

June 3, 2025

Chair Vanessa Delgado & Members of the Governing Board
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Subject: PAR 1111 and 1121 – Reduction of NO_x Emissions from Natural Gas-Fired Furnaces and Small Water Heaters

Dear Chair Delgado and Members of the Governing Board:

Thank you for the opportunity to comment on the South Coast Air Quality Management District (SCAQMD) Proposed Amended Rule 1111 – Reduction of NO_x Emissions from Natural-Gas-Fired Furnaces.

Trane Technologies (Trane) 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.

The 2022 Air Quality Management Plan (AQMP) identified the need for extensive use of zero-emission technologies to achieve required nitrogen oxide (NO_x) reductions with emission-reducing heat pumps as a key factor to achieving the agency's air quality targets, which also aligns with Trane Technologies goals to reduce emissions in our customers' use of our products. The district may wish to consider additional technology solutions that meet NO_x emissions reduction needs without compromising energy

efficiency or cost effectiveness consumers. Trane Technologies offers the following comments regarding the Proposed Amended Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired Furnaces:

We greatly appreciate the work that has been done by SCAQMD staff to assess and address hundreds of comments, which identified concerns about affordability, consumer choice, technology and grid readiness, and the impact on schools and businesses for small commercial units. We were generally supportive of the original structure, but we understand the SCAQMD's need to address the concerns of other stakeholders. We have heard similar concerns from some of our customers as noted below.

Trane Technologies manufactures Zero NOx equipment in all heating capacities, and we raise the following recommendations related to our customers' concerns rather than to comport with our business model. To that end, we do believe that the proposed structure might be simplified and separately, slightly modified to address concerns that we've been hearing from schools.

Customer feedback on split fee suggests simplification may be needed.

The current proposed fee structure and sales targets for manufacturers are overly complex and burdensome, particularly in the residential market. Tracking the units sold by the manufacturer to dealers and distributors and then to customers. The proposed split fee will likely be unwieldy for manufacturers and distributors and perhaps even consumers. We have heard less opposition to a fixed annual fee structure that changes over time than a split fee during the same year. We have been told that the fee structure could be differentiating. We support an increasing fee over time, but as a single fee.

Schools, and perhaps others, will delay equipment replacement without an affordable option for dual fuel as back-up heat.

There seems to be more willingness for consumers to transition to heat pumps if they are allowed to use dual fuel backup heating at low temperatures, even if there is a lockout for an internal temperature set point that the owner cannot modify. This is largely due to cost increases for using heat strips or loss in capacity at low temperatures and upfront investment¹.

In dual fuel systems where the heat pump is the primary heat source and the furnace serves as a backup, these systems should be categorized as heat pumps. This classification is crucial for schools with 3- to 5-ton capacity systems, which are unlikely to

¹ [Dichter, Abound Analysis of Greenhouse Gas Emissions from Residential Heating Technologies in the U.S.A.](#)

transition to heat pumps without backup gas heating during low temperatures. Dual fuel systems significantly reduce NOx emissions by using the furnace only when the heat pump cannot meet heating demands efficiently.

Dual fuel heating systems represent a highly cost-effective and environmentally friendly heating solution in many applications by leveraging the most efficient heating source for a given condition. In a dual fuel configuration, the heat pump will operate as the primary heating source at milder temperatures with heating demand. Due to Southern California's predominantly mild winter temperatures, the heat pump will operate the vast majority of the time in a dual fuel system. When the heat pump is operating, the furnace is shut off, resulting in zero NOx emissions. As temperatures get colder and the heat pump does not have the capacity to efficiently keep the home warm, the furnace takes over as the auxiliary heating source, reducing the need for strip heating during peak hours. When outdoor temperatures get warmer and the heat pump can again operate effectively, it resumes operation and the furnace is shut off.

Dual fuel systems that combine a 40 ng/J furnace with a heat pump will yield a 96% reduction in NOx emissions over a standalone 40 ng/J furnace, due to reduced furnace runtime.¹ The incremental cost of replacing a residential HVAC system with a dual fuel system will often be similar to the cost of replacing an existing furnace with a ULN furnace and yields additional benefits. It has also been demonstrated that installing heat pumps and retaining some fossil fuel equipment for use only in the coldest weather could reduce fossil fuels to 1%-3% of heating energy while reducing fossil fuel heating capacity and avoiding electricity capacity upgrades.² Because the highest heating needs are infrequent, the district can also avoid any increase in local peak electricity demands during the use of backup electric heat strips.

Shifting the market toward dual fuel systems, rather than ULN furnaces, will keep customers in the district at the forefront of the transition to reduce carbon emissions. Leveraging existing fossil fuel infrastructure during a transition to a low-carbon energy system can facilitate increased penetration of electric heating, while HP energy and thermal comfort performance improves.

As a first option, we recommend that SCAQMD align with the California Energy Commission (CEC) Title 24 allowance for ultra-low NOx, with dual fuel classified as an acceptable alternative provided there is a controlled lockout of back-up heating above a certain temperature. The dual fuel lockout would minimize overuse and set conditions to minimize emissions.

² Michael Waite, Vijay Modi, Electricity Load Implications of Space Heating Decarbonization Pathways, Joule, Volume 4, Issue 2, 2020, Pages 376-394, ISSN 2542-4351, <https://doi.org/10.1016/j.joule.2019.11.011>.

As an alternative, SCAQMD could provide an exception allowing dual fuel to provide backup heating in schools so long as the primary heating source is designed to be an electric heat pump.

We appreciate the opportunities we have had to comment on rule development and look forward to continued dialogue on current and future rulemaking to ensure the outcome works well for all stakeholders.

Sincerely,

Helen Walter-Terrinoni