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AAON Comments on 2028 Energy Code and Reference Appendices

Additional submitted attachment is included below.

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November 5, 2026

California Energy Commission
Docket Unit, MS-4
715 P Street
Sacramento, California 95814

Re: Pre-Rulemaking Draft Regulatory Text for the 2028 Energy Code and Reference Appendices; Docket Number 25-BSTD-03

Dear Commissioners:

AAON, Inc. ("AAON") is a U.S. manufacturer of commercial air conditioning, heat pump, and heating equipment. Headquartered in Tulsa, Oklahoma, AAON employs more than 6,100 people across operations located exclusively in the United States and has been in continuous operation since 1988.

AAON submits these comments on the California Energy Commission's ("CEC") draft regulatory text for the 2028 Energy Code and Reference Appendices. AAON recommends revisions to the indoor growing space conditioning provisions to (i) require integrated systems, (ii) establish the same functional modulation requirements if decoupled systems remain permitted, and (iii) verify compliance with the operating restrictions for commercial dehumidifiers.

1. Section 908.1.6.2.2 – Indoor Growing Space Conditioning Systems

AAON recommends requiring integrated space conditioning systems under Section 908.1.6.2.2 and removing the coordinated decoupled system option as an alternative means of satisfying that requirement. **The integrated system provisions already accommodate multiple technologies**. Section 908.1.6.2.2.1.1 permits integrated direct expansion systems, four pipe chilled water systems, desiccant dehumidification systems, and other systems meeting the specified functional requirements. Requiring integrated systems would preserve these technology choices while establishing consistent requirements for cooling, dehumidification, and recovered heat. Cal. Energy Comm'n, *Pre-Rulemaking Draft Regulatory Text for the 2028 Energy Code* § 908.1.6.2.2.1.1, TN 273088 (Oct. 12, 2026) ("Draft Energy Code").

The Codes and Standards Enhancement ("CASE") Report provides evidence supporting AAON's recommendation. Its modeling estimated approximately 25 percent lower annual heating, ventilation, air conditioning, and dehumidification energy use for the integrated system evaluated than for the modeled decoupled baseline using fixed capacity equipment meeting code minimum requirements. Amy Droitcour et al., *Controlled Environment Horticulture: Final CASE Report* 170, 174, TN 270765 (June 2026) ("CASE Report"). In addition, models used in support of the CASE proposal show approximately 15% energy savings when comparing commercially available integrated packaged systems to decoupled applications consisting of HVAC systems with modulating capacity that exceed code minimum efficiency. Megerson & Anderson, *Cultivation HVACD System Comparison Study* (2023).

Integrated systems are commercially available from multiple manufacturers. The CASE Report estimated total initial costs of $298.57 per canopy square foot for its integrated design and $292.81 for its decoupled baseline. It also describes additional project comparisons in which integrated systems had lower installed costs. CASE Report at 158–59, 179–80, tbls. 65–66. In AAON's view, the documented availability, energy savings, and cost comparisons support requiring integrated systems.

If the CEC retains the coordinated decoupled system option, AAON recommends the same functional modulation requirements for both system configurations. The CEC's proposed code would require integrated systems and their controls to be capable of modulating sensible heat ratio, heat recovery, heat rejection outside the space, and supply fan speed. For commercial unitary air conditioning or heat pump equipment used in decoupled systems, however, the proposed code would require a minimum of two stages for both cooling capacity and fan control, without a comparable modulation requirement. Draft Energy Code §§ 908.1.6.2.2.1.3, 908.1.6.2.2.2.2.

Two stage operation does not provide the same control capability as modulation. Although the common control provisions require coordinated temperature and humidity control, they permit equipment to stage or modulate and do not resolve this difference. *Id*. § 908.1.6.2.5. Comparable modulation capabilities would help both system configurations match equipment output more closely to changing temperature and humidity loads. If the CEC retains the two stage minimum for commercial unitary equipment in decoupled systems, AAON requests that it explain the technical and energy performance basis for allowing those controls instead of requiring modulation.

2. Section 908.1.6.2.6 – Commercial Dehumidifiers

AAON recommends adding an explicit verification requirement to Reference Nonresidential Appendix NA7.21.2 for the operating restrictions in Section 908.1.6.2.6. That section limits when commercial dehumidifiers that release heat inside the building may operate. At least one of two conditions must be met: (i) the space can use all the waste heat; or (ii) the other conditioning systems serving the indoor growing space cannot meet its full cooling, heating, and dehumidification needs. Draft Energy Code § 908.1.6.2.6.

Draft Appendix NA7.21.2 does not expressly require verification of those operating restrictions. For dehumidifiers without modulating heat rejection or recovery capacity, it requires verification that

controls can automatically stage individual dehumidifiers based on the space dehumidification load. Cal. Energy Comm'n, *Pre-Rulemaking Draft Regulatory Text for the 2028 Reference Appendices*, Reference Nonresidential App. NA7.21.2, item 3.2, TN 273089 (Oct. 12, 2026).

The added test would confirm that controls prevent commercial dehumidifiers covered by Section 908.1.6.2.6 from operating unless at least one of that section's operating conditions is satisfied. The results would be documented on the applicable Certificate of Acceptance as required by Section 908.1.6.2.7. This verification would help prevent dehumidifier operation from unnecessarily increasing the space cooling load.

* * *

AAON appreciates the opportunity to comment and respectfully requests the CEC incorporate these revisions to improve energy performance and verify operation of indoor growing space conditioning systems.

Sincerely,

Clint Reese

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