

Comment Letter #66



July 5, 2022

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: A.O. SMITH COMMENTS TO SOUTH COAST DRAFT 2022 AQMP

A. O. Smith appreciates the opportunity to submit comments to the South Coast Air Quality Management District (SCAQMD) regarding the Draft 2022 AQMP. The Draft 2022 AQMP serves as the blueprint for how the region will meet the 8-hour ozone National Ambient Air Quality Standard (NAAQS) and fulfills U.S. EPA's nonattainment area requirements and includes a variety of strategies relying on NOx emissions reductions through economy-wide transition to zero emission technologies. A. O. Smith's comments focus on the proposed measures for residential and commercial buildings.

The Draft 2022 AQMP proposes zero NOx emission standards for space heating, water heating, and cooking appliances for installation in new buildings and replacement at the end of useful life for units in existing buildings. Implementation is projected to begin in 2029 for residential buildings and in 2031 for commercial buildings.

As the state and local government agencies develop policies to reduce greenhouse gas (GHG) emissions and move toward building electrification, it is imperative that these policies that will be put into place are in alignment. A. O. Smith recommends a stepwise and pragmatic approach to reach electrification goals, and we look forward to working with the SCAQMD, other local agencies as well as the state in this regard. Recognizing the various challenges to building electrification, A. O. Smith respectfully requests that SCAQMD consider the following:

- **Align Implementation Dates:** Align the effective date for new construction as well as retrofitting existing buildings to 2031.
- **Develop a System of Prioritization for Retrofits:** Create a process by which homes that do not require main panel upgrades can be retrofitted first.
- **Include Electric Storage Resistance Water Heaters as an Eligible Upgrade for Incentive Program:** The Draft 2022 proposes to provide incentives to promote replacement of zero emission appliances. The states of Oregon and Washington include electric storage resistance water

heaters as well as HPWHs as eligible for electrification programs. California and SCAQMD can follow suit.

ABOUT A. O. SMITH

A. O. Smith is a global leader applying innovative technology and energy-efficient solutions to products manufactured and marketed worldwide. Our company is one of the world's leading manufacturers of residential and commercial water heating equipment and boilers, as well as a 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.

As a leading manufacturer of both residential and commercial heat pump water heaters (HPWHs), A. O. Smith has a keen interest in this Draft 2022 AQMP. The path to achieving carbon neutrality will require several changes in California. HPWHs will play a vital role in two key California policy priorities – reducing the carbon footprint of our buildings as the state transitions water heaters from primarily gas-fired to electricity and helping to manage the integration of increasing amounts of renewable energy as HPWHs may shift load and serve as thermal energy storage devices.

HPWHs and grid-interactive electric storage water heaters offer the ability to provide thermal storage serving as a battery for assisting the integration of renewable energy into local distribution grids in both residential and commercial applications. Flexible demand [or smart] water heaters, which include grid-enabled electric resistance storage water heaters and HPWHs, have additional controls that allow the utility or third-party aggregator to control their energy use (e.g., load shifting) during the course of the day. Within a given local territory, a fleet of water heaters can be controlled to be a flexible energy storage system that can adjust the load on the grid. Given that every home in the state has a water heater, smart water heaters can play a key role in load management and carbon reduction within the built environment.

BUILDING ELECTRIFICATION REQUIRES SIGNIFICANT INVESTMENTS

In California, about 75 percent of homes (or 9.75 million) were built before 1990. Older homes are less likely to have adequately sized electric panels to accommodate all electric appliances.¹ In addition to the cost of the electric appliance, an older home may also require an electric panel upgrade. The California Energy Commission (CEC) estimates that a panel upgrade can cost between \$2,500 - \$4,000² and would likely be borne by the home or property owner. In a scenario where every house built before 1990 requires an electric panel upgrade, an investment between \$25 - \$40 billion dollars would be required. Another study on building electrification by the not-for-profit organization, [Pecan Street](#), found that it would cost approximately \$100 billion to upgrade electric panels in the residential sector across the

¹ California Energy Commission. *California Building Decarbonization Assessment - Final Commission Report*, August 13, 2021, pg 109.

² Building Decarbonization Coalition. [Towards an Accessible Financing Solution](#). June 2020, pg 14.

country. Regardless of the exact amount, it's important to note that just one component of electrification, updating the main electrical panel of a home, will require a tremendous financial investment. The figures shared here do not even account for the cost of upgrading electric appliances that in many cases are more expensive than their gas counterparts. According to the Building Decarbonization Coalition, the cost to electrify low-to-moderate income (LMI) households in California would require investments in the magnitude of \$72 - \$150 billion over the next several decades.

A. O. Smith is pleased that the Draft 2022 AQMP Draft also proposes to provide incentives to promote replacement with zero emission appliances in existing buildings with a focus on disadvantaged communities. Consistent and long-term funding for GHG reduction programs and incentives is essential in aiding consumers in making different purchasing decisions and accepting new technologies.

