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Re: AHRI Comments Regarding Washington Proposed Rule Update - Chapter 173-443 WAC, Hydrofluorocarbons (HFCs).

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Dear Ms. Kildahl,

On behalf of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI), I respectfully submit the following comments in response to the Washington Department of Ecology (Ecology) Proposed Rule Update - Chapter 173-443 WAC, Hydrofluorocarbons (HFCs).

AHRI represents more than 330 manufacturers of heating, ventilation, air conditioning, and refrigeration (HVAC-R) and water heating equipment. It is an internationally recognized advocate for the HVAC-R 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 U.S. alone, AHRI members companies, along with distributors, contractors, and technicians, employ more than 1.3 million people. Many of our members operate small businesses providing the important lens of that perspective.

AHRI has worked for more than a decade to support regulations to reduce the consumption and production of hydrofluorocarbons (HFCs). Our members strongly supported the agreement to amend the Montreal Protocol on Substances that Deplete the Ozone Layer to phase down HFC production and consumption as a proven, predictable, and practical approach. We demonstrate that support in our work with state regulators, environmental non-governmental organizations (E-NGOs) and other stakeholders around the world even sharing information regarding transitions with local industries to encourage a positive outcome. AHRI and its members greatly appreciate the efforts of the Washington State Department of Ecology (Ecology) staff who published this NOPR to further this work.

## Definitions and Regulatory Alignment

AHRI is pleased to update Ecology on the status of federal HFC phasedown rulemakings expected to be promulgated by the EPA. The Environmental Protection Agency recently proposed the Technology Transitions Rule under the American Innovation and Manufacturing

(AIM) Act. The proposed Technology Transitions (TT) support the implementation of the AIM Act by guiding manufacturers' priorities for transition rather than purely relying on the market forces of the phase-down to facilitate transition timing. AHRI and other organizations have submitted petitions supporting Technology Transitions to provide for orderly equipment transitions and to avoid the disorderly transition efforts witnessed in other countries during the phase-down.

Additionally, EPA has considered many of AHRI's past petitions for GWP limits and transition compliance effective dates for various categories of equipment. AHRI worked with nearly one hundred other stakeholders affected by the TTs to develop its various petitions striving to reach consensus on appropriate timing for transitions and GWP limits.

AHRI strongly urges Ecology to align its regulatory structure with the anticipated federal regulations to reduce burden on retailers (all end users of refrigerated products), reduce burden on manufacturers, increase clarity for the market, and support the success of the HFC phasedown schedule. AHRI understands that Ecology has given special consideration to its drafted definitions to promote alignment with existing regulations both federally, and in states such as California. Some definitions and requirements could still benefit from modifications to increase harmonization with other regulatory structures. Principally, AHRI recommends that Ecology update its definitions to match those used by EPA in its Significant New Alternatives Program (SNAP<sup>1</sup>), the American Innovation in Manufacturing Act<sup>2</sup> (AIM Act), and the California Air Resources Board (CARB) in its HFC rulemaking.<sup>3</sup> Please note that "Global Warming Potential," "GWP," "Global Warming Potential Value," or "GWP Value" can refer to the 100-year GWP value as it appears in WAC 173-441-040, or the 100-year GWP value published by the Intergovernmental Panel on Climate Change (IPCC) in its Fourth Assessment Working Group 1 Report (AR5) (IPCC, 2013).

### **Residential and Commercial Air Conditioning and Heat Pumps**

AHRI recommends that Ecology define "**Residential and Commercial Air Conditioning and Heat Pumps**" using the EPA SNAP Definition; This end-use includes equipment that cools enclosed spaces in households and commercial industries but excludes chillers<sup>4</sup>. It includes room air conditioning such as window units, packaged terminal air conditioners (PTAC) and heat pumps (PTHP), and portable air conditioners; central air conditioners (i.e., ducted); non-ducted systems (both mini and multi splits); packaged rooftop units; water-source and ground-source heat pumps; and other products. Residential and commercial air conditioning and heat pumps are often distinguished from chillers by the fact that they condition the air directly, rather than cool (or heat) water that is then used to condition air.<sup>5</sup>

### **Air Conditioning**

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<sup>1</sup> [Significant New Alternatives Program](#)

<sup>2</sup> [American Innovation in Manufacturing Act](#)

<sup>3</sup> [HFC rulemaking](#)

<sup>4</sup> A minor modification has been made to EPA's definition.

<sup>5</sup> [Substitutes in Refrigeration and Air Conditioning | US EPA](#)

## Department of Ecology Definition of “Air Conditioning”

“Air conditioning” means the process of treating air to meet the requirements of a conditioned space by controlling its temperature, humidity, cleanliness, or distribution. Air conditioning includes chillers, except for purposes of GWP thresholds under WAC 173-443-040, and heat pumps. Air conditioning applies to stationary equipment and does not apply to mobile air conditioning, including those used in motor vehicles, rail and trains, aircraft, watercraft, recreational vehicles, recreational trailers, and campers (RCW 70A.60.010).

