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Trane Technologies Comment 111523 - Docket 22-BSTD-01

Additional submitted attachment is included below.



November 15, 2023

California Energy Commission
Docket Unit, MS-4
Docket No. 22-BSTD-01
715 P Street
Sacramento, CA 95814

Re: Title 24-2025 Express Terms – Docket No. 22-BSTD-01

Dear Commissioners and CEC Staff,

Thank you for the opportunity to comment on Docket No. 22-BSTD-01 regarding the heat pump baselines in Title 24-2025.

Trane Technologies is a world leader in creating comfortable, sustainable, and efficient environments and leading our industry in sustainability practices. Through our strategic brands Trane and Thermo King, and our portfolio of environmentally responsible products and services, we bring efficient and sustainable climate solutions to buildings, homes and transportation. Our bold 2030 Sustainability Commitments are central to our business strategy and include a pledge to reduce our customers' carbon emissions by one gigaton (2% of the world's annual emissions) and to bring our own operations to carbon neutral. Our ambitious greenhouse gas (GHG) emissions reduction targets which have been verified by the [Science Based Targets Initiative \(SBTi\)](#) challenge us to lead by example, collaborate with our customers to drive sustainable innovation and create opportunity for all in our workplace and our communities.

As a global HVAC manufacturer, Trane Technologies has a strong track record demonstrating a commitment to the electrification of buildings as the organization works to achieve a sustainable future. We are at the forefront of setting new standards to improve the health and well being of the indoor environment across communities. Furthermore, Trane Technologies shares with the California Energy Commission a commitment to bringing efficient and sustainable climate innovations to the built environment to help achieve sensible long-term clean energy goals with updates to the 2025 energy code.

Discussion

1. Project Funding for HVAC Alteration

Underserved communities may be disproportionately impacted. An electrical upgrade, often required with retrofitting HVAC systems, could delay project funding. This may delay the adoption of electrification in California.

2. Project Schedule for all HVAC Alteration

Heat pumps used in alterations and retrofits have a significant impact on the electrical load of existing buildings. An existing building's electrical infrastructure may be limited for existing gas/electrical equipment. Since the HVAC equipment is the largest portion of the electrical load calculation, there is a concern that utility upgrades may be required for a majority of alteration projects. Upgrading the existing transformer brings a challenge to completing projects on time, which creates an additional hardship.

To switch from a gas/electric AC unit to a heat pump requires adding electric heat strips for supplemental heat in most cases. Typically, the heat pump without electric heat matches the electrical load of the gas/electric AC unit. However, many applications in California will need additional supplemental heat to be added, particularly for Climate Zones 11, 12 and 13. For the addition of electric heat strips, a typical range of 20-30% more power will be required.

1. In all cases this will require upsizing the feeders for each unit which includes:
 - a. Replacing the disconnect, feeders and breakers for each unit from the distribution panel back to the unit.
 - b. Increasing the cost of each installation by a rough order of magnitude of 5% to 15% depending on the distance from the distribution panel for each unit.
2. In most cases the amount of electrical power needed to go to a HP is not available in the distribution panel. In this case an additional panel will need to be added or the existing panel will need to be upsized for the additional load. This includes:
 - a. Replacing the feeders mentioned above and replacing the feeders & breaker in the main panel board
 - b. Increasing the cost approximately an additional 5% to 10%
3. In most cases the service to the building or site will not be sufficient to handle the increased electrical load and will need to be upsized with the utility.
 - a. This requires the involvement of the Electrical Service Provider
 - b. This will extend the schedule of replacement projects substantially as the owner and contractor are reliant on the engineering services of the individual Electrical Utility and typical lead times of 6 months to 12 months are not uncommon.
 - c. The cost increase for this will vary, however will be substantial as it requires both the replacement of the main panel board and the Electrical Utility provider's engineering services which will typically be the responsibility of the owner.

In many cases at a minimum both items 1 & 2 will be required, but it is very likely that all three will be required on older facilities. Specifically, our field data shows that educational facilities fall into the latter scenario and would require a service upgrade.



Key Issues

Trane Technologies views the intent of the proposed baseline for nonresidential alteration as showing a preference for heat pump technology. We agree with the California Energy Commission's approach. However, a heat pump with supplemental electrical heating typically has a higher electrical load which may impact the cost and timeline of all alteration projects. This could have negative impacts particularly on emergency projects where building occupants would not have any heating source until the electrical upgrade has been performed. We recommend a heat pump with supplemental gas heating be included as baseline for non-residential alteration.

Comments and Feedback

On page 14 of the draft express terms, dual fuel heat pumps are defined as "an electric heat pump with gas furnace supplemental heat that alternates between the two fuel sources." Please provide clarity for our industry if a dual fuel heat pump is included under the heat pump category.

In residential section 150.2 F(i). Altered Space-conditioning System - mechanical cooling the language states clearly that when a building is altered or a system is replaced, a heat pump with supplemental heating using natural gas or electric heating shall be used. Due to these key issues, we recommend the same for non-residential alteration.

Conclusion

Trane Technologies greatly appreciates the California Energy Commission's commitment to sustainability and the clean energy future of our state. We look forward to assisting with implementation of the next phase of Title 24 program.

Sincerely,

Beth Braddy

Beth Braddy

Unitary Regulatory Affairs Leader

Commercial Unitary HVAC North America

bbraddy@trane.com

+1 478-319-0369 Cell