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Re: Maryland Building Decarbonization Policy Options

Dear Ms. Osorto and Mr. Stewart,

These comments are submitted by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI), on behalf of our member companies, regarding Maryland's supplemental request for comment on the Maryland Commission on Climate Change (MCCC) Building Energy Transition Plan Discussion Draft.

AHRI is the trade association representing more than 300 manufacturers of heating, cooling, water heating, and commercial refrigeration equipment. AHRI is an advocate for the industry and develops standards for and certifies the performance of many of the products manufactured by our members. In North America, the annual output of the HVACR and water heating industry is worth more than \$44 billion. In the United States alone, the HVACR and water heating industry supports 1.3 million jobs and \$256 billion in economic activity annually.

AHRI, and our members, are very interested in Maryland's efforts to reduce its greenhouse gas footprint. Our manufacturers support legislative and regulatory efforts that promote a healthy environment and robust economic growth, while saving energy and ensuring a high quality of life

for consumers.¹ As a collective industry, we are continuously working to review and design new higher efficiency equipment that improves consumer comfort without compromising consumer choice, product quality, or safety.

Many of AHRI's members manufacture products, such as electric equipment used for space and water heating, that will help Maryland achieve its 2030 Greenhouse Gas Reduction Act goals and define a roadmap for reaching net-zero emissions from residential and commercial buildings by 2045. AHRI understands that Maryland intends to set many targets for electrification and building decarbonization as informed by the Energy + Environmental Economics (E3) Maryland Building Decarbonization Study, proceedings of Maryland's Buildings Sub-Group, and building decarbonization policies from other states. Any recommended policy should account for the unique climate and consumer needs of individual equipment installations rather than a "one size fits all" approach. AHRI appreciates Maryland's stakeholder engagement process and Maryland's willingness to work toward practical and implementable solutions. AHRI is pleased to provide additional comments to the discussion draft.

AHRI thanks the MCCC, the Mitigation Work Group (MWG), and the Buildings Sub-Group for thoughtful consideration of stakeholder feedback. AHRI recognizes new and updated building decarbonization policy recommendations in the Discussion Draft that reflect input from stakeholders in this process. Specifically, AHRI is pleased to see a focus on enabling incentives for policy drivers, the need for mixed-fuel solutions, prioritizing new construction, specific carbon intensity reduction goals, ensuring equitable benefits for Marylanders, identification of grid readiness upgrades, and development of low-carbon fuels.

AHRI recommends that Maryland enact a policy approach that allows the market to adapt to transformation. Incremental steps allow the state several opportunities to examine and reassess the relationship between its overall strategy, as well as realities in the marketplace, and pivot its approach to capitalize on opportunities and unforeseen challenges.

As noted in the Discussion Draft, electrification with fuel backup is the most cost-effective and low-risk option for promoting decarbonization. Based on data presented during Building Ad Hoc Committee meetings, and data developed during U.S. Department of Energy rulemakings, 73-percent of homes in Maryland currently use gas, propane, or oil furnaces, a mere 20-percent of which would experience a net savings if switched to a heat pump at this time,² and over 50-

¹ For example, the American Innovation and Manufacturing (AIM) Act of 2020 was strongly supported by AHRI and its members. The AIM Act is projected to reduce greenhouse gases equivalent to approximately 2.5 billion tonnes of carbon dioxide by 2035. AHRI and its members have petitioned the U.S. Environmental Protection Agency (EPA) to advance transitions equivalent to approximately an additional 0.5 billion tonnes of carbon dioxide.

² Mayernik, J, Cost Effectiveness of Electrification with Air-Source Heat Pumps, Presentation to the Maryland Commission on Climate Change's Buildings Subgroup (August 2020); NREL, Electrification Futures Study (2017); RMI, The Economics of Electrifying Buildings (June 2018); U.S. DOE, Energy Efficiency Potential in the U.S. Single-Family Housing Stock (December 2017).

percent of all Maryland households would have a negative cost impact if required to switch fuel technologies.³

AHRI encourages Maryland to continue to hold public stakeholder meetings to ensure that impacted stakeholders, including homeowners, have an opportunity to provide relevant input on policy recommendations. AHRI is eager to provide feedback to future proposals and policy recommendations and is happy to provide technical support and data related to the specific technologies being analyzed.

