

December 7, 2020

Chair Mary Nichols
California Air Resources Board
1001 I Street, Sacramento, CA 95814
P.O. Box 2815, Sacramento, CA 95812

Re: AHRI Comments Regarding California Air Resources Board Draft Proposed Regulation: *Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End Uses*

Dear Ms. Nichols,

On behalf of the Air-Conditioning, Heating and Refrigeration Institute (AHRI), I respectfully submit the following proposal in response to California Air Resources Board (CARB) Draft Proposed Regulation: *Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and Other End Uses*.

AHRI is the trade association representing manufacturers of heating, cooling, water heating, and commercial refrigeration equipment. More than 300 members strong, 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, the industry supports 1.3 million jobs and \$256 billion in economic activity annually.

For more than a decade, AHRI has worked to support regulations to reduce the consumption and production of hydrofluorocarbons (HFCs). Our members were the original proposers and strongly supported the Kigali amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer to phase down HFC production and consumption as a proven, predictable, and practical approach to a transition away from refrigerants with high global warming potential (GWP). We have worked cooperatively with state regulators and environmental non-governmental organizations (E-NGOs) in an attempt to harmonize regulations, and we are working closely with both foreign and domestic governments to prepare and successfully execute the safe and orderly transition to low-GWP refrigerants.

We thank the CARB technical staff for working with AHRI and for addressing many of our concerns during the rule-making process especially with respect to concerns related to commercial refrigeration.

The California state legislature mandated a reduction of emissions of hydrofluorocarbons by 40% by 2030 compared to 2013 through Senate Bill (SB) 1383 signed into law in September 2016. Although the California state legislature mandated specific HFC transitions (SB-1013 enacted in 2018), those provisions were insufficient to reach this ambitious goal, which requires a transition faster than the timeline included in the Kigali HFC Amendment to the Montreal Protocol. As a result, CARB has included a provision in the 45-day language (October 20, 2020) limiting the use of air conditioning refrigerants having a global warming potential of 750 or greater on January 1, 2023.¹

“Air-conditioning (new) equipment, residential and nonresidential Refrigerants with a GWP of 750 or greater Prohibited as of January 1, 2023”

¹ Proposed Regulation Order Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning, and other end uses. <https://ww2.arb.ca.gov/sites/default/files/2020-07/DRAFT%20CA%20SNAP%20Amendments-Reg%20Text.pdf>

In 2018, AHRI and the Natural Resources Defense Council (NRDC), along with several individual companies, proposed CARB adopt a January 1, 2023 transition date in response to CARB's 2017² workshop proposing a transition date of January 1, 2021. The January 1, 2023 date was proposed to align with the date of a Department of Energy (DOE) efficiency standards change which mandated a transition in the same timeframe to enable manufacturers to make a single transition. As discussed in more detail below, the proposal was based upon the expectation that important building code amendments would be enacted in 2019, which at this time has not been done.

This transition will require the use of refrigerants with a different flammability classification than the current refrigerant (R-410A). Although the suitable alternatives are considered as having lower flammability (Class A2L) according to the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE),³ a modification to the building codes is required to enable the use of these alternatives. Code modifications must be made far enough in advance that manufacturers, who work with a three- to five-year design cycle, have the certainty necessary to design and produce compliant equipment.

The consensus safety standards that need to be adopted into code are:

- Underwriters Laboratories (UL) 60335-2-40, which is a product listing standard;
- ASHRAE 15, which describes installation requirements for equipment; and
- ASHRAE 15.2 (proposed), which extracts the residential installation requirements from ASHRAE 15.

It is important to note that industry's proffer of a 2023 transition date was premised on the expectation that safety standards and building codes would be timely, orderly, and updated to reflect changing technology--that has not occurred.

The building codes do not yet enable the use of low-GWP refrigerants.

The air conditioning industry is now in a challenging situation in the State of California. In 2019, the Uniform Mechanical Code (UMC) was not updated through the International Association of Plumbing and Mechanical Officials (IAPMO) process to enable the use of low-GWP refrigerants by adopting the necessary safety standards. California traditionally adopts the UMC on a three-year cycle and then makes modifications as needed. Although AHRI strongly advocated for the UMC to be updated to include the relevant safety standards during this cycle, the modifications did not receive the necessary votes in favor of the proposed changes.