## CARB Definition of Air Conditioning

“Air-conditioning (AC) Equipment” or “Air-conditioning System” means equipment that cools, heats or dehumidifies spaces in residential or non-residential settings for comfort cooling and other purposes, including, but not limited to, room air conditioning such as window units, packaged terminal air conditioners (PTACs), packaged terminal heat pumps (PTHPs), residential dehumidifiers, and portable air conditioners; ducted central air conditioners and heat pumps; non-ducted air conditioners and heat pumps (both mini- and multi-splits); packaged rooftop units; water-source and ground-source heat pumps; and other dehumidifiers. “Air-conditioning equipment” also includes computer room and data center cooling and remote condensing units for comfort cooling applications. Chillers are defined separately from “air-conditioning equipment.” “Air conditioning equipment” refers to stationary air-conditioning equipment and does not include mobile air-conditioning equipment, including that used in vehicles, rail and trains, buses, aircraft, watercraft, recreational vehicles, recreational trailers, and campers.<sup>6</sup>

## Applicant

AHRI recommends that Ecology define “Applicant” in the following manner; “Applicant” means, for purposes of this regulation, any person who sells, leases, rents, installs, uses, or otherwise enters into Washington commerce without subsequently transporting out of Washington commerce any substance in end-uses listed in WAC 173-443-040(2) or (3) “who applies for a variance under WAC 173-443-080”. AHRI requests that Ecology ensure that equipment manufactured before the compliance date can still be rented in WA State as well.

## Chiller

AHRI recommends that Ecology define “**Chillers**” using the EPA SNAP Definition; “Chillers” cool or heat water, which is then circulated to provide comfort cooling throughout a building or other location. Chillers can be classified by compressor type, including centrifugal and positive displacement (which includes heat pump chillers).

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<sup>6</sup> [Air-conditioning Equipment | California Air Resources Board](#)

Chillers used to cool or heat industrial processes are discussed under Industrial Process Refrigeration.<sup>7,8</sup>

AHRI notes that EPA specifically differentiates between chillers for comfort cooling/heating and chillers used in indirect refrigeration systems as noted below and recommends that the Department of Ecology use these separate definitions so that there is harmonization with action taken by EPA.

Indirect supermarket designs include secondary loop systems and cascade refrigeration. Indirect systems use a “chiller” (not to be confused with the “chiller” end-use) or other refrigeration system to cool a secondary fluid that is then circulated throughout the store to the cases.<sup>9</sup>

### **Commercial Ice Machines**

AHRI recommends that Ecology define “**Commercial Ice Machines**” using the EPA SNAP Definition; “Commercial ice machines” are used in commercial establishments (e.g., hotels, restaurants, convenience stores) to produce ice for consumer use. Ice machines produce ice in various sizes and shapes, and with different retrieval mechanisms (e.g., dispensers or self-retrieval from bins).<sup>10</sup>

### **Commercial Refrigeration Equipment**

AHRI recommends that Ecology define “**Commercial Refrigeration Equipment**” using the EPA SNAP Definition; “Retail food refrigeration”, or “commercial refrigeration” as including equipment designed to store and display chilled or frozen goods for commercial sale. This end-use includes the following categories of equipment: stand-alone equipment, remote condensing units, and supermarket systems.

“Refrigerated food processing and dispensing equipment” dispenses and often processes a variety of food and beverage products. This equipment can be self-contained or can be connected via piping to a dedicated condensing unit located elsewhere. Equipment within this end-use category include but are not limited to: chilled and frozen beverages (carbonated and uncarbonated, alcoholic and nonalcoholic); frozen custards, gelato, ice cream, Italian ice, sorbets and yogurts; milkshakes, “slushies” and smoothies, and whipped cream.<sup>11</sup>

### **Date of Manufacture**

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<sup>7</sup> [Industrial Process Refrigeration](#)

<sup>8</sup> [Substitutes in Refrigeration and Air Conditioning | US EPA](#)

<sup>9</sup> [Retail Food Refrigeration | US EPA](#)

<sup>10</sup> [Substitutes in Refrigeration and Air Conditioning | US EPA](#)

<sup>11</sup> [Retail Food Refrigeration | US EPA](#)

AHRI requests that Ecology define the **“Date of Manufacture of Self-contained Equipment”** as the date found on the nameplate for equipment charged at the factory. Self-contained equipment manufactured prior to an effective compliance date of January 1, 2026 to be charged with the HFC or HFC blend after January 1, 2026.

