



November 1, 2021

Jennifer Elwell
Bay Area Air Quality Management District
375 Beale Street
Suite 600
San Francisco, CA 94105

Re: Regulation 9 Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters 2021 Amendment

Dear Jennifer:

On behalf of Bradford White Corporation (BWC), we would like to thank you for the opportunity to comment on the Bay Area Air Quality Management District (BAAQMD) Regulation 9 Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters 2021 Amendment.

BWC is an American-owned, full-line manufacturer of residential, commercial, and industrial products for water heating, space heating, combination heating, and water storage products. In the Bay Area, a significant number of individuals, families, and job providers rely on our products for their hot water and space heating needs.

The 2021 Amendment to Regulation 9 Rule 6 establishes gas-fired boiler and water heater phase-out deadlines based on heat input capacity as follows:

1. Heat input capacity less than 75,000 Btu/hr, applicable on January 1, 2027; and
2. Heat input capacity of between 75,000 Btu/hr and 2 million Btu/hr, applicable on January 1, 2031.

While we appreciate BAAQMD providing transparency in the proposed phase-out deadlines above, we would like to better understand how BAAQMD staff determined that these dates are adequate to ensure a successful market transition from gas-fired boilers and water heaters to zero NOx technology. BWC has concerns that the magnitude of the transition proposed by BAAQMD will place significantly more stress on an already constrained supply chain and may create unintended consequences in BAAQMD territory like similar regulations have in Washington.

In 2019, the Washington Department of Commerce (DOC) enacted a regulation making the state the first to require demand response capabilities for electric storage water heaters. Under the regulation, heat pump water heaters sold and installed in the state must be demand response capable by January 1, 2021, followed by the same mandate for electric resistance water heaters on January 1, 2022. Since this regulation being finalized, supply chain challenges, caused largely by the COVID-19 pandemic, has made it difficult for manufacturers to produce sufficient products that are compliant with this regulation. In response, the Washington DOC has enacted an emergency rule that temporarily delays the enforcement of the regulation

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until March 1, 2022, for both heat pump and electric resistance storage water heaters. In addition, the WA DOC noted in their emergency rule that this date may need to be extended.

Heat pump water heater (HPWH) technology currently only represents a very small portion of the California market, and the United States, and like any new technology, will take a considerable amount of time for the supply chain to scale up. In California and across the United States, several collaborative efforts are taking place with manufacturers, industry stakeholders, state regulators, and the U.S. Department of Energy to make this transition successful.

BWC participates in a national focus group called the Advanced Water Heater Initiative (AWHI), along with other manufacturer, utility and industry stakeholders. In May 2021, the group published a report called “Building Demand for Unitary Heat Pump Water Heaters,” which highlighted a pathway to transform the residential market in California as follows:

- Pathway 1: Install HPWHs in all newly constructed single family and multifamily homes
- Pathway 2: Replace existing electric resistance storage water heaters with 240V HPWHs
- Pathway 3: Replace existing gas and propane storage water heaters with 240V and 120V HPWHs

The report concluded that unitary HPWHs could feasibly achieve a 10% market share across the state over the course of the next 3-5 years by following the path outlined above. While Pathway 1 has essentially been addressed in the 2022 Title 24, Part 6 Energy Code, Pathways 2 and 3 will require significant efforts by manufacturers, wholesalers, and contractors, as well as utility, local, and regional incentive programs to achieve.

The state has recently funded three programs (i.e., BUILD, TECH, SGIP) aimed at increasing market share and understanding the barriers to installing heat pump technology. These programs are designed to identify installation barriers in new construction, retrofit, and most importantly, fuel substitution applications. The programs go beyond incentives and focus on contractor training, financing, and supply chain. Given the currently low market share of heat pump technology in the market and these programs in their initial kickoff stage, BAAQMD’s proposal to fast-track this market transformation to 100% beginning in 2027, likely will overlook installation, technology and financing challenges that have yet to be identified and outpace the market’s ability to adopt HPWH technology.