California normally adopts modifications to the building code on a triennial cycle, but the state also has an off-cycle process for proposing and adopting modifications to the building codes, known as the "intervening code adoption cycle", between each triennial code update. A handful of state agencies, including the California Office of the State Fire Marshall (SFM), have the authority to propose code changes during the intervening code adoption cycle. Neither the SFM, nor any other agency, submitted a proposal to adopt the relevant safety standards into the California building code update that will go into effect in July 2021.

The next available California Building Standards Commission (CBSC) code cycle to ensure safety standard adoption, will have an effective date of January 1, 2023. The California Office of the State Marshall (SFM) would have to submit a code change proposal by February 2021 to meet the statutory obligation for a code change proposal. In January 2020, the SFM convened a working group to discuss the safety standards and the changes needed to the building codes to enable the use of low-GWP refrigerants. These meetings have been contentious with significant

² Public Workshop on Rulemaking Proposal: High Global Warming Potential Refrigerant Emissions Reductions California Air Resources Board October 24, 2017. https://ww3.arb.ca.gov/cc/shortlived/meetings/10242017/public_workshop_snap-california_10-24-17_presentation.pdf?_ga=2.182187808.621576105.1573738237-276427812.1565094831

³ ASHRAE 34 documents refrigerant classifications.

opposition to the introduction of low-GWP, A2L refrigerants especially in residential air-conditioning equipment despite the significant body of myth-busting research discussed in this forum. However, the SFM stated on October 1, 2020 and again unequivocally on December 3, 2020 that they would not submit a code change proposal for the 2021 Triennial Code Cycle, delaying any proposal until the 2022 Interim Code Cycle which will only be in effect July 2024. In fact, the SFM went even further stating that they would not even consider removing the prohibition added to the 2021 UMC against the use of low-GWP, A2L refrigerants in homes as requested by AHRI.

Despite valiant efforts from industry, the SFM and IAMPO have not only conclusively declined to adopt the new safety standards into the building codes, they have also introduced an express prohibition of the use of low-GWP refrigerant in residential AC systems. CARB is well aware of the status of the building codes, as its representatives participated in all of the SFM A2L working group meetings including the most recent meeting on December 3, 2020 wherein the chair of that committee unequivocally stated that the SFM would not offer any amendments to enable the use of low-GWP refrigerants during the present cycle. **It is simply untenable for the California Air Resources Board to require for the use of low-GWP refrigerants in 2023 when the use and installation of these refrigerants is prohibited by the state building code.** Importantly, California law recognizes the blatant inequity of setting compliance dates that are unachievable. Health and Safety Code section states:

If necessary to carry out its duties under this section, the state board shall adopt and enforce rules and regulations that anticipate the development of new technologies or the improvement of existing technologies. **The rules and regulations shall require standards that the state board finds and determines can likely be achieved by the compliance date set forth in the rule.**⁴

Based on all available information, CARB cannot make the requisite finding that a 2023 compliance date is achievable. Regardless of statutory mandates, a common sense of justice and good government dictates that regulatory bodies simply cannot set unachievable standards. CARB does not have the authority to make determinations about the safe use of A2L refrigerants. That authority lies exclusively with the SFM, the California Building Code Commission (CBSC), and the legislature. AHRI has repeatedly sought coordination between the various agencies on this matter, and as of the date that these comments were submitted CARB and the SFM have not resolved the A2L dilemma; industry remains in the impossible situation of meeting CARB's mandate on the one hand, compliance with which is prohibited by the state safety codes, on the other hand. CARB has been aware for over three years that the building codes would present a challenge to the implementation of its short-lived climate pollutant (SLCP) strategy. The Board had an affirmative duty to work with the SFM and state safety code agencies prior to finalizing the SLCP strategy,⁵ and yet it was industry who has coordinated the limited interaction between the various departments when it became clear that the conflicting agencies had no path toward a resolution. As of the date of this filing, no path to compliance is achievable by 2023. Manufacturers have dedicated substantial resources and worked diligently to design efficient, effective low-GWP products, but it remains patently illegal to sell these products in California. The earliest achievable compliance date is January 1, 2025, but even that date is entirely contingent upon successful coordination between CARB and SFM resulting in the adoption of updated equipment safety standards into the California building codes.

Importantly, the notion of an achievable compliance date is premised both *when* building codes are updated and *what* those codes contain. If California, like Washington State, adopts the existing published UL and ASHRAE safety standards into the building codes, then manufacturers can design and produce compliant equipment on a

⁴ HSC § 39602.5 (pertaining to emissions limits; the principle holds for HFC emissions limits).

