



June 23, 2022

California Air Resources Board

Re: 2022 Draft Scoping Plan

Dear California Air Resource Board Staff:

On behalf of Bradford White Corporation (BWC), we would like to thank you for the opportunity to comment on the California Air Resource Board (CARB) proposed 2022 Draft Scoping Plan (2022 Plan).

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

While CARB has set forth a statewide goal to phase out the sale of NOx producing water heating equipment by 2030, we have concerns that the deadlines set by CARB in the 2022 Plan are overly aggressive. The magnitude of the transition will place significantly more stress on an already constrained supply chain under the proposed timelines and fails to consider several external factors that may hinder the ability of the state to transition successfully. Even though California may be on the forefront of transitioning to zero-emission water heating, there are other states and countries developing plans to decarbonize and reduce emissions, resulting in a much larger demand for heat pump water heaters (HPWH) than California alone. CARB must consider global demand for HPWH products, not just the State's demand, in their assessment to determine a feasible timeline for transitioning to only allow the sale and distribution of zero-emission water heating technology.

BWC recognizes that the 2022 Plan serves as a high-level guide for the state and for local air districts to enact rule changes. In the 2022 Plan CARB published Appendix F, which includes many proposed actions to decarbonize buildings. BWC has provided comments below to these actions:

Comments to Appendix F, Building Decarbonization

Throughout the 2022 Plan, CARB has established that buildings make up a substantial portion of the State's greenhouse gas emissions and further states that "building electrification—in new and existing buildings—provides the most technically feasible path to reduce building-related emissions."¹ While we do not dispute the claim, we have significant concerns with the strategies proposed to decarbonize existing buildings. Homeowners and building owners typically do not plan for when their water heating equipment fails, and when it does, they are forced to respond quickly to the emergency.

Approximately 90% of residential water heater replacements are done on an emergency basis where the water heater has failed and is not necessarily easily or cost effectively repaired, or possibly can't be repaired

¹ Draft 2022 Scoping plan, Appendix F, page 1 [Appendix F - Building Decarbonization](#)

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at all. It is essential that products are available locally, as customers need to be able to have these products installed in a timely manner to satisfy their hot water needs. Local availability is not likely if manufacturers do not have the right product mix, and those products are not stocked by local distributors and retailers, forcing the consumer or business to go without hot water or heating for an extended period of time.

Having the right products available for the right application is only one piece of the puzzle. Barriers, such as electrical infrastructure and space constraints, can add to the complexity and cost of replacements and may place a significant and unfair burden on the customer. Low-to-medium-income homeowners and small business owners, who are simply trying to restore hot water service will be adversely affected. If CARB chooses to adopt the proposed timelines, then the Board must also ensure there is a robust program and funding in place to help property owners prepare for the transition well in advance of needing a new water heater.

While we commend the state's initial success in increasing adoption of residential HPWH technology, the commercial sector has not been addressed with the same level of attention, increasing the barriers to a complete transition. The recently adopted 2022 Title 24, California Energy Code does not address HPWHs in existing commercial and nonresidential buildings, largely because there are very few commercially available products on the market today.

A shift to require that existing commercial and nonresidential buildings be retrofitted to use all electric water heating technology will require significant time, money, and collaboration by manufacturers and plumbing trade associations to train the workforce to ensure quality installations. This is an effort that will take many years to come to fruition, as new technology becomes commercially available, likely extending well beyond 2035. Like residential products, commercial HPWH technology will face similar challenges around product footprint, adequate free air space and electrical capacity. In cases where the challenges exist, requiring the water heater to be relocated, or in cases where an emergency replacement is not achievable, CARB should have provisions in place to allow an Ultra-Low NOx alternative. While solutions to these challenges may emerge with time, the market for commercial HPWH equipment is even smaller than residential products and will take significant effort to develop practical solutions.

In comments BWC submitted to South Coast Air Quality Management District (SCAQMD) in response to their 2022 Air Quality Management Plan control measures R-CBM-01 and C-CMB-01. We proposed establishing a common definition for determining when a project is considered "infeasible" for transitioning to zero-emission water heating technology. In the absence of a common definition for "infeasibility" established by CARB to guide air district rulemakings, BWC proposes the following as a starting point for a more comprehensive discussion:

"Where a project applicant can reasonably demonstrate that all parts and equipment required to retrofit an existing, mixed fuel building with a zero-emission water heater equipment is not:

- Commercially available;
- More costly than commercially available gas options (20% or more);
- Able to fit in the footprint of existing equipment;
- Able to meet the building/home water heating demand; and,
- available from suppliers within the district to replace inoperative equipment on an emergency basis.

In these cases, an exception shall be granted to use readily available gas Ultra Low NOx water heating equipment."

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Appendix F, Section 3 Feasibility

BWC respectfully disagrees with several of CARB's assumptions regarding readiness of technology to replace natural gas appliances.

