078eDTwS6RJT_YLXOO3Rm5.AanhxznXDdmCOZRM)

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See response to TN#259024.

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Staff notes that the Energy Code preserves fuel choice and the ability to use all federally covered products.

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The Commission's Additional Response to Comment	Date of Comment	Phase of Comment
Thank you for your comment.	9/11/2024	Adoption
Thank you for your comment.	9/11/2024	Adoption
Thank you for your comment.	9/11/2024	Adoption
Thank you for your comment. Staff has determined that keeping the single-family air conditioning system alteration requirements in Title 24, Part 11 is the best approach to achieve the State's long term decarbonization goals. Benefits of this approach include ensuring a smooth transition to statewide use of heat pump technologies; and allowing time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.	9/11/2024	Adoption
No additional comment.	9/11/2024	Adoption
Thank you for your comment.	9/11/2024	Adoption
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Thank you for your comment.	9/11/2024	Adoption

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Thank you for your comment.	9/11/2024	Adoption



<b>Comment Number</b>	<b>Commenter</b>
240416-01	Carol Roberts, Greg Consulting
240416-02	Meg Waltner, Energy350 on behalf of NRDC
240416-03	Carol Roberts, Greg Consulting
240416-04	Brian Selby, Selby Energy Inc
240416-05	Meg Waltner, Energy350 on behalf of NRDC
240416-06	Bronte Payne, Sun Power

240416-07	Carol Roberts, Greg Consulting
240416-08	Bob Raymer, California Building Industry Association (CBIA) & California Apartment Association

240416-09	Bronte Payne, Sun Power
240416-10	Mike Little, HERS Rater (self- employed)
240416-11	Christopher Ruch, National Energy Management Institute (NEMI)
240416-12	anonymous

240416-13	Raymond Hernandez
240416-14	Shelby Gatlin, CaCERTS
240416-15	Stephanie Gorton, VP, Energy
240416-16	Bob Raymer, California Building Industry Association (CBIA) & California Apartment Association

240416-17	Jeremy Zeedyk, NEMI
240416-18	Christine Condon, Certified Energy Analyst and HERS Rater.
240416-19	Christine Condon, Certified Energy Analyst and HERS Rater.
240416-20	Michael Little, sole proprietor HERS Rater
240416-21	Vicki Burlingham
240416-22	Vicki Burlingham



240416-23	Marina Blanco, Gabel Energy
240416-24	Kevin Kane, CHEERS
240416-25	Chandra Apperson, Certified Energy Analyst providing energy consulting services to contractors and designers
240416-26	Shawn Mayer, Harris & Sloan
240416-27	Gina Griffiths Rodda, Gabel Energy

240416-28

Michael Little,  
sole proprietor HERS  
Rater

240416-29

Shelby Gatlin,  
CalCERTS

240416-30

Natalie Seitzman,  
SCPPA

240416-31

Steven Winstead,  
NEMI

240416-32

Michael Scalzo,  
National Lighting  
Contractors  
Association of  
America, a lighting  
ATTCP

240416-33	Stephanie Gorton, VP, EnergyGuy
240416-34	Stephanie Gorton, VP, EnergyGuy
240416-35	Andrew Graf, Western States Council of Sheet Metal Workers

240416-36	Andrew Graf, Western States Council of Sheet Metal Workers
240416-37	Christopher Ruch, National Energy Management Institute (NEMI)
240416-38	Christopher Ruch, National Energy Management Institute (NEMI)
240416-39	Steven Winstead, NEMI
240416-40	Christine Condon, Certified Energy Analyst and HERS Rater.
240416-41	Bob Raymer, California Building Industry Association (CBIA) & California Apartment Association

240416-42	Bronte Payne, Sun Power
240416-43	Karen Bragg, US Green Building Council
240417-01	Skip Ernst, Daikin
240417-02	Gina Griffiths Rodda, Gabel Energy
240417-03	Ted Tiffany, On behalf of Myself

240417-04

Christopher Ruch,  
National Energy  
Management Institute  
(NEMI)



240417-05

Meg Waltner,  
Energy350 on behalf  
of NRDC

240417-06

Hwakong Cheng,  
Taylor Engineers

240417-07	Jonny Kocher, Rocky Mountain Institute (RMI)
240417-08	Jonny Kocher, Rocky Mountain Institute (RMI)
240417-09	Hassan Fawaz, GMEP

240417-10	Anne Pernick, SAFE Cities at stand.earth
240417-11	Blake Herrschaft, Building electrification programs manager for Peninsula clean energy & Professional mechanical design engineer licensed in California
240417-12	Jeff Whitelaw, Daikin Comfort Technologies

240417-13

Ted Tiffany,  
Building  
Decarbonization  
Coalition

240417-14

Melissa Yu,  
Sierra Club

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240417-24	Bronte Payne, Sun Power



240417-25

Bob Raymer,  
California Building  
Industry Association  
(CBIA) & California  
Apartment  
Association

240417-26

Hassan Fawaz,  
GMEP

240417-27	Kurt Hurley, Green building sustainability program Manager, City of Berkeley
240417-28	Gina Griffiths Rodda, Gabel Energy
240417-29	Kelly Cunningham, PG&E

240417-30	Jon McHugh, McHugh Energy
240418-01	Marina Blanco, Gabel Energy
240418-02	Gina Griffiths Rodda, Gabel Energy

240418-03	Nehemiah Stone, Stone Energy Associates
240418-04	Gina Griffiths Rodda, Gabel Energy
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Carol Roberts,  
Greg Consulting

240418-35

Carol Roberts,  
Greg Consulting

240418-36	Luke Morton, CABEC Advocacy Committee Committee
240418-37	Gina Griffiths Rodda, Gabel Energy
240418-38	Gina Griffiths Rodda, Gabel Energy
240418-39	Brad Heavner, Policy director with the California Solar and Storage Association (CalSSA)

240418-40	Andy Schwartz, Tesla
240418-41	Bob Raymer, California Building Industry Association (CBIA) & California Apartment Association
240418-42	Luke Morton, CABEC Advocacy Committee Committee



240418-43	Kurt Hurley, Green building sustainability program Manager, City of Berkeley
240418-44	Bob Raymer, California Building Industry Association (CBIA) & California Apartment Association
240418-45	Luke Morton, CABEC Advocacy Committee Committee
240418-46	Marina Blanco, Gabel Energy

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240418-48	Carol Roberts, Greg Consulting
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240418-50	Chandra Apperson, Certified Energy Analyst providing energy consulting services to contractors and designers
240418-51	Carol Roberts, Greg Consulting
240418-52	Nehemiah Stone, Stone Energy Associates

240418-53

Marina Blanco,  
Gabel Energy

240418-54

Karen Bragg,  
US Green Building  
Council

240418-55	Marina Blanco, Gabel Energy
240418-56	Kurt Hurley, Green building sustainability program Manager, City of Berkeley
240418-57	Mike Little, HERS Rater (self- employed)

## Comment(s)

Timestamp 2:25:45. Heat pump water heater venting calculations, another huge issue when these are not outside, and again I'm referring to central water heaters primarily. How is this new additional calc and coordination going to be confirmed in the field? Plan review and building inspector? There is no mechanical acceptance or HERS test for that. How does that get enforced?

Is there any intent to apply this to central systems? We are seeing widespread failure in heat pump water heating boiler systems that are in either the garage on a podium or in a mechanical boiler type room. They're just not being ventilated properly. I don't think anyone anticipated the amount of ventilation required.

Timestamp 2:21:00. On HPWH ventilation requirements, support intent of requirement and appreciate work CEC, staff, and CASE team have done to date to ensure right balance struck between ensuring performance and making sure these requirements are not over burdensome. Some issues I've commented on before, (1) compressor rating point is not something published by manufacturer so concerns exist around enforceability of using that for determining room size and ventilation amount. (2) required area with ducted inlet configuration. I will submit those comments to docket again. They're similar to what I've submitted before.

Timestamp 2:23:40. Regarding HPWH and backup electric heat requirement, are you referring to a hybrid unit? This is commonly used in a hybrid water heater where tank and water heater are one unit, or are you referring to a separate requirement for a separate electric resistance water heater on a central boiler setup in that first piece? To read that correctly, are you saying that if you have a central heat pump boiler system, you are going to be required to also have an electric resistance water heater backup? We've had systems that don't perform well during those 1 week bad scenarios.

Timestamp 2:18:55. Exception 5 to 110.4(c), where it states that the exception applies where "inadequate solar access..." This is very vague and not defined. We find this could be a potential abuse of this exception. It needs some sort of parameter indicating what "inadequate solar access" means. I've been in communications with the CASE team and they are considering making changes to this. As it's written, it is really unenforceable or has high potential for abuse in compliance.

Timestamp 2:22:10. On Pool & Spa heating requirements, support this measure. Largest gas saving measure proposed by IOU team. Disappointed to see expansion of exception for alterations to all existing pools from just single-family. This really cuts into savings, which are so important. I will be commenting further on that on docket, but wanted to register that concern, but also support Brian's comments/concerns on "inadquate solar access."

Timestamp: 2:08:47. On slide 63, can you clarify the LSC and Source Energy and what they are relevant to? When you went over it, both were relevant to new construction, but the slides, it looks different.

Timestamp 2:29:30. (1) As we look at what things we can take care of during the 2025 cycle and what we can't move until 2028, I've had an inquiry regarding forms... we're going to live with the 2022 Energy Code for the next 4-6 years. To look at things we cannot address until the 2025 code, how do you suggest we get some things that need action sooner than the 2025 code cycle taken care of under the 2022 Code. I know it's old news, but we're on the ground living with these buildings still in construction for 5 or more years.

(2) Now we're boots on ground dealing with forms, registries, acceptance testing and installation forms, things that don't exist, things that are incorrect. There are just boots on the ground now, and all of these things that were thought out years ago, they're kind of broken, and it's hard to get things fixed when we're focused on 2025 and 2028. We're going to be working with things for years before we touch a 2025 code building.

Timestamp: 2:38:40. I don't expect to have any detailed discussion today, but it would be a question or comment for Thursday's discussion on residential. As we move into LSC, as you know we've done a lot of work with Commission staff regarding the LSC and making sure that it doesn't have an unintentional impact on peak load items that serve summer peak load very well. It is my understanding that we are going to be doing the ACM workshops this summer which will get into the weeds on this. To the extent that we can have a chat about that on Thursday, that would be great. Right now we've been working on a 20% buffering which apparently has been working on very well. We did an extensive research analysis through a grant provided by the CA home building foundation. We provided that information to the CEC. We will be looking forward to that and this summer's discussions. We support the standards and standards development, but it is difficult for us to support individual provisions because we always comply with the regs in their entirety. Right now it looks like it's heading in a good direction with that 20% buffer that would apply for probably about 3 years, so we'll look forward to the discussion on Thursday. This is a big item for us, and we support where the CEC is heading.

Timestamp: 2:41:20. For nonresidential and multifamily in coming days, in cost effectiveness analysis for PV and battery storage, I think there is an undervaluing. Products will be more cost effective when the ITC is properly factored in. There are two places where the current explanations don't totally line up with the way that the inflation reduction act will work. 1st on prevailing wage, a lot of projects may not need to comply with prevailing wage to get the full 30% value of the ITC. They only need to do that if they are over 1 megawatt, then they need to comply with prevailing wage if they want the full 30%. A project developer could decide to opt out of the 30% and not do prevailing wage apprenticeships just for the IRA, I know there are separate state laws. For the purposes of the IRA they will still get a 6% ITC. For things like battery replacements, ITC has phase out, but section 48 and 48E are the corporate tax payer versions. 48E kicks in in 2025, it is a check neutral version of the ITC, and that starting in 2035 remains at 10%, so there is not actually a full phase down of ITC for corporate tax payers, only residential tax payers under Section 25D of the federal tax code.

[Reaction to staff response] Yes there will be projects where prevailing wage portion of cost effectiveness should be removed, and there will be portions where more ITC value could actually be added on. Yes they will be more cost effective.

I would also like to know if there was an easier way to find these meetings. I have signed up for CEC emails, but CEC inundates my email and I have to sit through volumes of emails else to try and find anything relevant but serious.

Timestamp: 2:44:00. Commissioner McAllister, I wanted to talk to 10-103.3(a), and this goes off of Mr. Zedyke's comment earlier about the ECC program that you really needed to clarify that that is a residential program. Specifically, the scope of 10-103.3(a), it currently does not match the defined purpose of the ECC program. According to the definition in 10-102, the ECC program is specifically designed for field verification and diagnostic testing in residential construction, but when you look at the scope, they did not include the word residential anywhere in there. That really makes it into a very broad program. To avoid any issue with this and ensure clarity, language describing the scope of the ECC program should specifically state that it is limited to residential buildings only. This adjustment will align with the program scope with its intended purpose as it is defined in the Energy Code. Thank you for your consideration.

most cities are unaware and do not require any ATT certifications on most projects that clearly show it.



will the city start requiring ATT certifications, as most of the departments in Southern California do not ask for these requirements?

Timestamp: 2:35:55. On Stephanie, EnergyGuy, comment, had this morning on rater company disclosures which are new. Some of the things that the Rater companies are supposed to disclose to the providers are their pricing structures. One of the things that CalCERTS would like to suggest is that the Commission start with having the Providers disclose their pricing, and in subsequent cycles, have the rating companies disclose their prices. As a rating company, one of the things I would be concerned with is the protection of that information. Joe mentioned that it would be provided with the CEC in aggregate form, but the providers would need to work with their clients to make sure that the providers themselves protect that information. We will be submitting comments to docket. We understand the importance of the financial information needing to be disclosed to the commission, but would highly recommend that the Commission start by looking at provider pricing first.

So while we appreciate all the years of feedback and listening and collaboration, I do have an interest in just hearing the vision pertaining to the disclosure of the details of our pricing structures. So if there's any sharing or confidentiality of those prices, but more importantly, I just wanted to know if there was an intent for regulation of pricing.

I just wanted to say very quickly that CBIA concurs with the concern that's been raised by Shelby from CalCERTS and from CHEERS. We'll, of course, as in the past, we'll be working with CEC staff and the two providers to try to figure out how to deal with the problem that the new language on on-site audits might be fixed or whatever, but we'll deal with that in a written comment, and look forward to working with you on it.

I'd like to just make a comment about the name change from HERS to the Energy Code Compliance program. I just feel that it might be a little bit inappropriate to be named that, and it might cause a little bit of confusion in the sense that the ATT program also covers Energy Code Compliance. We would suggest that maybe changing the name to Residential Construction Code Compliance would be more appropriate because it would help to match the intention of that program to its scope and purpose, and provide a little bit of clarity and avoid some confusion. So I'll keep my comments brief but that's the basis of it.

And so I just wanted clarification here. I'm still a little confused. The documentation author who made the compliance document settling and consults with the client can be the same person as the HERS Rater, is that correct?

Also, again, I would like to actually reiterate my concern about calling a Field Verification & Diagnostic Testing rater an Energy Code Compliance Rater. I think it is confusing in this industry because those are two separate, really separate roles.  
Thanks so much for all this great work.

I just wanted to ask what -- first of all, is there any intent to maybe certify or in some way bring into the equation the energy consultants? I think there's a large gap between most energy consultants and everyone else.  
And also, is there any path to improve the rate of permits pulled on existing remodels and change outs? Because to me, that's the number one concern with compliance.

Will the CEC provide an external website or report format for the yearly reporting? Also, what security measures will be provided for retaining our financial and company information? This appears to be similar to our corporate reporting.

What documentation or testing will be required to prove we are capable of procuring permits and assisting a builder better manage the Title 24 portion of his project? We will need clarification of what qualifications are required. And how do we provide this info to the CEC and ECC-Provider?

During the presentation, only CF1Rs and CF2Rs were mentioned. Should the language also include the LMCI and LMCV forms?

The first point is -- which is what has been raised by CAA and by CalCERTS -- and that is the onsite. So if the builder has trouble coordinating that, then they have to convert it to 100 percent testing, and that has a lot of challenges. I'm sure you all might recall, as we've already stated: logistical issues, liability issues, what have you. So that's a concern we'd like to have the Commission address.

Secondly, also this goes back to the separate sample of the QA process. And if I understand the language correctly, it refers to requiring the ECC-Provider to go out in the separate sample test and to then QA inspect the house that was inspected by a HERS tester -- or inspector, but in addition to another house within that same sample set.

-----Followup questions after first response from Joe -----

And so that lead to a bit of a confusion for us only because we, as you know, do training and certifying of raters, and so we are testing to do the QA process on raters, not on contractors. So that's broaching us into a different area that goes outside our charter.

And with that I'll surely follow up as well with all my comments in writing on the docket.

Will current HERS raters be able to recertify for the 2025 Energy Code cycle, or will all raters be considered new based on the proposed program changes and have to complete all classroom and lab training again?

Timestamp 55:56 to 105:10

Summary - the participant, Commissioner, and staff engaged in an exchange of comments and answer regarding the Declaration of Separation of Services.

