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Greenheck Comments - Proposed 15-Day Express Terms 2022 Energy Code

See attached pdf.

Additional submitted attachment is included below.

July 29, 2021

California Energy Commission
Docket Office, MS-4
1516 9th Street
Sacramento, CA 95814-5512

RE: ***Title 24-2022 15-Day Express Terms [Docket No. 21-BSTD-01]***

The following comments are in response to the California Energy Commission (CEC) 15-day language in the Notice of Proposed Action – Express Terms published on July 13, 2021.

Greenheck supports CEC's recommendation regarding the Fan Energy Index (FEI).

The CEC T24 proposal related to FEI is uniquely applicable to fans for several reasons.

1. FEI is easy to understand – FEI has a universal meaning across multiple fan types and has a universal meaning at any fan power. For example, at a given duty point, a fan with an FEI of 1.0 will consume 50% more power than a fan with an FEI of 1.5 (1.5/1.0-1). This holds true for a 1kW fan, a 5kW fan, a 100kW fan and so on. The same is true regardless of fan type (axial fan, centrifugal fan, power roof ventilator, or some other type of fan). FEI will be easy for the market to understand and apply to virtually any fan application.

2. FEI is applicable to energy standards and codes – FEI lends itself to use in energy standards such as ASHRAE 90.1, national energy codes such as IECC, and state energy codes such as CEC Title 24. ASHRAE 90.1-2019 includes fan FEI requirements as does IECC and several other state and stretch codes (e.g. IgCC/ASHRAE 189.1). The adoption of FEI in CEC T24 will add rigor to building standards and code requirements targeted at reducing fan energy consumption.

3. FEI leverages natural market dynamics – FEI will reinforce the commercial building construction process to reduce fan energy consumption. When designing a ventilation system for a commercial building, the simplicity of FEI will allow consumers (i.e. building owners, contractors, and engineers) to be more informed about the energy consumption for their specific fan application. A more informed consumer will make better fan selections. For example, FEI will provide specifying engineers an easy to understand single number reference to limit the power consumption for any given fan duty point. By including the fan FEI on the building equipment schedule engineers will establish a minimum baseline for fan power consumption. Owners and engineers can establish an FEI to meet minimum regulatory and code requirements, or they can increase the FEI based on tradeoffs between first cost, lifetime building operation costs, carbon reduction goals, et al. Based on the building design FEI requirements established by the owner and engineer, contractors will

be compelled to only supply fans that meet the minimum FEI specified by the owner/engineer. In this way, FEI will ensure a level playing field during the bid process for the building.

From a regulatory perspective, FEI will make it easy for code officials to verify compliance to local, state and national codes during plan review and during final commissioning. During plan review, requiring FEI on engineering design documents will allow code officials to easily verify that the FEI for a given fan meets minimum code and regulatory requirements. During the building commissioning process code officials can easily check the FEI on the fan label to verify compliance with code and regulatory requirements.

Finally, as FEI becomes more widely adopted, manufacturers will work to improve fan designs and offer the market more options to minimize fan power consumption at the performance ranges being specified by consumers.

4. FEI is applicable to utility incentive programs – The simplicity of FEI will provide the market with a single number methodology easily applied to incentive programs that promote "above code" fan energy limits. Seattle City Light and other utilities are already offering incentives to use fans that exceed local code FEI requirements.

Greenheck supports CEC requirements for third-party performance verification of FEI

The Air Movement and Control Association International (AMCA) has a history of working with manufacturers and regulatory bodies to adapt their standards and certification programs to help ensure regulations are practical and achieve the desired results in the market. To ensure FEI will maximize energy savings related to fans, we support third-party FEI performance verification that is consistent with the rigor of AMCA's Certified Rating Program(CRP) for FEI.

Greenheck supports differentiation for fans embedded in HVAC equipment

Greenheck recommends CEC implement FEI requirements consistent with requirements and limitations in ASHRAE 90.1-2019. Greenheck recommends fans embedded in equipment with capabilities related to:

- cooling,
- heating,
- humidification,
- dehumidification,
- air cleaning and/or
- air purification

be differentiated from fans with single functionality to move air.

Concluding Remarks

Greenheck very much appreciates the opportunity to comment and contribute to the CEC T24 development process. In summary:

1. Greenheck is supportive of the CEC effort to reduce fan energy consumption through the use of FEI.

2. Greenheck supports requirements for third-party performance verification of FEI consistent with the AMCA Certified Ratings Program.
3. Greenheck supports utilizing FEI consistent with requirements in ASHRAE 90.1-2019.

Thank you.

Commenter Credentials:

With over 35 years of experience with the Greenheck Group, a leading manufacturer of HVAC equipment and having held positions in engineering, sales, marketing, software development, and general management, I have a solid foundation for understanding the impact regulations can have on a business and a market. In addition, I am active in the development of test standards and codes with industry trade associations including ASHRAE, AMCA, AHRI, HVI, UL, NFPA, ICC, NAM and others. I also participated on the U.S. Department of Energy's Working Group responsible for developing recommendations on Commercial and Industrial Fan and Blower (CIFB) Energy Regulation and am a past U.S. Secretary of Energy appointee to the Department of Energy's Appliance Standards and Rulemaking Federal Advisory Committee (ASRAC).

The Greenheck Group is comprised of a number of brands including Greenheck, Unison Comfort Technologies, Innovent, Valent, Precision Coils, Accurex, and Airolite. Headquartered in Schofield, WI, **Greenheck has offices and manufacturing facilities in California**, Wisconsin, Oklahoma, Kentucky, Tennessee, North Carolina, Mexico, and India. Greenheck employs nearly 4,000 people worldwide, including over 3,500 in the United States. With over 70 years of family ownership, Greenheck is a worldwide leader in the manufacture of air-movement, conditioning and control equipment, systems and services. Greenheck's extensive product offering includes commercial fans and industrial blowers, laboratory exhaust systems, dedicated outdoor air systems, energy recovery ventilators, air handling equipment, make-up air equipment, and kitchen ventilation systems. Related products include air-control dampers, fire and smoke control dampers, heating and cooling coils as well as architectural and mechanical louvers. Greenheck equipment is used in all types of residential, commercial, institutional, and industrial buildings and applications ranging from comfort ventilation to industrial processes.

Industry Associations

Greenheck engineers are active with many government and industry organizations working to establish performance standards and application guidance related to HVAC systems and products. Examples include:

- United States Department of Energy (DOE)
- International Standards Organization (ISO)
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)
- Air Movement & Control Association (AMCA)
- Air-Conditioning, Heating, & Refrigeration Institute (AHRI)
- Home Ventilation Institute (HVI)
- International Code Council (ICC)
- California Energy Commission (CEC)

Greenheck's involvement with the aforementioned groups is largely focused on development of standards, regulations and programs that result in energy efficient HVAC systems as well as

practical selection and application of energy efficient products manufactured for those systems. Greenheck is continuously working to provide constructive, consistent and substantial insight regarding industry standards and regulations.

Greenheck appreciates the opportunity to support this regulatory effort and is prepared to provide additional details regarding historical data and the potential impact the regulation will have on the market.

Respectfully Submitted,

Mike

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