June 26, 2024

California Air Resources Board
1001 I Street
Sacramento, California 95814

Re: Zero-Emission Space and Water Heater Proposed Standards

Rinnai America Corporation (Rinnai) is submitting this letter to provide input on California Air Resources Board's (CARB) Zero-Emission Space and Water Heater Proposed Standards. Rinnai appreciates the opportunity to provide these comments.

I. Introduction

Rinnai is the U.S. based subsidiary of Rinnai Corporation, Nagoya, Japan, and is part of the over 100-year-old Rinnai Group. Rinnai is the leading gas tankless ("instantaneous") water heater provider in North America.

Rinnai has its headquarters in Peachtree City, GA and in 2022, it opened the first gas tankless water heater manufacturing facility in the United States, a 360,000 square foot manufacturing facility in Griffin, Georgia. Rinnai's new facility employs advanced automation, precision assembly processes, and is ISO 9001 and/or ISO 14001 certified. The only product that Rinnai manufactures at this new plant is a gas product that will become obsolete under this proposed new rule. Rinnai's new facility alone currently employs 122 people, including 78 jobs held by female workers and 102 jobs held by minority workers. Further, Rinnai has 450 employees in sales, service, customer care, and supply chain, among other areas, many of which work to support the sales, installation, and servicing of non-condensing tankless water heaters. Rinnai is also a proud corporate sponsor of The Midwest Food Bank, Folds of Honor, and Bloom Closet, a local non-profit supporting the needs of foster children.

Rinnai supports efforts to decrease emissions, increase energy efficiency, and reduce energy use. Rinnai has a goal of becoming carbon neutral by the year 2050. The company's brand promise is to "Create a Healthier Way of Living." The Rinnai Innovation Manifesto (RIM 2050) is focused on ensuring we achieve our sustainability goals including 2030 "low-carbon targets" and decarbonization by 2050. Rinnai believes that all its current and future products will move the United States in that direction.

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Tankless gas water heaters have been expanding in the U.S. market, in large part by replacing storage water heaters, helping improve efficiency, and reduce greenhouse gas emissions. This includes both non-condensing and condensing models of gas tankless water heaters. Since their inception in 2004, gas tankless water heaters have grown to 10% of the water heater market in the U.S. and are projected to grow to 12% by 2027. For sales of non-condensing gas tankless water heaters alone, from 2005 to 2022, this has already saved 339 million MMBtus (0.34 quads) and 37.7 billion pounds (17 million metric tons) of carbon emissions.

II. Background

California Air Resources Board's (CARB) has originally introduced two proposed regulations aimed at lowering emissions from newly sold space and water heaters within the state to achieve its climate objectives. Furthermore, it revised Concept B to align dates and thresholds and recently proposed concept C.

Concept A: Statewide Rule as Described in 2022 SIP Strategy Measure
Regulatory concept A would target and include:

- All new sales of residential and commercial space and water heaters by 2030
- Would not limit the use or repair of existing space and water heaters

Concept B: Statewide Rule Based on Bay Area and South Coast Measures
Regulatory concept B would target and include:

- New sales requirement for space and water heaters
- This option is based on the adopted Bay Area and the proposed South Coast rules statewide using their staggered compliance dates by capacity and application as summarized in Table 1.

Table 1.

Effective Date	Equipment Type	Capacity/Size Limits
2027	Boilers and water heaters	< 75,000 Btu/h
2029	Central furnaces	< 175,000 Btu/h
2029	Boilers and water heaters	≤ 400,000 Btu/h
2029	Instantaneous water heaters	≤ 200,000 Btu/h
2031	Boilers and water heaters	≤ 2MM Btu/h
2031	Pool heaters	≤ 400,000 Btu/h
2031	Instantaneous water heaters	≤ 2MM Btu/h
2033	High temperature (>180°F) boilers and water heaters	≤ 2MM Btu/h
TBD	Central furnaces	≤ 2MM Btu/h

Concept C: Refined Concept B
Regulatory concept C would target and include:

- New sales requirement for space and water heaters

- Staggered compliance dates based on technological feasibility. Align with Bay Area (adopted) and South Coast (proposed) Air District zero - NOx rules for implementation consistency and as summarized in Table 2.

Table 2.