Comment: Is the Declaration self-certified or is it enforced? How would a single principle company owner manage both the Rater services and non-rater services? Are there design services that are not restricted by the conflict of interest requirements?

I really am uncomfortable with the name Energy Code Compliance, ECC, because it can convey that this is about -- can be confused with the energy consultant, and what really is their purview. And if I were to have a choice, there should be something like verification in the name that then ties it to the Certificate of Verification that is associated with their work.

First of all, I agree with Gina on the comment that she just made. My first interpretation of ECC was that more in line of energy compliance -- not energy compliance, but energy consultant.

Second, I was unclear on the language for entities like myself, sole proprietor, zero employees, I offer several services to homeowners and contractors, permit, HERS rating, or ECC rating, and also consulting for contractors on compliance, interpretation of compliance forms, et cetera. As a one-man operation, I didn't hear a lot of clarification as to the Separation between Services for someone like myself.

My comment today is about the new rule for us to do QAs on sample groups and residential new construction sample groups. And the new requirement is that we do quality assurance reviews on associated homes for every seventh sample group. That's going to impact over 30 percent of residential development in the state of California, and so we want to work with the CEC on the language of that a little bit to get some flexibility, because I think there's going to be an impact to builders and a substantial expense that we haven't calculated in this rulemaking. Most -- so over 30 percent of builders use sampling of those. More --most of them exceed seven sample groups. And if we can't get in, they need to go to 100 percent testing, or we need to work with the CEC on what that actually means. And if that home doesn't pass Title 24, what does that mean? And those questions really aren't clear in the regulations.

So we kind of need to work through that provision. It's -- doing associated QA is not new, but the strict language and the code for this specifically might need some work.

First, in pockets of new development and fast-growing areas. Those bring a lot of new solar and storage onto the same circuit in a short period of time. And then second, in distribution systems that are approaching 100 percent clean energy, where rooftop PV is more likely to displace other renewable energy sources.

So we believe that CEC is perfectly positioned to marry expertise of building energy usage and understanding the State's electrical system, and we look forward to working with the CEC to ensure that the Energy Code provides enough flexibility to accommodate local grid conditions and grid planning in POU territories.

I wanted to go back to my previous question on the High Rise Multifamily Dwelling Unit Ventilation Removal ATT from that, and I know you added on NA1.9 that -- basically, like, you said the project manager gets to choose to use an ATT alternatively, but that could be a little confusing, and I was wondering what the justification for taking it completely is out, instead of saying ATT and HERS -- or, sorry, ATT or HERS.

I do appreciate you adding the Shadow Audits into the code, and hopefully this gets approved and pushed through. This was something we pushed for during COVID because we were in dire need of it, but regardless it's here and coming now.

I do really like what you've done with the residential HERS program, the new ECC program. I know you were talking about solutions for the ATTCP program. You'd mentioned a couple of directions that you were going to go. It would be nice to see if maybe something along the lines of what you're doing for ECC could apply to the ATTCP program, holding all parties accountable and documenting all actions on different projects.

My one concern was that you mentioned with the ATTCP program for improvement that you're looking to use federal funds to help with maybe enforcement, compliance, outreach, whatever it may be to help educate the HGAs.

What happens if the federal funds do not become available, or what happens when you exhaust those federal funds? This is not a solution that's going to be based off of a budget. It's based off of some incoming funds. So I hope you're taking into consideration that there might be better options or better funding outside of federal funding.

Who or what committee is treating the permitting and compliance, and where can we find that information? Energy, our providers CHEERS and CalCERTS, and our competitors have experienced tremendous energy -- have extended tremendous energy in attempting to raise California's compliance rates, to no avail. Without enforcement and consequences for noncompliance, aka fees, I'm afraid this effort and budget will be spent in vain.

How can we get involved to share the specific and impactful data we have?  
And then final question: is this coming from the IRA funding?

Western States Council is largely supportive of the changes that are being made to the ATTs and ATTCPs.

With respect to the proposed Shadow Audit Alternative at the training facility, I was wondering why the new language required an audit of each ATT once per Code cycle, while the job site option only requires 1 percent of each AT's overseen projects be shadow audited. Shouldn't the Training Facility Option and Job Site Option be equivalent?

And it seems like in the new language, in adding that the ATEs or ATTs would be once per Code cycle, that you're attempting to clarify the time period in which the auditing would occur. And I think that that language was helpful, and I think that language could be implemented for the paper audit as well in kind of establishing a time period for the audit review, and when you're capturing that 1 percent, because I think it's a little vague at this point. So for example, you know, having a Shadow Audit occur within a Code cycle looking back at the last Code cycle to determine what that 1 percent of the compliance forms are, and the Shadow Audit would be, for purposes of calculation.

The suggestion to conduct shadow audits at a training center I believe is a really positive step forwards. However, it is crucial that such audits do not pose excessive burdens on the ATTCP who's responsible for their implementation. While the idea of executing random mechanical audits at job sites could be effective under certain conditions for certain jobs, it will prove and has proven to be impractical for widespread implementation due to challenges related to access, security, safety, and legal considerations. Therefore ATTs should be afforded the flexibility to carry out a shadow audit on either on-site or a training center, meaning at some points it may make sense to do an on-site depending on the region and where you're at. Other times it may make sense to do it at a training center.

And for that, we would ask that the -- everything be kind of even there. So the regulations and objectives governing shadow audits should be consistent irrespective of the location where they're conducted.

I will be submitting all this in written documentation and look forward to working with all of you in the future.

The other point to hit on what Andrew had talked about before, there is a need for clarification on the general requirement of 1 percent audit frequency to ensure uniform compliance across all ATTCPs. Simply stating something like 1 percent per Code cycle, that would help make sure that everyone's doing the same thing. Just saying one percent is - - kind of leaves it out in the open.

I will be submitting all this in written documentation and look forward to working with all of you in the future.

I just wanted to clarify on the High Rise Multifamily Dwelling Unit Enclosure Leakage Test, the removal of the ATT Certified Technician from that.

Will these presentation slides be available somewhere?

Timestamp: 2:34:10. Part 1, Section 115, community solar. No issue, but want to make sure we're reading this correctly. Under subsection 6, location, you're adding language that says "the distribution system shall have an electric voltage less than 100kV. In talking with Mike Stone from NEMA, it seems like you're trying to clarify that you don't want major power lines coming in from the desert? Is that correct? 100kV is kind of big, and we're fine with that, but is that the intent here? This provision is on page 111.



In the analysis of PV and Battery the ITC was undervalued. The report should be more cost effective, if the correct ITC were utilized in analysis evaluation. There are two areas where inflation reduction act would work. First, on prevailing wage, a lot of projects might not need to comply with prevailing wage to get the full 30% value of ITC. They only need to comply with prevailing wage if the projects are over 1MW, but a project developer could decide to opt out of full 30% and not do prevailing wage and apprenticeship. Second, on the battery replacement, the ITC is phase out, but section 48 and section 48ED (tech control of ITC) are corporate tax fair of ITC which is starting at 2035 and remains at 10%. So, there is not a full phase down of ITC per corporate tax fairs, only residential tax fairs under section 25D of federal tax code phase down. The prevailing wage portion of cost effectiveness should be removed, then more portion of ITC should be added later. That makes the analysis of PV and Battery more cost effective.

Will we have an opportunity to provide written comments in response to the proposed Energy Efficiency Standards after these three days of hearings are finished?

Guideline 36 question. In past web meetings, you know, I think last fall, it was asked and answered that you were aimed at building controls, and factory-installed unit controls were not part of this.  
Is that still true?

I have a bit of an issue with Guideline 36 in terms of enforceability. What does enforcement look like to our building departments when they're trying to support the Guideline 36 requirements? I really am hoping that there's some careful thought about how that's supported in the compliance forms, and in the field verification that might be associated with those particular -- hey, is it certified controls? Who's confirming it's on the certified list? And to support the building departments.  
And that was it. Thank you.

I just wanted to thank all of the hard work from staff on developing these nonresidential baselines for schools that include heat pumps. I know there has been some public comment recently about repealing the heat pump baselines for multizone systems. I would encourage you to look at additional prescriptive leeway for the heat pump allowances in multizone systems, but do not repeal the heat pump baselines in its entirety. I understand that the Commission has put a lot of work and thought into the LSC metrics for these, and provided a lot of background information over the last couple of years on the development of these baselines, and I want to encourage you to maintain those in the 45-day language and get this to final language.

So again, just want to appreciate all the hard work from staff, and encourage you to continue on the path that you've started.

I was specifically asking about 140.4(a)3B. So this would be the multizone conditioning system types and specifically for school buildings. Could you provide kind of the rationale behind that, or what was the thinking, or, you know, why it was limited to that? Or what's the thought process? Just so we can understand a little bit better.

So am I hearing you right, that you basically determined that this was the most efficient way to put in these systems for that size of building? Is that a correct statement?

Yeah. Just wanted to support a few of the things that you've presented during this section. Starting with the expansion of the nonresidential baselines to larger multizone systems in larger buildings, you know, strongly support your efforts to expand those heat pump baselines to new building types, larger buildings, multizone systems, an incredibly important step forward to meeting the State's emissions reductions goals. And, you know, I think it's important to emphasize that these are prescriptive requirements. There's alternatives through the performance path. And, you know, I support the work that you've noted and Ted's comments that, you know, there might be ways to add additional flexibility into these prescriptive baselines, but as they are, you know, they set the bar at a heat pump level for these expanded building types. And that's a huge priority of ours, and really happy to see them in there, and support staff's work on that.

Also wanted to support the retrofit measure. Really appreciate staff's work on that as well, and support the requirements as they're listed in the table that Bach showed. Again, that one is really important for encouraging installation of heat pump systems in smaller commercial buildings during retrofits when we have a chance to make those upgrades. And then finally wanted to support the hot water supply temperature limits as well. Those are important both for achieving energy savings today and for enabling heat systems in the future.

So, thank you for all your hard work.

Sorry, I joined at one, thinking that I would be hearing the non-res HVAC section, but it looks like you're ahead in the schedule. So I missed that earlier. I apologize for that.

But I did want to comment on the proposed heat pump baselines and express, I think, deep concern with the proposal as it's stated. You know, this is a pretty significant change to the prescriptive HVAC requirements for these building types. It feels like it's being rushed through without sufficient vetting. Right? So that was presented over the summer workshops. And in the express terms, the supporting report was only just recently released with the 45-day language, so, you know, there's limited opportunity for the public and the industry to really review and, I think, have the opportunity to engage and do a back and forth. Right? We're pretty late in the process at this point with 45-day language. You know, we have concerns about some of the assumptions that go into the analysis that we'll comment on in writing.

But, you know, overall, I think that the big concern is we're mandating very limited system options for offices and schools. you know, a Four Pipe Fan Coil, plus DOAS, plus Air-to-Water Heat Pump, that's not a common system that designers are choosing to use today, and so it's not clear that that's really always universally going to be the right system type for different applications. You know, whether it is truly cost effective compared to the baseline, I think, is very questionable. It sounds like a very expensive system, and my fear is that this is going to push projects that would otherwise go prescriptive to the performance approach, you know, which -- you know, there's lots of modeling issues, it's very difficult -- excuse me -- difficult to enforce, right? If the goal is to promote the use of heat pumps, I think there are other ways to do this. I hope we can find those for this cycle or for the next cycle.

Yeah. just want to respond to that last comment, and encourage -- you know, I think I've mentioned this earlier. We're encouraging the CEC to work to make any edits that we need to in the prescriptive pathway to create more options for the heat pump baseline. But wanting to not move it to a future Code cycle, because that would just not be aligned with the State's climate goals, of kicking it three years out, when a lot of the infrastructure that would be installed in these buildings would become standard assets before our 2045 Carbon Neutrality Goal.

I think that since commercial buildings, most go through the performance pathway anyway - - I've heard, like, upwards of 90 percent -- I think this is probably something that could be dealt with with pretty small edits to the prescriptive language to try to address the concerns that Taylor Engineers has, but I don't think that we need to be throwing the baby out with the bath water, so to speak.

So look forward to working with any folks who are interested in trying to come up with a solution to the concerns without actually, like, completely rolling back the requirements, which are completely necessary for our climate goals.

Thank you.

Calling to largely echo what Meg and Ted have already said. I think that the A/C and heat pump requirements for commercial buildings is a great addition. I really appreciate that you all look forward on doing some of that, including the 45-day language. It's very powerful.

I also appreciate the work that was done on the commercial baseline for multizone -- sorry, heat pump baseline for multizone buildings. And, yeah, have noticed that there have been some concerns in the docket. And also largely agree with Ted and Meg that there should be ways to add more flexibility, maybe in the prescriptive pathway, but also want to echo that there's always the performance option for folks who find the prescriptive pathway to be a little too daunting.

Yeah. Really appreciate all the leadership that CEC is doing here on this work, on the non-commercial -- or on the nonresidential slash commercial side.

Thank you.

So my question is mostly about the VRF prescriptive phase, as I know that we're going to have a refrigerant change soon, and that refrigerant most likely will be more stringent on ASHRAE 15, and will possibly create more shafts, possibly ventilation for said shafts, depending on what we get from the jurisdiction.

My question is, will there be any type of leeway around it for air source, assuming let's say alterations, you can't build shafts, ASHRAE 15 will end up working for a more stricter refrigerant type? Is there any type of questions being asked right now from the Energy Commission about this with vendors, manufacturers, jurisdiction, your updates on that, and what you would see being an alternative possibly for air source?

I want to applaud the CEC for extending prescriptive heat pump space heating requirements to all school, retail, library, financial institution, and office occupancies. This benefits California students and workers with clean air, cooling, and air filtration. We also applaud the CEC for maintaining the requirement for heat pumps to be prescriptively required for small package unit replacements in most climate zones, and I want to urge you to please maintain these requirements in the final standards.

So I'm very supportive of the existing building prescriptive requirements for small rooftop package units to be required to be heat pumps upon replacement. I strongly urge us to keep that requirement. It'll ease the amount of effort local governments need to do to pass local reach codes, and it's the most common sense approach to start decarbonize our building -- decarbonizing our commercial building stock from an engineering perspective. I also support reducing the temperature requirements for central systems. We need our -- many of our central condensing unit, condensing boilers, are being modeled as though they're running at condensing temperatures, but are running at 180 degrees, and not necessarily meeting the efficiency as we're seeing in the modeling. Running at lower temperatures will enable a heat pump in the future, and will make sure they're running more efficiently now.

In addition, I would support requiring daytime occupancy facilities in Climate Zone 16 when they're being replaced to be heat pumps. Climate Zone 16 would also like to get in on this game. We have many daytime occupancy facilities that are already run on heat pumps, and cannot afford to continue to be installing gas equipment for the next three years until the next code cycle.

Thank you so much.

I'm noting that we will be putting some comments in writing, either ourselves or through our Industry Trade Association. Our concern is relative to Section 140.4(a)3B, specifically for the schools. We think that is overly prescriptive, and from my understanding, a Four Pipe Fan Coil system, which is currently in that prescriptive section, is an uncommon system for schools and offices, so we will be commenting further on that.

As to a comment that I heard about VRF systems and A2L refrigerants, I would note that the products' safety codes and building codes are all being updated to ensure that the installation and use of VRF products in all types of buildings will be safe and efficient.

Thank you.

Want to go over a couple of things. First, Hasan, there are EnergyPro and CBECC trainings supported by the Codes and Standards IOU teams. Please do check in on both PG&E and the Codes and Standards classes. There's a ton of them out there, and they do a really great job of those on-hand trainings.

I wanted to go back to this electric baseline issue for multizone systems for schools. I want to restate something that Hwakong noted about this being mandatory. It is a prescriptive requirement. I have seen the comments from Taylor Engineers about expanding the prescriptive options there, and yes, there are some things we can do to expand the prescriptive options there. But it is not a mandatory requirement. It is a prescriptive requirement that can be met through the performance approach as well. And there's elements that we can talk about in the ACM further down the road, but I do not encourage the CEC to completely rescind that package.

The Taylor Engineer's office has been involved in the case measure for over two years now developing that, and this last-minute request to rescind it entirely and go back to the original gas baseline is, in my view, really detrimental to the progress that the CEC has made. And I want to encourage you to expand the prescriptive allowance, and we can have a very robust conversation about the ACM and baselines in that development further down the road, but this prescriptive element is pretty well-developed. It needs some minor tweaks and not a full repeal.

So I will docket these comments, as others have said today, but I encourage the Commission to keep on the path that they're on here. It is fairly well-developed, and needs some prescriptive widening, but does not need to be repealed at all.

Calling in to echo Ted's comment and Jonny's comment as well. Just thanking the CEC for extending prescriptive heat pump space heating requirements to all schools, retail, library, financial institutions, and also office occupancies. This is really going to benefit California students and workers with clean air, cooling, and air filtration, and allow zero-emission appliances like heat pumps that can really provide lifesaving cooling during our more and more extreme heating, and be able to build climate resiliency.

