DOCKETED	
Docket Number:	24-BSTD-01
Project Title:	2025 Energy Code Rulemaking
TN #:	256322
Document Title:	Carrier Corp Comments - Carrier Corporation comments to the 2025 T24 energy code 45 day language
Description:	N/A
Filer:	System
Organization:	Carrier Corp
Submitter Role:	Public
Submission Date:	5/13/2024 1:39:27 PM
Docketed Date:	5/13/2024

Comment Received From: Carrier Corp
Submitted On: 5/13/2024
Docket Number: 24-BSTD-01

Carrier Corporation comments to the 2025 T24 energy code 45 day language

Additional submitted attachment is included below.

Pat Riley
Associate Director, Regulatory Affairs
HVAC Americas
Patrick.Riley@Carrier.com

May 13th, 2024

California Energy Commission (CEC)
Docket Unit, MS-4
1516 Ninth Street
Sacramento, California 95814-5512

Docket Number: 24-BSTD-01

RE: Carrier comments to the 2025 Energy Code Rulemaking, Title 24 Express terms, 45-day language.

Dear CEC Staff,

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.

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.

Section 110.2(a) – Minimum Efficiency Tables
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

Pat Riley
Associate Director, Regulatory Affairs
HVAC Americas
Patrick.Riley@Carrier.com

of new or updated DOE regulations are set far enough in advance that this should not be an issue for this code.

Specific additional comments to the minimum efficiency tables as proposed:

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.

VRF equipment: The VRF table references AHRI 1230 as the test procedure for multi-split 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).

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.

Section 120.10 – Mandatory Requirements for Fans
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.

Section 140.4 – Prescriptive Requirements for Space Conditioning Systems

140.4(a)2 – Single Zone Space-Conditioning System Type
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.

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

Pat Riley
Associate Director, Regulatory Affairs
HVAC Americas
Patrick.Riley@Carrier.com

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. Examples would be as follows:

140.4(a)2.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."

140.4(a)2.C: Instead of "Retail and grocery building spaces in Climate Zones 1 and 16 with cooling capacity 65,000 Btu/hr or greater. The space-conditioning system shall be a dual-fuel heat pump," Carrier requests CEC provide options such as "Retail and grocery building spaces in Climate Zones 1 and 16 with cooling capacity 65,000 Btu/hr or greater. The space-conditioning system shall be a dual-fuel heat pump or a heat pump."

Section 140.4(a)3: Multizone Space-Conditioning System Types

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.

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.

Section 140.4(r)

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.

Pat Riley
Associate Director, Regulatory Affairs
HVAC Americas
Patrick.Riley@Carrier.com

Section 141.0(b)2.C.ii
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.

Section 150.0(h)9: Capacity Variation with Third-Party Thermostats
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.

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.

Various Sections of the Residential Prescriptive Approach
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.

Pat Riley
Associate Director, Regulatory Affairs
HVAC Americas
Patrick.Riley@Carrier.com

Section 150.2(a)1E: Space-Conditioning Load Calculations and System Capacity
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.

Summary:

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.

Respectfully submitted,

Pat Riley

Pat Riley
Associate Director, Regulatory Affairs, Carrier