Effective Date	Equipment Type	Capacity/Size Limits
2027	Boilers and water heaters	< 75,000 Btu/h
2029	Furnaces	< 175,000 Btu/h
2029	Boilers and water heaters	≤ 400,000 Btu/h
2029	Instantaneous water heaters	≤ 200,000 Btu/h
2029	Furnaces	≤ 2MM Btu/h
2031	Boilers and water heaters	≤ 2MM Btu/h
2031	Pool heaters	≤ 400,000 Btu/h
2031	Instantaneous water heaters	≤ 2MM Btu/h
2031	Pool heaters	≤ 2MM Btu/h
2033	High temperature (>180°F) boilers and water heaters	≤ 2MM Btu/h

III. Discussion

Rinnai supports efforts to decrease emissions, increase energy efficiency, and reduce energy use. Rinnai manufactures highly efficient water and space heating products that have contributed to significant reductions in energy and emissions and is on the path of becoming carbon neutral by the year 2050.

Rinnai has concerns on regulatory concepts (A, B and C) proposed, specifically for the water heating and boiler categories. The proposed rule is intendent to reduce and eliminate the use of gas water heating and boiler appliances in homes and commercial applications. Both options directly target the phase-out of highly efficient gas water heaters and boilers that require new installations or replacement.

Rinnai would like to bring forward the concerns and challenges which CARB's "Zero-Emission Space and Water Heater Proposed Standard" imposes on customers, businesses, and manufacturers.

A. Federal Preemption Concerns and Dormant Commerce Clause

- **The Energy Policy and Conservation Act (EPCA)**

The Energy Policy and Conservation Act (EPCA) enables the U.S. Department of Energy (DOE) to establish energy conservation standards across the nation for various appliances and equipment. This act aims to prevent individual states from enacting their own regulations that could influence the energy standards for these products, except in rare cases.

According to the preemption clause of EPCA, states are barred from implementing regulations related to the energy efficiency or usage of specific products. This clause has been broadly interpreted by courts to indicate that Congress intended it to have a wide-ranging preemptive effect.

State-level energy usage regulations for DOE-regulated products are directly prohibited. In the case of California Restaurant Association v. City of Berkeley, the Ninth Circuit clarified that EPCA blocks regulations, including building codes, that dictate the amount of natural gas consumed by certain consumer appliances at the usage point.

Moreover, the Berkeley court noted that EPCA's preemption clause also covers regulations targeting the products directly and building codes related to their natural gas consumption. Through EPCA, Congress aimed to prevent states and localities from restricting the use of specific products in homes, kitchens, and businesses.

Congress enacted the preemption provision of EPCA to eliminate the systems of separate state appliance standards that created a “growing patchwork of differing state regulations” and to maintain a national approach to appliance regulation.

The enactment of EPCA's preemption clause was intended to prevent the formation of disparate state appliance standards, which were leading to a confusing mix of state regulations, and to promote a unified national strategy for appliance regulation.

- **Federal Preemption under the Clean Air Act (CAA)**

The Clean Air Act (CAA) provides a framework for regulating air pollutants at the national level, primarily through the Environmental Protection Agency (EPA).

CARB’s zero-emission appliance standard conflicts upon the regulatory domain of the EPA. Any state-level regulation that conflicts with or undermines federal environmental regulations is subject to preemption. Given that the CAA does not explicitly grant California the authority to regulate emissions from space and water heaters to this extent, CARB’s proposed standards could face challenges under the preemption doctrine.

Even if the EPA through the CAA granted the state authority to regulate the emissions of products out of existence, under the U.S. Supreme Court ruling in West Virginia v. EPA, we believe that such regulation would be a “major question” and require U.S. legislative action, and with that, the EPA cannot delegate to the states what it cannot do itself.

- **Implications of the Dormant Commerce Clause**

The Dormant Commerce Clause doctrine prohibits states from enacting regulations that unduly burden interstate commerce. CARB’s zero-emission appliance standards could create barriers to trade by imposing unique requirements that manufacturers must meet to sell their products in California. This could lead to a fragmented market where products designed to meet California’s

stringent standards are not viable for sale in other states, thereby disrupting the national market and placing undue burdens on interstate commerce.

Such state-specific regulations could force manufacturers to produce separate models for California and the rest of the country, leading to increased production costs and inefficiencies. This not only burdens manufacturers but also restricts consumer choice and raises prices, creating a significant impact on interstate commerce.

As a result, CARB's zero-emission space and water heater proposed standards raise serious concerns related to federal preemption and the Dormant Commerce Clause. The proposed standard contradicts EPCA's and CAA's federal preemption and the Dormant Commerce Clause by proposing a total ban on the sale of space and water heaters based on their energy source, regardless of their adherence to federal standards. These proposals would complicate the regulatory landscape by adding another layer to the already complex "patchwork." Consequently, to stay true to the clear language and intent of EPCA's and CAA's preemption clause and its broad implications on the Dormant Commerce Clause, Rinnai suggests that the proposals for space and water heaters be withdrawn.