DEVELOPMENT OF PRIORITIZATION FOR REPLACEMENTS IN EXISTING BUILDING STOCK

A. O. Smith recommends a pragmatic approach to reach electrification goals, and we look forward to working with SCAQMD and other state agencies in this regard. As noted during the California Air Resources Board (CARB) Scoping Plan Update workshop, the age, and characteristics of some of the existing building stock can prove challenging to completely electrify. In addition to a panel upgrade, space constraints of an older home can make it difficult to install a HPWH. Most gas water heaters are placed inside a small closet, whereas a HPHW requires more space for the appliance to function efficiently and as intended. Given that some homes may lend themselves to a cheaper, faster, and overall easier transition to electrification, A. O. Smith recommends a system of prioritization to help target homes that are immediately ready for replacement while continuing to develop plans for buildings that are harder to electrify. In the State of New York, for example, some local jurisdictions are pursuing a stepwise approach for building electrification by completing energy audits of buildings (residential and commercial) as a first step to identify, tier, and prioritize which buildings can transition to all-electric end-uses ahead of others.

Retrofitting existing commercial buildings has similar issues as retrofitting a residential home: type and size of equipment, age of the building, and space constraints. However, the primary challenge in commercial applications is being able to match the customers hot water needs (i.e., load) in converting from a gas-fired product to a HPWH. In certain applications, the economics of the conversion will not be favorable, including the potential to increase the annual operating costs to the business owner or property owner. According to a report on the assessment of building decarbonization by the CEC, small business owners and property owners of small and medium size commercial buildings could incur retrofit costs of up to \$40,000.³ Therefore, ensuring the correct application of the equipment will be critical. A. O. Smith recommends a stepwise approach to reaching electrification goals by allowing high efficiency gas condensing equipment to be used in limited cases where there is no viable electric alternative. Using hybrid heat pumps with options for gas/electric back-up may also be necessary for certain space constrained and larger thermal load applications, such as health care facilities, in certain areas of the state.

³ CEC Draft 2021 Integrated Energy Policy Report Volume I: Energy Efficiency and Building, Industrial, and Agricultural Decarbonization, pg 16.

STREAMLINED PROCESS FOR ELECTRIFYING EXISTING BUILDINGS

Californians need a streamlined, easy-to-use program to assist homeowners and property owners in embracing electrification. Programs developed to incent customers to switch from gas water heaters to electric ones must be easy to use. Inspections of installations are critical to ensure that work was performed to required specifications and that appliances are working efficiently. Nevertheless, in-person inspections can further delay projects. A. O. Smith is encouraged that the City of San Jose has implemented an online permitting and inspection program for HVAC with heat pump technology which includes training for inspectors on heat pump technology installations so that they have the knowledge of what to look for in a quality heat pump installation. An online permitting process and remote inspections through virtual verification through pre and post pictures of installations should be considered as it continues to build out its electrification programs.

ADDRESSING THE SHORTAGE OF EXPERIENCED HPWH INSTALLERS

There is currently a shortage in California of plumbing contractors that have HPWH experience because most water heating systems in California are gas-fired. The current pool of trained contractors and installers is limited which keeps the HPWH market from growing a consistent and stable workforce. As such, we recommend that local and state agencies work together to explore barriers to the market, including licensing requirements which can help to address the HPWH contractor shortage that many manufacturers see taking place currently.

PROVIDING MANUFACTURERS WITH BUSINESS CERTAINTY

The CEC assumes a turnover rate of 7 percent in water heaters in existing single-family homes and multi-family units, which equates to 861,000 water heaters being replaced annually.⁴ To capture even 10 percent of this market means installing 86,000 units per year. The number of HPWH units sold annually across the entire country in 2020 was approximately 100,000.⁵ To convert the entire annual California market of water heaters to HPWHs would require a ten-fold increase of nationwide HPWH manufacturing capacity. These figures are meant to illustrate that meeting California’s demand for HPWHs at even a modest pace would require significant ramp up of manufacturing and have vast impacts on the supply chain. This sort of increase takes time to orchestrate as new manufacturing capacity and production lines must be created. Therefore, having a clear and reliable policy scheme will be necessary to provide manufacturers with the business certainty needed to make the massive investments required to increase manufacturing capacity at this unprecedented scale.

CONCLUSION

The transition away from utilizing natural gas for space and water heating, to electricity exclusively, presents significant challenges from funding and consumer awareness and acceptance to physical infrastructure and electricity grid modernization. A. O. Smith urges the SCAQMD, state and other local agencies to take a pragmatic, clear and reliable approach as they build upon GHG reduction goals.

⁴ *ibid.*

⁵ ENERGY STAR® Unit Shipment and Market Penetration Report Calendar Year 2020 Summary, pg 6.

In addition to having consistent programs that provide incentives and consumer awareness and education on electric water heaters, we recommend that SCAQMD also focus on:

- Streamlining processes for installations;
- Providing manufacturers with the business certainty needed to make the necessary investments required to increase manufacturing capacity; and
- Continuing agency coordination to align federal, state, and local policies and rules to help achieve a smooth transition to reaching carbon neutrality.

We appreciate the opportunity to provide comments to the Draft 2022 AQMP. We look forward to continuing the dialogue and working with the SCAQMD to design a program that helps achieve our GHG reduction goals as effectively as possible.

Sincerely,



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