AHRI requests that Ecology define the **“Date of Manufacture of Remote Equipment”<sup>12</sup>** as the earlier date of either the date on the equipment nameplate or the date that the refrigeration circuit was completed and initially filled with refrigerant for equipment that is not charged in the factory.

Remote condensing equipment manufactured prior to the effective compliance date of January 1, 2026 can be charged with the HFC or HFC blend allowed prior to January 1, 2026.

AHRI requests the Department of Ecology to harmonize with the AIM Act in the regulation for technology transitions. If the Department of Ecology is unable to wait for the finalization of the TT Rule, AHRI asks for the following:

### **Existing Equipment**

AHRI requests that Ecology define **“Existing Equipment”** as equipment with a date of manufacture prior to the compliance date of the regulation. Existing Equipment may be maintained using the refrigerants allowed before the compliance date.

### **New Refrigeration Equipment**

AHRI asks that Ecology define **“New Refrigeration Equipment”** as equipment that is first installed using new components, used components, or a combination of new and used components, or modified such that any refrigeration equipment in a new facility that is first installed using new components, used components, or a combination of new and used components applicable to refrigeration end-uses, in new construction; an existing facility not previously used for cold storage, retail food refrigeration, commercial refrigeration, industrial process refrigeration, or ice rinks; or an existing facility used for cold storage, retail food refrigeration, commercial refrigeration, or industrial process refrigeration that has undergone replacement of 75 percent or more of its evaporators (by

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<sup>12</sup> Note that AHRI members would also support the California Air Resources Board structure and definitions for New Refrigeration Equipment and New Facilities, as well as the structure of their 2020 regulations.

A New Facility” means any of the following. (1) New construction; (2) An existing facility not previously used for cold storage, retail food refrigeration, commercial refrigeration, industrial process refrigeration, or ice rinks; or (3) An existing facility used for cold storage, retail food refrigeration, commercial refrigeration, or industrial process refrigeration that has undergone replacement of 75 percent or more of its evaporators (by number) and 100 percent of its compressor racks and condensers.

<sup>13</sup> EPA could then use an exception: the Compliance Date does not apply to any new facility with new refrigeration equipment that received an approved building permit prior to the compliance date so long as the circuit holding the regulated substance is completed, charged with a full charge, and otherwise made functional for use for its intended purpose no later than January 1, 2027.

number) and 100 percent of its compressor racks, condensers, and connected evaporator loads.

A compliance date of January 1, 2026 should apply to “New Refrigeration Equipment” as defined above.

- Ecology should allow for variances if a portion of the system is labeled with a later date.
- Ecology should allow for replacement of appliance components, including but not limited to cases, compressors, valves, condensers, evaporator units, piping and other components to keep that existing system running.
- Ecology should allow for remodel or retrofits, which will likely result in the use of new, more efficient, cases and higher operational efficiency and reduction of leaks.
- Ecology should allow for installation of commercial and applied products where building permits have already been received.

AHRI recommends that Ecology allow replacement of components, parts, and partial units in existing refrigeration equipment. HVAC-R and water heating equipment, which is designed for 10 to 50 years of service, represents a significant investment for homeowners, building owners and retailers. Existing equipment should continue to be readily maintained throughout its lifetime. Due to the significant investment in equipment, regulatory limitations should not obsolete it and cause economic hardship, and Ecology must account for the carbon impact of prematurely obsoleting equipment.

The long-term environmental benefit of HFC regulations including the AIM Act and WAC 173-443 is from the phase-down of the supply of HFCs. No technology will impact that benefit, and the HFC price increases and lack of availability of refrigerants will provide a market force to transition to lower GWP where possible. To the contrary, limiting the sale of existing equipment will mean that that it must be collected and shipped for either landfilling or recycling creating unnecessary waste.

Ecology should not mandate replacement of any equipment that has a date of manufacture of the compressor-bearing equipment prior to the effective compliance date. Ecology should specify that replacement components may be manufactured, imported or exported, and installed after the Compliance Date to maintain, service, or remodel an existing field-erected system in an existing facility, provided they are labeled, “For retrofit, replacement, remodel, or maintenance only.”

### **New Air Conditioning Equipment**

AHRI requests that Ecology define “**New Air Conditioning Equipment**” and set WAC 173-443 compliance dates related to “New Air Conditioning Equipment” on January 1, 2025, excluding for VRF, on January 1, 2026.

AHRI requests that Ecology define “**New Air Conditioning Equipment**” as any air-conditioning equipment or system that is one of the following: (1) First installed using new components, used components, or a combination of new and used components; (2) An

existing system with a single condenser and single evaporator that has a new exterior condenser, condensing unit, or remote condensing unit; or (3) An existing system having more than one condenser and/or more than one evaporator that is modified such that the system has undergone cumulative replacements, within any three-year time period, of 75 percent or more of its indoor evaporator units (by number) and 100 percent of its air source or water source condensing units.