B. Product Availability and Consumer Adoption Cost

The proposed concepts will require retrofitting of many existing homes and buildings to adopt zero-emission counterparts. There is a wide range of products installed and available in the market. These products often have different features, installation capabilities and suitability, space requirements and pricing, and serve different needs of consumers, businesses, building and construction markets. For many consumers who urgently need to replace their water or space heater, a like-for-like replacement provides best compatibility with the existing infrastructure, lowest complexity, relative ease of installation, and best associated cost-savings.

The proposal will result in significantly higher upfront costs, complexity and burden to the consumer because the initial cost of purchasing and installing zero-emission appliances, like an electric heat pump water heater (EHPWH) or an electric boiler is generally higher than their gas counterparts. The cost difference would limit or exclude water heating accessibility to low and in some cases middle income families. Based on DOE's own estimates, the EHPWH solution, even at a Tier 4 rating, is estimated to have a 10-year life - at least 5 years less than an instantaneous solution. This rule, therefore, has the potential to strand families who had a cost effective, highly efficient, and reliable solution with limited options for hot water once their instantaneous gas water heater can no longer be repaired.

Furthermore, CARB's own assessment on available technologies shows that current adoption of zero-emission technologies is low due to several factors. While these technologies may be suitable for limited use and specific applications, they may not yet offer a fully viable or

desirable alternative to gas counterparts for high-heat or high-temperature applications or other specific uses. Moreover, pushing for a one-size-fits-all approach may overlook the potential of emerging technologies, such as hydrogen-enriched natural gas, hydrogen, or biofuels, and dual-fuel systems which could provide alternatives to complement natural gas and support emission reductions without necessitating a complete overhaul of gas water and space heaters, and the infrastructure.

Furthermore, mandating the installation of zero-emission water heaters and boilers often requires substantial upgrades to the electrical infrastructure, both at the grid level and within homes and buildings (ie upgrading electrical panels and wiring). These upgrades necessitate significant investment and can disrupt households and businesses during the transition. This will also significantly increase the demand for electricity due to the mandated adoption of zero-emission appliances, which can be of great concerns about the grid's capacity to handle peak loads, especially in locations already experiencing strain on their electrical systems. This requires careful planning to ensure the reliability of the power grid, particularly during peak usage times. This proposal does not adequately address the challenges or proposes a path to mitigate them.

Rinnai is also concerned that such stringent regulations might not adequately account for regional variations, technological advancements, consumer choice or individual circumstances and needs. A more flexible approach that allows for a mix of technologies and products and recognizes the diverse needs of different consumer needs would be more effective. Encouraging innovation and providing incentives for voluntary transitions could achieve environmental goals without imposing undue burdens.

C. Rural and/or Under-Resourced Areas

Rural and under-resourced areas typically have lower median incomes and higher rates of poverty. The high initial costs of zero-emission water and space heating appliances will be prohibitive for many residents in these regions.

Additionally, rural areas often face challenges related to infrastructure, including limited access to reliable electricity. The existing electric grid in these regions may not be capable of supporting the increased demand from electric space and water heating systems without significant upgrades. Also, rural areas may lack access to technicians and service providers trained in installing and maintaining zero-emission systems. Investments in grid infrastructure and workforce training are essential before implementing energy and fuel type use regulations prematurely. Residential consumers and local businesses in rural and under-resourced areas will struggle to absorb the costs associated with transitioning to zero-emission systems and such rulemaking will compromise their financial viability.

Regulating space and water heaters in rural and under-resourced areas requires careful and detailed analysis and consideration of economic, infrastructural, and technological factors. To

achieve equitable and effective implementation, CARB must analyze in detail any infrastructure improvements, ensure technology adaptability, and evaluate the impact on local consumers and businesses.

With its own analysis, CARB estimates a significant cost impact for zero-emission replacement costs compared to currently available baseline equipment. As illustrated in Figure 2, on a distributed and averaged analysis, the cost impact is more pronounced for space heating, particularly for larger units, and can result in an incremental cost impact ranging from about 10% to over 1400%. Similarly, for water heating equipment, the incremental cost impact ranges from 56% to 68%. In terms of absolute cost impact, the burden to the consumer can range from about $5,000 to over $50,000 for space heating equipment. For water heating, the burden on the consumer can range from about $1,000 to $15,000. This financial burden is especially significant for consumers in rural and under-resourced areas who may not have the financial flexibility to absorb such high costs.

