



March 27, 2024

California Air Resources Board
1001 I Street
Sacramento, California 95814

Re: Zero-Emission Space and Water Heater Proposed Standards

To Whom It May Concern:

A. O. Smith Corporation (“A. O. Smith” or “Company”) appreciates the opportunity to provide comments on the California Air Resources Board’s (“CARB”) February 28’s Public Workshop (“Workshop”) pertaining to Zero-Emission Space and Water Heating Standards. The outcome of this rulemaking will have a significant impact on the design and manufacturing of the Company’s product offerings. The Company appreciates that CARB is early in the process and is requesting feedback early and often on their standards development concepts. While the Company is supportive of CARB’s goals to reduce GHG emissions in the state, it does have some concerns with the pathways and timing to achieve those goals and provides the following feedback on the concepts proposed during the workshop.

I. About A. O. Smith

A. O. Smith Corporation, with global headquarters in Milwaukee, Wisconsin since 1874, applies technology and energy-efficient solutions to products manufactured and marketed worldwide with operations in the U.S., Canada, China, India, Mexico, the Netherlands, and the UK. Listed on the New York Stock Exchange (NYSE: AOS), the Company is one of the world’s largest manufacturers of residential and commercial water heating equipment and boilers, as well as a leading manufacturer of water treatment and air purification products. Along with its wholly owned subsidiaries, A. O. Smith is the largest manufacturer and seller of residential and commercial water heating equipment, high efficiency residential and commercial boilers, and pool heaters in North America.

II. Overview

In the Workshop CARB presented two regulatory concepts to meet the State Implementation Plan (“SIP”) strategy of meeting that state’s emissions reductions levels. The first regulatory concept (“a”) would be a full transition to zero-emissions technology effective on January 1, 2030, as summarized in Table 1, and the second regulatory concept (“b”) would be a staggered transition based off of measures adopted by South Coast Air Quality Management District (“SCAQMD”) and Bay Area Air Quality

Management District (“BAAQMD”), as summarized in Table 2. The two regulatory concepts suggested by CARB provide some level of flexibility which will aid in the implementation of CARB’s emission standard. However, the scale of this transition warrants careful consideration as this rule development process unfolds. California is the single biggest market in the United States. As such, when evaluating the feasibility of this rule CARB should investigate not only current commercial availability of zero-emissions products, but also the manufacturing industry’s ability to meet the exponential rise in anticipated demand that would follow based on how the final rule is constructed. While having demand certainty is, without question, a positive from a manufacturers point of view, there are certain considerations and recommendations that the Company outlines below that would aide in providing the business certainty that manufacturers seek.

III. CARB Regulatory Concept “a”

Regulatory Concept “a”, while the simplest to apply, will have the largest single impact to the California supply chain. Having a single transition date for all products in the HVAC and Water Heating sector will place a heavy burden on manufacturers to ensure that there are not only products that can meet the current market needs of customers but also that production, distribution and supply chains are developing at the same pace to fulfill zero-emissions product lines and capacity at the same time.

Table 1: CARB’s Regulatory Concept “a”

Effective Date	Equipment Type	Capacity/Size Limits
2030	Boilers and water heaters	No limit
2030	Space Heaters	No limits

While this proposal would align with the States SIP’s proposed measure on residential and commercial buildings to require that *“Beginning in 2030, 100 percent of sales of new space heaters and water heaters would need to comply with the [zero] emission standard ...”* the Company observes that there is more nuance when balancing the regulatory goal with actual market conditions necessary for the level of market transformation that will be required.¹ As will be highlighted further in review of CARB’s Regulatory Concept “b” and additional A. O. Smith recommendations, the market readiness of zero-emissions technology ranges dramatically across product types (i.e., residential vs. commercial water heaters and boilers). A single date will make it difficult to align product development across all product types, let alone prepare all distribution channels. Currently, the residential market has a wide range of zero-emission product offerings available to meet the needs of the consumer. However, while the current market demand for residential products can be met by industry today, the volume that Concept “a” would create cannot be met across these nascent product classes in the water heating market². Conversely, commercial products have a much lower adoption rate in the U.S. market. Many gas-fired replacement zero-emissions products will need to be further developed, along with many safety standards and building