At the very least, air handlers and other components should be allowed to be replaced that are part of a data center or computer room, as defined below, or a commercial system with 62.5 tons capacity or more. These systems are oftentimes integrated into the structure of the building creating significant cost for building owners. The condenser or condensing unit is often housed outside and needs to be replaced several times during its lifetime. It would be cost-prohibitive to replace the indoor units with A2L compatible units instead of allowing for maintenance and repair.

### **AHRI requests that Ecology harmonize servicing needs of VRF equipment.**

When CARB completed its rule to phase down high GWP equipment, a specific tandem service capability for VRF equipment was included. This high-efficiency equipment requires a unique installation which precludes a customer from easily being able to switch from one refrigerant to another. These systems will not utilize drop-in and place refrigerant lines throughout a building. The environmentally friendly equipment requires a substantial investment for the installation of the ultimate consumer.

In the CARB requirements, up to 75% of indoor units and 100% of outdoor units can be replaced in case of significant servicing needs and for warranty purposes. AHRI requests Ecology include information about the capability to ensure a period of ordinary utilization of a customer matches CARB requirements for harmonization and to ensure consumers who invested in high-efficiency solutions are able to service them.

### **Regulated Refrigerant**

AHRI recommends that Ecology define “**Regulated refrigerant**” as a class I or class II substance as listed in Title VI of section 602 of the federal Clean Air Act amendments of November 15, 1990 (RCW 70A.60.010).

### **AHRI supports a proposed limit of 700 GWP for AC/HPs and chillers.**

AHRI asks Ecology to observe that the EPA’s AIM Act TT Rule currently has no approved refrigerants with a GWP between 700 and 750 for AC/HPs. AHRI concurs that 700 GWP would allow for commercially available alternatives to be used in ACs, HPs, and chillers.

AHRI has asked EPA to list R513A for residential and commercial AC/HP equipment and likewise requests that Ecology list R513A for residential and commercial AC/HP equipment. There are some smaller manufacturers that would like to commercialize this refrigerant for

specialized equipment. Please note that EPA SNAP Rule 25 has not yet been finalized when considering these comments.

**AHRI supports the restriction of the use of HFCs and blends containing HFCs that have a GWP of 700 or greater for new equipment beginning January 1, 2025, excluding equipment where the temperature of the chilled fluid leaving the equipment (i.e., the supply temperature to the facility) is less than -58 °F (-50 °C). AHRI asks for a small number of exceptions to this proposal.**

AHRI notes that EPA excluded chillers where the chilled fluid leaving the equipment is less than -50C as requested by AHRI in its petitions. AHRI requests that Ecology likewise exempt ultra-low<sup>14</sup> temperature for all equipment due to continued challenges in identifying low GWP alternatives with sufficient efficacy.

**AHRI continues to ask that medical, scientific, laboratory, and research applications be exempted from any specific requirements related to this regulation.**

Medical, scientific, laboratory, and research applications may require unique conditions and refrigerants to meet them in very small volumes. Innovation should not be stymied by limiting the ability to develop or research of new products or to protect medicines and vaccines. Equipment used for this purpose is well maintained with very low leak rates and refrigerant is responsibly collected at end-of-life.

**AHRI requests that Ecology limit the GWP for ice skating rinks to 700 GWP as chillers are used interchangeably for ice skating rinks and other uses.**

Creating a specialized product class for ice skating rinks would result in additional costs and delays during times of stress in the supply chain. Chillers are well maintained with very low leak rates and refrigerant is responsibly collected at end-of-life.

The long-term environmental benefit of WAC 173-443 is from the phase-down of the supply of HFCs. No technology will impact that benefit, and the HFC price increases and lack of availability of refrigerants will provide a market force to transition to lower GWP where possible.

**AHRI asks for exceptions for equipment used in dairy farms, data centers, computer rooms, and chemical production facilities. These markets are currently included in Industrial Process Refrigeration (IPR). Note that AHRI requests a January 1, 2026 transition date for IPR equipment.**

AHRI notes that there are some unique technical considerations of industrial process refrigeration equipment for which an exception is needed from proposed GWP limits.

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<sup>14</sup> SNAP defines very low temperature refrigeration systems require maintaining temperatures at approximately -80 degrees Fahrenheit (-62 degrees Celsius) or lower. Examples include medical freezers and freeze-dryers, which generally require extremely reliable refrigeration cycles to maintain low temperatures and must meet stringent technical standards that do not normally apply to refrigeration systems.



Manufacturers and end-users of certain chemical processing equipment ask that Ecology ban the following refrigerants for use in chillers in chemical production facilities.

