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Lennox Comments - CEC Title 24-2025 Express Terms

Additional submitted attachment is included below.



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California Energy Commission
1516 Ninth Street
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California Energy Code (Title 24, Part 6)

Submitted via: CEC Docket 24-BSTD-01

Re: Lennox Comments regarding California Energy Code (Title 24, Part 6) 45-day Express Terms

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.

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 publicly-traded company and has thousands of employees. Lennox manufactures HVACR products, equipment and control systems subject to California Energy Commission (CEC) requirements.

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.

A. General Comments

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.

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 IEPR Electrical Demand Forecast indicate significant increases in electrical demand as efforts to decarbonize continue.

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.

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.

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.

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.

B. Specific Issues regarding the Express Terms Proposal

In addition to the above general comments, Lennox offers the following comments on the specific measure proposals.

SECTION 140.4 – PRESCRIPTIVE REQUIREMENTS FOR SPACE CONDITIONING SYSTEMS

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.

SECTION 150.0 – SINGLE-FAMILY RESIDENTIAL BUILDINGS – MANDATORY FEATURES AND DEVICES

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.

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.

Sincerely,



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