DOCKETED	
Docket Number:	25-BSTD-03
Project Title:	2028 Energy Code Pre-Rulemaking.
TN #:	273349
Document Title:	David Winningham Comments - Lennox Comments on the California Energy Commission Request for Information (RFI) Energy Data Collection Phase 3 – Space Conditi
Description:	N/A
Filer:	System
Organization:	David Winningham
Submitter Role:	Public
Submission Date:	11/4/2026 1:07:23 PM
Docketed Date:	11/4/2026

Comment Received From: David Winningham
Submitted On: 11/4/2026
Docket Number: 25-BSTD-03

Lennox Comments on the California Energy Commission Request for Information (RFI) Energy Data Collection Phase 3 â€“ Space Conditi

Additional submitted attachment is included below.

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November 5, 2026

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Submitted via: e-mail at docket@energy.ca.gov

Re: Lennox International Inc. Comments on the 2028 Energy Code Pre-Rulemaking Draft Regulatory Text, Data Center Requirements (Docket No. 25-BSTD-03)

Lennox International Inc. ("Lennox") respectfully submits these comments on the California Energy Commission's ("CEC" or "Commission") pre-rulemaking draft regulatory text for the 2028 California Energy Code, Title 24, Part 6, with particular focus on the proposed data center and computer room cooling requirements.

Lennox is a leading provider of climate-control solutions for the heating, air-conditioning, and refrigeration ("HVACR") markets. Through its commercial HVAC and Heatcraft Refrigeration Products businesses, Lennox develops refrigerant-based, hydronic, heat-rejection, controls, and emerging thermal-management technologies relevant to data centers and other high-density computing applications.

A. General Comments on the Pre-Rulemaking Draft regarding Data Centers.

Lennox supports the Commission's objective of improving data center energy efficiency. The final requirements, including Sections 910.1 and 910.2 governing computer rooms and data centers and the related nonresidential HVAC provisions in Section 401.3, should remain technology-neutral, performance-based, and sufficiently flexible to accommodate rapidly evolving air-cooled, liquid-cooled, refrigerant-based, two-phase, hybrid, and heat-recovery architectures. The Energy Code should establish measurable outcomes and permit equivalent-performing alternatives rather than select a preferred cooling medium or system configuration.

B. Specific Comments on the Pre-Rulemaking Draft regarding Data Centers.

Comment 1: Preserve Technology Neutrality

Concern
Sections 910.1 and 910.2 appear to favor specific cooling architectures, including facility water loops, liquid cooling, or prescribed system configurations, rather than focusing on performance outcomes.

Recommendation

Lennox supports California's objective of improving data center efficiency; however, compliance pathways under Sections 910.1 and 910.2 should remain technology-neutral and performance-based. Code requirements should allow alternative cooling technologies, including refrigerant-based systems, water/glycol systems, hybrid architectures, direct expansion systems, and emerging cooling technologies, provided equivalent or superior energy performance relative to the applicable prescriptive baseline can be demonstrated. We recommend that compliance be based on measurable annual energy performance and other applicable performance metrics rather than prescribed cooling architectures.

Rationale
This approach preserves innovation, supports emerging technologies, and avoids picking market winners and losers.

Comment 2: Recognition of Advanced Refrigerant-Based Cooling Systems

Concern
Section 910.2.1 separately addresses air-cooled and liquid-cooled ITE systems and includes requirements for chilled-water and facility-water systems, but it does not clearly address other advanced refrigerant-based and hybrid cooling architectures.

Recommendation
The code should be flexible to recognize advanced refrigerant-based cooling architectures used for high-density computing and AI applications. Emerging systems utilizing refrigerant-to-refrigerant, refrigerant-to-liquid, or trans-critical CO_2 technologies may provide energy performance equivalent to or exceeding traditional chilled-water architectures and should remain eligible for compliance where the applicable performance requirements can be demonstrated.

Rationale
This supports continued evolution of innovative products that can advance improved energy Efficiency.

Comment 3: Alternative Compliance Path for Novel Technologies

Concern
The prescriptive requirements in Section 910.2 may not fit new cooling technologies or system configurations that can provide equivalent or superior annual energy performance.