¹ CARB 2022 State Implementation Plan, at page 101

² Energy Star 2022 Shipment data shows only a 3% market penetration of HPWHs at only 141,000 units sold in 2022.

code changes, to meet the needs of consumers. A transition date of 2030 for commercial products without evaluating technological readiness, product availability and first costs is very likely to lead to a market failure that risks undermining market confidence in heat pump products and would ultimately impede their adoption. Consistent with these market differences, the Company recommends that CARB consider a more flexible approach which would include mechanisms to extend the effective date if necessary. Such an approach would allow adjustments within a reasonable timeframe from the rule going into effect, to a date further in the future that can allow for the successful implementation of both residential and commercial zero-emissions products into the marketplace.

IV. CARB Regulatory Concept “b”

Regulatory Concept “b”, detailed in Table 2 below, provides a staggered transition that will allow for companies to develop and ramp up production to meet the incremental steps in demand across product types. The Company is generally supportive of this proposed regulatory concept as it provides additional time for larger systems to come to market and aligns with current efforts already in progress in the state to reduce emissions from the building sector. Notwithstanding its general support of regulatory concept “b”, the Company does have some concerns and suggestions for improvements which are detailed in the follow sections.

Table 2: CARB's Regulatory Concept "b"

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

A. Alignment of dates with existing regulations

The Company appreciates that CARB is looking to align with ongoing state activity. Consistent with this activity, further consideration needs to be given to the cumulative impact of not only zero-emissions standards but also of federal energy efficiency standards and the expected impact these regulations will have on the available stock of zero-emissions products over the next decade. Manufacturers are working feverishly to build out manufacturing capacity to not only meet the 2027

requirements of BAAQMD Rule 9-6, which sets a zero-NOx requirement for residential water heaters, and a similar proposal from SCAQMD but also the ensuing change to the minimum energy conservation standards for residential water heaters (“NAECA 4”) as promulgated by the U.S. Department of Energy (“DOE”) which proposes to transition the electric water heater market to a heat pump baseline.³ DOE expects this change in efficiency standard to raise expected shipments of HPWH’s from 141,000 to approximately 4,000,000 units within the next six years.⁴ While these pending and ensuing regulatory drivers are going to be challenging in and of themselves, expanding the 2027 transition to HPWH’s from BAAQMD to the whole state will pose a significant, if not infeasible, challenge to manufacturing capacity to meet the increased product demand in such a short time. Due to this limitation the Company would request the CARB consider a transition date for residential water heaters and boilers of 2028. The additional year will allow for time to build out manufacturing lines, supply chain, and human capital resource plans to ensure manufacturers can accommodate the expected demand surge expected to follow the implementation of the point of sale zero-emissions product regulation.

B. Alignment of residential product

The Company understands that CARB is proposing to adopt dates promulgated under BAAQMD’s Rule 9-6. However, the misalignment between product classes serving the same market only serves to undermine CARB’s overarching goal to reduce GHG in the state. Storage type and instantaneous water heaters both serve the same market – residential dwellings that have access to natural gas. By staggering the compliance dates of these two product classes CARB will be incentivizing homeowners that already have a gas storage water heater to install a gas instantaneous water heater over fuel switching, at considerably higher costs, to a more expensive high efficiency heat pump. This not only undermines the goal of reducing GHG emissions but also creates an added barrier in the HPWH market transformation in the state. Once homeowners switch from storage to an instantaneous water heater, switching to an electric storage HPWH becomes more challenging and costly than transitioning directly from a gas storage water heater to a HPWH. Given these concerns, the Company requests the CARB place product classes on a level playing field (i.e., technology agnostic) in the market and align the transition to zero-emissions residential water heaters in 2028.

C. Boiler Classification

While CARB’s proposal attempts to set a clear dividing line between residential and commercial products, it does not align with the DOE regulatory definitions for the boiler product class. DOE regulation defines a boiler as a subset of furnaces and specifies that a residential boiler *“Has a heat input rate of less than 300,000 Btu per hour for electric boilers and low-pressure steam or hot water boilers.”*⁵ To that end, the Company requests the CARB modify the cutoff capacity for boilers to occur at 300,000 Btu/hr.