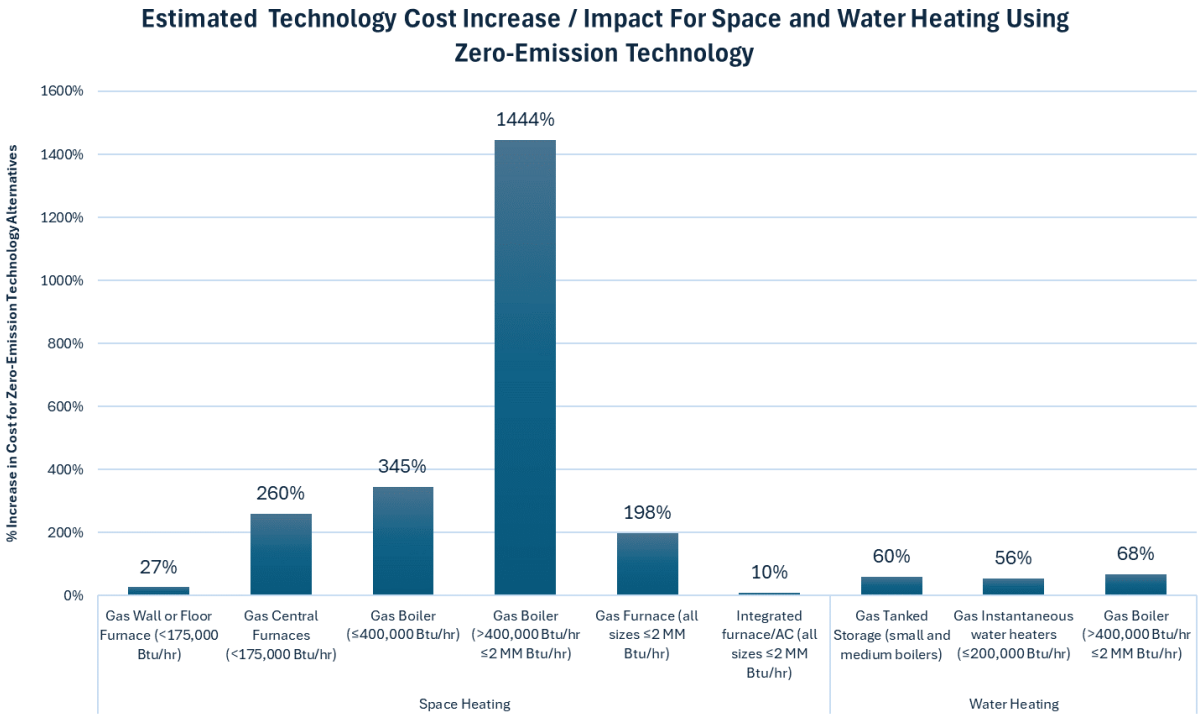

Figure 1. Estimated technology cost increase and impact on space and water heating appliance

The overall impact could lead to significant disparities in energy access and affordability, creating a divide between those who can afford the new systems and those who cannot. This could result in long-term socio-economic consequences, including energy poverty and reduced quality of life for many consumers in these communities.

Therefore, it is crucial to consider more gradual and financially supported approaches to transitioning to more energy efficient appliances instead of zero-emission systems, ensuring

that all consumers, especially those in rural and under-resourced areas, can afford and benefit from these environmentally friendly technologies.

D. Standards and Harmonization

The proposal presents potential conflicts and inconsistency with existing policies at state levels, inter-state levels, federal, and other agency levels, which may not only hinder the effectiveness of environmental actions but also create regulatory, economic, and practical challenges for consumers, businesses, and manufacturers. The federal government, through agencies like the DOE and the Environmental Protection Agency (EPA), has its own federally recognized set of standards and regulations for appliances, focusing on energy efficiency and emissions. CARB's zero-emission mandate on water heaters and boilers creates a regulatory mismatch, complicating compliance for manufacturers and potentially leading to a confusing market landscape where different standards apply in different jurisdictions. This inconsistency can stifle innovation and slow down the national progress towards cleaner energy goals. Furthermore, many state and federal policies aim to enhance energy independence and security by diversifying energy sources, including gas. The CARB standard, by pushing for electrification, might inadvertently undermine these broader energy policies by sidelining investments in cleaner natural gas technologies and infrastructure improvements that can also contribute to reducing emissions and enhancing energy resilience.