So, yeah. I'm just calling in to echo to maintain these requirements and the final standards. Thank you.

And then more of a secondary thing is to piggyback off what someone else said about DOAS and VRF, and how sometimes it's harder for some other people to do the performance approach, I personally have been doing the performance approach. I've been doing over 100 models specifically for multifamily.

One thing I will want to say is, I do like the idea of promoting the performance approach. I feel like there's still a skill gap from, let's say, the top energy consultants you might see, versus an engineering firm trying to get a little bit off Energy Code Ace. Yes, they do single-family on Energy Code Ace and other areas. They might do very simple HVAC rooftop units for nonresidential models, but I've never once seen any type of push for multifamily modeling, and I feel like even some of the better people don't really know what to tell you, as I have yet to see anyone give a definitive how-to on those, how to do this, how to do that, how to input this. I feel like a lot of people do little different things even at a higher level, and I'd just like to see maybe an encouragement of teachings, especially for multi-family modeling for others at least, and to get a definition of what we should be doing for everyone to the standard.

Thank you for the presentation there. The question I had was just on the -- the most -- what you just went over with the laboratories. And you talked about at the end there being some acceptance tests there.

Just to clarify, are there going to be added acceptance tests for the ATT in that case, that would be verifying that these systems actually work the way they're supposed to?

I just would encourage you to make sure that the -- whoever going to be verifying that, you know, does have the qualifications for it. You know, whereas the ATT is in very -- in many cases, especially when you look at, like, a level two, an ATT level two that the ATTCPs have, such as NEMIC, you're looking at someone who's TAB-certified. That would be the right person to test that type of system to verify that it's working.

I just wanted to -- I believe the question that Chris Ruch would have asked if he was listening, or was available right now, would be to the comment that was just made about those acceptance tests not being done by a certified ATT. The question that I would have, then, is if all the acceptance forms are now required to be done on a certified ATTCP database, how would an individual perform that test and record that data without having access to that, if they were not a certified ATT?

It seems to me like a bit of a miss that needs to be captured under the ATT program, the certified program.

I appreciate that and understand.

I just don't quite understand why that would be a separate function from what a mechanical acceptance testing would be doing, if they are in fact testing mechanical systems for acceptance. It just doesn't quite ring true to me. And I guess we'll just have that further discussion on that.



Fenestration - Fire Rating, and U-factor.

U-factor requirements create challenges where fire-rated windows are required

And I just wanted to comment specifically about the Mandatory Requirement for Vestibules. Since it's in the mandatory section, making sure how is that being dealt with or triggered when additions and alterations would be very key. Because at this point, it looks like if we're touching the envelope, that could potentially be a trigger. So just making sure that that is clarified.

And I also highly encourage you not to make this mandatory, mostly because vestibules looks of buildings are done by planning, and projects that would be subject to this Mandatory Requirement are going through planning right now, and would be going for a building permit in a time, and would have to go back to planning, for any envelope or looks and feel changes. Having it be prescriptive, having them be able to test out of it, and performance calculation: great.

But making it a mandatory, and setting projects back so far, and a lot of money for redesign, would be very, very challenging. And assuming that they have the location and square footage or front entrance to a location, in all of our jurisdictions all across the State, does seem to be a challenge. Could be a challenge. And if it's mandatory, there's no way to get out of that unless they had -- they could, yes, they could meet some of these exceptions, but again, planning is the one who decides this. That would be a challenge in most locations, to go back.

And just to confirm and affirm that we have docketed this letter already with this comment regarding the vestibule yesterday. I want to add another issue that I have regarding this Mandatory Vestibule Requirement, of which not all buildings have the ability to support the vestibules. And we do a lot of work in downtown areas, and there's no room for a vestibule. And if we're talking about downtown San Francisco and its relatively mild Climate Zone, I just don't see how the cost effectiveness associated with these vestibules can be supported in the cost it would take to carve out space for the building to support a vestibule. And I would like to also support that this should be considered as a prescriptive measure, and please clean up when it applies to additions and alterations.

I just had a clarifying question. I think I know the answer to this, but for the PV exceptions, it only applies to the truly nonresidential buildings. So even though high-rise multifamily is under this portion of the code, the exceptions don't apply because those did retain?

And thank you guys so much for the presentation. It was a great presentation, helping to clarify some questions.

I just wanted to make sure, since we're adding new building types to the PV and battery tables, I want to make sure that we're really clear as to what the definitions of those are, and providing definitions, because they don't match up with building-level Building Code occupancies, and there can be a lot of confusion about this is Occupancy A but it has potentially different building types within the Energy Code.

So please, if we're not going to reference building occupancies, as is seen through the rest of Title 24, we do need definitions of what these ones include or do not include. It would be very, very heavy.

And how that would be -- and how, for the enforcement agents, to make that clear as to where that they might find that information, because that's not something that's typically shown

I did want to bring up when it comes to the PV section, I can't remember the code section off the top of my head right now, but it is in the SARA calculation, defining how to determine SARA. And there is -- I think it's the third point where it says that SARA excludes any areas affiliated with any other local codes, or by -- or, excuse me, by any state codes or local code as approved by essentially the CEC.

The way it's written right now looks like the local codes and the state codes need to be approved. I would just put a slight -- I'm recommending a slight, or asking for a slight change, where they look at bullet points or commas or numbers because it looks like, as it's written, those two both need to be approved at the state level.

I made this comment yesterday, but just to flag it in this PV section, some of the calculations around cost-effectiveness I think will need to be updated to account for improved cost effectiveness when the ITC is being properly captured.

And, you know, we certainly understand the reworking, or the need to rework, the exception number five. You know, not to go through the regulatory history, but we weren't at all happy with the PUC decision. We were able to get multifamily back in there for virtual net metering, but that just wasn't the case for multi-tenant commercial. Not that I still understand why that happened, but it happened.

A request to the CEC -- and this gets out of the Standards -- but for the Energy Conservation Manual, the ECM and the blueprint, it would be great to see three or four examples, including the one that Muhammad just gave, of when this would apply and when it wouldn't apply. It's kind of a difficult read in the Standards, as a great many things in the Standards are. But if you could provide some pictorial explanations of when and where you would be required to meet PV and battery and where you wouldn't, thanks to the PE decision on VNEM, that would be very helpful. I definitely see where the building officials could use something like that, and as well as the building industry.

So once again, we understand the difficult position that you've been put in. We're hoping to change the PUC ruling down the road. There's a number of bills that are in the legislature seeking to do this. But that always takes time. But for the intermediate time, if you could just provide industry with some examples in both the ECM and in the blueprint down the road, that'd be great.

And that's my comment. Thank you.

And the first thing I want to do is mostly go over a very small multifamily question. I'll save any other questions for tomorrow that are very -- that I might need to listen to everything. But one thing is just for the current Code, to see if that's going to be a discrepancy changed later, is in the multifamily for new buildings envelope, mass floors have a Mandatory Requirement of basically 0.269 U-Factor, but the alteration for said floor in multifamily alteration is 0.111, which is more strict than new.

Do we know if that's a discrepancy, or if that's something that might be fixed later on?

Because if you make it as new, it's going to need less insulation than if it's altered for a multifamily building. I'll also read on page 362 of the Energy Code of 2022 for new buildings. It's for mass raised floors of a minimum of three inches of lightly lightweight concrete over metal deck, an average U-Factor of 0.269, which is about, like, carpet width and then -- with heavy -- and then if you go to the next one on the page -- let's see what page that is again -- 484 for alterations, then it's going to be R-6 insulation, where you're at a value of 0.11 for mass.

And my question for Christopher on 120.6(k), the commercial kitchen electric readiness -- I did make a note here. It mentions -- the exact language is the connected service capacity. Now I'm wondering if the plan is to use a similar language that was adopted for the EV-capable space where there's service panel capacity, because you -- maybe you were just putting the slide deck together quickly, and you didn't include the word service panel, but, you know, there's a whole chain. There's a whole sequence of things that are impacted in other codes. So, is that the intention, is to make it sort of a sibling requirement to the way the wording of the EV-capable space is? Where there's space physically, there's the electrical service capacity, you know, and ultimately we need electric load calculations in the building?

So in -- so, Christopher covered the 120.6(k), and I apologize if I have many things open my screen -- but yeah, 120.6(k). So, this is a Mandatory Requirement for commercial kitchen electric readiness. As I go down the bullets, and I'm looking at my screenshot here, it says service capacity, 800 amps connected. So there's some nuance there.

I guess what I'm wondering is, I really liked the wording for the EV-capable space. And of course, that's not in the Energy Code, that's CALGreen. But, you know, it's very specific about space in the service panel, the service panel has that capacity. So, I'm just wondering if you're going to coordinate with that, because I think that was well done.

I just want to applaud all the work that was done to clean up the lighting chapters, the beautiful stuff I saw for sign lighting, with the JA8 stuff. I was involved with all the stuff with nonresidential multifamily indoor lighting, so of course I'm proud of that. But there are a lot of people that were part of these efforts.

And it's really great as compliance improvement here in California to say, we're cleaning things up, we're simplifying, and we are not just continually adding, we're also helping make things make sense.

And I was not fast enough to raise my hand as Gina was speaking, but my comment was also going to be thank you to the Energy Commission for both moving the lighting sections forward, but also simplifying and clarifying the language within. For the last few cycles, our team had a hope that this would be done, and submitted some suggestions, and really appreciate the participatory process, and congratulate you on a cleaner lighting section of the Code that properly reflects the phase-out of technologies in California, and responding to past legislation, and also the moving on to more efficient sources.

And I just have one question about the -- as Simon noted, ENERGY STAR is being phased out. I'm wondering what -- is the J8 test standard going to address high-temperature or elevated temperature, you know, for the JA8(e), you know, elevated temperature ratings which are needed for enclosed and recessed light? Is there something that is planned to be added, or -- because I think in the past that referenced the ENERGY STAR program?

(Timestamp 03:15:23). I just have a couple of questions more related to their prescriptive requirements, and how they're gonna relate to the performance section of this part of the code. I know that now that that balance ventilation is going to be requiring our air leakage test on our dwelling units. And I saw that the language for low Rise multi family still had the dwelling unit or the building envelope, leakage testing still in there as a performance. Option is that going to remain as a performance option? And if so, with the baseline it has to test to when it have to be lower than the balanced ventilation system requirements for envelope leakage testing. (2) RESPONSE to Marian's reply: I would just request that the section of code gets clean up, because I do believe that within the performance section of the Multi family part multi family chapter, it still does offer building envelope, leakage, and reference appendices to the residential reference appendices. So if that's not true, then that can be removed because you can still model that lower envelope leakage testing within the multifamily software currently. Marian's response: Marian Goebes from the CASE team: Just clarifying the balance, ventilation, or supply only ventilation requirement is only for multi family, not for single family, so single family can still use, exhaust only. Your question about dwelling unit leakage as a performance option that's only available for single family. So for single family, you can get energy savings credit if you go below the ACH 50 assumption or and then for multi family, you can't get credit for that. The reason is that you don't know if you are building tighter than that compartmentalization requirement. You don't know if that air coming from the outside where you would get energy savings or from adjacent spaces, like other units. So again, balance or supply, only ventilation is only going to be required for multifamily, not single family and single family can claim credit for that reduced dwelling leakage, but not multifamily. (Commentor's response in comment column).

Appreciation comment (Timestamp 03:31:40). I just wanna say the clean up of what you guys have in the add/alt section. For multifamily, for ventilation is fantastic because it as I've already commented, we always forget, it seems to be how do these requirements apply to additions and alteration, and Maureen did a great job of making sure that was very Marian. I'm sorry. No, Maureen Marine did a great job, making sure that was clear. Thank you.

Appreciation comment and counter on a negative comment for exhaust-only from Hassan (Timestamp 03:34:53). You heard a comment earlier that there should be an exception for to allow it exhaust only in some situations with multi family. I would like to state that I believe that is not the case. There's there's plenty of reasons plenty of of research showing that exhaust on it too often doesn't work and actually can cause problems with with the kitchen exhaust and additionally, the the tenants will never have the opportunity to change that themselves it, and the owner of the property, the builder of the property is only one that can make that that work, and there it may be more expensive for them in some cases to to try to figure out how to get the balanced or supply type of ventilation. But.. That expense is is way way less than what the tenants could experience in terms of health costs and lost work.

(Timestamp 03:36:41). I wanna reiterate Nehemiah's comment. When these first came out, people really were all for balanced ventilation, and I had a lot of my multi family clients really look at what can they do to the design of the building to support the intake and outtake and the distance needed. And sometimes that meant reconfiguring the facade of the building. It's doable and it supports health and safety.

(Timestamp 03:38:44). My other comment is to exhaust, I think exhaust has its place. Exhaust, ventilation. What we see in the field is that we don't have enough good language to back us up, for a good exhaust design. We have exhaust fans in small apartments that need 40 to 50 cfm total, continuous ventilation but because we can assign an 80 cfm. Fan, It is being hardwired with an on off switch at the same place as the light, and we can preach best practice all day long. But when that Gc is value engineering, it is not going to happen. We are not getting the best work and we don't have any support to get better design and better equipment enforceable. That's enforceable. So yes, people are gonna jury rig it. They're gonna undo it as soon as they can take that thing and shut it off. It's loud and annoying. So I'm sorry to see that option going away. I would like to have it have been better supported in the field.

(Timestamp 02:44:10). First of all. We want to thank you for your transparency and letting us see these code sections ahead of time. It's something I would like to also see encouraged for any UMC related code sections for the State. The second thing I wanna talk about is mostly, I believe, exhaust only is now being taken out of the multifamily as an ability to go with for that route. And now it's only be supply and balanced. Only I apologize. If you haven't talked about it just yet. I joined in a few minutes late after the lunch meeting. So one things I wanna bring up as well. We understand this being very reasonable, and we can definitely see this being no issue for the most part for a single family. I do think we have to be a little more careful when it comes to multifamily, as there are times where you really can only go with exhaust, only as a termination, as you can do, exhaust supply. Only if there is a bathroom. and then what we also have to keep in mind is, especially when I look at many modular buildings. A lot of them are made to be smaller, compact, whether that's for low income, etc. and those might not even have a full 10 width from wall to wall. and because we need 3 feet separation of exhaust from any openings and 10 feet of separation from outsider, it may not always be feasible, and the thing about modular buildings anything such that you're not always able to go to the roof with the exhaust. They will have to be stuck into each modular pod. and if you're constantly putting each one bytes to each other, and there's no room and corridors. If there is a corridor, there's not much you can do in a situation. and we were not likely be able to use ASHRAE 62.1 modifications for cities like LA. Anymore. As time goes. We do hope that we can see some type of more wiggle room for this, as it might not always be easy to build under mechanicals for this reason. (2) the second point would just be about the same with the middle framing walls. We work with many big architects and contracting teams, there are many times they do get back to us, and multifamily saying, Hey, look! We have a very large building. It's just not feasible to install. Bridget on buildngs like this.

(Timestamp 03:42:53). It's somewhat to do with the exhaust. Only again, I am not gonna reiterate what I've said, but instead, I wanna bring up a new topic that I like to talk about in regards to Ervs and Hrvs regarding balance, ventilation and the feasibility of this I've talked to before with vendors from renew air, who work with Erv's that are able to be put multifamily, as they're only about 10 inches in height. They had some interesting co-sections in, let's say, Washington up North, where they allowed less than 10 feet separation, and all they have to do was provide a manufacturer guarantee you that there's less than 2% chance of any 2% of any infiltration coming from the exotics back into the intake. I think if that were to be help implemented, it would make if exhaust only has to go through, and everything goes through with that. Ervs can be a good option. It increases energy recovery. It makes it so much more efficient for the building than just a separate outside airfan, and not just for mandatory requirements, but to help with prescriptive. It'd be great to have some type of thing where we can balance between mechanical code energy code for the State to allow some type of additional exception to. If you have a Erv that allows less than 2% of the infiltration coming in that we can use that to be within a certain distance. That's feasible. Let's say 5 feet or so when sometimes they're even put right next to each other, having that type of infiltration requirement. If there's some type of coordination that they can done with the California States for mechanical and energy to allow your fees to have that type of separation. I feel like it'd be a lot more common to see ERVs.

(Timestamp 03:54:42). Commissioner. I do appreciate you bringing up the part about the permits. I think that is an issue to address, and I think a lot of us would like to help the CC on that. But I did have a very specific question going back a day to 140.4(a)3, And this is page 381, out of 758 out of the 45 day language. This was the part where there there was a lot of discussion about Multi zones and school buildings, and within the minimums for these my question is: there was a slide, and it was also stated by Staff that there was a size limit for the school buildings like it was only the very largest school buildings that would have to do this multi zone. And I was just having trouble finding that where it was stating that it was only buildings of a certain size I could see single zone, and then I could see multi zone. But it looked like, if it's a school building that's a multi zone it would follow under those rules, and I was just wondering if you could point out what I'm missing.