BWC would like to pose the following considerations and clarifying questions to BAAQMD staff:

- BAAQMD should consider the proposed gas-fired boiler and water heater phase-out dates of 2027 and 2031 as a milestone, not a deadline on its pathway to transition towards zero NOx technology. The BAAQMD board of directors voted on October 18, 2021, directing staff to include a technical advisory committee who would evaluate progress towards transitioning to zero NOx technology on an annual basis as part of the rulemaking. The proposed dates should remain as a milestone, and the proposed rule should include language that allows the respective dates to be extended if the technical advisory committee determines the market is not able to fully transition by then.
- During the September and October public workshops, BAAQMD staff made several mentions of low voltage technology to heat water. These technologies are still under development and not yet commercially available. Manufacturers who have product prototypes, and groups like the AWHI, are exploring their market adaptability through field trials. HPWHs currently available in the marketplace have an inherently slow recovery rate compared to their gas-fired counterparts and low voltage products designed to be plugged into a shared circuit will have even slower recovery.

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These technologies, therefore, may be limited to low occupancy or low water use applications, as well as warmer climates.

- BAAQMD should set aside funding to study and include as part of the technical advisory committee's scope that all available HPWH technology, commercial and residential, be evaluated for performance in a variety of Bay Area regions and buildings. By sampling across the nine Bay Area counties, BAAQMD can evaluate different ambient air and inlet water temperatures, providing a more comprehensive understanding of where adoption barriers may exist. These findings should be made publicly available.
- The proposed gas-fired boiler and water heater phase-out for boilers with a heat input capacity of between 75,000 Btu/hr and 2 million Btu/hr by 2031, may present significant technological challenges, as well as installation challenges. The heat input range represented by this rule covers gas-fired boiler and water heater technology used for sanitizing and other commercial purposes, which requires high water temperatures of 180°F or greater. A zero NOx requirement would necessitate a HPWH solution that has typically lower output temperatures, which may conflict with health, safety, and performance demands in certain applications. Additionally, space considerations and airflow supply need to be considered. BWC recommends that the technical advisory committee work with mechanical contractors to figure out what is needed to transition existing buildings away from gas-fired boilers and water heaters to HPWH technology.
- The U.S. Department of Energy is currently working on increasing their energy efficiency standards for water heating and boiler equipment. Further restricting NOx thresholds presents a real challenge for manufacturers to design compliant products. Manufacturing equipment to meet a lower NOx threshold, often results in a lower efficiency and vice versa.
- AB3232 calls for a 40 percent reduction of GHG emissions from 1990 levels in residential and commercial buildings by 2030. Has BAAQMD considered an approach to this rulemaking that aligns more closely with AB3232?
- Has BAAQMD fully evaluated grid stability and infrastructure needs (i.e., impacting utilities, homes, and businesses) to support a transition to electric HPWHs? What about the impact to hospitals, schools, eldercare facilities and homes for the infirmed when there are disruptions to the grid? What about customers who cannot afford to proactively upgrade their electrical service and are left without hot water or heating when their equipment fails? Has BAAQMD considered provisions for homeowners and business owners to install gas appliances in an emergency replacement situation?
- Electric utilities are currently trying to balance policy directing them to decarbonize their supply and support early adopters of electric heat pump technologies through incentive programs and financing. This delicate balance costs money, and it is ultimately passed on to the ratepayers. Has BAAQMD considered the extra cost burden to ratepayers to fund a large-scale market shift to heat pump technology? Additionally, has BAAQMD considered that as electricity prices increase it may discourage adoption of heat pump technology?
- What feedback have utility stakeholders provided BAAQMD on the proposed updates to Rule 9-6?

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- What feedback from consumer advocacy groups representing fixed income consumers (e.g., AARP) has BAAQMD received on the proposed updates to Rule 9-6?
- What feedback has BAAQMD received from equipment wholesalers, plumbers, electricians, mechanical contractors, and mechanical design engineers on the proposed updates to Rule 9-6?

Bradford White Corporation thanks the BAAQMD and staff for the opportunity to provide feedback on this proposed rule change. Please let me know if you have any questions or would like to schedule a meeting to discuss our comments further.

Sincerely,

Bradford White Corporation

Eric Truskoski
Senior Director of Government and Regulatory Affairs

Cc: R.B. Carnevale; L. Prader; R. Wolfer; M. Corbett

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