



June 26, 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”) May 29th Public Workshop (“Workshop”) pertaining to Zero-Emission Space and Water Heating Standards. The Company appreciates that CARB is early in the process and is requesting feedback on its standards development concepts. While the Company is supportive of CARB’s overarching goals to reduce greenhouse gas (“GHG”) emissions in the state, it does have some concerns with the proposed 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 this Workshop CARB presented a new regulatory concept “c” which updates the requirements for furnaces and expands the scope of pool heaters from a 400,000 Btu/hr capacity limit to a 2 MM Btu/hr capacity limit. However, it does not change any requirements for water heaters from regulatory concept “b”.¹ In the workshop CARB also responded to comments received from their February 28 public workshop. While the Company appreciates the responses provided by CARB during the workshop, what

¹ CARB May 29, 2024, Workshop Slides

follows are comments to the proposed compliance dates and justifications provided by CARB for residential tank type and tankless water heaters.

III. CARB Regulatory Concept “c”

Regulatory Concept “c”, detailed in Table 1 below, remains mostly aligned with the proposed Regulatory Concept “b” compliance schedule proposed at the February 28 Workshop. Given the alignment between the two concepts pertaining to water heaters, the Company remains supportive. However, A. O. Smith continues to have concerns surrounding the misalignment of compliance dates between residential products serving the same market sectors, as well as the short window of compliance for residential water heaters and boilers of 2027.

Table 1: CARB's Regulatory Concept "c"

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

A. Transition date for Residential Water Heaters

As stated in previously submitted comments, A. O. Smith appreciates the efforts to align zero-emissions compliance dates across the state.² However, with a market transition standard as impactful as this rule will be, alignment with other jurisdictions is not necessarily the best approach. There is a strong case to be made for staggering this rule with existing rules as opposed to aligning exactly on transition dates for this equipment type.

Current market data, analyzed in Appendix A, shows that there are approximately 730,000 gas water heaters sold into the state annually. Nationally, Heat Pump Water Heaters (“HPWHs”) make up only 3% of the 4.9 million residential electric water heaters sold each year, which amounts to roughly 150,000 units.^{3,4} This means that industry-wide the national annual supply of approximately 150,000

² Comments submitted on March 27, titled “AO Smith Comments on CARB Zero Emissions”

³ [https://www.energystar.gov/sites/default/files/asset/document/2022 Unit Shipment Data Summary Report.pdf](https://www.energystar.gov/sites/default/files/asset/document/2022%20Unit%20Shipment%20Data%20Summary%20Report.pdf)

⁴ [https://www.ahrinet.org/system/files/2024-02/December 2023 Statistical Release.pdf](https://www.ahrinet.org/system/files/2024-02/December%202023%20Statistical%20Release.pdf)

HPWHs will need to increase by approximately 5x to meet the additional demand in California. Given the differences in manufacturing requirements for these products compared to a standard electric or a gas unit, significant capital investments - across the entire HPWH industry - will need to be made to meet this demand, the timing of which should be taken into consideration by CARB to enable a more seamless HPWH market transformation within the state.

Figure 1 below illustrates the projected total market sales of residential electric storage water heaters under each of the proposed regulatory concepts and the A.O. Smith Recommended transition. Figure 1 also accounts for the market change due to the implementation of Bay Area Air Quality Management District’s Rule 9-6 and proposed South Coast Air Quality Management District’s Rule 1121.