(Timestamp 03:33:07). I just wanted to applaud the CEC for introducing a prescriptive requirement for heat pump, space, and water, heating in all climate zones for residential buildings, and applaud the CEC's decision to include the new construction heat pump baselines for space and water heaters in additions. And I also wanna ask you to please maintain these requirements in the final standards. And also say that removing the language from the draft Express terms on alteration where an A/C system would be replaced by heat pump was a missed opportunity to improve air quality for Californians. Drive the heat pump market and accelerate heat, pump adoption, and to ask you to please move the prescriptive requirement for a heat pump h to replace an air conditioner in existing single family homes. from the voluntary section part 11 of Calgreen back to the energy code part 6. And that way Californians will not miss out. This is a no regrets, opportunity to cut planet warming emissions, improve the health and safety of homes and benefit consumers by encouraging the installation of energy. Saving heat pumps when air conditioning units burn out. Thank you very much.

(Timestamp 03:37:12). I do also want to put on record that I do not agree with there being heat pump requirements for alterations. The cost. Effectiveness is not supported, and it's going to drive people away from enforcing the code. If we start putting in requirements, they're going to be very difficult for homeowners to achieve. Thank you.

Heat pump requirements moving to part 11 disagreement comment (Timestamp 03:38:07). To follow up the heat pump requirement to not be moved to part 11. I do agree with Gina's statement. That is a huge cost, Delta. It's not just a one to one change out. You don't take the A/C unit that died while your furnace is working and put a heat pump out there. It's a major difference in cost, and the refrigerants are usually not supported in that. You have to do the whole system again.

Follow-up comment on Christopher Ruch's comment on school building zones (Timestamp 03:56:57). it doesn't say certain sizes of school and office. It really is, it's single zone, or it's multi zone. I think. What Bach was referring to yesterday is the case, Prototype buildings that were used to research the cost effectiveness of this particular measure.

Question on understanding cooling impact (timestamp 44:53). Heat pumps or split systems that have similar heating and cooling capacities. If we push the heating capacity up, we're going to end up oversizing, the cooling capacity. We believe that that was a direct conflict introduced in our requirements, which is what we're working on. Energy Star requirements have a limit to oversizing of cooling of 130-140%. And with our review we've seen that this is kicking us over that in many cases, so we'd like to recommend that we either add an exception or take this requirement out altogether as there are already other requirements for supplementary heat. There's lockout requirements, and there's maximum sizing requirements. So we feel those are handling the sizing of supplementary heat much better than of this requirement (2)The original draft language included requirements for mechanical loads to be provided to verify, presumably that's been removed. So I'm just curious if the Commission is planning any type of verification that the equipment is sized correctly for the requirements.

(Timestamp 02:07:56). We wanna commend the Energy Commission staff for removing the instantaneous gas water heater option for additions. These are very difficult to electrify once they're installed, requires significant gas demand and did not function during power outages due to the electricity requirements on the controls and their lack of storage. They're also dangerous. We agree with the CABECC comment regarding clarification on prewiring for additions. This can be a little confusing, but isn't an important requirement. (2) With regards to existing residential Hvac systems. We recommend the Commission prescriptively require heat pump capability for new or replacement A/C systems. Now we kindly ask that the State of California take the lead on building decarbonization. California currently has far and away the highest saturation of gas fired residential equipment of any State in the United States, possibly on planet earth. If the State is willing to take the lead on this requirement, it will drastically reduce the amount of effort our board boards and city councils will need to spend on reach codes. This takes a lot of effort. I have been to over a hundred council meetings related to reach codes and expect to attend dozens more if this measure is kicked down the road to the end of the decade. These cost, city staff, time, council, time, and endless resources. 2 of our member agencies have already created these requirements years ago, and are successfully implementing. Those are Portola Valley and the city of San Mateo. In the interim between the 2025 code cycle. In the next one, well, over a million air conditioners will be installed in California. Heat California homes without heat, pump capability. Stranding fossil fuel equipment in these homes into the 2040 s. We kindly request the CEC. Consider creating this prescriptive prescriptive requirement today.

(Timestamp 02:10:20). I wanted to start by supporting the prescriptive requirements for heat pumps and additions. As well as for heat pump water heaters new additional heat pump water heaters serving additions. Those both will harness a key opportunity to install heat pumps in those new spaces. Following on the comments from Blake Herrschaft, we were disappointed to see A/C to heat, pump, replacement, provision move to part 11 we think this misses a major opportunity to upgrade existing A/C systems to heat pumps at the time of equipment replacement and urge you to reconsider the decision to put that in part 11 versus part 6 in particular. Really urge you to reconsider it for the circumstance of major alterations, these alterations where you're replacing the whole system, including the ductwork and the equipment where it's really a key opportunity to encourage the installation of a heat pump instead of that one way, A/C system, and and really a small incremental upgrade compared to that whole project scope and cost. we've obviously commented on this issue a lot and appreciate all of staff and everyone's hard work to date. But yes, we would like to urge you to reconsider that that part of this proposal. Thank you very much. And yeah, I appreciate all the hard work on this.

Comment on heat pump measure changes (Timestamp 02:12:17 ). Largely would like to to echo comments from from both Blake and Meg. Do Wanna, you know, reiterate the positive comments I said on the new construction, single family, baseline and nonresidential for HVAC equipment As well as the AC heat pump replacement for existing commercial buildings. However, and disappointed that CEC is moving the A/C to heat pump requirement from part 6 to part 11 from a pre rulemaking draft. You know, in order to hit the 2030 pump goals, it's gonna be pretty difficult to do that if we're not going to be replacing every system opportunity as they come up. Since our commissioners break down, this is a very cost effective opportunity for folks to actually be switching over to heat pumps, especially here in California, with milder climates. When looking at the Ira tax credits. It's it's pretty clear that the upfront cost of of a minimum efficiency air conditioner and compared to a 45 c. Tax credit eligible., heat pump is actually, you know, about equal. So I think that's something to to look into a little bit more and also want to. You know, around operating costs with the the most recent proposal through care rate customers being able to get a lower fixed charge cost. I think that the electric rate concern around increased electrical rates for low income folks is is no longer a concern which I I know is something that CEC. Staff was concerned about when first looking at the AC to Heat pump environment. I would encourage the C staff to reconsider between the 45 day language, and would also like to, at least for these opportunities where the whole system replacement, including decked work, is happening. I agree with with Meg that this is a very low hanging fruit and I think the the incremental cost is more than worth the benefit of of electrifying that whole system. Thank you.

Appreciation Comment on prescriptive requirements for heat pump space and water heating and question on PV. (Timestamp 01:23:11). Strongly supports the expansion of the prescriptive heat pump baselines to space and water heating and all climate zones. We think these will set an important decarbonization signal for buildings, while, as it's been discussed, will still allow flexibility and fuel choice under the performance path.

Question on PV requirements (Timestamp 01:23:49)I was curious to learn more about the PV. EER trade off and wondering if there's any further documentation of how those numbers were developed. I haven't looked at the Doc closely enough to see these. I'm curious whether you've taken into account the difference in system lifespan between HVAC equipment and Pv systems, and also sort of the certainty of performance relative between those 2 systems and developing those numbers.

Comment on water heating requirements (Timestamp 02:05:46). One thing that I thought was important, since the prescriptive requirements now no longer requires or allows a gas water heater. Section 150.0(n) electric ready requirements for water heaters requiring the infrastructure for the future installation of heat pump, water heater applies to additions. When a water heater is added to serve an addition, I think it would be particularly helpful to add some language in section 1 50.2 a 2 under the performance standards indicating this, that when a gas water heater is added to serve in addition, it must also meet the requirements of section 150.0(n). There's a lot of confusion within the industry in this area among building departments, plans, examiner building inspectors as well as energy consultants, and this language would be particularly helpful to clarify. Now that some of the language regarding water heaters have changed.

(Timestamp 02:37:13). The other item is the verified pipe installation 160.4(e) 4 requiring pipe installation to be HERS verified. To date there is no precedence of that being a mandatory requirement. I think this is of particular concern. When this measure or the inspection by the third party. Verifier isn't called this project, you know, close trying to get a permit, and there are no provisions for this verification to be made after the fact. This happens quite often, and I think that requiring the pipe installation to be HERS verified is a bit far reaching and optimistic to execute consistently in the field.

Adds to Brian's comment on Section 160.4(e)4 (Timestamp 02:40:22). To your other comment, Brian, regarding domestic hot water pipe insulation, that is a special trip we have that we take that credit in the modeling only on projects where we know we have lead certification involved. because for most of the required hers testing on a high rise multi family, we do not really have to be there in the rough sage, so we would only be there. Audio issues so requested to submit later in writing.

(Timestamp 02:41:20). 160.9(f). Regarding electric ready at the central boiler system, I noted from Tuesday's meetings that you had real specific requirements coming in around the ventilation for heat pump water system, you know, boiler systems. This electric ready at the central boiler have all of those things been considered and covered in JA. 15. Because it's more than just space. It involves transformers. It involves ventilation. A lot of these are not on the roof. There's a lot more to it than just power and space to be electric ready at that location.

(Timestamp 02:48:17). There are some jurisdictions that it can be a hard time when we're sizing our transformers for central heat pump water heating but they're still installing gas. So that being electric ready with our gas systems. And I just wanna make sure that there is an appropriate pathway if local utilities, local jurisdictions are not allowing or making it almost impossible to be putting in that extra transformer for future load, and what those considerations might be, what kind of pathway they would need to go forward if they do need to meet those electricity requirements. But again, that utility interaction can be challenging.

Online question (Timestamp 03:19:21). Regarding PV sizing with EBR, 2. Can you clarify? The average should be condition area, weighted capacity, weighted average or just a straight average of installed equipment regardless of capacity.

Appreciation comment (Timestamp 01:32:24). Voice support for the 2 Heat pump baselines for residential homes. We think this is a great step forward. And I really wanna cheer the CEC on for being a leader in decarbonization in new construction. I think this is a good example that other States should be looking for towards a as a way to promote electrification while still having the flexibility within Federal law. And yeah, great research and worked on this. Look forward to working with the CEC, I'm moving forward to ensure this gets into the final code. Thank you.

Appreciation comment (Timestamp 01:35:55). We wanna commend the CEC on moving forward on decarbonization with the 2 heat pump baseline for new homes. This will drastically reduce greenhouse gas emissions of new homes will future proof. Our new housing stock reduce local government staff time devoted to reach code adoption and save California's money. As a professional design engineer. I've successfully specified heat pumps for commercial and residential buildings in California since before the first iphone was released. As a consultant, I now programs manager for Peninsula clean energy. I've supported cities and all electric reach code adoption for over 2 dozen jurisdictions. We are ready. Our local building officials have shared that it is rare that an applicant for new construction even considers gas anymore. Our realtors and builders note that the market has moved towards all electric. We really want to thank the CEC. Staff and commissioners for the changes made over the last 2 code cycles and the proposals presented here today. Thank you so much.

(Timestamp 03:44:51). I just wanna thank the CEC, Commissioner, Commissioner McAllister, your staff has done an incredible job this code cycle and appreciate all the advocates stepping up today and providing their technical comments. You know, we've had a lot of people that I've been following the standards for quite a while provide some fantastic comments today. And you know a lot of in support of the dual heat pump baselines. And I wanna make sure that you guys maintain those for both residential and non residential as well. Staff. Make sure we do some cleanup to make sure those prescriptions are cost effective. and easily to implement. I want to applaud you on the inclusion of A/C to heat pump for additions and want to encourage major alterations as well. And to kind of just push back on one thing that, Gina had had noted about the alterations being enforceable. It's going to be much harder to enforce, and puts a burden on the local jurisdictions to both. Not only go through the adoption process, but also the enforcement jurisdiction by jurisdiction, industry, AIA ashrae. All of the designers that have to implement, code by code, county by county, city by city. It just makes the burden a little bit. Just want to make sure, You know, if there is an opportunity to keep that in Part 6, the enforceability is there for us, but generally I wanna thank Commissioner Mcallister, you and your staff. Again. Nice work on this, and we'll help you see this to the finish line. I appreciate all your help.

Appreciation and clarification question 150.2 for new construction (Timestamp 01:47:10). Thank you guys for all the work on this prescriptive single family. There're some great adds to it that I'm really enjoying. Especially this exception in New dwelling units with a condition floor area 500 square feet or less with the Fenestration. I just wanted to verify that the addition and alteration sections are written in such a way that would this exception also apply to new dwelling units that are considered an addition. New ADUs that are considered additions to an home or an alteration to a home also meet this exception? Or is this limited only to new construction dwelling units?

Comment on BESS Ready requirements (timestamp 48:42). Wonderful that now we have some options when the load-serving entity is not able to provide the power that's a current issue with the 2022 code. We would like the Energy Commission to consider a retroactive opportunity under the 2022 code to apply some of the language here, because it's starting to become a problem with the ADUs where the utility or load serving entity does not have the capacity, basically rendering that project is unbuildable or cannot comply with the code.

Comment on local mechanical exhaust (timestamp 01:02:42). If you could clearly indicate the stone requirements for those local mechanical exhaust systems rather than referring to ashtray. 62, 2. Since that is a resource that lives behind a paywall. It's very hard to access. Those requirements are listed currently in the residential single family Compliance manual, but most of the smaller contractors that I work with are not going to access that material. So they have a hard time finding systems that comply, or knowing whether or not, they are compliant. So if that language regarding the zone requirements could be brought directly into the code, I think it would make their job a lot easier.

Comment on heat pump sizing (timestamp 01:05:54). If there was going to be a verification process for the pump sizing?

Single-Family Skylights - Mandatory Too Restrictive. Few products exist in NFRC directory to meet mandatory U-factor requirement.

Question on Mandatory requirements for fenestration products lowering the U factor to 0.40 (timestamp 52:16). While I understand, for new construction and large homes or production builds that is a reasonable U factor. But for small additions, for small ADUs, and for homes where all they are doing is altering a few glazing surfaces it becomes virtually impossible for clients to do things the right way. As Brian stated, there are very, very few listed Nfrc companies. Of those, there are only about 4 or 5 that have over 5 or 6 products that are currently available. (2) The other consideration is fire-rated glazing. So when you are talking about cities where buildings are built very close together. Fire-rated windows are required and cannot meet this U factor whatsoever. Sometimes they are not changing many glazing surfaces. So there is absolutely no way to meet this overall mandatory, U factor. I strongly recommend that there be exceptions for skylight alterations, small skylight addition and also looking at the fire rated windows, that is a health and safety issue.

(Timestamp 03:40:06). On PV systems being powered up and actually supporting all electric buildings. We are just now beginning some studies and primarily affordable housing buildings, because they are always the the ones at the forefront because they're pushed into these things sooner than market rate. We are studying their bills with the utility and we are finding that very often it is 6 months to a year before their PV System is actually energized in their all electric building with their failing water. You know, heat pump water boiler systems and it is not cost effective. And it's not delivering hot water. There's so many things happening on the ground. Now, we have real data to look at. We have real projects to look at. We're not looking at 2020 studies. We're back. When this was implemented in the last code cycle. We have data now, and we have to help, We have to help these building operators get their Pv going so that they can find that benefit and find those offsets that they promised, and in the CUAC. They promised offsets to their tenant. and that could be 50% of their utility bill where the owner is either happy to pay that until that system's energized, and with, you know, we cross our fingers, and only hope that they get the savings that the CUAC. Predicted. I do want to reach out, you know. Shout out to the CUAC Team. They've done amazing work in the software as everyone has it all the software. But we've really come a long, long way on that. And we really appreciate everyone's hard work to get that right now I just need the building to back it up.

(Timestamp 03:20:25). Quick question going back to the SARA roof calculation, With the low, with the flat roof versus a steep slope or pitch roof. You know, we have a lot of buildings that do for architectural requirements. They have a lot of slope tile roofs around the up perimeters of the buildings. And then we have this nice, beautiful, expansive, flat roof and is the expectation now that when we're using the SARA calculation that we are using 2 separate formulas. number one, because we have to include available roof area. (2) And with this question, number 2, is with the kind of blending of low rise and high-rise multifamily in roof and SARA Calcs, will we be able to omit the north, facing steep slope groups if we have to count them with the other formula? (2) POINT added to response: One other point to add to that if we could, which I'll add to the docket for consideration. These are generally not very large, expensive slope areas, right? They barely hold one panel and that's on the horizontal. Or, you know, portrait kind of layout, because they're not deep enough to hold more than one, maybe 2 panels. So by having a higher multiplier for that space, that square footage. I think we're working against the opportunity of what kind of panel we can place in that location where we are, you know, throwing away 3 and a half feet of a strip of a long length of a building, because it will not hold the second row of panels. But we're getting. We have to count that square footage in the And we now have a higher multiplier for that square footage. It is really unusable. I'll add that to the note, but I would like to maybe have that consideration. For what do we do in these smaller, if they're not going to necessarily be under 80 contiguous square feet.



Comment question, clarification question (Timestamp 03:25:14). Steep slope roof sound like they should be calculated on the plan view, and not the actual area.