Buildings Ad Hoc Committee Proposed Recommendations

AHRI reviewed the discussion draft and its 18 policy recommendations listed below:

1. Adopt an All-Electric Construction Code
2. Develop a Clean Heat Retrofit Program
 - a. Allow fuel-switching through EmPOWER beginning in 2024.
 - b. Allow beneficial electrification through EmPOWER beginning in 2024
 - c. Target 50 percent of residential AC and water heater sales to be heat pumps by 2025, 100 percent by 2030
 - d. Direct more Strategic Energy investment Fund (SEIF) funding to energy efficiency and beneficial electrification.
3. Create a Building Emissions Standard
4. Create a Clean Heat Standard
5. Develop a Utility Transition Plan
6. Offer incentives for net-zero energy all-electric new buildings.
7. Lead by example through the electrification and decarbonization of state buildings.
8. Prioritize an equitable level of benefits for all Marylanders.
9. Improve interagency coordination for holistic building retrofits.
10. Allow local jurisdictions to set higher fines for non-compliance on building performance.
11. Sunset financial subsidies for fossil fuel appliances within EmPOWER.
12. Use federal funds for comprehensive retrofits of low-income housing.
13. Offer tax credits or other incentives for enhanced energy efficiency in new construction.
14. Allow above-code green programs to comply with the state-adopted IECC.
15. Allow a portfolio approach to renewable energy generation.
16. Evaluate property tax assessment processes to support decarbonization efforts.
17. Identify locations that need grid upgrades to accommodate new all-electric buildings.
18. Accelerate development of low-carbon fuels.

AHRI comments focus on providing feedback applicable to the HVACR and water heating industry.

³ AHRI calculated this value by multiplying the number of furnaces by the proportion of each furnace fuel type that would experience a negative payback.

Adopt an All-Electric Construction Code

AHRI supports clear code policies but notes the need for sufficient time for additional training of HVACR and water heating technicians to install, maintain, and service electric equipment. Many energy efficient electric systems are newer products that require additional technician training. The HVACR and water heating industry is committed to providing this training within its supply network. AHRI recommends that Maryland include additional time for training and offering funding to training centers or incentives for training to ensure that Maryland technicians are prepared for code changes and new equipment.

AHRI notes that many HVACR and water heating technologies will transition to new technologies in 2025 as part of the phasedown of hydrofluorocarbons (HFCs) under the [American Innovation in Manufacturing Act](#) (AIM Act). There is significant work to be done to comply with transitions in 2025. OEMs must re-design equipment and then have all equipment successfully tested at Nationally Recognized Testing Laboratories (NRTLs) to ensure compliance with safety standards, vibration standards for over-road transportation, and energy efficiency requirements for thousands of models of products.

Targeting code updates to occur after this 2025 transition would allow time to go through the same design and testing cycle and result in a higher likelihood of product availability for Maryland's goal of building decarbonization. AHRI recommends Maryland review a gradual transition to any all-electric construction code. Maryland should take into account low-rise residential construction versus commercial buildings, new construction versus existing buildings, climate zones, and exemptions; a one-size-fits-all approach does not take these distinctions into account. Maryland could develop incremental steps for all-electric policy through public review; testing the policy on low-rise residential new construction, examining results of this policy, then developing additional policies that would be effective for commercial new construction, which has a complex mix of building stock and therefore many exemptions to consider.

AHRI is actively involved in developing building codes. Building retrofit requirements are much more complicated than new construction codes. For example, switching from a gas furnace to an electric heat pump, even in a major renovation, could require substantial modification to a building including duct sizing, electric panel upgrades, and modifying room size, among other issues. As such, Maryland's building codes should take an incremental approach that initially focuses on new construction only.

Develop a Clean Heat Retrofit Program

Allow fuel-switching through EmPOWER beginning in 2024.

