FREQUENTLY ASKED QUESTIONS

Final Rule – Phasedown of Hydrofluorocarbons: Establishing the Allowance Allocation and Trading Program under the American Innovation and Manufacturing (AIM) Act

What are HFCs?

Hydrofluorocarbons (HFCs) are potent greenhouse gases (GHGs) developed and manufactured as replacements for ozone-depleting substances (ODS). These fluorinated chemicals have no known natural sources. They have global warming potentials (GWPs) (a measure of the relative climatic impact of a GHG) that can be hundreds to thousands of times greater than that of carbon dioxide (CO_2). Unlike ODS, HFCs do not deplete the stratospheric ozone layer.

Where are HFCs used?

Climate-damaging HFCs are used in many of the same sectors where ODS have been used: primarily air conditioning and refrigeration, and also fire suppression, solvents, foam blowing, and aerosols.

Why are HFCs increasing in use?

HFCs are rapidly increasing in the atmosphere due to increased demand for refrigeration and air conditioning globally, and because they are the primary substitutes for ODS, which are being phased out worldwide due to the global agreement the *Montreal Protocol on Substances that Deplete the Ozone Layer* (Montreal Protocol).

What are the impacts of HFCs on the environment?

HFCs are extremely powerful GHGs that accelerate climate change, which threatens society with costly health and environmental impacts such as floods, wildfires, drought, and increasingly severe weather events. More information on climate change can be found at https://www.epa.gov/climate-change.

What is the AIM Act?

The American Innovation and Manufacturing (AIM) Act of 2020 was enacted by Congress on December 27, 2020. The AIM Act provides new authority to address HFCs and directs EPA to: (1) phase down the production and consumption[1] of listed HFCs through an allowance

[1] "Consumption" is the amount of HFCs newly added to the U.S. market through production and import, minus exports and destruction.

allocation and trading program, (2) manage these HFCs and their substitutes to maximize reclamation and minimize releases to the atmosphere from equipment, and (3) facilitate the transition to next-generation technologies through sector-based restrictions. To achieve the phasedown of HFCs, EPA must:

- Establish baselines for U.S. production and consumption from which reductions must be made, according to the formulas provided in the AIM Act.
- Phase down the production and consumption of HFCs by 85% below their baseline levels in a stepwise manner by 2036, starting with a 10% reduction in 2022.
- Issue allowances by October 1st each year so companies may produce or import HFCs in the following calendar year.
- Establish a mechanism where allowances can be traded and sold, with an offset that results in a greater reduction of HFC production or consumption.
- Ensure that sufficient allowances are available to meet the estimated needs in six types of uses listed in the AIM Act.

The HFC Allocation Final Rule to Phase Down HFC Production and Consumption

What does this rule do?

Consistent with the AIM Act, EPA is directing the phasedown of listed HFCs to 15% of their baseline levels in a stepwise manner by 2036. To achieve this, EPA has established an HFC allowance allocation and trading system, including allocating allowances for six specific applications listed in the AIM Act. Allowances are based on the "exchange values" of HFCs which are defined in the Act and correspond to their 100-year GWPs.[2] Allowances are needed to produce or import bulk HFCs.

This rule also establishes a robust compliance and enforcement system to prevent and identify illegal activity in the United States and to help ensure compliance with the obligations under the AIM Act.

Information on the final rule can be found at https://www.epa.gov/climate-hfcs-reduction/final-rule-phasedown-hydrofluorocarbons-establishing-allowance-allocation.

What are the costs and benefits of the final rule?

The total emission reductions of this final rule from 2022 to 2050 are projected to amount to the equivalent of 4.6 billion metric tons of CO_2 – nearly equal to three years of U.S. power sector

[2] 100-year GWPs of listed HFCs are given in the Errata to Table 2.14 of the Intergovernmental Panel on Climate Change (IPCC)'s 2007 Fourth Assessment Report (AR4). Available at *https://www.ipcc.ch/report/ar4/wg1*

emissions at 2019 levels. In 2036 alone, the year of the final reduction step, this rule is expected to prevent the equivalent of 171 million metric tons of CO_2 emissions – roughly equal to the annual GHG emissions from one out of every seven vehicles registered in the United States. A global HFC phasedown is expected to avoid up to 0.5°C of global warming by 2100.

EPA used the social costs of HFCs to monetize the benefits of this rule. EPA estimates that in 2022, the annual net benefits of this action are $1.7 billion, rising to $16.4 billion in 2036 when the final phasedown step is reached. The present value of the cumulative net benefits of this action is $272.7 billion from 2022 through 2050. The benefits are calculated over the 29-year period from 2022–2050 to account for the years that emissions will be reduced following the consumption reductions from 2022–2036.