AHRI requests that Ecology prohibit the following refrigerants in new IPR Equipment rather than implementing GWP limits for IPR end-uses:

- Industrial Process Refrigeration equipment (new) designed for chilled fluid leaving the equipment at temperatures  $\leq +35$  °F (2 °C) and  $> -10$  °F (-23 °C) ban the use of the following refrigerants after January 1, 2025: R-404A, R-507, R-507A, R-428A, R-422C, R-434A, R-421B, R-408A, R-422A, R-407B, R-402A, R-422D, R-421A, R-125/ R-290/R134a/R-600a (55/1/42.5/1.5), R-422B, R-424A, R-402B, GHG-X5, R-417A, R-438A, R-410B
- Industrial Process Refrigeration equipment (new) designed for chilled fluid leaving the equipment at temperatures  $\leq -10$  °F (-23 °C) and  $> -58$  °F (-50 °C) ban the use of the following refrigerants after January 1, 2025: R-404A, R-507, R-507A, R-428A, R-422C, R-434A, R-421B, R-408A, R-422A, R-407B, R-402A, R-422D, R-421A, R-125/ R-290/R134a/R-600a (55/1/42.5/1.5), R-422B, R-424A, R-402B, GHG-X5, R-417A, R-438A, R-410B

Manufacturers and end-users of equipment for dairy farms ask that Ecology ban the following refrigerants for use in dairy farm IPR applications as of January 1, 2025.

- Industrial Process Refrigeration equipment (new) designed for chilled fluid leaving the equipment at temperatures  $\leq +35$  °F (2 °C) and  $> -10$  °F (-23 °C) ban the use of the following refrigerants after January 1, 2025: R-404A, R-507, R-507A, R-428A, R-422C, R-434A, R-421B, R-408A, R-422A, R-407B, R-402A, R-422D, R-421A, R-125/ R-290/R134a/R-600a (55/1/42.5/1.5), R-422B, R-424A, R-402B, GHG-X5, R-417A, R-438A, R-410B

Manufacturers and end-users of computer room air conditioning (CRAC) equipment ask that Ecology limit the GWP of refrigerants to 700 GWP, if CRAC equipment (including chillers) are not separated into another category.

**AHRI asks that refrigerated and frozen beverages covered under UL 621 be provided with an exception to any transition requirements.**

UL 621 standard addresses some refrigerated and frozen beverage equipment, such as soft-serve ice cream. It has not been updated to allow for flammables and they are excluded from scope for CSA/UL 60335-2-89. Refrigerated and frozen beverage equipment are in scope of CSA/UL 60335-2-89, but some markets were not included. These small markets will need an extension until this is resolved.

AHRI requests that the transition effective date for other food processing equipment that is included in UL 60335-2-89 is set as January 1, 2026, as requested for all other refrigeration application due to the reasons listed earlier in the document.

**AHRI recently was made aware of concerns related to transition readiness for certain Commercial Refrigeration Equipment (CRE).**

Some manufacturers of roll-ins, blast chillers, prep tables, and chef bases have focused on equipment using larger quantities of refrigerant and have asked AHRI to support consideration of an extended transition date for those equipment types. AHRI members do not object to a delay for this equipment, if needed and justified. We understand that those companies will provide their own comment.

**Automatic Commercial Ice Machines (ACIM) and vending machines that may be used in hallways and areas of egress must have an ASHRAE safety classification A1 class refrigerant option to be compliant with building codes.**

Building codes limit the use of flammable refrigerants in hallways and areas of egress, which applies to ACIM and vending machines, and other equipment. In addition to the safety standard, ASHRAE 15 limits the installation of equipment containing flammable refrigerant charges within 20 feet of an open flame, such as in a commercial kitchen. It is unlikely that either will be changed in time for a 2026 transition as any new standard would have to be adopted by all building codes to allow for a uniform transition.

**AHRI asks that any ACIM transition determination be delayed until there is resolution of issues including development of viable refrigerant blends that can meet building code limits and harmonize with other regulations impacting this industry. ACIM ranges from approx. 50 lbs. to 4000 lbs. a day, which translates to 60 grams of refrigerant all the way up to over 40 lbs. of refrigerant.**

**In ACIM equipment with larger charge sizes, it is necessary to be able to utilize A1 refrigerants with lower flammability and lower temperature glide for safety and compliance considerations.**

AHRI recommends the inclusion of language acknowledging an exemption under WAC 173-443-050 for Automatic Commercial Ice makers to be permitted to use refrigerants R-404A and R-134a. Automated commercial ice makers (ACIM) have been granted an exemption in the U.S. Environmental Protection Agency's (EPA) Significant New Alternatives Program (SNAP) 19 and 20 rules. According to SNAP Rule 20; **"Ice makers"** are machines designed for the sole purpose of producing ice, in various sizes and shapes, and with different retrieval mechanisms (e.g., dispensers or self-retrieval from bins). Under SNAP, "commercial ice machines" are identified as a separate end-use not part of the retail food refrigeration end-use (e.g., not a "stand-alone" unit). See e.g., 59 FR 13070 (March 18, 1994) where EPA clearly designated "commercial ice machines" as a separate end-use than "retail food refrigeration." Thus, both self-contained ice makers, as well as ice-making units solely connected via piping to a dedicated remote condenser, do not fall under the retail food refrigeration end-use and hence are not subject to SNAP Rule 20. SNAP Rule 20 also clarifies that since remote condensing ice makers designed solely to be connected to a supermarket remote rack are not sold or manufactured with a condensing unit, they do not meet the definition of automatic commercial ice maker used by DOE in the automatic commercial ice maker energy conservation standards.