³ <https://www.regulations.gov/docket/EERE-2017-BT-STD-0019>

⁴ EERE-2027-BT-STD-0019 at chapter 9

⁵ 10 CFR 430.2 “Furnace”

Taking into consideration the prior comments the Company would recommend using the below table which updates CARB’s proposed regulatory concept “b” in a way which would reduce manufacturer burden while still maintaining the emission reduction goals of the state.

Effective Date	Equipment Type	Capacity/Size Limits
2028	Water heaters	< 75,000 Btu/hr
2028	Boilers	≤ 300,000 Btu/hr
2028	Instantaneous water heaters	≤ 200,000 Btu/hr
2029	Central furnaces	< 175,000 Btu/hr
2029	Water heaters	≤ 400,000 Btu/hr
2031	Boilers and water heaters	≤ 2,000,000 Btu/hr
2031	Pool heaters	≤ 400,000 Btu/hr
2031	Instantaneous water heaters	≤ 2,000,000 Btu/hr
2033	High temperature (>180F) boilers and water heaters	≤ 2,000,000 Btu/hr
TBD	Central furnaces	≤ 2,000,000 Btu/hr

Additional recommendations

In addition to the modifications recommended prior the Company would recommend further adoption of key provisions found in BAAQMD’s and SCAQMD Implemented/proposed rules.

D. Implementation Working Group

A key to ensuring the successful implementation of the proposed regulation is to allow for continuous monitoring of the market and allow for adjustments to be made to compliance deadlines based on a variety of factors, including, but not limited to permitting times, local grid distribution infrastructure improvements, workforce limitations and lead-times, and of course product availability. Consistent with these factors, the Company requests that CARB adopt the BAAQMD requirement for an implementation working group (“IWG”), that monitors the *“...technology options currently (and projected to be) available to be sold, installed or offered for sale that do not conflict with the standard in Section 301.3; the projected costs of purchase and installation of such technology, including any ancillary costs, as applicable; any incentive programs available to reduce these costs; and infrastructure readiness associated with rule compliance.”*⁶ Additionally, BAAQMD’s approach requires that the IWG submit a report to the Board not less than two years before the implementation of a zero-NOx standard to allow for the Board to choose to delay the requirements until such time that market imbalances are mitigated. This pathway is paramount to ensuring the success of this zero-emissions standard and will allow for the state to course correct if any anticipated technologies fail to commercialize in the projected compliance timeline.

⁶ Bay Area Air Quality Management District Rule: 9-6-404

E. Emergency Replacement Exceptions

In line with the need for guardrails, CARB should also adopt the exceptions put forth in SCAQMD's proposed "Alternate Compliance Options" for proposed amendments to rule 1164.2.⁷ These exceptions allow for a reasonable pathway to address key concerns of electrification – emergency replacement, panel upgrades, utility service upgrade delays and large-scale commercial retrofits. These exceptions will have minimal impact on the effectiveness of the rule and its total GHG reduction but will drastically reduce first costs and consumer discomfort while increasing business certainty for large commercial operators.

V. Conclusion

The Company is supportive of CARB's goal to reduce GHG emissions in the state and is appreciative of CARB's attempt to harmonize with existing state requirements. The regulatory concepts presented at the workshop mark a good first step at a state emissions standard and the company believes that with the recommendations made throughout this comment that CARB is on the right track for creating a standard that will both meet the states emissions goals while limited burden on manufacturers and residents.

The Company appreciates the opportunity to comment on the CARB's proposed regulatory concepts pertaining to zero-emission standards for space and water heating and looks forward to continuing the dialogue and working with the CARB throughout the rulemaking process.

Please do not hesitate to contact me if you have questions.

Respectfully submitted,



Joshua C. Greene, Esq.
Corporate Vice President – Government, Regulatory, and Industry Affairs
A. O. Smith Corporation
jcgreene@aosmith.com

⁷ SCAQMD PAR 1164.2, at page 15