Will production and import of HFCs be limited?

Yes. Starting January 1, 2022, allowances are needed to produce or import bulk HFCs, with limited exceptions. Under the AIM Act, the number of HFC production and consumption allowances will decrease to 15% of baseline levels by 2036.

What is an allowance?

An allowance is the unit of measure that EPA uses to control production and consumption. An HFC allowance is equal to 1 metric ton of exchange value equivalent (i.e., 1 metric ton CO_2 equivalent). HFCs with higher GWPs thus require more allowances to produce or import than lower-GWP HFCs. The AIM Act specifies that an allowance allocated by EPA is a limited authorization for the production or consumption of a regulated substance and does not constitute a property right.

How do allowances work?

Entities need to expend allowances in order to produce or import bulk HFCs. Producing HFCs requires expending both production allowances and consumption allowances. Importing HFCs requires expending only consumption allowances. This is the mechanism EPA has used to implement the ODS phaseout. This design helps EPA ensure that both the production and consumption caps from the AIM Act will be met through the allowances allocated. A third category of allowances established through this rule, called “application-specific allowances,” can be used to either produce or import HFCs for the specific applications (see below). Allowances are valid between January 1 and December 31 of a given year and cannot be banked or rolled over to the next year.

Are allowances needed to import products containing HFCs?

No, allowances are not needed when importing HFCs contained in a manufactured product such as an appliance, an aerosol can, or a foam. Allowances are only required to import bulk HFCs, which are when the HFCs are in a container (e.g., cylinders, drums, ISO tanks, small

cans) for the transportation or storage of that substance. Another way to view it is that bulk HFCs must first be transferred from a container to another container, vessel, or piece of equipment in order to realize their intended use.

What is the phasedown schedule?

EPA has established production and consumption baselines using the formulas in the AIM Act. The allowed production and consumption levels will decrease relative to the baselines, consistent with the schedule established in the AIM Act. The following table provides the consumption and production limits under the AIM Act's phasedown schedule.

HFC Phasedown Schedule and Consumption & Production Allowance Caps

Year	Consumption & Production Allowance Caps as a Percentage of Baseline	Consumption & Production Allowance Caps in MMTEVe*
Baseline	**Consumption: 303.89 MMTEVe Production: 382.55 MMTEVe**	
2022–2023	90 percent	Consumption: 273.5 Production: 344.3
2024–2028	60 percent	Consumption: 182.3 Production: 229.5
2029–2033	30 percent	Consumption: 91.2 Production: 114.8
2034–2035	20 percent	Consumption: 60.8 Production: 76.5
2036 & after	15 percent	Consumption: 45.6 Production: 57.4

* The baselines and caps are expressed in million metric tons of exchange value equivalent (MMTEVe), which are numerically equivalent to million metric tons of CO_2 equivalent ($MMTCO_2e$).

What information did EPA use to calculate the U.S. baselines?

EPA developed the HFC baselines from data reported to EPA through the Greenhouse Gas Reporting Program (GHGRP), import records provided to Customs and Border Protection (CBP) through their Automated Commercial Environment (ACE) database, responses from other likely producers and importers to direct outreach from EPA, and in response to the May 2021 proposed rule and February 2021 Notice of Data Availability. More information on the data EPA sought is available at https://www.epa.gov/climate-hfcs-reduction and in Section VI of the final rule.

How is EPA allocating allowances?

EPA has established the framework and criteria for issuing allowances to specific companies. For 2022 and 2023, EPA is issuing allowances to:

- Companies that produced and/or imported bulk HFCs in 2020 will receive allowances based on the three highest years (not necessarily consecutive) of production and/or import

between 2011 and 2019. Historical importers that were not active in 2020 will be given individualized consideration if they provided documentation during the comment period showing that they were still active in 2020.

- Companies that use HFCs in one of five applications listed in the AIM Act.[3] These companies will receive application-specific allowances. The five applications are:
  - A propellant in metered dose inhalers;
  - Defense sprays;
  - Structural composite preformed polyurethane foam for marine use and trailer use;
  - The etching of semiconductor material or wafers and the cleaning of chemical vapor deposition chambers within the semiconductor manufacturing sector; and
  - Onboard aerospace fire suppression.

EPA intends to issue allowances for 2022 by October 1, 2021. EPA will also set aside allowances for companies identified late and for new market entrants, which will be issued by March 31, 2022. EPA intends to develop a separate notice-and-comment rulemaking to establish allowance criteria for 2024 and later years.

More information on the data EPA sought to inform company-specific allowances and how to submit data to EPA is available at https://www.epa.gov/climate-hfcs-reduction and in Section VII of the final rule.

Am I potentially eligible for allowances?