**AHRI recommends that Ecology reference EPA’s SNAP Rule 20 for Automatic Commercial Ice Machines (ACIM) and consider exempting ACIM from categorization under the retail food refrigeration end-use.**

ACIM manufacturers are working on alternatives to refrigerant R-404A for Canada and are also likely to identify a viable refrigerant alternative for R-134a. It is important that the language in the Proposed Rule Update for WAC 173-443-050 explicitly delineate an exemption for ACIM.

Ice machines do not just cool product but produce a food product. ACIMs are used to manufacture ice akin to food processing equipment. It is a diverse and complex market. ACIM refrigeration cycles are unique compared to other refrigeration system cycles because they require specialty compressors and components. Ice Machines require alternating freeze and harvest cycles for production of ice which requires specially designed condensing units. Many different machine types are required to meet the varying demands for ice shapes (i.e., square, sphere, crescent, flaked, chewable, other gourmet ice types).

It should also be noted that additional time is needed for ACIM transitions because of the varying demands for many end-uses including restaurants, health care (medicinal, therapeutic), supermarkets, hotels, offices, universities, and schools (not just for beverages)

ACIM is a small market requiring a comparatively small amount of annual refrigerant supply. This small market means that component suppliers do not prioritize these markets, providing refrigerants and components after larger markets are satisfied.

The Department of Energy will likely set a new minimum energy efficiency standard for ACIMs within the coming year with an effective date between 2027 and 2029. Environment Climate Change Canada (ECC) has set a GWP limit of 1500. ACIMs manufacturers continue to research solutions through the Air Conditioning, Heating, and Refrigeration Technical Institute (AHRTI). There is insufficient data available to set an appropriate transition date and GWP limit that will comport with the building code requirements.

An alternate construct might be to ban refrigerants as follows commensurate with the next energy conservation standard, specifically, R-404A, R-507, R-507A, R-428A, R-422C, R434A, R-421B, R-408A, R-422A, R-407B, R402A, R-422D, R-421A, R-125/ R-90/R134a/R-600a (55/1/42.5/1.5), R-422B, R-424A, R-402B, GHG-X5, R-417A, R-438A, R-410B

Again, the long-term environmental benefit of the AIM Act is from the phase-down of the supply of HFCs. No technology will impact that benefit, and the HFC price increases and lack of availability of refrigerants will provide a market force to transition to lower GWP refrigerants where possible, per the designed construct of the AIM Act.

**AHRI supports incentives and allowances of equipment retrofits using lower GWP refrigerants as an alternative to running existing equipment utilizing higher GWP refrigerants.**

Retrofitting existing equipment with lower GWP refrigerants has immediate environmental and economic benefits. Retrofitting existing equipment involves conducting a refrigerant conversion to allow existing equipment to utilize a lower GWP refrigerant, without necessitating the complete replacement of a refrigerant system. This practice has an immediate environmental benefit and is preferable to continuing to run existing equipment that utilizes comparatively higher GWP refrigerants. The immediate environmental benefit is realized in 3 ways: 1) the use of lower GWP refrigerant; 2) increased energy efficiency; and 3) decreased refrigerant leak rates.

In addition to the immediate reduction of the GWP of the refrigerant used, a system that has been retrofitted will tend to have lower leak rates than the existing equipment. This is because a refrigerant system receives significant maintenance during the retrofit process. Further, there Additional added benefits include immediate increased energy efficiency realized with the retrofit during the retrofit of existing equipment.

AHRI encourages Ecology to review the studies referenced in this section to understand how retrofits can serve as a solution for Washington State's emissions and energy efficiency goals while also taking into consideration environmental justice (EJ) concerns around the cost limitations of small businesses and low- and medium-income consumers<sup>15</sup>.

Equipment retrofits differ from refurbishing equipment, as components within the equipment system that directly impact efficiency are replaced with new and more efficient parts. In the process of retrofitting existing equipment, our members have found that the equipment is maintained to reduce leak rates, increasing energy efficiency and reducing overall emissions of the equipment. Retrofits yield immediate reductions in greenhouse gas (GHG) emissions, and a 6.6-9% (for an average of 8%) increase in energy efficiency performance<sup>16</sup>. Ecology's current proposal would lengthen the life of older, less efficient equipment without permitting retrofits, requiring their eventual replacement with more expensive, new equipment. Not allowing retrofits equates to a missed opportunity for 8-10% in energy efficiency improvements<sup>17</sup>.