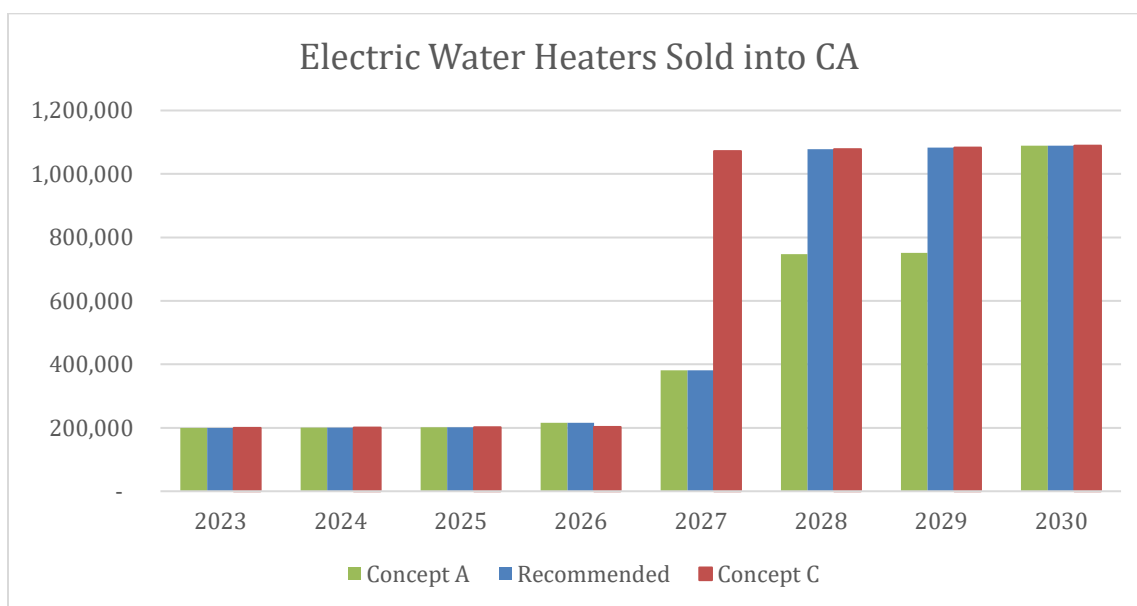


Figure 1: Change in Demand of Electric WH

Additionally, while this proposed regulation, and specifically regulatory concept C, sends regulatory signals to the market on the direction of the state, CARB states in their presentation that this rule is not expected to be finalized until 2026, which would put a zero-emission effective date for water heaters <75,000 Btu/hr at less than one year from publication of the final rule.⁵ This compliance window is not reasonable and creates unnecessary investment risk should the final rule be delayed or challenged in court. In response to stakeholder comments regarding the implementation date, CARB states that “2027 compliance date is technologically feasible. Delaying implementation to 2029 would delay realization of approximately 2MMT CO₂e annually.”⁶ While the transition may be technologically feasible from a product standpoint, CARB needs to consider practicality of market and consumer

⁵ CARB May 29, 2024, Workshop Slides

⁶ Id.

adoption of HPWHs within its proposed time period. For this reason, the Company requests CARB reconsider their position on this and adopt a 2028 Effective Date for products < 75,000 Btu/hr.

B. Alignment of residential product

In response to comments regarding aligning the compliance date for products serving the same market sector, specifically gas-fired storage water heaters and gas-fired instantaneous water heaters, CARB stated “CARB would like to provide more time for instantaneous waters because some currently installed units may be in small spaces, which may complicate replacement with zero-emission units. Proposal is aligned with air districts to move toward statewide consistency.”⁷ The Company understands the concerns with replacement applications having complicated and otherwise expensive replacement situations. However, this issue will not solely be isolated to just instantaneous water heaters. Delaying the transition date for gas-fired instantaneous water heaters may inadvertently exacerbate this issue in the future.

Moving from a gas-fired product to a zero emissions product will have many challenges for homeowners including, but not limited to: electrical upgrade work required by code (including to an existing electrical panel), proper re-location of the water heater, exhaust/venting and space requirements. By allowing for instantaneous products to be sold for two years after tank type products are required to transition, homeowners, in most cases, may make the least costly decision to simply replace their existing gas-fired instantaneous water heater instead of going through the hurdles and added costs that will come with converting to a zero-emissions technology. This scenario runs counter to the prior assertion made by CARB that a 2027 effective date for residential storage products will provide 2MMT CO₂e of emissions saving annually. If CARB believes that the transition from an instantaneous gas-fired water heater to a zero-emissions alternative is infeasible prior to 2029, then the Company would request that CARB maintain the same effective date for instantaneous water heaters as storage type water heaters but allow for ***gas-fired instantaneous water heaters to be installed as a replacement for existing gas-fired instantaneous water heaters until 2029***. This exception to the zero-emissions mandate would allow time for these difficult situations to be better understood and replacement strategies to be developed. This would also prevent the zero-emissions standard for tank type water heaters from being undermined by installing a gas-fired instantaneous water heater.

IV. 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 Company does however remain concerned with the proposed compliance periods and potential loopholes in the proposed concept. The Company believes that with the recommendations made throughout this

⁷ Id.

comment that CARB is on the right track for creating a standard that will facilitate a successful transition to low NOx products, ensuring an adequate supply of compliant products, and meet the states emissions goals while limiting burden on manufacturers and its 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,

A handwritten signature in black ink, appearing to read "Joshua C. Greene". The signature is fluid and cursive, with a long horizontal stroke at the end.

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Appendix

A. California Water Heater Market Analysis

Publicly available data from the U.S. Energy Information Administration’s (“EIA”) Residential Energy Consumption Survey (“RECS”) allows for the overall universe of gas and electric water heaters in the state to be estimated.⁸ Table 1 shows the California specific water heater characteristics.

Table 1: Highlights for water heating in U.S. homes by state, 2020

	Number (million) and percentage of housing units								
	Main water heating fuel								
	Total ^a	Electricity		Natural gas		Propane		Fuel oil or kerosene	
All homes	123.53	57.04	46%	59.33	48%	4.12	3%	2.62	2%
California	13.18	2.48	19%	10.27	78%	0.40	3%	Q	Q

The U.S. Department of Energy (“DOE”) estimates a unit lifetime for electric storage water heaters to be approximate 14 years.⁹ Using this information it can be assumed that 1/14 of the installed base of residential water heaters will be replaced every year. Dividing the number of households in each jurisdiction by 14 yields Table 2 below, which provides an estimate of annual shipments into California which can be used to estimate the shift in natural gas to HPWH demand caused by the regulation.

Table 2: Estimated Annual Shipments of Water Heaters into CA, 2020

Lifetime: 14

	Estimated yearly shipments			
	Total	Electric	Natural Gas	Propane
All homes	8,823,571	4,074,286	4,237,857	294,286
California	941,429	177,143	733,571	28,571

⁸ <https://www.eia.gov/consumption/residential/data/2020/index.php?view=state>

⁹ EERE-2017-BT-STD-0019-0018