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October 30, 2023

California Air Resources Board
1001 I Street, P.O. Box 2815
Sacramento, California 95814

Re: Response to Request for Information for Senate Bill 1206 Assessment Report

To Whom It May Concern:

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) is pleased to submit the following comments in response to the California Air Resources Board's (CARB) Request for Information (RFI) regarding the Assessment Report provided for in Senate Bill (SB) 1206. AHRI represents more than 330 manufacturers of air conditioning, heating, and refrigeration equipment. It is an internationally recognized advocate for the HVACR industry and certifies the performance of many of the products manufactured by its members. In North America, the annual economic activity resulting from the HVACR industry is approximately $256 billion. In the United States alone, AHRI member companies, along with distributors, contractors, and technicians employ more than 1.3 million people.

INTRODUCTION

AHRI's member companies strongly support the global transition from Hydrofluorocarbons (HFCs) to substitute refrigerants with lower Global Warming Potentials (GWPs) and have consistently and significantly advocated for a robust national regulatory framework to do so. That national regulatory framework now exists and will grow more stringent over time. As AHRI member companies continue the planning and execution needed to meet the rigorous requirements of the national regulations, there is high concern about the promulgation of individual state regulations that are not in lockstep.

AHRI recognizes the important role CARB played in the wake of the uncertainty at the national level following the adoption of the Kigali Amendment to the Montreal Protocol in 2016. CARB stepped up to fill gaps in the regulatory landscape that persisted in the years immediately following Kigali's adoption. With the implementation of *The American Innovation and Manufacturing Act of 2020* (AIM Act) by the U.S. Environmental Protection Agency (EPA), and a structured national framework to accomplish the climate-related goals regarding the transition from high GWP HFCs to more climate-friendly substitutes, the previous state of regulatory uncertainty no longer exists.

EPA has recently finalized rules (i) constricting upstream production and net import of HFCs, via the allowance allocation and trading program, and (ii) requiring transitions to climate-friendly substitutes, via the technology transitions program. EPA also has just proposed new

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regulations for the management of refrigerants specifically designed to reduce leaks from equipment and enhance the recovery and reclaim of refrigerants at equipment end-of-life. This is a comprehensive national framework that upon termination ensures U.S. compliance with the terms of the Kigali Amendment and will contribute to Kigali's ultimate avoidance of up to 0.5° C of projected warming by 2100, even if no further subnational action occurs.

AHRI understands CARB will continue with its own HFC regulatory programs and remains eager to work with CARB to ensure that prospective state regulations i) are as consistent as possible with federal standards and ii) reflect technology and economic realities.

Accordingly, as an overarching comment in response to this RFI, AHRI requests that CARB use the Assessment Report to prioritize the gathering of updated market information in the 2024-2028 period and holds off on introducing new regulatory requirements until more market data on the HFC transition during the 2024-2028 period is fully available and properly analyzed. Analyses should include feasibility and performance of substitutes, the climate gains achieved in that time period, the size of the additional climate benefits achievable beyond EPA rules, and the economic and competitiveness concerns facing American consumers and manufacturers.

In this regard, AHRI requests the Assessment Report be shared prior to publication, with mechanism in place for AHRI and others to review drafts and provide comments and technical data, as may be available, prior to such report being finalized. These are exceptionally complex issues, and CARB will be preparing this report while the HFC transition is happening in real time. It is infeasible to expect this RFI could adequately capture comments from AHRI and others that reflect future market and technological realities.

1. BACKGROUND

The U.S. heating, ventilation, air conditioning, and refrigeration (HVACR) industry actively supported the Obama Administration in its pursuit of the Kigali Amendment to the Montreal Protocol and applauded the Kigali Amendment's adoption in October 2016.

The industry also led the efforts to advocate and gain approval for *The American Innovation and Manufacturing Act of 2020* (AIM Act), 42 U.S.C. § 7675, which ensures U.S. compliance with the terms of the Kigali Amendment and represents the most significant expansion of federal environmental statutory authority since the Clean Air Act Amendments of 1990.