As noted by AHRI in previous comments, an incentive program that promotes equipment replacement would likely provide as much, if not more, environmental benefit as a fuel-switching incentive program, while simultaneously reducing consumer costs and electrical grid burden. Significant energy and environmental benefits can be obtained by incentivizing consumers to replace existing equipment, regardless of fuel type, as long as it can be shown that there is an

equivalency on target greenhouse gas emissions reductions as a result of deployment of a product.

AHRI supports market-based incentives in any policy recommendation that Maryland enacts.

Maryland's Electric Grid

AHRI is also concerned with the ability of Maryland's electrical grid to supply energy to heat pumps if many consumers switch equipment. Maryland's proposals should present a pathway forward, considering Maryland's current gas and electrical grid infrastructure, that ensures a smooth transition for both utilities and consumers.

As homes switch to heat pump technology, equipment sizing will continue to play an important role in helping satisfy the heating load needed in the winter. AHRI believes it is important for Maryland to understand the scope of its installed base of heating equipment and ensure that fuel switching is cost effective, feasible on the electric grid, and maintains consumer choice. Maryland should preserve multiple fuel options and let Marylanders choose lowest cost and lowest carbon energy system.

Moving the thermal load from gas to electric will result in a significant increase in electric peak in winter. Load increases on the grid may limit energy reliability and availability in Maryland, as we've seen other parts of the country experience widespread electricity outages due to extreme weather events such as ice storms, heat waves, and hurricanes.

Allow beneficial electrification through EmPOWER beginning in 2024

AHRI agrees with the Discussion Draft E3 finding that electrification with fuel backup is often the most cost-effective and low-risk option for achieving building decarbonization goals. A minority of Marylanders will save money by switching from a furnace to a heat pump. Cost burdens from this switch are also likely to disproportionately affect low-income households.⁴

Target 50 percent of residential AC and water heater sales to be heat pumps by 2025, 100 percent by 2030

AHRI recommends that the MCCC share how these targets meet Maryland's greenhouse gas reduction goals and what proportion of new sales are installed in new construction versus existing buildings. AHRI is concerned that these targets are arbitrary and would not deliver the energy savings Maryland seeks. As noted earlier, incentivizing equipment replacement is an effective policy tool for achieving Maryland's goals and would likely be more effective than bans on specific technologies.

⁴ National Renewable Energy Laboratory, Energy Efficiency Potential in the U.S. Single-Family Housing Stock (2017), Pg. 76 (available at <https://www.nrel.gov/docs/fy18osti/68670.pdf>).

As noted earlier, time for technician training is needed to ensure proper installation and maintenance of equipment to maximize energy savings. Poor installation practices have been shown to reduce energy efficiency significantly, especially in ducted systems.⁵

Direct more Strategic Energy investment Fund (SEIF) funding to energy efficiency and beneficial electrification.

AHRI appreciates Maryland's focus on developing robust incentive programs to achieve its goals.

Create a Building Emissions Standard

In general, AHRI looks forward providing input into standard development. AHRI notes that equipment maintenance plays an important role in reducing emissions and again notes the importance of proper training for technicians and contractors.

Create a Clean Heat Standard

AHRI looks forward to providing input into the development of this standard.

Offer incentivizes for net-zero energy all-electric new buildings.

AHRI looks forward to providing information to assist in the development of Maryland's incentives for net-zero buildings.

Prioritize an equitable level of benefits for all Marylanders.

Maryland should address equity with any building decarbonization policy. Raising the price of electricity during peak hours will unevenly impact different customer classes due to differences in the ability to either reduce the volume of their energy consumption or shift its occurrence in time. Utility burden is not evenly shared across society. Low-income communities and small businesses face utility burdens that far exceed national averages.

Prior to the adoption of electrification and decarbonization policies, Maryland should establish measurable goals regarding equity; ensure that programs address or do not exacerbate the housing shortage; and create a stable, long-term public fund to support and subsidize advanced efficiency measures. Over 50 percent of Maryland households will have a negative cost impact when switching fuel technologies.