Comment question (Timestamp 03:26:08). Steep slope when a roof perimeter feature might not be capable of supporting Pv. And maybe there needs to be a certain whip like we have to for solar readiness.

Appreciation comment and concern expressed (Timestamp 03:14:26). First, I want to thank you for the changes that you're making to low rise multi family aligning with non-residential and high rise multifamily with SARA methodology. Thank you, and thank you so much for supporting the battery, calculation, methodology to support SARA. That was a big miss in the past. and I have docketed this in the past, and I'm sorry, Javier. I gotta say it again. I hate the EER add to the prescriptive formula, gonna say it out loud. Thank you.

(Timestamp 01:30:09). Comment on JA 12 energy storage requirements. The 72 hr reset, we believe, is a reasonable compromise on how to ensure that batteries do the cycling that they're expecting to do. We believe there are just 2 additional elements that are needed on the operating conditions. One is to target the timing of discharges in response to time of use rates. The way it's written batteries may be forced to discharge in the middle of the day, when rates are lower, which would be to the detriment of customers who could save that charge for peak hours, and we would still get the same amount of cycling and a actually at a more beneficial timing. If they're allowed to wait until the high pricing and there may be days when you really don't want them to discharge in the middle of the day. so we can clean that up. (2) The other one is on in advance of extreme weather events that you know, we will be doing daily cycling and solar, only charging for these batteries. But there should be a timeout allowed on that activity during announced severe weather advisories by the national weather Service and public safety power shut off events. This is allowed in other programs, or we can pause our cycling in response to storm activity, and it should be allowed as well here. (3) We also have some concerns about the labeling requirements. I don't think we've had much discussion of that, and and we will go back to staff with with our issues there.

Appreciation comment and concerns on JA12 (Timestamp 1:33:18). We want to thank the CEC Staff for the collaborative work they did on JA 12 performs in particular. You know, really pleased to see the new framework with the designation of cycling capacity, and the 72 h reset, which we think, as a you know, superior approach to ensure ongoing cycling of these systems to achieve the greenhouse gas and other mission goals that the CEC. You know, hopes to achieve by allowing source to offset other delete defense requirements. do have some lingering concerns about the specific control strategies that the cycling has to be subject to as currently drafted, while, you know, certainly appreciate the intent of things like the basic control and time use control as written. They seem to, you know, we think, impose an overly restrictive kind of order of operation on systems, and you'll be able to recognize some of the contingencies that Brad Heavener mentioned, including, you know. may want to charge from both solar and storage to get their battery system in as high state as charge state of charge as possible in advance of a potential outage. So we will also plan on submitting, I think some comments advance on May thirteenth deadline. To suggest some amendments, the language to soften a bit, and in a man that we can preserve the intent to ensure cycling without unduly limiting the way customers use these systems.

Appreciation Comments (Timestamp 01:25:47). We're very appreciative that the Commission is going to maintain some type of compliance benefit for storage as we know, gas prices are going up, but so are our electric prices. and we especially see a huge shift coming our way in the next 3 to 4 years where, from a market standpoint consumers more and more are gonna be wanting storage on site as a hedge against increased electrical rates. And I think you're gonna find local government entities are gonna like that, too. (2) For the peak load like Nrdc Cbi strongly supports the CEC's proposed modification. We've done some initial analysis which we shared with the CEC, this change that you're making allows us to continue to focus on Summer peak load. Comment on CBEC version 9.9B: We'll be doing some analysis using this latest computer program and we'll be sharing all that with the Cec. But I have to say right now, it's looking very good. Thank you very much.

Comment on PV requirements (Timestamp 01:27:35). We're in our tasks are trying to get the PV designers and installers retained as early as possible in the design process to set that code compliance element up for success and adding these new elements with the steep slope and multipliers. But, more importantly, the EER2 elements in that equation make it, just a little bit more convoluted to do that. Typically the PV subcontractors and designers. They have no idea what EER2. I think the recommendation I'd have, or one possible resolution is just if there's finding a way to note reasonable values or in a the residential compliance manual. This trying to think about how to help this code do the work that it wants to do.

(Timestamp 02:42:46). Thank you for the updates on the multifamily mandatory. My comment is brief, suggestion to consider, particularly in California. Climate zones that have extreme you know, heating cooling degree day driven energy budgets to consider a mandatory exterior finish. Say, for instance, age, solar reflectance, so that there is a reduced load to our State's Peak load from cooling, because the building itself can reject shortwave, infrared and and the and the cooling will be, you know, internal gains. Climate zone. 16 comes to mind. But you guys are the experts.

Will share Chapter 7, A. with regards to windows in the Wildland urban interface with Payam with questions. Comment/concern on Mike Little's comment on dual fuel systems (timestamp 58:40). The CEC is not proposing a ban on any type of fuel line. Whatnot? We have different options. Yes, it's going to cost considerably more if you decide to go with gas. We've recognized the CEC's trajectory to go in the direction of decarbonizing the house construction. The one concern that I have out there that I've raised before isn't really in the CEC's hands...and that is, we're already running into capacity problems in Southern California.

(Timestamp 01:48:50). I just wanted to bring this up as a placeholder for future stuff. In terms of that, thinking about our how our building standards are going to be more interactive with the distributed energy system in our grid, which I think there's, you know, the Ipers is kind of the direction we're going, but the encourage the Commission, you know, as it's already doing, looking at Pcms and other kinds of storage technologies. To maybe open up some of those opportunities to protect about how and not if to get maybe past. Say, you know, things like thermal mass enabled again but to do it in a way that addresses past concerns. I'm glad to to eventually help resolve our our future, our present and future problems with and our energy transition.

Question on Mandatory requirements for fenestration products lowering the U factor to 0.40 (Timestamp 02:14:48). In Section 150.1, for in the new construction section, when there are new dwelling units and the ease on U factor in certain climate zones for fenestration. I just wanted to make sure that new dwelling units that are considered additions and alterations as well are given that exception, or as it is not explicitly written into those sections, or are this additions and alteration sections written in such a way that that exception could also be applicable to new ADUs that are considered additions.

(Timestamp 02:31:40). I just wanna thank the Commission and the Multi Family Restructuring case team for the cleanup to the multifamily section of the code. By and large, I agree with most of the additions to this section. There were a couple that were concerning to me. Section 160.1(b) metal frame walls shall not exceed a 0.148 U factor. This particular measure, if you were to go to table JA 4 4.3.4 or 4.3.3, there are no metal wall framing assemblies that meet that 0.148 U Factor without adding rigid, continuous insulation. This is a particular concern, in many cases those mandatory requirements are not governed by the performance approach, meaning that somebody could demonstrate compliance without meeting the mandatory requirements, and it's often not caught by the plans. Examiner of the building inspector losing out on the the savings there, and completely understand that those savings are important on, especially on metal frame walls. But having a requirement that only requires rigid insulation or compliance on metal framing, for multifamily creates a confusion in the industry, especially when you're dealing with a mixed use building. Of particular concern, this requirement also applies to additions and although there are allowances for wood frame construction to extend an existing wood frame wall to match the same thickness of the existing wall, there are no provisions in the addition, section 180.1 1A, that allows the same consideration for extending a metal frame wall. We think this is a particular importance for additions. (2) Follow-up response: Undersand..because it only applies to multi family, and not also non res it just makes it confusing for the industry as well as having those situations where you have a mismatch in the wall thickness. You know, at the very least an exception very similar to those in the for wood frame construction. So I think that this has a high probability of noncompliance, and in rather than having none of the walls meet this U factor at least give consideration for at least a wall extension not to be required to meet this and the rest of the wall will.

(Timestamp 02:38:39). Agrees with Brian's comment on the U factor reduction. For 160.1(b), the 0.148 metal frame wall, you factor mandatory minimum, it's difficult. The best thing we've come as close to that in assembly values is 2 layers of 5, 8 Dry wall on the interior, R. 21 bat insulation, one inch of dense glass, or similar product, and 7, 8 ths inch of stucco exterior. We do this on the lower levels, where we have, you know, mid-rise projects that have metal frame underneath during the podium. You know it all depends on the construction. If we have what frame above or not? But as to your point, Brian, without that one inch rigid phone, we're not going to hit 0.148. It's gonna be really tough.

Question on Mandatory requirements for fenestration products lowering the U factor to 0.40 (timestamp 47:13). This requirement puts a lot of pressure on installers to find compliant products specifically, skylights a simple search through the Nfrc Certified Products Directory. There are very few skylight products that can meet this point or lower U factor requirement. This is an undue burden on the industry to meet such a low U factor when our prescriptive requirements are really driving efficiency. We understand that there's a need to have a more stringent mandatory requirement. But in this situation, even the point 4 or 5 U factor is causing a lot of issues within the residential additions and alterations. In some cases new construction. But that's not the primary issue.

Comment on Ductless systems language (timestamp 01:02:34). Section 1 50.0(a)1 if that could clearly indicate whether or not ductless systems need to comply with the mandatory roof deck installation requirements. This is one we run into pretty frequently where, because the language is silent, we're having to make an assumption.

Query on rating systems for CA and follow-up response to Karen Bragg (commentor): (Timestamp 04:04:29). I don't know if you are prepared or not to expand on. I missed the first part of that conversation on a rating system for California. (2) And the reach of this whole house rating program is for existing homes in retrofit. (3) I just wanna add one last comment to your points made earlier. Karen., good news is we've got more hers rating in mid rise and high Rise buildings than we used to, and our lower door air infiltration rates are equal to the lead minimum requirements. We've come a long way in getting a hers later in the rest of that building. And and it is helping what we're not getting in those high Rise buildings, or over 3 stories, is a QII as a consultant and a rating entity. Here we also do the QII inspection even on a high rise, because we want them to pass the blower door. It is instrumental in a supply, only situation or exhaust only situation where you have a blower door mandatory. So again, anything in code related to help support us. Get those third party verifications out there. They do help. Thank you.

(Timestamp 03:51:33). I just want you. In response to something that that you say, Commissioner Mcallister, there was Ted, Tiffany, and many others were involved in a group called the Compliance Improvement Advisory Group. A little more than 10 years ago a number of of papers we wrote cover a lot of the compliance improvement issues. And I I would recommend that that you and Staff go back and take a look at some of those papers because they they can, you know, if those, if the suggestions are followed, they can help improve compliance. We're never going to have perfect compliance. I mean, I think that you know that's a a an honest a assessment that we, you know we need to to come to terms with. But we can still improve compliance. And there's a lot of really good suggestions that came out of the Compliance Improvement Advisory Group. Thank you.

(Timestamp 02:46:59). Thank you very much for all the work you did on multifamily. I know last, you know, a lot of the cleanup is great really great to see it moving in that direction. But I do wanna echo some concerns with the metal wall. Mandatory, U factor dropping. As many have stated, this can be a challenge, especially in projects mid rise podium where the plane of the wall continues from below the podium to above. And so now our wall thickness, at our lower levels can be different and can be quite a challenge to meet our waterproofing requirements from lower levels to upper, where we're continuing to wood. And this, even if we include it in the model, putting in that region installation. 9 times out of 10 as they come to construction, realize the feasibility of it. It's the first thing they ask for, as it's going to be increasingly difficult to meet the waterproofing requirements. Totally understand the need for energy efficiency. but trying to be consistent where there are different different wall types on a project can really hinder. And I do see us as potentially a place for noncompliance for these projects when building inspectors are out in the field.

(2) RESPONSE to follow-up asked by Javier: I think that's a great add it does come up quite a bit. I know that in response to Brian's comment we're talking about adding spray, foam, installation. and to show compliance within the energy model. We're talking about staggering stud. Absolutely. We encourage builders to do that. However, that is not currently available as a path pathway when modeling within the performance software. So documenting this and being able to prove they're still meeting these requirements to get challenged. So sorry, Javier. One off a side tangent. But so to your point. Yes, I would love a wall extension for metal walls. There's existing construction. We do not want to impede the existing infrastructure from being able to maintain an update. And I think that would be a great add. And then for that view factor, you know, if we can get it in the software and be able to prove it with our alternative building pathways, not just framing and rigid. We might see more viability for this U factor. Requirement.

(Timestamp 03:58:52). Sorry for the hesitation, asking my question. I wasn't quite sure how to ask this, but I also have been a green, a lead green rater for the past 7 years in Southern California, and have a lot of experience looking at like midwifes multifamily longcom housing. And in that vein I know how important like field verification and enforcement are. So if thinking, if we want this new code to really have the impact, that we need that that really enforcement and verification are really important and my guess is local jurisdictions. Everyone's gonna have a hard time just ramping up and adjusting to to what's required here. and I. I don't know what role the CEC. Has, if any, in in helping to regulate or guide how the code is enforced. But would there be? I mean knowing that a program like lead or other green building programs have a a structure and method of like being in the field and verifying things. Would third party green building programs be considered as maybe an alternate compliance path for some of these issues.

(Timestamp 03:16:17). Climate zones that do not have an Shgc requirement prescriptively. Is that also going to mean that within the performance software they are not. Gonna they're gonna have no requirement as well. Thank you.

Comment on prescriptive component package (Timestamp 01:37:17). I'd like to echo many of the comments, and the support on the compliance cycling capacity to be flexible and allowance with respect to the economic reciprocity of time of use rates. (2) I have another comment regarding the compliance cycling capacity pertaining to be ESS And and in general just a reminder that as we look statewide at reliance on electric appliances that may have a 12 to 15 year lifetime. We do not forget that a building which intrinsically has the ability to perform the storage of heat, energy, and and then to redeploy it may be a value. I've made a comment on the California energy plan for 2024, and I think that same comment pertains here so that there might be an alternate compliance pathway where the internal wall assemblies have an increased thermal mass. So currently, in the table, 150.1(a) we have a mass wall assembly, which is an exterior wall at 7 btu per hour per square foot. but if we modeled 12 for interior walls only, the structure would have the ability to coast through. And so you might consider relaxing that compliance, cycling capacity if the interior mass walls, which, by the way, might have a lifetime of 70 years or 90 years, it's wood frame construction depending on the climate. But achieves the same grid-friendly goals. So you know, as we're pushing these appliances, the ability for them to interact. Considering the system's impact on the distribution, the transmission grid and our overall State's energy system. We don't want to forget that. If we build structures not only with ultra efficient envelopes, but add to that approach, increase thermal mass. We can reduce the engineering challenges and the interconnection. Challenges with the battery energy storage. And we might consider an alternate path here. And I'll make this comment. I'm not opposed to the compliance cycling capacity. Of course it's a necessity. What I'm what I'm inviting us to do is sort of a yes and paradigm, and and not forgetting the opportunity to remind designers statewide, that increasing thermal mass of buildings may have a comparable benefit. Thank you.

Question on heat pump sizing and dual fuel systems (timestamp 55:04). Was touched on the earlier comment on heat pumps. Nobody has mentioned anything about dual fuel systems. I know you're trying to get away from gas, but it seems to me that's the only viable alternative to using resistance heating as a secondary heating measure. Do you have any comments on that? It seems to be the only way where you could properly size the equipment for cooling and heating.

## Staff Response to Comment During Hearing

Danny Tam: That ventilation requirement currently states "consumer integrated heat pump water heater" so a central system is not available. As far as enforcement, there would not be an ECC verification, it would just be done with compliance forms documentation. (In response to intent to apply to central systems) That is definitely an issue but for this cycle, we did not consider it for central systems. We could consider for the 2028 cycle. We do have some mandatory central water heater ready requirements that will be presented on the 3rd day (of hearings) for the 2025 cycle, so that should address some of those future concerns.

Payam Bozorgchami: Thank you for the comment. We look forward to your written comments on docket.

Danny Tam: Because of the location, it's currently applicable for any heat pump water heater, individual or central. Most hybrid or unitary heat pump water heaters on the market have back up electric resistance. In the case of a split system, compressor shut off is below the ambient...

If the compressor cutoff is below the winter median of extreme, yes. If that is an issue, please submit a comment.

Danny Tam: Thank you for the comment. This is something we've received feedback on, and we'll consider making changes in 15-days or addressing this via compliance manual.

Payam Bozorgchami: Thank you for the comment. We look forward to your written comments on docket.

Haile Bucaneg: Slides are incorrect. LSC is new construction, additions, and alterations, and Source Energy is only for new construction. Thank you. Slides will be updated.



(1) We absolutely want to engage and understand where challenges exist and our outreach does a good job of hearing these issues and provide clarity on how our requirements apply where needed. With regards to changes to requirements, that's a conversation we need to have and understand the issues that exist and what solutions can be done in between rulemaking.

(2) We very much appreciate that comment. Our compliance office is working on multiple fronts with regards to compliance and enforcement, and I encourage you to reach out and we can connect you with our Compliance Branch, and make sure we're on the same page about efforts in between code cycles, and we would love to have your participation and anyone who would like to participate, to try to make sure that compliance and enforcement gets to a much better place.