AHRI and its members take pride in the role our industry played in the historic vote on September 21, 2022, in which a broadly bipartisan group of senators voted to approve U.S. ratification of a treaty expressly dedicated to the mitigation of climate change and the avoidance

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of up to 0.5° C of projected temperature increase by 2100.[1]

We now are diligently and expeditiously transitioning to lower GWP substitutes to comply with the now final regulations by EPA establishing GWP limits on the vast majority of our industry's product lines and equipment types manufactured after January 1, 2025.[2]

Indeed, many of these federal requirements are in response to petitions AHRI and other trade associations in our industry submitted to EPA – actively seeking new regulatory standards to speed the transition from high GWP HFC refrigerants. We prepared and submitted such petitions even as the upstream manufacture (production) and net import (consumption) already are significantly constrained pursuant to the Kigali Amendment's phase down schedule, in which overall HFC supply will contract beginning January 1, 2024, to 60 percent of the baseline period.[3] The market will contract again in 2029 to 30 percent of the baseline period, which fundamentally reshapes the refrigerant market and captures significant climate benefits even if nothing else is done.

This transition from high GWP HFCs is made possible by multi-billion-dollar investments by our industry and decades of research and development. Yet even with the benefit of such investment and innovation, the technical and commercial challenges remain so great that many manufacturers are racing the clock to shift product lines before a substantial part of EPA's rules take effect at the end of next year. No low GWP substitutes are "drop in" replacements for their high GWP predecessors, instead often requiring complex design changes to ensure both consumer and worker safety and concomitant advances in energy efficiency and refrigerant management.

Moreover, AHRI and its members are doing the lion's share of the work in updating state and local building codes to remove prohibitions on the substitute refrigerants that our members are redesigning equipment to use. But for the efforts of AHRI and its members over the past two years, state and local building codes otherwise would have stopped the HFC transition in its

[1] Ex. Rept. 117-2-Amendment To Montreal Protocol ("Kigali Amendment"), Record Vote Number 343, Yea-Nay Vote 69-27, 117th Congress, 2nd Session (September 21, 2022). *See also* Velders, *et al.*, *The large contribution of projected HFC emissions to future climate forcing*, 106 PROCEEDINGS OF THE NATIONAL ACADEMIES OF SCIENCES 10949-10954 (July 7, 2009).
[2] *See* pre-publication draft of the final rule Phasedown of Hydrofluorocarbons: Restrictions on the Use of Certain Hydrofluorocarbons under Subsection (I) of the American Innovation and Manufacturing Act of 2020 (official version not yet published in the Federal Register at time of this writing).
[3] *See* Phasedown of Hydrofluorocarbons: Establishing the Allowance Allocation and Trading Program Under the American Innovation and Manufacturing Act, 86 Fed. Reg. 5516 (October 5, 2021). *See also* Phasedown of Hydrofluorocarbons: Allowance Allocation Methodology for 2024 and Later Years, 88 Fed. Reg. 46836 (July 20, 2023).

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tracks regardless of the AIM Act and EPA's implementing regulations.

All this is to say AHRI's concerns about further requirements on HFCs pursuant to SB 1206 are not grounded in antipathy to climate policy or recalcitrance in the face of ambitious regulatory requirements. To the contrary, as noted above, AHRI believes the HFC transition is now fully underway and comprehensively supported by a federal regulatory framework expected to strengthen over time and that this is, for at least the next five years, sufficient to capture the full climate benefits available for HFC refrigerants.

2. ADDITIONAL COMMENTS

In addition to the general comments provided above, AHRI wishes to offer the following comments.

a. GWP Limits & Climate Performance

It may be the case that adopting an exclusive or nearly exclusive focus on GWP will work against achieving greater climate benefits. Some low or ultra-low GWP refrigerants are likely to require greater energy consumption and, potentially, water consumption, depending on the geographic region and local climate, among other criteria.

In its Assessment Report, AHRI requests CARB analyze energy and water use changes for equipment types where low or ultra-low GWP limits might be considered and seek specific equipment data on the technical realities of transitioning to still lower GWP refrigerants.

