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CEA Letter 2 of 3_Comments on 2025 BEES - Title 24 Parts 1 and 6_Express Terms_45-day Language

CEA Comments Letter 2 of 3 - Mechanical Sections

Additional submitted attachment is included below.

May 13, 2024

California Energy Commission
Docket #24-BSTD-01
715 P Street
Sacramento, CA 95814

Re: Docket Number: 24-BSTD-01 – 2025 Building Energy Efficiency Standards, Title 24 Parts 1 and 6, Express Terms, 45-Day Language

CEA Comment Letter 2 of 3: Mechanical Sections

Dear CEC Commissioner McAllister and Staff,

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.

CEA and its Members had the opportunity to work collaboratively with the CEC, Compliance & 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 & 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.

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).

The following comments and recommendations (CEA Comment Letter 2 of 3) relate to "Mechanical Sections" of the Energy Code (TN# 255315-2):

1) **Sections 10-103.2(c)3Fii & iii**
   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.
   b) The following underlined amendments to **Sections 10-103.2(c)3Fii and iii** and additions of **iv and v** in the 2025 Energy Code, 45-Day Language aims to address these concerns:

Section 10-103.2(c)3F

"i. Remains as drafted in 2025 Energy Code, 45-Day Language

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).

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:

a. On the job site; or

b. At an ATTCP training facility.

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.
v. The shadow audits must be in addition to any testing used for ATT recertification."

2) **Section 120.1(d)5**
   a) Language in 120.1(d)5A says "Spaces meeting these criteria above include, but not limited to:"
      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.
   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".

3) **Section 140.3(a)9Cib and NA5.5**
   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.
   b) CEA recommends amending **Section 140.3(a)9Cib** with the following strikeout and underlined language:
      "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.~~7~~9. Representative test floors must meet the following conditions:"

4) **Section 140.4(a)3A and B**
   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.

i) CEA recommends the CEC remove the new proposed requirements: ~~"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)3E; 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) space-heating hot water loop which complies with Section 140.4(a)3C. The DOAS shall comply with Section 140.4(a)3E; 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)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.~~
~~B. School buildings. The space conditioning system shall be four-pipe fan coil (FPFC) terminal units 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."~~

5) **Section 140.4(c)2B**

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 NRCA-MCH-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.

b) CEA recommends adding the following underlined language and create subsection **140.4(c)2Biii**:

"B. Setpoint reset. For systems with direct digital control of individual zone boxes reporting to the central control panel:

i. static pressure setpoints shall be reset based on the zone requiring the most pressure

ii. Control sequences of operation for static pressure setpoint reset shall be in accordance with ASHRAE Guideline 36.

iii. 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."

6) Section 140.4(d)2A

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 NRCA-MCH-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.

b) CEA recommends adding the following underlined language and create subsection **140.4(d)2Avi**:

"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 95ºF 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. Control sequences of operation for reheat zones shall be in accordance with ASHRAE Guideline 36.
vi. Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance, as specified by the reference Nonresidential Appendix NA7.5.15. 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 NA7.5.15."

7) **Section 140.9(b)3**
   a) The section clearly calls out for an acceptance requirement and specifies that a certificate of acceptance be submitted to the enforcement agency.
      i) "Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance…"
      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"
   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.
   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, by a certified ATT, 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."

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.

i) "Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance…"
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"

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.

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 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."

9) Section 140.9(c)4B and NA7.17

a) This section clearly calls out for an acceptance requirement and specifies that a certificate of acceptance be submitted to the enforcement agency.
i) "Applicable equipment and systems shall be certified as meeting the acceptance requirements for code compliance…"
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…"

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.

c) CEA recommends adding the following underlined language and strikeout to **Section 140.9(c)4B**:

"B. Fume Hood Automatic Sash Closure Acceptance. Before an occupancy permit is granted for buildings with ~~the~~ fume hoods subject to 140.9(c)4, the equipment and systems shall be certified, by a certified ATT, 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."

10) Section 160.2(b)2Aivb2

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.

b) CEA recommends amending **Section 160.2(b)2Aivb2** with the following strikeouts and underlined language:

> **"2. Compartmentalization Testing.** 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 shall ~~which requires an ECC-Rater may alternatively~~ be performed by a certified Mechanical Acceptance Test Technician according to the requirements specified in Reference Appendix NA~~1.9~~ 2.3."

11) Section 160.2(b)2Biv

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.

b) CEA recommends amending **Section 160.2(b)2Biv** 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 ~~which requires an ECC-Rater may alternatively~~ shall be performed by a certified Mechanical Acceptance Test Technician according to the requirements specified in Reference Appendix NA~~1.9~~ 2.3."

12) Section 160.3(d)2A

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.

b) CEA recommends reverting **Section 160.3(d)2A** to the 2022 Energy Code language and adding "by a certified Mechanical Acceptance Test Technician":

"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."

13) Section 160.3(d)2B

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.

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":

"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."

14) NA1.9.1 Field Verification by the Acceptance Test Technician

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.

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. ~~Systems verified under this procedure are not eligible for use of the sampling procedures described in NA1.6.~~"

15) Applying EER2 thresholds for PV System Sizing could be counterproductive for adoption of variable speed heat pumps.

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.

16) **Section 110.2(e) Appendix NA.7.5.18 Cooling Tower Conductivity Controls**
    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.

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.

Sincerely,

California Energy Alliance
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