To our knowledge, low voltage HPWH technology (i.e., 120-volt) is not currently commercially available in retail or distributor locations. While some products may exist, the technology is not as widely adopted as the 240-volt unitary HPWH. BWC has taken part in industry discussions regarding the need to develop low voltage technology and has concerns that the technology may only be applicable in a limited number of applications, not as a mass market solution as advertised. Several of the same installation challenges experienced by commercially available residential 240-volt HPWHs will exist for low voltage technology, including:

- The existing water heater location lacks physical space to fit a properly sized heat pump water heater and/or adequate free air space, and cannot be ducted or vented per manufacturer instructions thus requiring it to be relocated.
- The existing water heater location does not have an outlet available to plug a 120-volt unit into, and a new outlet and/or circuit must be supplied to power the unit.
- The 120-volt unit may be limited in its ability to provide adequate hot water. The 120-volt product concept was designed around its ability to plug into a shared 15-amp outlet, restricting its maximum power draw to 900 watts. This may limit the market to products, which only use a compressor, or a compressor with a small resistance element. Limiting watts, will limit the ability of water heaters to recover quickly, making them only suitable for low water use applications.
- As stated above, the recovery may be limited by available wattage, requiring an increase in the tank size to support the household. A larger tank may not fit in the existing space and require relocation.

The cost to retrofit an existing building with a HPWH will vary based on the unique challenges like electrical capacity and install space in each home or building. While we appreciate CARB recognizing these challenges exist, the suggested approach of using low voltage water heating technology or simply increasing production of zero emission technology to fit the space and keep the cost of retrofit down, is not necessarily feasible in the majority of existing buildings.

Over many decades, homes and buildings were built around energy codes and utility rates that support natural gas appliances. Because of this, many homes and buildings lack the necessary infrastructure to easily and cost effectively switch fuels. We recommend for CARB to consider a more comprehensive approach of preparing existing buildings to make the transition to zero emission technologies, so that emergency replacements can better accommodate a zero-emission appliance when the water heater needs to be replaced. We suggest that CARB work with utilities and state agencies to establish a robust program to help equitably renovate existing buildings to be electric ready in preparation ahead of the state's phaseout dates.

Appendix F, Section 4 Potential Actions to Support a Successful Transition to Building Decarbonization

CARB acknowledges local governments complementary authority to restrict greenhouse gas emissions (GHG) through adoption of reach codes. Variable and ambitious local reach codes result in confusion for industry and may result in building standards being adopted too early without adequate product to support them. As we stated earlier, the proposed timelines to transition to zero-emission appliances are already aggressive, and by supporting local reach code adoption through development of voluntary model building standards, such as CALGreen, ordinances adopted even before CARB's proposed dates further exacerbates the problem.

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BWC agrees with CARB that the state's current incentive programs are insufficient to support the transition to zero-emission appliances. Current incentive programs fail to address the underlying challenge to transitioning existing buildings, the electrical infrastructure, and unique construction challenges. Programs need to be developed to support building owners to proactively prepare their buildings for zero-emission appliances, rather than rely solely on incentives, which only support a single technology change on burnout. CARB acknowledges these challenges exist and should continue to work with other state agencies and local governments to prioritize programs to prepare buildings before appliances burn out.

While BWC recognizes that refrigerants play a role in reducing the state's emissions, transitioning to low GWP refrigerants, in an expedited timeframe, is problematic for HPWHs. One of the main arguments for transitioning to low GWP refrigerants is to enable the HPWH to deliver higher water temperatures (i.e., 150°F or greater). The state suggests driving the HPWH industry towards CO₂ technology in a relatively short timeframe. While CO₂ is a low GWP refrigerant that can achieve higher stored water temperatures to help reduce the grid's peak demand at times, this same objective can be achieved with other refrigerants and technology.

Driving the industry down to a GWP limit of 150 will also continue to increase the already high cost of HPWHs compared to other water heating equipment and have an in proportionate negative impact on low-to-medium income homes and buildings further hindering market adoption. Low GWP refrigerant is significantly more expensive than what is being used today, requires special equipment and training for installers to utilize, and some refrigerants are also flammable. With few commercial HPWH options available in the market today, CARB should not limit a manufacturer's ability to innovate by further regulating refrigerants for these products, at this time.

In closing, we would like to invite CARB staff to meet with BWC to discuss how we can best accomplish transitioning to zero-emission water heating equipment across all sectors. We understand the state's goals to reduce emissions and want to play a part in ensuring it is successful in doing so.

BWC thanks the California Air Resource Board for the opportunity to provide feedback on the Draft 2022 Scoping Plan. 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; R. Simons; B. Hill; L. Prader; C. VanderRoest; M. Corbett; B. Wolfer

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