On a related point, AHRI requests CARB evaluate the beneficial effect of national requirements on leak detection and repair and refrigerant recovery and reclaim proposed by EPA in its first rulemaking under subsection (h) of the AIM Act, in terms of reducing refrigerant emissions and, therefore, elevating the importance of other aspects of a piece of equipment to its overall climate performance.

b. Further Barriers to Refrigerant Transitions

As noted above, AHRI has worked diligently over the past two years to update state and local building codes to allow the use of A2L refrigerants that were otherwise prohibited by such building codes for their mild flammability. The challenge of this effort, which spanned all 50 states and innumerable local jurisdictions, is difficult to overstate. But for this effort, irrespective of changes in federal and other state law, it would not be possible for HVACR manufacturers to use the vast majority of low GWP substitutes currently available in their equipment.

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AHRI anticipates that all state and local building codes will be updated by regulation or legislation (or both) on a timeline that allows for the sale and installation of most, if not all, equipment using A2L refrigerants – virtually all of which have been widely identified as low GWP substitutes across multiple HVACR sectors and subsectors.

This has been pursued in parallel to efforts to submit applications to EPA seeking approval of such A2Ls under EPA's Significant New Alternatives Policy (SNAP) under section 612 of the Clean Air Act, whereby it is unlawful to use a substitute refrigerant in a particular product category unless it has been approved by EPA for use in that product category, subject to use conditions and use limitations in the event safety concerns warrant such conditions or limitations.

This is typically the case for an A2L refrigerant, given its flammability, which has added complexity to the SNAP process and required extensive coordination among standards bodies such as UL and ASHRAE and state building code commissions and regulators.

AHRI is offering this discussion with the point of noting that, for many end uses, particularly for air conditioning, there has yet to be any concerted effort by the industry to navigate this same regulatory obstacle course for the use of A3 refrigerants, such as propane.

As noted above, a federal or state regulatory requirement for an A3 in an end use (or indirectly, such as via a low or ultra-low GWP limit) is not, by itself, sufficient to remove these other legal and regulatory barriers. The process to remove such barriers is extensive, time-consuming, and costly, both financially and politically. Many formal building code updates occur on timelines of at least five years, making any further changes to building codes to accommodate A3s not possible absent extraordinary action before 2029 or 2030 – and potentially longer, if opposition from other stakeholders were to emerge.

Accordingly, AHRI would request CARB investigate and thoroughly describe and discuss such regulatory barriers in its Assessment Report vis-à-vis any discussion of adopting low or ultra-low GWP limits for various end uses in the anticipation that compliance is possible via the further transition to A3 refrigerants. In this light, AHRI wishes to note that the industry is not categorically opposed to A3 refrigerants but has great concern regarding unrealistic regulatory timeframes and technology assumptions in the consideration of lower GWP thresholds.

In addition to the regulatory barriers, there are technical barriers that have limited the industry's ability to evaluate A3 refrigerants across a wide range of products. For example, the industry attempted to test A3 flammable refrigerants in an AHRTI research project, AHRTI-9007-2, Benchmarking Risk by Whole Room Scale Leaks and Ignitions Testing of A3 Refrigerants. After conducting testing on small charge systems including mini-splits and PTACs, the contractor declined to conduct further testing on systems with higher refrigerant charge sizes. This example illustrates the need for additional work to develop new test procedures and facilities that allow

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for the safe testing of equipment with A3 refrigerants.

c. Defining Product Categories

Related to the foregoing discussion is how future GWP limits, if any, might be set with regard to a specific product category, AHRI is concerned about overly broad categorizations and imprecise or overly general terminology that fails to capture specific differences in equipment types and functions within a product category. This matters when new GWP limits and transition dates are considered, since what might work for some equipment types might not necessarily work for others, even if they are roughly in the same general category.

For example, AHRI is appreciative of CARB's efforts to demarcate temperature thresholds for Industrial Process Refrigeration – Chillers when establishing GWP limits and transition dates but feels CARB's category of "Other Air Conditioning" as a catch all category risks sweeping up distinct equipment types without sufficient regard for the feasibility of low or ultra-low GWP substitutes (and timelines to achieve such a transition).

Accordingly, AHRI would request in its Assessment Report that CARB seek to break down product categories and discuss possible approaches to GWP limits and transition dates in accordance with finely tuned assessments of the feasibility of currently available substitutes.