Cmmr McAllister - If there are questions about usability or forms that don't make sense or don't seem to reflect the intent or need, we'd love to hear that. CBECC and the forms ecosystem is under constant improvement, so we don't know about problems if nobody tells us. As Javier suggested, get in touch with him and the compliance office, we really appreciate your time and effort.

Payam Bozorgchami: The peak cooling and 20% discussion will be presented by Danny on Thursday.

What you're saying is that the PV and Energy Storage requirements would be even more cost effective were these other considerations taken into account, right?

Javier Perez: Yeah. This is Javier Perez, Project Manager for the 2025 Energy Code. I feel your pain, Mike. As far as any hearings or events that are scheduled related to our rulemaking process, our 2025 webpage has -- the bottom half of the webpage has upcoming events with links to, you know, the different hearings. We have the three days here, as well as a new event that was added in the last 24 hours for April 30th, not related to this rulemaking. So I'll -- Mike, we'll put a link to the 2025 page in the chat so the audience can see it. But otherwise, just hang in there with us. You know, we're trying to update our dockets to limit the amount that anyone gets. So very much appreciate the feedback.

n/a

Joe Loyer: Yeah. We are aware of this issue. And as I've stated just a moment ago, we are attempting to address that through another program, another process.

Joe Loyer: I think we've answered that one.

Our compliance rate study that we are currently designing at the moment. We are looking to try and fund that through federal funds to help improve -- help outreach to local jurisdictions to educate them on not only the ATTCP program, but also the HERS program or the ECC program, or whatever name we may change it to, how they can easily and simply enforce the Energy Code by supporting these programs and requiring the use of the ATT technicians and the raters to be on site to do the proper inspections at the proper times.

n/a

Joe Loyer: So the intent here on that reporting is that that reports to the Provider, and that's very specific in the regulation. We don't want you reporting your confidential pricing structures to the Energy Commission, primarily because at that point, the Energy Commission, that information can be gotten from us in a Request for Information. So what we prefer to have happen is have that information go to the providers. The providers will aggregate that information to a very specific set of rules that we've actually put in regulation as well to additionally protect you and protect other companies' pricing structures.

The intent here is not to regulate pricing. But as you may or may not know, the Energy Commission does not have sufficient information on the cost of these services that we have created for the marketplace, so we need better information, and this is our primary means of getting that information. We don't need it specifically from individual companies, or individual raters, but we need to know what the marketplace of raters and Field Verification & Diagnostic Testing services is costing consumers.

n/a

Commissioner McAllister: Well we have to think about an acronym because RECC isn't the greatest.

Joe Loyer: As long as they're signing as the document author and not the Responsible Person.

Joe Loyer: Thank you and look forward to your comments.

Joe Loyer: So taking the last question first: yes. Not in this engagement. We are looking at ways that we can improve the permitting rate for California outside of the Energy Code itself.

Yeah. That is also a concern of the Energy Commission's as well. That is another element that we are looking into outside of the Energy Code itself.

So we are interested, are actively engaged in efforts to improve the abilities of not only the designers, but the people actually swinging the hammers, as well as improving the permitting rate itself.

Joe Loyer: So we will ask that information to be sent to the providers who will secure that information as confidential and give the Energy Commission summary data only. So, in that regard, the Energy Commission will not retain any corporate or confidential information from rater companies or raters.

Joe Loyer: So that information is included on the Chapter Three of the Codes and Standards - - Business and Professions Code. So Division Three of the Business and Professions Code actually goes to great extents to identify exactly what has to be included for individuals that will be performing this line of work.

So the language itself includes the Certificate of Compliance and Certificate of Installation. By restraining my presentation to enunciating CF1Rs and CF2Rs, those are the most common versions of those forms. But since we refer to the Certificate of Compliance and Certificate of Installation, the LMCI and LMCC are included.

Joe Loyer: Correct.

Joe Loyer: No, you will be able to recertify for the new Code cycle.

Joe Loyer and Commissioner McAllister:

The Energy Commission does not want to dictate the structure of an existing or proposed company beyond what is absolutely necessary for conflict of interest. We have included those prohibitions in code and we will allow for a variety of corporate structures to address prohibitions.

Payam Bozorgchami: Thank you, Gina.

Joe Loyer:

So the Separation of Services for a, shall I say, one man band are actually moot. You can't separate your services as a design -- or as somebody who's going to be providing these other services.

Now, that said, we believe that there is a synergy to be had with such an individual. You do have to be careful about how you treat the CF1R and CF2R and permits. When you sign as a Responsible Person on CF1R or CF2R, you are taking full responsibility for the project as if you are the project manager. So you have to be careful about how you sign that. You can still produce those documents, but you need to sign as a document author in that situation. As far as inputting onto design and polling, that can be done, but the signature, again, on those documents has to be somebody who is basically not going to be you as the project proponent or project manager.

So there are issues with this and we understand this. There are -- you are not the only sole proprietor. But we hope to hear from you exactly how it is that you do your business now in these terms, and I would ask that you submit that to us in a comment to the docket, and let us know exactly how you believe that this this new requirement is going to impact your business.

Joe Loyer: We appreciate that comment, Shelby. We look forward to the comments that you will submit into the docket.

Joe: Thank you. We look forward to your comments.

Com McAllister: so the Energy Code is about the building. That's the, sort of the boundary of the -- sort of the unit of analysis of the building code, if you will. But -- and so in that, the cost effectiveness, you know, is defined in a particular way, but that way does actually complement much of the other planning activities that the Commission and the PUC and others actually do, and so SB 100 is one of those.

Our forecasting is another that also is an hourly modeling, you know, at a larger scale. But it does actually look at aggregated building loads, and anticipates the electrification that's going to take place, and the PV and the behind-the-meter storage and the rest of it.

So whether there's an incentive within the code to build in those technologies from the outset like, you know, through the builders and kind of code-related incentives, that's one question. But I think there definitely are ways that the Energy Commission is valuing those Distributed Energy Resources beyond the code.

And so whether that's in the IRP context, you know, in our forecasting work, we fund a lot of research and development on technology development -- you know, microgrids and the like. We're funding a lot of battery work, sort of up and down the grid, for reliability purposes. So just would really encourage much of this but, you know, utilities have been such innovators, and just really encourage you and your members to plug into those various, you know, rulemakings or discussions that are happening at the Commission, and often jointly, you know, with other agencies.

So thanks for the comment and really all you're doing.

Joe Loyer: So the justification for that was really basic. The way the code was written in 2022, we were kind of in a mid-step with mechanical ATTCPs. They weren't quite implemented yet, and they were implemented mid-code. So we were in a difficult position there. That language was very confusing in and of itself. I'm not saying this language is perfect, far from it.

If you have a way to better clarify that, I encourage you to make that comment and to our docket.

Commissioner McAllister: Yeah. I'll take that one. Thanks a lot for the question. This is Commissioner McAllister.

So we do actually have funds now to do this. We were awarded, not to the level we applied for, but we did get, you know, a relatively modest grant to do work with selected local governments to kind of unpack this problem and try to establish, you know, a better way of doing things with them.

At the end of the day, the local governments enforced the code on the ground at the project level, and so they have to be bought in to requiring the ATT process in any given applicable project. So we really need to treat them as partners while we figure this out. We have tried legislation to get more, you know, funding to this, so that we can develop a system with a little more teeth, and so far so not successfully. You know, advocates have worked the legislature for that for a couple of rounds now, and so far it has not gotten done.

And so there is a -- the fundamental problem here is that if somebody -- you know, if a local government doesn't engage and see that -- either doesn't even know they're supposed to be requiring it or they choose not to, that's a problem. And so we never find out about it. The Energy Commission never finds out about it until after the project is done.

And so we really need a system to be more rigorous to track projects and the measures within a project, say in the nonresidential for the ATTs. And, you know, the equivalent on the HERS, you know, on the ECC side as well. We really need more information earlier about a project to know that these regs -- that these rules apply in the first place. Then we have some teeth to, you know, enforce compliance.

But there's a -- there are a lot of links in this chain, and the local jurisdiction is a big one obviously, but there are others that we also need to put in place with more rigor so we can have a system that actually works, and get the ATTs into the projects at the right moment so they can do their jobs. Right?

So we all have that goal. And, you know, we're committed to getting there, and hopefully we can collectively find some mechanisms to resource this and to put in place a system with some rigor.



Commissioner McAllister: I'll talk on the residential side a little bit. So one sort of fundamental problem here is the lack of information. So Joe referred to that earlier, but if there's an HVAC retrofit, or that kind of scale of a project out in the world, and either the contractor or the homeowner does not get a permit or -- I think that's very common in this space, certainly in the HVAC area -- if they don't get a permit, even if they do get a permit sometimes, there really is no visibility. maybe they don't fill out the right forms, or they don't sort of proactively get into the system, then it's like a tree falling in the forest when nobody's around, right? We don't even know that project took place.

We need a system to enable us to know that there's even a project so that we can know that the Code applies so that we can expect the compliance, documentation to come through. If that does not take place then, it's an orphaned project out there with no link to compliance. Many advocates, and many of you are very aware, painfully aware, of this problem. And many of you have put your heads together to try to get a legislative solution and, we're now planning to move forward with a solution that maybe. It'd be great to have the legislature's sort of imprimatur on this effort. But we're going to find ways, we're looking for ways within our existing jurisdiction to bring some resources to this to build the systems that we need to understand what equipment is coming into the State and start to connect some of these dots.

Anyway, I know none of this is satisfying. None of this is a complete answer or a fully satisfying answer to any of us, probably, but we are concerned and looking for solutions.

Commissioner McAllister: So the initial -- the funds I referred to before, we already have in-house: yes, those are from the IRA RECI program, Residential Compliance Enhancement -- or whatever it's called -- program.

Anyway. One of the IRA programs. So that's what we have thus far.

Joe Lower: And in terms of getting involved, Stephanie, you actually are already in touch with the members of staff that are working on this, so we will be reaching out to you.

Joe Loyer: So we felt that that was equivalent when it came down to it. The 1 percent job option and the -- or the test each ATT at the training facility. When we did that calculation, it wasn't a 1 percent of the jobs that the ATT performed, it was a 1 percent job of the ATE, the Acceptance Test Employer. So when we did the back-of-the-envelope calculation in estimating it, it came out to roughly the same number of audits. So we can actually -- I believe we actually do show that calculation at some point in our background documents, but we can make that clear.

Joe Loyer: I would encourage you to actually write that out to the best of your ability and put that into our docket system so it's a comment that we can consider.

Joe Loyer: Thank you, Chris. We look forward to your comment.

Joe Loyer: Thank you, Chris. We look forward to your comment.

Joe Loyer: So yes, to a certain extent, we are now relying on the ECC-Rater to perform that. However, the subsection NA1.9 provides the alternative. So the developer, the project lead of that construction project can, in fact, redirect that test to the ATT.

Michael Shewmaker: Yes. A copy of today's presentation will be docketed to the rulemaking docket, as well as posted to our website and event page following today.

Javier Perez: Please submit comment to docket to ensure we fully understand the issue

Payam Bozorgchami: Yes, there is an opportunity. Later on, in the presentation after the break, when Joe's done, there will be a slide actually that has the docket address where you can submit your comments in writing. In doing so, please provide your contact information also. Stay tuned. That slide was presented after my presentation, and it will be presented after every presenter's presentation.

Rupam Singla from the CASE team: That is still the case.

Bach Tsan: We are working with the IOU Compliance Improvement teams to develop support for Guideline 36. Additionally the CEC is working with stakeholders on developing content for the Compliance Manual. Verification and testing will be addressed in the 2028 Code Cycle

Payam Bozorgchami: Thank you for your comment. CEC staff has analyzed the systems and will work with industry to establish Executive Director approvals for alternative designs.

Bach: Yes. For school buildings 140.14(a)3B -- yeah, so this is for the extremely large schools.

So our prototype looked at the 210,000 square foot building, and -- as a multizone system -- our analysis found that Air-to-Water Heat Pump with the Four Pipe Fan Coil system is dedicated to air and heat recovery. It was a viable or reasonable system for this type of facility and building.

I understand that, you know, through the -- we state before that, if you could, if you wanted to perform this through a -- deliver your system air heating and cooling capacities through VAV systems, you could do so with some additional measures attached to that, but you would have to go through the performance approach at this time.

Yeah. The most efficient. Yeah. Based on our LSC metrics, Source Energy metrics, yes.

Javier: Let me add to that, Bach, if that's okay. This is Javier Perez with the Energy Commission.

Thanks for the question, Christopher.

You know, I think in an ideal world, we'd have multiple solutions that achieve the efficiency that we prescribed here for the systems that we have identified for the buildings that we're talking about, right? But, you know, in the time that we've had and in the analysis that we had, these are the systems that we've identified that are cost-effective and that are technically feasible and that can achieve the targets that we're seeing. You know, I think one thing that Bach presented early on is that we are considering having language that allows for future development of prescriptive pathways, where systems are equal in energy consumption or better.

You know, I think speaking to Ted's comment earlier, we recognize that there are multiple strategies to achieve energy efficiency and to achieve our general long-term goals, you know, and we're looking to try and -- step one is get one that meets our rulemaking criteria and then, you know, the next step will be to continue to see what we can do to iterate, and

Thank you for your comment.

Payam Bozorgchami: Okay. So I think, Mr. Cheng, you're talking about the Large Schools and the Large Office spaces. The provisions in the code right now are 140.4, I believe it is.

Bach Tsan: Yeah, we have been reviewing some of the comments that are coming in. You know, the comments in the reports have been published and docketed with the rest of the rulemaking package. So we welcome and encourage comments that will come in, and we would like to discuss with you further.

So for the most part, we presented this a little bit earlier, about where this applies, and how this is a prescriptive option that was evaluated, that was economically feasible in our -- and technologically available in our analysis. So we would like to see a little bit more detail on where those have been addressed.

So yeah, sure.

Javier Perez: Yeah. Thanks, Payam. Yeah, Hwakong Cheng, thanks for the comment. And I think we very much appreciate the desire to have more flexibility in the prescriptive pathways.

You know, one of the things that was presented today was about adding language that, or considering adding language, that could accommodate for other systems that are equally energy efficient for the prescriptive requirements that we have identified, and that would be generally like an option on the list of prescriptive compliance requirements. And so where -- we would like to continue to collaborate with you and stakeholders to see if we can find other alternative solutions to a Four Pipe Fan Coil, for example, that we have prescribed, and where we can get to those solutions. You know, adding language that allows for this to be added to the list of prescriptive options seems like it would very directly address your concern, that the list is very limited.

So I think, as with all comments, very much appreciated, and very much welcome, and recognize the challenges that exist here. Please, you know, do docket your comments, but also, you know, we have heard this comment and we're continuing to hear this comment, and we are listening, and we are attempting to develop language that does provide some

Thank you for your comment.

Thank you for your comment.

CEC Staff is aware of the shaft ventilation requirements for running refrigerant lines in the shaft and that will be a design practice engineers and designers will need to incorporate into the development of the building.

Bach Tsan: Thank you for your comment. CEC staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due to high costs incurred by residents.

Thank you for your comment.

Bach Tsan: For schools only one multi-zone system is allowed, but schools may still comply prescriptively by using single-zone systems or they can use the performance path. Projects may use the performance compliance path, including the mechanical-only path, or a system approved by the Executive Director.



Thank you for your comment.

Payam Bozorgchami: Thank you for your comment.

Payam Bozorgchami: So what you're asking, Hassan, is to have a training on the CBECC software when it comes to modeling a multi-family?

Well, EnergyPro, you're going to have to contact the vendor themselves directly. But CBECC-Com and CBECC-Res, the Energy Commission does have YouTube videos and educational information out there.

But reach out to us and let's see what else we have that we can help you with.

Haile Bucaneg: Yeah. I would need to go back and double check who would be responsible for the testing there, but I believe so.

Cheng Moua: It was recommended that I answer one of the questions that was asked earlier during the Covered Process section presented by Haile. I believe the question was that, for the Covered Process Acceptance Tests that were mentioned, do they require a certified mechanical acceptance technician to perform the test? Or who would be performing these tests? And the answer to that is no. So the Covered Process Acceptance Tests, those requirements do not fall under the scope of the mechanical ATTCP program. So just wanted to answer that so we have it on record.

Cheng Moua: As far as documenting for the Covered Process Acceptance Test, those are a different set of forms. So those would be the NRCA PRC forms, which do not get registered through the providers. So these tests would be -- as all acceptance tests that are not done through lighting and the mechanical programs -- usually be performed by the installer. We refer to it as the field technician, but it could be the installer usually. It could be a test and balance contractor, or a commissioning agent, someone with that background and that's involved in the project.

Payam Bozorgchami: An Exception was added to prevent a code conflict with other part of the Building Code. Part2, Chapter 7A for this instance.

Michael Shewmaker: Staff has clarified that the vestibule requirement only applies to newly constructed buildings. And then due to a lack of ability to model the vestibule spaces in the compliance software, the requirement was made mandatory since there would be no way for the user to trade off that requirement.