Retrofits serve as an excellent opportunity for meeting emissions and energy efficiency objectives of Washington State in a cost effective and inclusive manner.

**AHRI supports different levels of advanced leak technology on the market today. Under CARB's RMP the expanded definition of "Automatic Leak Detection" includes alternative technologies identified as indirect systems:**

"Automatic leak detection system" means a calibrated device using continuous monitoring for detecting leakage of refrigerants that on detection, alerts the operator, and may be either: (A) A direct system that automatically detects the presence in air of refrigerant leaked from a refrigeration system; or (B) An indirect system that automatically interprets measurements (e.g.

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<sup>15</sup>R449A retrofit brings 8% energy savings <https://www.coolingpost.com/world-news/r449a-retrofit-brings-8-energy-savings/>

<sup>16</sup> First UK Supermarket R-449A Installation Shows Energy Saving for Waitrose - <https://www.achrnews.com/articles/133424-first-uk-supermarket-r-449a-installation-shows-energy-saving-for-waitrose>

<sup>17</sup> Ahold Completes Retrofit of 175+ Netherlands Supermarkets to Opteon™ XP40 <https://www.contractingbusiness.com/refrigeration/article/20868708/ahold-completes-retrofit-of-175-netherlands-supermarkets-to-opteon-xp40>

temperature or pressure) within a refrigeration system that indicate a refrigerant leak (e.g., in refrigerated cases and other locations in the system) and alerts the operator to the presence of a refrigerant leak.

AHRI informs Ecology that the Chapter 173-443 HFC Rule's current requirements for automatic leak detection equipment to detect refrigerant leaks at 10 parts per million (PPM) should be expanded to include indirect technologies identified by the CARB definition. The direct method systems currently in use measure leak detection by calculating PPM of refrigerant in the air. Direct method systems are less accurate than refrigerant detection indirect systems methods, which track the liquid levels of refrigerant within a system as well as temperatures and pressures of refrigerant, to monitor leaks.

AHRI also encourages Ecology to recognize that some leak detection technology currently utilized in refrigerant systems was initially designed and intended to monitor refrigerant leaks for safety purposes, as opposed to how it is being used now, to detect very small concentrations of refrigerant leaks. Because these types of systems have been repurposed for a use for which they were not initially intended, the function of these leak detection systems is inadequate and often detects refrigerant too late.

Adequate refrigerant leak detection technology identified by the CARB definition above is available today on the market. By utilizing leak detection incorporating this type of technologies, Ecology can limit the number of false alarms, increase low level detection of leaks, and prevent safety concerns with early detection of refrigerant leaks. AHRI encourages Ecology to consider incorporating CARB language and definitions for ALD automatic leak detection technology for refrigerant leaks in the Chapter 173-443 Rule.

**AHRI supports a 150 GWP limit starting January 1, 2025, for foams provided there is a caveat or enforcement discretion in the event of supply shortages.**

AHRI requests that Ecology allow for enforcement discretion or some other mechanism in the event of supply shortages, that are continuing for low GWP foam blowing agents and refrigerants. Foams are used as insulation in refrigeration and other equipment. It should be noted that these shortages extend to non-fluorinated refrigerants such as carbon dioxide and hydrocarbons of sufficient quality for use as a refrigerant.

**Ecology should incorporate GWP limits and transition dates for HFCs contained in imported products regulated under Chapter 173-443.**

HFCs contained in imported products should be regulated to restrict the use of certain HFCs in certain product categories. All imported products containing HFCs should be required to transition to lower GWP alternatives at the same time and with the same GWP limit as required by domestically manufactured products, ensuring that the environmental benefit of the phase down is realized in full. Furthermore, there could be additional environmental benefit by introducing low GWP technologies in these countries to move toward faster adoption.

Import should be defined as in the Code of Federal Regulations for the EPA's AIM Act<sup>18</sup> as a *“means to land on, bring into, or introduce into, or attempt to land on, bring into, or introduce into, any place subject to the jurisdiction of the U.S., regardless of whether that landing, bringing, or introduction constitutes an importation within the meaning of the customs laws of the U.S.. Offloading used regulated substances recovered from equipment aboard a marine vessel, aircraft, or other aerospace vehicle during servicing is not considered an import.”*

**AHRI requests that Ecology clarify that manufacturers may still export equipment designed to use current refrigerants and are not subject to Ecology's GWP limitations.**

AHRI asks that Ecology continue to allow for the export and sale of equipment containing or designed to contain regulated substances at currently used GWP levels. Other jurisdictions may not have building codes updated to allow for next generation refrigerants, while depending on supply from US manufacturers. Banning these sales would harm American manufacturing and limit access to receiving markets further encouraging the sale and use of older or refurbished equipment with potentially lower energy efficiency that may leak more refrigerant.