Maryland should also ensure grid stability in urban neighborhoods and rural communities where there may currently be issues, or there could be issues in the future, especially focusing on private and public residences for the elderly, hospitals, health care facilities, schools, and critical businesses such as grocery stores.

Improve interagency coordination for holistic building retrofits.

AHRI is eager to hear plans to improve interagency coordination or wholistic building retrofits.

⁵ Walker, Iain S. Best Practices Guide for residential HVAC retrofits. Lawrence Berkeley National Lab (LBNL) (2003).

Allow local jurisdictions to set higher fines for non-compliance on building performance.
AHRI is unable to offer expertise on this approach.

Sunset financial subsidies for fossil fuel appliances within EmPOWER.
AHRI is unable to offer expertise on this approach.

Use federal funds for comprehensive retrofits of low-income housing.
AHRI agrees that additional funding can be used to ensure low- and moderate-income households can procure new and more efficient equipment via incentive funding. Limiting the funding to only electric equipment, however, is likely to limit the carbon reduction available to Maryland. Replacing existing equipment with newer more efficient equipment of the same fuel type is a cost-effective way to reduce emissions.

Offer tax credits or other incentives for enhanced energy efficiency in new construction.
AHRI believes that incentive programs increase efficiency in new construction but has found that direct rebates may be more impactful than tax incentive programs.

Allow above-code green programs to comply with the state-adopted IECC.
AHRI reminds Maryland that above-code programs for privately-owned buildings would need to be voluntary to ensure compliance with federal statute.

Allow a portfolio approach to renewable energy generation.
AHRI is unable to offer expertise on this approach.

Evaluate property tax assessment processes to support decarbonization efforts.
AHRI believes that incentive programs increase efficiency in new construction but has found that direct rebates may be more impactful than tax incentive programs.

Identify locations that need grid upgrades to accommodate new all-electric buildings.
AHRI appreciates Maryland's consideration of grid readiness in its goals to decarbonize buildings. Maryland should start by analyzing the anticipated draw on the parts of the grid servicing all-electric new construction which will rapidly increase electricity demand.

AHRI also recommends that Maryland review the efficiency and fuel mix of the grid to ensure that increasing demand does not raise emissions by burning more fossil fuels to meet the additional demand especially in urban and rural under-served communities.

Accelerate development of low-carbon fuels.
Significant work is needed to ensure beneficial development of low-carbon fuels. AHRI agrees with the E3 findings of the need for low-carbon fuels to meet Maryland's energy demand. Renewable natural gas, hydrogen-enriched fuels, and other fuel options all provide options for Maryland to reduce the carbon intensity of building heating.

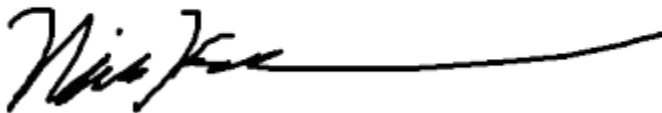
Opportunities to Enhance Maryland's Policies

As noted earlier, standards offer Maryland opportunities to enhance its efforts and align with industry progress on decarbonization. Maryland should look to adopt the latest version of ASHRAE 90.1 or its equivalent to the building codes to ensure the most technologically advanced standards are applied in the state.

Maryland should also continue to promote a technology agnostic approach and push manufacturers to compete in the open marketplace. All appliances providing significant energy and environmental benefits should be evaluated, regardless of fuel type. Maryland must take into account consumer choice and affordability in terms of both upfront and operating costs. Being overly prescriptive in all-electric and decarbonization policies discourages or disallows improvements in next generation technologies that might benefit from further innovation. One example is decarbonized gas technologies, such as renewable natural gas or hydrogen. Maryland homes and buildings built to an all-electric standard would require costly retrofits for the gas piping infrastructure needed to transport these decarbonized gas technologies.

AHRI appreciates the opportunity to provide these comments. Should you have any questions regarding this submission, please do not hesitate to contact me.

Respectfully,

A handwritten signature in black ink, appearing to read "Nick Harbeck", followed by a long horizontal line extending to the right.

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