Michael Shewmaker: Staff has clarified that the vestibule requirement only applies to newly constructed buildings, and have provided a number of exceptions. And then do a lack of ability to model the vestibule spaces in the compliance software, the requirement was made mandatory since there would be no way for the user to trade off that requirement.

Muhammad: Correct. You are correct. And even if you have, you know, mixed-use building, this exception is only for the Section 140.10. Nothing -- we will discuss tomorrow about what's going to happen with Section 170.2. Yeah.

Payam Bozorgchami: Sure. So I think we could do that through our blueprints, and I think we could do that through the manual and provide further description and evaluation of those building types. We'll work with you and Gina, and the documentation team that develops the forms and documents, and try and make it easier for -- attempt to make it easier for the AHJs out there to do their job properly.

Javier Perez: And really quickly, Payam, thanks Marina for the comment. Very much appreciate, you know, the clarity that you're asking for.

You know, I think one thing that we do want to make sure you do is submit your comments in writing. Payam hits that every time. You know, I think it'd be useful to see what definitions, or what language for definitions, you might -- or your group might -- think might be most appropriate for some of these buildings that may not have a clear enough definition, or where those gaps exist. You know, I think that we're definitely conscious that our definitions need to be clear in order for enforcement to be able to draw these lines. So just do want to say, thanks for that comment, and we're very much considering making sure that our definitions aligning with industry practice.

Thank you.

Muhammad Saeed: Yeah, thank you, Marina.

I think, yeah, we have already got that comment docketed and, yeah, we will definitely try to work on it and then get back to you.

Payam: Thank you for that comment, Bronte. Yeah, we still have that record from yesterday, so we'll be evaluating that. We'll look into that.

Muhammad Saeed: Thank you Bronte. Increasing the cost effectiveness will not have the effect on standards.

Payam Bozorgchami: Thank you, Bob.

As you know, after the adoption of the Standards and the approval of the -- after the adoption of the Standards, we have the Energy Commission staff with our consultants work regularly to update the compliance manuals, and we provide fact sheets and information for -- sorry -- for the public to make it easy for them to understand what the Code says. So that's something that we do every Code cycle, and in doing so, I think we are more than happy to cater to that request. To provide examples, to provide guidance of how to meet these compliances.

Payam Bozorgchami: Okay. I'm going to have to look at that, but I kind of encourage you to put that in a comment to us.

n/a

Thank you, no response needed.

Thank you, no response needed.

Simon Lee: We still have that requirement. I believe that's in JA8.5. So manufacturers and testing labs can still refer to that section. It has reference to this testing as required. And yeah, we -- just want to mention that it's, from my understanding, it's a small portion of the products that will be using those high-temperature test. And so that's one of the reasons that we still have that reference in JA8.5. But this Code cycle, we have not, I guess, extracted the ENERGY STAR tests as new sections in JA8. But, yeah, we certainly can consider it in the next Code cycle.

Still have this same language in JA8.

Staff response: Thank you for your comment. Staff shall further investigate into this.

n/a

Payam Bozorgchami: Thank you. Nehemiah, I just wanted to point out that a lot of that work was done with our case team, which I thank them very much, and also Anushka Raut our air pollution specialist. Soon as she got hired on, rolled up her sleeve, went at it working on this. But thank you, folks for helping out that work.

n/a

n/a



Payam Bozorgchami: Requested to docket comments.

Payam: Thank you.

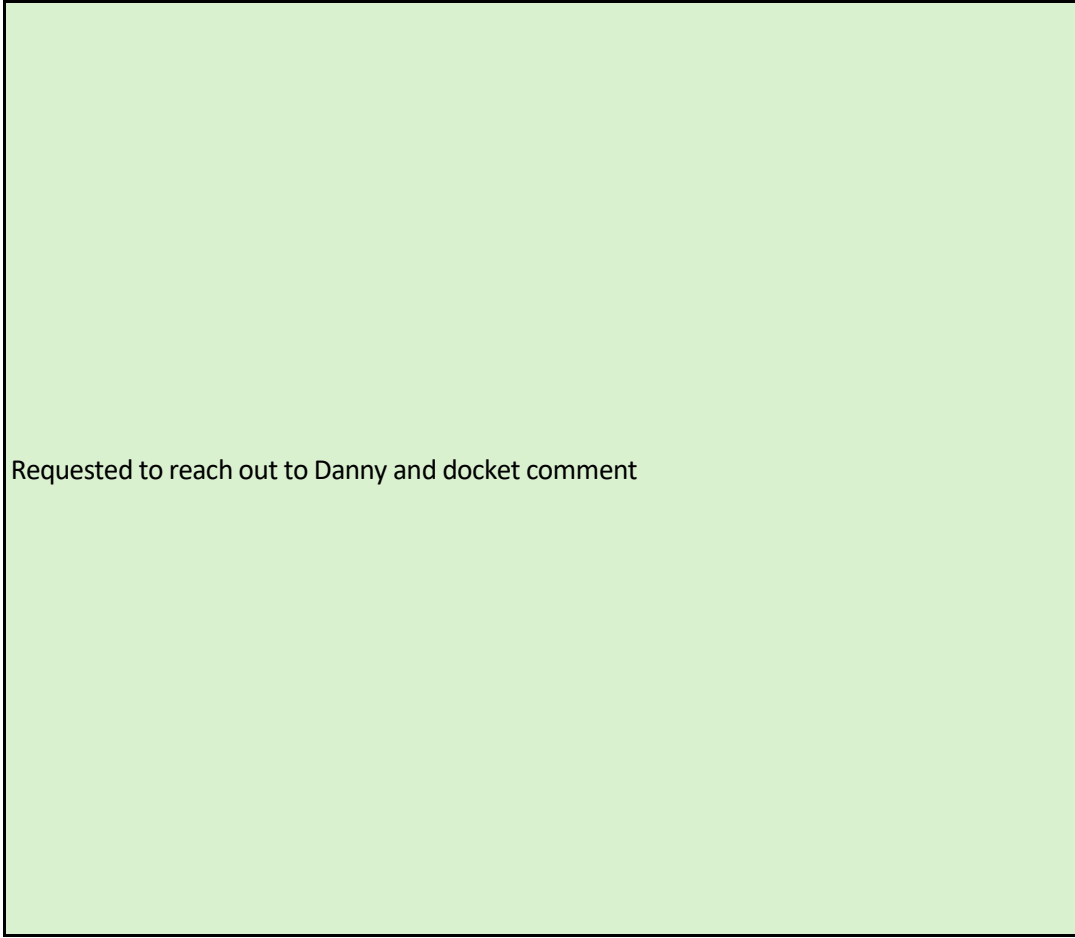
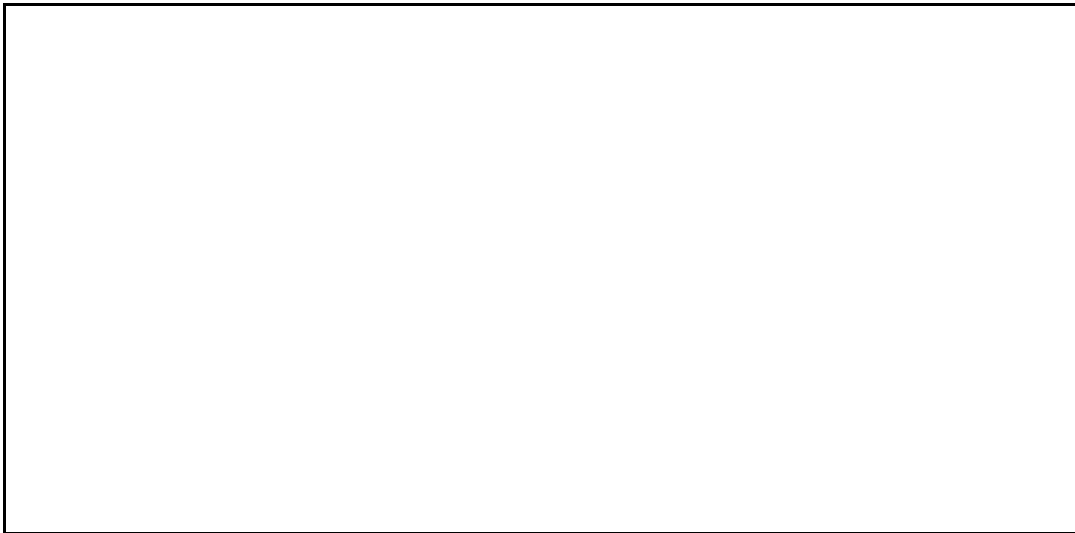
Bach Tsan: So in there was one of the slides. It just shows the large school buildings, and this is for square footage 150k and above for large schools to apply. We'll clarify that. But basically, you look at the section before that's from the 2022 code cycle that it's covered in. It's mostly zone buildings that's not covered in 140.4(a)2

Asked to submit comment with suggestions to the docket.

n/a

n/a

Follow-up, clarification comment.



Requested to reach out to Danny and docket comment

Payam Bozorgchami: Requested to reach out to Danny Tam and docket comment.

n/a

Thank you for your comment.

Danny Tam: Reduction size is supposed to account for the LSC difference when you have a higher efficiency EER2 so that should correspond whatever LSC savings you get as compared to reduction of PV size. As far as documentation, it is in the docketed report.

Payam Bozorgchami: Requested to reach out to Danny Tam on the language changes.

Payam Bozorgchami: Requested to submit comment in writing.

Payam Bozorgchami: Staff was unable to capture complete comment due to the commentor's audio issue. Requested to submit in writing.

Danny Tam: Pointed out that JA15 covers ventilation requirement as well as space requirement

n/a

Danny Tam: For prescriptive I think, our current thinking is just a straight average. We haven't decided. So we'd take comments on that for performance. The software have the capability to have like for each unit. What's corresponding of PV requirements

Payam Bozorgchami: Thank you for your comment.

Payam Bozorgchami: Thank you for your comment.

n/a

n/a



n/a

Javier Perez: ASHRAE 62.2 is available to the public, and the updated slides posted on the docket will have a link to the ASHRAE 62.2 technical resources web page for ease of access.

Stephen Becker: There is no HERS verification or field verification diagnostic testing component to these measures. So where the installer is responsible for this work, they need to show the appropriate documentation, showing that they're meeting the appropriate requirements.

Payam Bozorgchami: Staff reviewed the NFRC directory (NFRC being the entity recognized by CEC to rates Fenestration products for California) and did see products on the directory that do meet the new mandatory requirement of R-0.40 that are not proprietary to one manufacturer. Additionally, Exception 1 to section 150.0(q)1 does allow one to install 10 square feet of fenestration area or 0.5 percent of the conditioned floor area, whichever is greater, and be exempted from the maximum U-factor requirement.

Payam Bozorgchami: Staff reviewed the NFRC directory (NFRC being the entity recognized by CEC to rates Fenestration products for California) and did see products on the directory that do meet the new mandatory requirement of R-0.40 that are not proprietor to one manufacturer. Additionally, Exception 1 to section 150.0(q)1 does allow one to install 10 square feet of fenestration area or 0.5 percent of the conditioned floor area, whichever is greater, and be exempted from the maximum U-factor requirement.

Payam Bozorgchami: Audio was low, suggested to docket the comments

Muhammad Saeed: The reason we have I mean, we did 2 slopes initially, because expectation is that if you have a the high sloped roof. Right then you are, going to most probably put the panels flat with that slope right? It means that you can cover more ground with that. That is why it is the SARA times 18 watt per square feet. But if you think that there may be some situations in which that might not be possible, then, yeah, definitely. I would like you to submit that comment. Also you said that about the north facings roofs. I think we are not changing anything. With that we I mean, we just you just have. It's the same set of calculation, and you have to use the same solar assessment tools like before. It's just that threshold you know. The SARA times 14 and SARA times 18. That will be depending on your roof slope. So you are going to use one equation, but which equation that will be determined by the roof slope. But if you have multiple roof slopes, I think, then, yeah, for some roofs you will have to use the first equation and the sum for second, it all depends on the you know the root slope. But yeah, definitely, I would like to, you know, to docket, the comment and we will get. I will definitely get back to you for any clarification.

Follow-up response: Yeah, definitely. And I would like, whenever you docketed the comment, definitely send some examples. The one that you're talking about the small strips so that we can take a look and take that into consideration.

Muhammad Saeed: It's going to be the actual area minus any, you know, subtraction needed for any state code. For example, if for the fire marshal, like 3 feet or one and a half feet depending on the code language. So yeah, it's an actual area multiplied by 18. Is that the question is that the I hope that he answered the question. Luke.

Muhammad Saeed: Yeah, definitely. Gina, I mean, if you can. Provide the examples of what kind of roof by the parameter feature that will provide some hindrance for the for roof, for PV Support. Then we will definitely take that into consideration. Yeah.

n/a

n/a

n/a

n/a

n/a

n/a

Payam Bozorgchami: Language changes shall be made to provide clarity.

Payam Bozorgchami: In general provisions and the management requirement for metal framing is based on a U factor. And the U factor one of the options is to do the continuous installation. There are other ways you could do that. We could do with the high density spray foam. Actually, you could do a double wall system and I see what you're saying. Let me look into it. One of the issues is that the multi family we're going into as a roof or get into the multifamily industry of construction. We're going to see a lot more metal framing. As much as the installation you put in the cave really doesn't affect the conduction through that metal. So we have to somehow block that or break that bridge somehow.

N/a

Payam Bozorgchami: Staff reviewed the NFRC directory (NFRC being the entity recognized by CEC to rates Fenestration products for California) and did see products on the directory that do meet the new mandatory requirement of R-0.40 that are not proprietor to one manufacturer. Additionally, Exception 1 to section 150.0(q)1 does allow one to install 10 square feet of fenestration area or 0.5 percent of the conditioned floor area, whichever is greater, and be exempted from the maximum U-factor requirement.

Charles Opferman: I'll skip the history and just let there's the original house rating program is being re-envisioned. It's Workshops as part of a public engagement process, and the first workshop on this is April 13th at 9 Am. Once again go to the CEC web pages and calendar.

Commissioner McAllister: I really appreciate that. And I remember that well and you know many of those recommendations made their way into the 758 existing buildings report and have, you know, maintained a life since then. As well. So many of those recommendations aren't current recommendations. I think, where we've experienced a little bit of frustration is just closing that informational gap. To know when you know, projects are happening at all. And you know, when I said there was abysmally low permitting rates, that that is more on the residential side than the commercial side. But you know it's kind of across the board we have. We have a system set up that is not being applied to the majority of installations. On the residential side, for sure. So we need to close that informational gap in terms of knowing what equipment is coming into the State, and more or less where it's going. Because that's sort of the platform on which many of these actions that that the Commission, the local governments and others could be taking have to rest right is on good information. And so you know, if contractors were sort of making sure that permits happen, for example, that would let the world know that there's a project in that, in that, in that location. How do we sort of create the environment where that contractor feels like they need to do that. How can we sort of link up the permitting data with the equipment data and look and sort of begin to highlight the mismatches between that there are a number of things we could do to improve in that direction. And so just want to want to make sure everyone knows that we're planning to work on that in in earnest. But thanks, Nehemiah, you've played a big role in that.

Javier Perez (follow-up question): I think Brian's suggestion was to try to match the wall extension. General strategies that we have for single family, where we allow thickness to match the existing frame, so that those bump out some different challenges can be accommodated by. That's my question to you is, do you have any feedback related to what Brian has suggested for that as a solution. (Response in the commentor's comment column)

Payam Bozorgchami: I could tell you right now that the Energy Commission has a program, the outreach and implementation that's being managed by or supervised by Chris Olvera within our branch, and our efficiency that is out there I could tell you right now that the Energy Commission has a program, the outreach and implementation that's being managed by or supervised by Chris Olvera within our branch, and our efficiency that is out there and so forth. There's also the inner the energy code ace program that we have funded through the utilities that's been really adamantly assisting the English Convention, providing information training methods of filling out documents and actually doing enforcement and then the utilities themselves also have training programs and classes through PG&E. And Sacramento municipal utility districts. I don't know why your organization could not be up there providing assistance. Either. I have one member of the Energy Commission Charles. Charles response: Just want to point out that we also have a workshop behind April 30th, taking a look at our full house running system, beginning of taking a look at various rating systems that exist looking at single family residential and if you wish to participate in that one starts at 9 in the morning, of the CEC calendar



Payam Bozorgchami: I think they're going to be as is standard equals, proposed I have to double check with Haile Bucaneg, our lead on the ACM

Payam Bozorgchami: So currently in the computer software that we use for evaluating these measures and proposals, there is a built-in minimum thermal mass assumption. I believe it's -- oh, okay -- between 20 percent and 30 percent of the buildings considered to have thermal mass. In the past CODE cycles, we used to have that available, where a designer or energy consultant could model where thermal mass is located regarding -- or based on the unit interior mass capacity.

But now -- and I apologize for saying this -- but in the past we've noticed that there was a lot of gaming happening with that. So what we decided to do earlier on in the early 2000s was to build that into the program, so assumption that there's a 20 percent built-in requirement for a thermal mass.