Manufacturers will be required to comply with already existing laws and regulations and new updated requirements. CARB should take these other mandates into account and allow additional time for any proposed deadlines and harmonize its proposal with the recently published DOE rule "Energy Conservation Program: Energy Conservation Standards for Consumer Water Heaters" (Federal Register, May 6, 2024, EERE 2017–BT–STD–0019). Aligning with federal standards will ensure consistency across regulations, reduce compliance costs for consumers and manufacturers, and simplify the market for consumers. Additionally, harmonization would leverage DOE's extensive research and stakeholder engagement, providing a robust foundation for CARB's regulations. This approach will balance environmental goals with economic and practical considerations and help ease the burden placed on consumers and manufacturers already working towards complying at the national level which will meet CARB’s requirements at the same time.

E. Alternative Paths

As discussed so far, there are significant concerns, particularly conflicting with federal preemption concerns and Dormant Commerce Clause, substantial cost impacts, cost burden and infrastructure impact specifically for rural and under-resourced areas.

Rinnai suggests that the proposals for zero-emission space and water heaters be withdrawn and instead evaluate alternative paths that balance environmental objectives with economic realities, aiming for a more inclusive and practical approach to reducing emissions.

Potential paths may include high-efficiency gas appliances, hydrogen-blended fuels, renewable fuels and dual fuel systems.

- **High-Efficiency Gas Appliances**

High-efficiency gas appliances can significantly reduce emissions without the substantial upfront costs associated with zero-emission systems. These appliances are more affordable and can be more easily integrated into existing infrastructure and in most cases provide a like-for-like replacement option. CARB can further incentivize the adoption of high-efficiency gas appliances.

California, which accounts for approximately 15% of annual sales of low-efficiency gas-fired water heaters in the US, leads the nation in this category. Marginally increasing the efficiency of these water heaters to a Uniform Energy Factor (UEF) level of 0.8, over an estimated lifespan of 14.5 years starting from 2029 through 2042, could potentially save over 100 million MMBtus (0.1 quad) of fuel and reduce CO2 emissions by more than 12 billion pounds (5 million metric tons).

- **Hydrogen-Blended Fuels**

Blending hydrogen with natural gas can reduce carbon emissions while utilizing existing gas infrastructure. This approach provides a transitional pathway to decarbonization without the immediate need for complete system overhauls. Rinnai encourages CARB to promote research and development in hydrogen technologies and set targets for hydrogen blending ratios over time.

Rinnai tankless water heating systems are verified to be able to use up to 25% hydrogen-natural gas blends and further developing and launching products that can use 100% hydrogen as fuel.

- **Dual-Fuel Systems**

Dual-fuel systems that combine gas and electric heating can provide flexibility, reliability, and cost savings. These systems can operate primarily on electricity but switch to gas during peak demand or in cold climates where electric systems may be less effective. Rinnai recommends adopting and including standards for dual-fuel systems.

- **Extended Compliance Timelines**

Extending compliance deadlines provides more time for consumers and manufacturers to adapt to new technologies and spread out the financial burden. Currently proposed compliance timelines are aggressive, and we recommend allowing for a more gradual transition to alternative paths.

Rinnai believes that it is crucial to consider the economic and practical implications for all communities, particularly rural and under-resourced areas. By incorporating high-efficiency gas appliances, hydrogen-blended fuels, dual-fuel systems, and extending compliance timelines, CARB can achieve its environmental goals without imposing undue financial burdens on consumers and manufacturers.

IV. Conclusion

The proposed rule to control the space and water heating manufacturing market, promoting some appliances and fuel type, and eliminating others is a significant and drastic impact to customers, businesses and manufacturers. Unavailability provisions and legislative discussions aim to gradually and incrementally increase efficiency standards to promote energy conservation on a federal level – but not to change the selection of appliances generally available to builders and consumers in the market. Through this proposed rule on various appliances for space and water heaters, CARB is independently re-making the appliance industry and the energy industry in California. This is a major change that will have significant impacts to customers, businesses and manufacturers and the rule should not affect the types of appliances generally available to the user and selective to specific fuel types.

For these reasons, Rinnai does not support this ruling as it is proposed. We encourage CARB to implement a harmonized approach to its policy-making, involving coordination with other state and federal agencies, and local governments to ensure that policies are aligned, complementary, and collectively effective in advancing the goal of a sustainable and resilient energy future.

Rinnai looks forward to continuing to work together to address the challenges thoughtfully and reasonably. Please do not hesitate to contact us with questions or if we may provide additional information. We look forward to a continued robust partnership now and in the years to come.

Sincerely,

Eddie Ergican