⁵ HSC § 39730.5 ((b) Prior to approving the short-lived climate pollutant strategy pursuant to subdivision (a), the state board shall do all of the following:

(1) Coordinate with other state and local agencies and districts to develop measures identified as part of the strategy.)

relatively truncated timeline; however, if the state building code adopts substantially amended safety standards or sets additional design or testing requirements, then industry must have at least three years to react to such changes, which will require time-consuming product redesign, retesting, recertification of components, and recertification to safety and efficiency standards.⁶

There are over 4 million products listed in AHRI's Directory of Certified Product Performance with over 9 million new products sold and installed annually in homes and businesses maintained by over 400,000 technicians. All products are regulated by the U.S. Department of Energy (DOE) and must meet federal energy efficiency standards. Federal regulations recognized complexities in stationary air conditioning products by requiring 5-year lead times from promulgation of final efficiency regulations versus 3 years for other regulated products to allow for sufficient time to redesign, test, manufacturer, distribute, educate, and install equipment. Even if the SFM were to unexpectedly accomplish a code change during the 2021 Triennial cycle, twelve months⁷ is simply not enough time to design, build, certify, and bring a compliant product to market.

The Initial Statement of Reason (ISOR), published with the proposed regulation on October 20, 2020, anticipates that 2023 is an unachievable compliance date and sets forth an alternative compliance pathway for air conditioners. There is limited detail presented in the alternative compliance pathway described in the ISOR, so stakeholders lack sufficient notice to understand the exact parameters of what an alternative program may look like. However, the limited information in the ISOR suffers from two fatal flaws: 1. It is characterized as a "delay" for which manufacturers must compensate; and 2. It proposes a reclaim program that appears unachievable on its face. Manufacturers, stakeholders, and industry are not seeking a "delay" from 2023 to 2025. Rather, regulated stakeholders are asking CARB to promulgate a regulation to which they can comply—as described above, a 2023 compliance date for low-GWP AC is a legal impossibility. To-date the next possible regulatory compliance timeline that meets basic principles of fairness is 2025. Second, the proposed reclaim program that CARB contemplates in the ISOR cannot be supported because there is simply not enough R-410A available in retiring systems to be repurposed for use in new systems sold into California. While AHRI strongly supports refrigerant reclaim and acknowledges the vital role that recycled refrigerant will play in the transition to low-GWP refrigerants consistent with the phase down set forth in the Kigali Amendment to the Montreal Protocol, CARB's expectation that reclaim can be used in new equipment is not realistic. AHRI has conducted extensive research to ascertain the existing availability of reclaimed R-410A. Sufficient reclaimed R-410A will not be available within California to charge all new equipment manufactured in 2023 even at peak availability in 2030.⁸ The Environmental Investigative Agency (EIA) proposal in the ISOR requires that more than 100% of the refrigerant charged used in new equipment be reclaimed, which is untenable given the very limited availability of refrigerant for reclaim.

AHRI has worked tirelessly to develop and disseminate information related to the safe transition to low-GWP refrigerants.

⁶ CARB staff stated on multiple occasions during various public meetings that manufacturers have been aware of the proposed 2023 compliance timeline for at least two years. Principles of administrative law and due process dictate that a government agency cannot require stakeholders to dedicate resources to comply with any regulation until it is final. This regulation is an excellent example of why due process requires clear notice. Manufacturers must design to prescribed standards. As of the date of this submission, no parties—neither CARB, SFM, nor manufacturers—have adequate notice of what the prescribed safety standards will be in California. Stakeholders have no notice of their regulatory requirements, and therefore a 2023 compliance date contravenes basic due process. A 2025 compliance date could suffer from the same inadequacies if the prescribed design requirements are amended upon adoption into the building code and manufacturers lack time to react.

⁷ Unions and contractor organizations have indicated to AHRI that they need eighteen to twenty-four months for training prior to the transition.

⁸ Anthesis 2020 reclaim study is attached notes that approximately 8200 metric tons of R-410A will be available nationally in 2023 for recovery. CARB estimates 20% loss at end-of-life and less than 20% of the total would be available within California's borders. There are additional losses (up to 30%) during the purification process allowing for less than 1000 tons within the state to serve an estimated market demand of 4500 metric tons.