If you produce and/or import bulk HFCs, and/or you use HFCs in one of the five applications listed above, you may be eligible to receive allowances.

EPA also established a set-aside pool of allowances. These allowances are available to three groups of companies. The first two groups are companies that would have qualified for the allowances issued October 1, 2021, but that EPA was unaware of during the development of the rule. Specifically, these are (1) companies that qualify for application-specific allowances; and (2) historical importers of small amounts of bulk HFCs that were not required to report through the Greenhouse Gas Reporting Program. These two groups have priority access to the set-aside pool. The third group are companies that do not currently import HFCs but wish to do so. Companies that fall into these three groups seeking allowances must submit applications by November 30, 2021.

[3] For the sixth application listed in the AIM Act, "Mission-critical military end uses, such as armored vehicle engine and shipboard fire suppression systems and systems used in deployable and expeditionary applications," EPA will issue allowances directly to the Department of Defense.

What is the impact of the AIM Act on U.S. industry?

Backed by a broad coalition of industry and environmental groups, the AIM Act provides regulatory certainty across the United States for phasing down HFCs and ushers in the use of more climate friendly and efficient alternatives that can save consumers money while improving the environment. American companies are at the forefront of developing HFC alternatives and the technologies that use them, and the AIM Act allows these companies to continue to lead and innovate internationally. The final regulation may support increased international demand for alternatives manufactured by U.S. firms.

How will American consumers be affected by an HFC phasedown under the AIM Act?

Americans are expected to benefit from transitioning from HFCs to environmentally safer alternatives and more energy-efficient cooling technologies because phasing down HFCs is expected to better protect Americans' health and the environment. There are no requirements to stop using any specific HFC or HFC blend or to change equipment. Consumers will be able to continue using their equipment until the end of its useful life. As with the transition from ODS, the HFC phasedown may not be noticeable to most consumers.

How will EPA enforce these regulations and avoid illegal imports?

EPA has developed a robust and agile compliance and enforcement system with strong measures that prevent and identify illegal activity in the United States and ensure compliance with the obligations under the AIM Act. These measures draw from experience globally and in the United States. To prevent illegal trade in climate-damaging HFCs, EPA is coordinating with other federal agencies, in particular, U.S. Customs and Border Protection. The strong compliance and enforcement provisions in the final rule will help preserve the environmental and economic benefits of the HFC phasedown. The main components include:

- Administrative consequences to deter noncompliance and create pathways to address the impacts of noncompliance;
- Requiring the use of refillable cylinders and container labeling;
- Prior EPA approval to import HFCs that do not require allowances (e.g., feedstocks);
- A comprehensive tracking system using Quick Response (QR) codes or similar digital technology to track the movement of HFCs through commerce;
- Requiring third-party auditing of companies' recordkeeping and reporting; and
- Transparency of HFC production and consumption data for the general public and participants in the market, and to support enforcement and compliance efforts.

See the final rule, in particular Sections VIII, IX, and X for more information.

How is EPA addressing emissions of HFC-23?

HFC-23 is a regulated substance under the AIM Act and has the highest exchange value of any regulated substance at 14,800. HFC-23 is used in applications such as semiconductor etching and very low temperature refrigeration. HFC-23 is also unintentionally created and vented to the atmosphere during the manufacture of other fluorinated compounds. EPA has set a specific standard to which HFC-23 must be captured and controlled before the HFC-23 is subsequently either destroyed or captured, refined, and sold for consumptive uses.

How else will EPA address HFCs? Where can I go to learn more?

- EPA will facilitate transitions to next-generation technologies by establishing restrictions on specific HFC uses and evaluating availability of substitutes for the regulated HFCs.
  - EPA can initiate a rulemaking restricting HFCs of its own accord, or a person may petition EPA to promulgate such a rule.
  - As of September 2021, EPA has received more than a dozen petitions from companies, industry associations, states, and environmental organizations to address HFC use in refrigeration, air conditioning, aerosols, and other applications. More information can be found at https://www.epa.gov/climate-hfcs-reduction/petitions-under-aim-act.
- EPA will issue regulations for the management of HFCs to control, as appropriate, practices, processes, or activities for servicing, repairing, disposing, or installing equipment.

HFC PHASEDOWN
American Innovation & Manufacturing (AIM) Act
A U.S. Environmental Protection Agency Program

Additional Resources

Protecting Our Climate by Reducing Use of HFCs: https://www.epa.gov/climate-hfcs-reduction

Greenhouse Gas Reporting Program: https://www.epa.gov/ghgreporting/fluorinated-greenhouse-gas-emissions-and-supplies-reported-ghgrp

Contact EPA: spdcomment@epa.gov

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