By way of illustration, the heat pump water heater market is nascent, and products are still maturing and being introduced. Typical residential water heating heat pump systems are indoor integrated products (heat pump and tank combined) with sealed systems. Residential heat pumps water heaters that use ultra-low (<10)/no GWP refrigerants are currently split or monobloc systems, where the tank is installed indoors and the heat pump is installed outdoors, due to safety concerns with high pressures (CO2) or flammability (propane) of the refrigerant. These represent a very small share of the emerging market and carry a premium as compared to integrated heat pumps. Switching from a conventional electric water heaters to an ultra-low GWP split system in residential installations is costly and difficult, due to the increased cost of equipment and installation, including routing of piping between the heat pump and tank and finding a location for the outdoor unit.

Please note that many low and ultra-low GWP solutions used globally are A3 refrigerants (high flammability), which (per UL 60335-2-40 the safety standard for heat pump water heaters) are currently only allowed for residential indoor use with very limited charge amounts, making it very challenging to use them within an integrated water heater. The commercial market is even more nascent for heat pump water heaters, with the same concerns as residential, save that UL 60335-2-40 does not cover outdoor monobloc units, resulting in a default to indoor charge levels. More work is needed to determine safe charge levels for the use of A2 (flammable) and A3 (high

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flammability) refrigerants for use in commercial monobloc heat pump water heater systems.

d. HFC Data

AHRI notes that HFC data contained in CARB's 2022 Scoping Plan for Achieving Carbon Neutrality appears to overstate the impact of HFCs in later years.

For example, Figure 4-17 of the report presents HFC emissions for 2022, 2030, and 2045. But this data, when plotted against the total HFC baseline for the United States, indicates that California's emissions of HFCs, as a percent of total US emissions, will increase by 140 percent by 2045 (compared to 2022). This strikes us as highly unlikely, given AIM Act regulations and CARB's current regulations.

As previously mentioned, AIM Act implementation will significantly affect the U.S. market and HFC emissions, and CARB's existing HFC rules will enhance those changes, including with regard to leaks and refrigerant recovery and reclaim. AHRI requests the opportunity to review and comment on data analysis and projections used in the Assessment Report to ensure that any future regulations by CARB on HFCs are based not just on historic data, but data from the next several years as AIM Act regulations continue to be implemented nationally.

e. Refrigerant Management

AHRI respectfully requests CARB to extend the comment period to this RFI regarding the refrigerant management aspects of SB 1206 until after AHRI has had time to review and formulate policy positions on the refrigerant management proposed rule published in the Federal Register just 10 days prior to the RFI's deadline.[4]

This proposed rule, under subsection (h) of the AIM Act, contains significant new requirements regarding leak detection and repair and, especially, requirements to use only reclaimed refrigerant in both the initial charge and servicing of major sectors and subsections in the HVACR industry. Many of these are highly relevant to SB 1206's emphasis on establishing "robust" reclaim programs, as well as CARB's own existing refrigerant management programs.

AHRI would welcome the opportunity to discuss with CARB the climate benefits of harmonizing any future requirements in California with whatever may be finalized by EPA in this current rulemaking, which would have national effect and potentially represent only the first in a series of rulemakings under this subsection to address the same refrigerant management

[4] *See* Phasedown of Hydrofluorocarbons: Management of Certain Hydrofluorocarbons and Substitutes Under Subsection (h) of the American Innovation and Manufacturing Act of 2020, 88 Fed. Reg., 72216 (October 19, 2023). EPA's comment period closes December 18, 2023.

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issues contemplated by SB 1206.

In particular, this includes SB 1206's references to technician and broader workforce training and certification, which as yet is not contemplated by EPA's proposed rule under subsection (h) of the AIM Act but may be a subject of a future rulemaking in the near term. Clearly, this is a field in which a single national requirement would benefit manufacturers, workers, and consumers alike.

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AHRI also welcomes the opportunity for further discussion of its comments with CARB. Please do not hesitate to contact me directly if I can provide any further information or answer any additional questions.

Sincerely,

Samantha M. Slater

Samantha M. Slater
Senior Vice President, Government Affairs