Over the past five years, AHRI, in cooperation with the DOE, CARB and other concerned stakeholders have invested nearly \$7 million in research⁹ into the behavior and safe use of next generation refrigerants. This research has been used to inform the development of the safety standards and training in preparation for the transition.

In 2019, AHRI launched the Safe Refrigerant Transition Task Force^{10,11} (SRTTF) to address concerns related to the transition, evaluating the end-to-end supply chain for conversion readiness, to identify needs, and resolve issues or make recommendations to enable the safe use of low-GWP refrigerants in a timely manner to meet regulatory requirements.

In 2020, throughout the SFM A2L work group process, AHRI provided responses to every question and comment posed by the members and observers of the working group process backed by sound technical research. The SRTTF also hosted “The AHRI Refrigerant Webinar Series” creating a venue for experts to explain the volumes of research funded by AHRI and others specifically at the request of members of the working group to gain a better understanding of that research. More than 1,600 attendees learned about the research throughout the series videos of which have also been posted on-line at the request of members of the work group.¹²

In early 2020, AHRI agreed to fund and provide technical support for a project to develop training for firefighters with Underwriters Laboratories LLC (UL LLC). The laboratory work was completed in early December 2020 and the UL report is slated to be complete by the end of January 2021. The SFM does not view this as timely enough to submit a code change proposal for the 2022 Triennial Code Cycle.

The entire supply chain is facing the challenge of the COVID-19 pandemic.

The pandemic has disrupted businesses and preparations for the 2023 transition. Based on an AHRI member survey, with representation from the entire industry of essential heating and cooling equipment manufacturers, the pandemic directly led to at least temporary closures of manufacturing facilities for sixty percent of members by April 2020 and over eighty percent of members are experiencing reduced manufacturing capacity. Most members have been forced to furlough staff to address the economic impact of the COVID-19.

The pandemic has also changed the long-term outlook of the industry. Half of the industry has experienced lower availability of resources for research and development, resulting in the postponing of 2020 investment for new products as planned. Over 80 percent of respondents are experiencing supply chain disruptions. Some resources have been reallocated to address supply chain disruptions (e.g. qualification of alternate components), while other resources have been unavailable for other reasons (e.g. furlough or social distancing requirements). By mid-April, one-third of AHRI members were already unable to consistently source parts, components, and supplies needed to manufacture equipment. Additionally, almost half of the respondents were experiencing delays in equipment safety and performance certifications.

To combat COVID-19, manufacturers have taken important steps like social distancing, moving to remote work, provide additional healthcare support to ensure the safety and well-being of their employees, prevent the

⁹ Research results can be found at this website. <http://www.ahrinet.org/Resources/Research/AHRI-Flammable-Refrigerants-Research-Initiative>

¹⁰ Differences in the properties of next generation refrigerants (e.g., flammability and toxicity) may require changes to current practices to minimize risk while meeting regulations. Some new refrigerants are historic products that have not been used in some time or that will be used with larger charge sizes (e.g. ammonia and hydrocarbons).

¹¹ For more information about the AHRI Safe Refrigerant Transition Task Force see the following website, <http://www.ahrinet.org/SafeRefrigerant>.

¹² [AHRI Refrigerant Webinar Series \(ahrinet.org\)](http://www.ahrinet.org/AHRI-Refrigerant-Webinar-Series)

spread of illness, and comply with state requirements. These steps, however, have led to reduced staffing and resources to support transition readiness throughout the supply chain.

AHRI proposes that CARB limit the GWP for refrigerants used in air conditioning effective January 1, 2025 with the following provisions and commitments.

In December 2019, it became clear that the 2021 UMC would not enable the use of low-GWP refrigerants for AC. The AHRI Board of Directors decided that they were willing to continue to support a 2023 transition date in California provided the codes were updated by January 2021. The AHRI Board of Directors subsequently voted to support legislation to direct CBSC to adopt the relevant safety standards into the state building codes to safely enable the use of low-GWP refrigerants by incorporating the output of the CSFM process into the legislation, which was also meant to support any other outstanding issues.

AHRI explained to CARB staff the need for two years between the effective date of the building codes and the effective date of the AC refrigerant transition to ensure that equipment would be listed through Nationally Recognized Testing Laboratories (NRTL), which can take 12-15 months. For training, AHRI also explained that contractors and unions would require 18-24 months after the building codes are finalized. AHRI explained the strategy to move forward with legislation in hopes of sufficient time to prepare for a 2023 transition date.