Now, within the compliance assembly within the program, depending on how you -- whether you assume a CMU wall, metal framing, or wood framing, that thermal mass is captured internally within the program. And that's what was used for evaluating what we did with mechanical systems and others. Single-family homes, we assume a wood framing system with your standard 20 percent, assuming that there's carpet, hardwood floor, entries, and whatever so forth is your flooring for kitchens and bathrooms.

The Energy Commission, we understand through our research programs that there are other phase change materials coming in, there's more efficient fenestrations in the works right now. We're looking at IGUs. We're looking at, as Kurt said, phase change materials. And as that does come about, and is more available, and more readily available in the marketplace, that it shows reliability and construction practice, we will be able to integrate that into CBECC software. And CBECC software being a more exquisite program, it's easily captured.

The Commission's Additional Response to Comment	Date of Comment	Phase of Comment
No additional response needed.	4/16/2024	Lead Commissioner Hearings
Staff notes that compressor capacity is already being included by some manufacturers in provided specification sheets, and Staff understands that manufacturers plan to include this information in their specification sheets in the future.	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings
No additional response needed. Exception 5 to Section 110.4(c) was edited to include the phrase "where there is inadequate Solar Access Roof Area (SARA) as specified in Section 150.1(c)14."	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings

No additional response needed.	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings

<p>Staff agrees with commenter that revising the analysis would only lead to higher cost effectiveness, and therefore would not have regulatory impact. No changes have been made.</p>	4/16/2024	Lead Commissioner Hearings
<p>No additional response needed.</p>	4/16/2024	Lead Commissioner Hearings
<p>See response to TN# 256316.</p> <p>The current scope of the proposed ECC program is sufficiently described by the program requirements and includes single family residential, multifamily residential, and some nonresidential construction. Therefore, the suggested change to the ECC program scope would be inappropriate.</p>	4/16/2024	Lead Commissioner Hearings
<p>No additional response needed.</p>	4/16/2024	Lead Commissioner Hearings

No additional response needed.	4/16/2024	Lead Commissioner Hearings
Staff agrees with this comment and other similar comments, and changes have been made. Specifically, Section 10-103.3(f)2F has been modified as follows: By the end of March of each year starting in 2027, each ECC-Rater Company shall submit an Annual Activity Report to the Commission.	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings

<p>See response to TN# 256316.</p> <p>Staff spent over two years evaluating the proposed ECC program requirements including the name 'Energy Code Compliance.' Staff received many suggestions for a program name as well as developing name suggestions internally. ECC was chosen as the most reasonable compromise of all the suggestions. Very few comments have been received regarding the name, but the few that have been received are both positive and negative. It is Staff's opinion that any name would produce similar results and that the ECC name is still the most reasonable compromise.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>See response to #96</p> <p>Staff spent over two years evaluating the proposed ECC program requirements including the name 'Energy Code Compliance.' Staff received many suggestions for a program name as well as developing name suggestions internally. ECC was chosen as the most reasonable compromise of all the suggestions. Very few comments have been received regarding the name, but the few that have been received are both positive and negative. It is staff's opinion that any name would produce similar results and that the ECC name is still the most reasonable compromise.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed. Question is out of scope of this rulemaking.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>

<p>No additional response needed.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Section 10-103.3(d)5Cig has been modified as follows: If the ECC-Provider is refused access to the development, the ECC-Rater may be subject to investigation and disciplinary action <u>at the discretion of the ECC-Provider</u>. Staff notes that the intent of this section is to allow the ECC-Provider to investigate the refusal of access to the project site. If the ECC-Provider finds there is collusion between the Rater and Developer to circumvent the quality assurance requirement, the ECC-Provider must have the necessary tools to act against the ECC-Rater.</p> <p>Auditing an untested unit has been a long standing requirement in the HERS regulations. Unfortunately, this requirement has been largely ignored to the disbenefit of the consumer. Staff intends to enforce this requirement going forward.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Staff spent over two years evaluating the proposed ECC program requirements including the name 'Energy Code Compliance.' Staff received many suggestions for a program name as well as developing name suggestions internally. ECC was chosen as the most reasonable compromise of all the suggestions. Very few comments have been received regarding the name, but the few that have been received are both positive and negative. It is staff's opinion that any name would produce similar results and that the ECC name is still the most reasonable compromise.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>

No additional response needed.	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings



No additional response needed.	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings

No additional response needed.

4/16/2024

Lead  
Commissioner  
Hearings

No additional response needed.	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings
Staff considers the job-site audit as a higher standard. Staff provided the training facility audit as an alternative in response to comments received that job-site audits may not always be practical in the field. The training facility audit was provided as flexibility to ensure an in-person audit of ATTs still gets completed. Whether or not an ATT gets audited more or less using the training facility audit, depends on how many acceptance tests they perform. As we get more data, we can revisit the criteria in future code cycles if data supports changing the criteria.	4/16/2024	Lead Commissioner Hearings

No additional response needed.	4/16/2024	Lead Commissioner Hearings
No additional response needed. See response to comment in TN# 257281.	4/16/2024	Lead Commissioner Hearings
No additional response needed. See response to comment in TN# 257281.	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings
No additional response needed.	4/16/2024	Lead Commissioner Hearings
Correct. We intended to keep Community solar source near to the subscriber. 100 kV is consistent with NERC's "Bulk Distribution System" definition.	4/16/2024	Lead Commissioner Hearings

<p>Thank you for your comment.</p> <p>For the first part of the comment, we had concluded that even though the ITC is limited in its scope, that California AB 2143 would apply, so the prevailing wage is required for commercial projects.</p> <p>The partial battery ITC credit for the replacement battery does not have a big enough impact on the cost effectiveness analysis to change the regulatory language.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/16/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/17/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/17/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed. Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p>	<p>4/17/2024</p>	<p>Lead Commissioner Hearings</p>

No additional response needed.

4/17/2024

Lead  
Commissioner  
Hearings

No additional response needed.

4/17/2024

Lead  
Commissioner  
Hearings

No additional response needed.

4/17/2024

Lead  
Commissioner  
Hearings



<p>No additional response needed.</p>	<p>4/17/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/17/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Thank you for your comment. The performance path can also be used to design alternative systems for those buildings. Staff acknowledges that by the time the 2025 Energy Code goes into effect, we will have low global warming potential (GWP) requirements set by the California Air Resources Board that will affect all systems.</p>	<p>4/17/2024</p>	<p>Lead Commissioner Hearings</p>

No additional response needed.	4/17/2024	Lead Commissioner Hearings
No additional response needed.	4/17/2024	Lead Commissioner Hearings
No additional response needed.	4/17/2024	Lead Commissioner Hearings

No additional response needed.	4/17/2024	Lead Commissioner Hearings
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No additional response needed.	4/17/2024	Lead Commissioner Hearings

No additional response needed.	4/17/2024	Lead Commissioner Hearings
See response to TN# 255723. Exceptions were updated with regards to when vestibules are required.	4/17/2024	Lead Commissioner Hearings
See response to TN# 255723. Exceptions were updated with regards to when vestibules are required.	4/17/2024	Lead Commissioner Hearings
No additional response needed.	4/17/2024	Lead Commissioner Hearings

<p>See responses to TN# 256013, 255723.</p> <p>Staff agrees with comment, and changes have been made. The definitions of the new building types have been added.</p>	4/17/2024	Lead Commissioner Hearings
<p>See response to TN# 255723.</p> <p>Staff agrees with comment, and changes have been made.</p>	4/17/2024	Lead Commissioner Hearings
<p>No additional response needed.</p>	4/17/2024	Lead Commissioner Hearings

	4/17/2024	Lead Commissioner Hearings
This proposal is out of scope of this rulemaking. Staff did not modify requirements in Section 180.2(a)3B in this code update. Staff will revisit this topic in the next code cycle.	4/17/2024	Lead Commissioner Hearings

<p>See response to TN# 255784.</p> <p>Thank you for your comment. Staff has made some changes to clarify that the requirement is for the electric service panel serving the kitchen, and not necessarily the main service panel. This clarification is relevant for installations where there is a subpanel serving the kitchen.</p> <p>Staff reviewed CALGreen (Title 24, Part 11) for an opportunity for alignment, but the requirements were very different. Staff thinks the code language with the clarification edits to 'panel' is sufficiently clear for users.</p>	4/17/2024	Lead Commissioner Hearings
No additional response needed.	4/17/2024	Lead Commissioner Hearings
No additional response needed.	4/17/2024	Lead Commissioner Hearings



<p>Staff has updated JA8 to refer to the "time of failure" portion of the DOE test procedure in Appendix BB to Subpart B of 10 CFR Part 430 instead of referring to the ENERGY STAR Elevated Temperature Life Test method.</p>	<p>4/17/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Staff agrees with Marian's response i.e. balanced or supply-only ventilation requirements apply to Multi-family only. This topic will be explored further during the ACM development process to investigate appropriate credit to be provided for MF dwelling units.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Thank you for your comment. No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

No additional response needed.	4/18/2024	Lead Commissioner Hearings
Thank you for your comment. No additional response needed.	4/18/2024	Lead Commissioner Hearings
Thank you for your comment. No additional response needed.	4/18/2024	Lead Commissioner Hearings

Thank you for your comment. This issue relates to proceedings outside of the Energy Code. We suggest reaching out to CBSC and coordinating with the entity leading the code development of separation of intake and discharge openings.

Staff agrees with the comment regarding metal framed walls, and changes have been made. The U-factor for metal framed walls was reverted back to U-0.151.

4/18/2024

Lead  
Commissioner  
Hearings

<p>Staff has investigated this issue and identified a discrepancy in the California Mechanical Code (CMC). Coordination with California Building Standards Commission (CBSC) and Housing &amp; Community Development (HCD) will be required to address the issue. Staff has reached out to CBSC and HCD to suggest consideration of this matter. No changes are needed to the 2025 Energy Code.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>Thank you for your comments and your support. CEC staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due high costs incurred by residents.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed. Staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due high costs incurred by residents.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed. Staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due high costs incurred by residents.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff notes that prescriptive requirements for schools and offices using a single-zone HVAC system are defined in Section 140.4(a)2.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>See response to TN# 256315.004</p> <p>Staff notes that NIST's study on Sensitivity Analysis of Installation Faults on Heat Pump Performance shows no energy impact associated with cooling oversizing, if airflow is adequate as is required by Title 24.</p> <p>Staff reviewed Energy Star requirements, and were unable to find a conflict between the requirements of Energy Star and the 2025 Energy Code.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Thank you for your comments and your support. CEC staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due high costs incurred by residents.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>See response to TN# 257466.</p> <p>Thank you for your comments. CEC staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due high costs incurred by residents.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Thank you for your comments and your support. CEC staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due high costs incurred by residents.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>The electric ready language is in the preamble of Section 150.2(a), which is applicable to the prescriptive compliance method in Section 150.2(a)1 and performance compliance method in Section 150.2(a)2. No change is needed. We will consider developing a Blueprint article to help explain the requirement.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed. See response to comment in TN# 255723.</p> <p>Staff agrees with the comment, and changes have been made. Specifically, Staff has moved the pipe insulation verification requirement to Section 170.2(d)2 in order to provide more flexibility to use the performance compliance path and make adjustments if pipe insulation verification is not possible.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed. See response to comment in TN# 255723.</p> <p>Staff agrees with the comment, and changes have been made. Specifically, Staff has moved the pipe insulation verification requirement to Section 170.2(d)2 in order to provide more flexibility to use the performance compliance path and make adjustments if pipe insulation verification is not possible.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>



No changes were made based on this comment.	4/18/2024	Lead Commissioner Hearings
Thank you for your comment. Staff will incorporate changes in the compliance documents recommending that projects use the Section 10-108 exemption path for extenuating circumstances	4/18/2024	Lead Commissioner Hearings
Staff has restored the original 2022 PV sizing equation for single-family and low-rise multifamily buildings. EER2 will no longer be a factor affecting the PV sizing.	4/18/2024	Lead Commissioner Hearings
No additional response needed.	4/18/2024	Lead Commissioner Hearings
No additional response needed.	4/18/2024	Lead Commissioner Hearings

<p>Thank you for your comment.</p> <p>Changes have been made to Section 140.4(a)3 in response to stakeholder feedback. Section 140.4(a)3 includes an exception for schools and offices greater than 150,000 square feet or greater than 5 habitable stories, as well as schools in climate zones 6 and 7. Section 140.4(a)3 also includes an expanded list of energy-equivalent systems including variable refrigerant flow (VRF ) with dedicated outdoor air systems (DOAS); air-to-water heat pump (AWHP) with four-pipe-fan coil terminal units or parallel fan-powered boxes; and dual-fan, dual-duct systems with any heat pump for heating.</p> <p>Staff has published the analysis demonstrating that the requirements in Section 140.4(a)3 are technically feasible and cost-effective, and notes that the proposal was vetted through an extensive public process.</p> <p>Table 141.0-E-1 has also been revised.</p> <p>Staff has determined that having the requirements related to single-family air conditioning system alterations remain in Part 11 is the best approach to achieve the State's long term decarbonization goals by ensuring the market is able to smoothly transition to statewide use of heat pump technologies. This strategy allows time for the roll out of incentive programs and public subsidies, while avoiding risks of significant market shortages, disruptions, and public dissatisfaction due high costs incurred by residents.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Additions and alterations are required to comply with the fenestration standards of Section 150.1(c)3A with some modifications, but the exception would still apply.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>Unfortunately the Energy Commission does not have the ability to enact the 2025 Energy Code earlier than the effective date. The requirements of the 2025 Energy Standards will go into effect 1/1/2026.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed. No changes were made based on this comment.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>Interconnection timelines and related challenges are outside of the scope of the Energy Code.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>See response to TN# 256292.</p> <p>Staff has restored the original 2022 PV sizing equation for single-family and low-rise multifamily buildings. EER2 will no longer be a factor affecting the PV sizing.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>See response to TN# 256318.</p> <p>Thank you for your comment.</p> <p>(1) JA12.4.2 states that battery energy storage systems shall begin discharging during the highest priced time of use (TOU) hours of the day, so the battery will not discharge in the middle of the day.</p> <p>(2) JA12.3.3(d) states that this reset requirement does not apply to reserve level changes that are controlled by a load serving entity or the California Independent System Operator, third-party aggregator, or manufacturer due to severe weather or Public Safety Power Shutoff events.</p> <p>(3) The battery labeling requirements proposed in Section JA12.5 have been removed as the information was already present on the CF2R compliance documents.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>Thank you for your comment. Changes have been made to clarify the intent. Staff notes that the intent of the adopted Reference Joint Appendix JA12 language is to allow customers to switch between control strategies while maintaining consistent cycling capacity.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Thank you for your comment.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Thank you for your comment. The EER2 term has been removed from the Annual PV electrical output requirements in Equations 150.1-C and 170.2-C.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>See response to TN# 255784.</p> <p>Comment acknowledged, no change made. This proposal is out of scope of this rulemaking. Staff will revisit this topic in the next code update.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Thank you for your comments. With regards to the concern about fenestration - Staff agrees with the comment, and changes have been made. Specifically, exceptions have been added where mandatory maximum U-factor requirements for fenestration products exist within the Energy Code.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Thank you for your comment. Percent Thermal Mass assumption is already built into the Energy Code.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Upon further review of the comment, Staff feels that no edits need to be made to the language. The exceptions to Section 150.0(q) already apply to additions and alterations, including ADUs.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>Thank you for your comment. Staff has reverted the mandatory metal framed wall U-factor requirement to the existing 2022 requirement; U-0.151.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Thank you for your comment. Staff has reverted the mandatory metal framed wall U-factor requirement to the existing 2022 requirement; U-0.151.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>



Staff agrees with the comment, and changes have been made. Specifically, subsection (iii) was added to Exception 1 to Section 150.0(a)1 for ductless space-conditioning systems.	4/18/2024	Lead Commissioner Hearings
No additional response needed.	4/18/2024	Lead Commissioner Hearings
No additional response needed.	4/18/2024	Lead Commissioner Hearings

<p>Thank you for your comment. Staff determined that the proposed U-factor was highly restrictive for 2X4 metal frame construction. Since this measure contributed limited savings, Staff reverted the mandatory metal framed wall U-factor requirement to the existing 2022 requirement; U-0.151.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>No additional response needed.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>

<p>Per the 2022 Single-Family ACM Reference Manual, climate zones with no SHGC requirement are modeled as SHGC=0.35 in the Standard Design.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>See response to TN# 255784.</p> <p>Allowing thermal mass in the compliance software is out of scope of this rulemaking. Staff may revisit this topic in a future code update.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>
<p>Thank you for your comment. There is no language in the mandatory residential requirements that prohibits the use of dual fuel heat pumps, gas supplementary heating, or gas furnaces.</p>	<p>4/18/2024</p>	<p>Lead Commissioner Hearings</p>