For example, revisions to the 2020 editions of the Canadian National Model Codes are underway<sup>19</sup> and Canadians purchase the majority of the AC / HP equipment from the U.S.. Other countries are in a similar position and would unduly be impacted by this requirement disadvantaging US manufacturing further. Countries that depend on US imports should continue to be allowed to have access to products until such time as they determine that they are prepared for the transition to next generation alternatives.

**AHRI suggests that Ecology develop a guidance document or “frequently asked questions” or FAQs regarding the difference between “New” and “Existing” equipment, with the publication of the Chapter 173-443 HFC Rule.**

FAQ sheets and guidance documents have been invaluable in previous transitions for the HVAC-R industry. AHRI recommends Ecology create such a document and include the following practical examples to help the supply chain to understand when they are allowed to continue to maintain or are required to replace equipment.

**Examples that could be used in a FAQ sheet or guidance document.**

AHRI provides these examples of concern that need to be addressed for the subsectors that are comprised of field-erected and field-charged equipment, Ecology must clearly define in the final rule when an existing system, when modified as part of a remodel or maintenance, is covered by the new GWP limit.

Cases, compressors, condensers, evaporators, condensing units and other parts are all considered to be replaceable components. AHRI asks that they are allowed to continue to be

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<sup>18</sup> 40 CFR 84.3

<sup>19</sup> Canadian Commission on Building and Fire Codes. (2022, October 24). *Public review on proposed changes to the 2020 National Model Codes – Fall 2022*. Retrieved January 25, 2023, from <https://ccbfc-cccbpi.ca/en/get-involved/public-review-on-proposed-changes-to-codes-canada-publications-2022/>

used, to maintain HVAC-R systems. Replacement components manufactured after the GWP limit effective date can be used to maintain or service an existing system, provided they are labeled “For retrofit, replacement, remodel, or maintenance only”.

Here is a non-exhaustive list of continued needs to replace components for maintenance, retrofit, remodel and servicing.

- Replacement components manufactured prior to the GWP limit effective date can be used for maintenance.
- Display cases can be replaced with like product in 2028 with cases that were built in 2027 (or 2020).
- Display cases can be replaced with different cases in 2028, removing 3 *open* cases and installing 6 cases *with doors* to reduce energy consumption.
- Compressors may be replaced in 2028 with compressors that were built in 2027 (or 2020) as a repair.
- Compressors may be replaced with a replacement service model that is slightly higher in capacity.
- New compressors, condensers, evaporators, and cases with a date of manufacture prior to Dec 31, 2025, can be installed, in a system that is subsequently charged with R-448A.

Clarity is needed for food retailers, cold storage warehouse owners, and Industrial Process Refrigeration (IPR) system owners around how they will be able to maintain, repair, and remodel their existing refrigeration systems without the need to replace them with a new system, especially given the concern that current building codes and safety standards do not allow existing refrigeration systems using an ASHRAE safety group A1 refrigerant to be retrofitted with a safety group A2L or A3 refrigerant and it is not technologically or economically practical to retrofit them using CO2 as a refrigerant.

## Environmental Justice

AHRI requests that Ecology make Environmental Justice (EJ) considerations, including ensuring that policies do not negatively impact the availability and cost of equipment for low- and medium-income households and small businesses, especially retailers in rural and urban food deserts, such that they cannot afford to replace equipment. These “Mom & Pop” shops have slim profit margins and may be forced to continue to operate old leaky equipment with lower energy efficiency performance or purchase refurbished equipment without energy efficiency and refrigerant upgrades because they cannot afford new equipment.

AHRI encourages Ecology to explore longitudinal American Community Survey (ACS) datasets in any forecasting it attempts. IPUMS may be a helpful resource for tracking this data over time (<https://usa.ipums.org/usa/>).

## Conclusion

AHRI appreciates the Department of Ecology's efforts to harmonize with other regulations. AHRI asks that the Department of Ecology incorporate the provision, allowed under House Bill (HB) 1050, to eliminate administration and enforcement of requirements of these regulations if the U.S. EPA adopts requirements that are substantially duplicative of requirements of any HFC regulation, which would eliminate additional emissions reduction benefits.

Thank you, in advance, for the work to move this rulemaking to a final regulation; this is a high priority for AHRI and the U.S. HVACR industry. We appreciate Ecology's prompt attention and swift action in promulgating the regulation as required by legislation. We would be happy to provide any further information you may require.

Sincerely,

A handwritten signature in black ink that reads "Vivian Cox". The signature is written in a cursive, flowing style.

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