With the onset of the pandemic, it became clear that AB 3316 would not move forward and that the industry's ability to prepare for the transition would be further hampered by supply chain disruptions and availability of personnel. AHRI informed CARB that the industry was out of options for timely code changes to be prepared for a 2023 transition. AHRI asked CARB staff to change the transition date until 2025 to allow for 2 years after the 2021 Triennial Building Codes effective date to allow time to prepare for the regulation.

CARB asked AHRI to propose some options to reduce greenhouse gases to help to compensate for the new date.

AHRI Proposal #1¹³

On July 30, 2020, AHRI proposed that CARB change the transition date to January 1, 2025 maintaining a 750 GWP limit for newly manufactured stationary air conditioning equipment, understanding that safety standards and the California codes need to be aligned.

- Prohibit the sale, re-sale, transfer and/or import for use in California of newly produced R-410A, except for export from California on January 1, 2025.
 - Require the collection of all refrigerants at end-of-life
 - Require reclaimed refrigerant to meet purity requirements of AHRI 700 standard
 - Allow nationally reclaimed R-410A to be used in California¹⁴
 - Equipment manufacturers will promote and encourage the recovery of R-410A through education of their service and dealer networks
 - "Seller" of R-410A must report sales to CARB as a registered seller. Registered "Reclaimers" of R-410A must also report sales to CARB. Any "Reclaimer" or "Seller" must keep records of any sales to end-users. This should provide a mechanism to check reports from both "Sellers" and

¹³ AHRI made this proposal in a meeting on July 22, 2020 to CARB and it is formalized in the proposal on July 30, 2020.

¹⁴ If we assume an average lifetime of air conditioning equipment of approximately 20 years, then 5% are replaced annually and that refrigerant can be reclaimed for use which precisely matches the need for servicing refrigerant if leak rates approximately 5% (including emissions during servicing equipment). Although, this seems like a perfect match, there are additional losses during the reclaim process, so additional reclaim will be needed from other states to support California.

“Reclaimers”¹⁵ which should ease the enforcement burden and ensures compliance and attainment of necessary emission reductions.

On August 3, 2020, CARB rejected the first proposal from AHRI. On August 12, 2020, AHRI made a second proposal, which CARB included in the Initial Statement of Reason (ISOR) of the October 20, 2020 proposed rule.

AHRI Proposal #2

Air conditioning (AC) original equipment manufacturers (OEMs) will enable refrigerant recovery from 2022 to 2030 to offset the quantity of refrigerant higher than 750 GWP the OEM placed in new equipment shipped to and not exported from California in 2023 and 2024 in carbon dioxide (CO₂) equivalent (eq) units (using CARB’s Standardized Regulatory Impact Assessment (SRIA) leak rates and equipment lifetimes), GHGI). The amount to be offset will be adjusted up or down (GHGA) to recognize the refrigerant used in new equipment sold between 2023 and 2030 by: (1) Changes in refrigerant charge size and (2) Refrigerant GWP less than 750 GWP.

OEMs may facilitate recovery, purchase or use reclaimed refrigerant, or enable the destruction of recovered refrigerant in the equivalent quantity in CO₂ equivalent units from 2022 to 2030 to compensate.

The details of the AHRI Proposal #1 and 2 are provided in the Attachments. The proposals will enable the recovery and use of reclaimed refrigerant for servicing, which will encourage best practices necessary for a safe transition to lower GWP refrigerants and to prepare for the Kigali HFC phase-down nationally. It also broadens industry engagement in the effort to reduce HFC emissions to those most able to reduce them.

AHRI Proposal #3

AHRI and CARB discussed AHRI Proposal #2 for several months and an agreed-upon 3rd proposal, as the result of those discussions, will be presented to the Board by CARB staff on December 10, 2020.

AHRI thanks CARB for the continued dialogue to find a practical way forward to meet California’s ambitious climate goals. Please contact Helen Walter-Terrinoni at hwalter-terrinoni@ahrinet.org or 302-598-4608.

Sincerely,

Helen Walter-Terrinoni

Helen Walter-Terrinoni
Vice President, Regulatory Affairs
Air-Conditioning, Heating, and Refrigeration Institute

¹⁵ An initial and ending inventory could also be reported annually to further check transactions.