Recommendation
Lennox recommends establishing an alternative compliance pathway under Section 910.2 that allows an innovative cooling technology that does not fit a prescribed architecture to demonstrate equivalent or superior performance through modeled and, where appropriate, verified system performance relative to the applicable prescriptive baseline. This pathway would encourage innovation while maintaining the Commission's energy efficiency objectives.

Potential Supporting Metrics
For Title 24 energy compliance, equivalency should be demonstrated principally through modeled annual energy consumption or cooling-plant efficiency relative to the applicable

prescriptive baseline. PUE improvement, water utilization effectiveness (WUE), and heat-recovery effectiveness may be used as supplemental performance indicators where relevant to the regulated requirement.

Comment 4: Air-Cooled Chiller Restrictions

Concern
Section 401.3.12 limits chilled-water plants to no more than 300 tons of cooling provided by air-cooled chillers, subject to specified exceptions. This limit may inadvertently restrict advanced air-cooled or hybrid cooling architectures that can demonstrate equivalent or superior annualized energy performance.

Recommendation
Lennox requests that Section 401.3.12 include an additional exception for systems capable of demonstrating equivalent or superior annualized energy performance relative to the applicable prescriptive baseline. The comparison should account for system-level performance, including economizer operation, advanced controls, heat recovery, and site water constraints, rather than cooling medium alone.

Rationale
This allows free cooling, hybrid systems, advanced controls, and novel heat rejection systems to compete on performance.

Comment 5: Functional Equivalency Provision

Concern
Future technologies may not fit the current definitions in Section 201 or the air-cooled and liquid-cooled compliance categories in Section 910.2.1.

Recommendation
Lennox recommends adding a functional-equivalency provision to Section 910.2 permitting technologies that achieve equivalent cooling performance, reliability, and energy efficiency to comply regardless of cooling medium or heat-transfer architecture.

Suggested Examples
This provision would apply to refrigerant-to-refrigerant cooling, two-phase cooling, direct-to-chip cooling, CDU-based architectures, immersion cooling, and hybrid cooling systems.

Comment 6: Support for Heat Recovery Regardless of Cooling Medium

Concern
The heat-recovery requirements in Sections 910.1.4 and 401.3.19 should not favor chilled-water systems or any other cooling medium.

Recommendation
Heat-recovery incentives, exceptions, and compliance credits under Sections 910.1.4 and 401.3.19 should be available on an equivalent basis for any technology capable of recovering and

beneficially using waste heat, including refrigerant-based systems and hybrid cooling architectures. Credit should be based on useful recovered thermal energy rather than the cooling medium from which that energy is recovered.

Rationale
This supports CO_2 heat recovery, trans-critical heat reclaim, process heat recovery, and district energy integration.

Comment 7: Outcome-Based Metrics Instead of Architecture-Based Requirements

Concern
Sections 910.2.1 and 401.3.12 may indirectly prescribe system design by defining compliance around specified economizer, facility-water, chilled-water, and air-cooled configurations.

Recommendation
Lennox recommends emphasizing outcome-based metrics, led by annual energy performance for Title 24 compliance, rather than prescriptive equipment configurations. Cooling effectiveness, water utilization effectiveness (WUE), heat-recovery effectiveness, and lifecycle carbon reduction may provide supplemental information where relevant.

Benefits
This approach encourages innovation, competition, lower lifecycle emissions, and faster technology adoption.

Comment 8: Explicit Accommodation of AI and High-Density Computing

Concern
Cooling requirements for AI and other high-density computing workloads are evolving rapidly, while Sections 201 and 910 necessarily classify technologies based on current definitions and system configurations.

Recommendation
Given rapid advancements in AI and high-density computing infrastructure, Lennox recommends maintaining flexible compliance pathways under Section 910 that accommodate future cooling technologies capable of meeting the Code's performance objectives without requiring future rulemaking updates whenever a new cooling architecture is introduced.

That single concept protects CO_2 architectures, water/glycol architectures, and future Lennox/Heatcraft technologies without requiring the CEC to endorse a specific cooling technology.

In summary, Lennox recommends that the 2028 California Energy Code establish a technology-neutral alternative compliance pathway under Sections 910.1 and 910.2 that allows any data-center cooling architecture, including refrigerant-based, liquid-cooled, air-cooled, hybrid, or future systems, to demonstrate compliance through equivalent or superior

measured or modeled annual energy performance relative to the applicable prescriptive baseline.

Sincerely,



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