

FREQUENTLY ASKED QUESTIONS

Proposed Rule - Phasedown of Hydrofluorocarbons: Establishing the Allowance Allocation and Trading Program under the American Innovation and Manufacturing Act

What are HFCs?

Hydrofluorocarbons (HFCs) are fluorinated greenhouse gases (GHGs) intentionally developed and manufactured as replacements for ozone-depleting substances (ODS). They have global warming potentials (GWPs) (a measure of the relative climate impact of a GHG) that can be hundreds to thousands of times greater than carbon dioxide (CO₂). These chemicals have no known natural sources.

Where are HFCs used?

HFCs are mainly used in the same applications where ozone-depleting substances have been used: air conditioning, refrigeration, fire suppression, solvents, foam blowing agents, and aerosols.

Why are HFCs increasing in use?

HFCs are rapidly increasing in the atmosphere mostly 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 greenhouse gases 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 www.epa.gov/climate-change.

What is the AIM Act?

The American Innovation and Manufacturing (AIM) Act was enacted by Congress on December 27, 2020, as part of the Consolidated Appropriations Act, 2021. It directs EPA to address HFCs

by providing new authorities in three main areas: to phase down the production and consumption of listed HFCs, manage these HFCs and their substitutes to maximize reclamation and minimize releases to the atmosphere, and facilitate the transition to next-generation technologies that do not rely on HFCs. A summary of the actions EPA must take under the AIM Act is included below.

- Under the phasedown of production and consumption:
 - HFCs will be phased down to 15% of their baseline levels in a stepwise manner by 2036.
 - EPA will establish an allowance trading system and will set aside a certain amount of allowances for specific applications listed in the AIM Act.
 - Allowances will be based on the exchange values of HFCs which are defined in the legislation and correspond to their global warming potentials.¹
 - Allowances will be needed to produce or import HFCs.
 - Allowances for the following calendar year will be issued by October 1st of the preceding year.
- EPA will issue regulations for the management of HFCs to control, as appropriate, practices, processes, or activities for servicing, repairing, disposing, or installing equipment.
- EPA will facilitate transitions to next-generation technologies by establishing restrictions on specific HFC uses and evaluating availability of substitutes for the regulated HFCs.
 - Decisions will be based on technological achievability, commercial demands, affordability for residential and small business consumers, safety, consumer costs, building codes, appliance efficiency standards, contractor training costs, and other relevant factors, including the quantities of regulated substances available from reclaiming, prior production, or prior import; overall economic costs and environmental impacts, as compared to historical trends; and the remaining phase-down period for regulated substances under the final rule.
 - EPA will consider using a negotiated rulemaking for sector-specific rules.

¹ See IPCC, 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

Under this third authority, EPA recently received several petitions from industry, states, and environmental organizations to address HFC use in refrigeration, air conditioning, and other applications. More information can be found at <https://www.epa.gov/climate-hfcs-reduction/petitions-under-aim-act>.

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

What does this rule propose to do?

Consistent with the AIM Act, EPA is proposing to phase down listed HFCs to 15% of their baseline levels in a stepwise manner by 2036. To achieve this, EPA is proposing to establish an allowance trading system and set aside a certain amount of allowances for six specific applications listed in the AIM Act. Allowances would be based on the *exchange values* of HFCs which are defined in the Act and correspond to their 100-year GWPs.² Allowances would be needed to produce or import bulk HFCs.

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

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

What are the environmental costs and benefits of the proposed rule?

The total emission reductions of this proposed rule from 2022 to 2050 are projected to amount to the equivalent of 4.7 billion metric tons of carbon dioxide (CO₂) – nearly equal to three years of U.S. power sector emissions at 2019 levels. In 2036 alone, the year the final reduction step is made, this rule is expected to prevent the equivalent of 187 million metric tons of CO₂ 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 warming by 2100.

The social costs of HFCs were used to monetize benefits. EPA estimates that in 2022, the annual net savings of this action are \$2.6 billion, rising to \$17.9 billion in 2036 when the final

² See IPCC, 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

phasedown step is reached. The present value of the cumulative net benefits of this action is \$283.9 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 be limited?

Under the AIM Act, EPA must establish a baseline for HFC production and consumption (i.e., the amount of HFC production, plus imports, minus exports, minus destruction, and minus amounts produced for transformation³) and decrease how much HFC is produced and imported over time. EPA must also issue allowances for the production and import of HFCs. Allowances will be needed to produce and import HFCs, with limited exceptions.

What is an allowance?

EPA uses an allowance as the unit of measure that controls production and consumption. The AIM Act specifies that an allowance allocated by EPA under the AIM Act is a limited authorization for the production or consumption of a regulated substance (i.e., listed HFC) and does not constitute a property right. EPA is proposing that the Agency would issue allowances that would be valid between January 1 and December 31 of a given year, also known as a “calendar-year allowance.” A calendar-year allowance represents the privilege granted to a company to produce or import regulated substances in that year.

How do allowances work?

Under the proposed rule, entities would need to expend allowances in order to produce or import bulk HFCs. EPA is proposing that producing HFCs would require expending both production allowances and consumption allowances. Importing HFCs would require expending only consumption allowances. This is the mechanism EPA has used to implement the ODS phaseout and would meet the expectations of, and be understood by, producers and importers of HFCs. This design also helps EPA ensure that both the production and consumption caps from the AIM Act will be met through the allowances allocated. EPA is also proposing a third category of allowances called “application-specific allowances” that can be used to either produce or import HFCs.

³ Transformation is the process where a regulated substance is used and entirely consumed (except for trace quantities) in the manufacture of another chemical, also known as “use as a feedstock.”

What is the phasedown schedule?

EPA must establish production and consumption baselines, and then decrease allowed production and consumption relative to that level consistent with the schedule established in the AIM Act. The proposed baselines are based on currently available data, and the final figures may change based on an evaluation of all available data and information received prior to the final rulemaking. Based on current estimates for the baseline, the table below provides the estimated 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	Estimated Consumption and Production Allowance Caps in MMTEVe*
Proposed Baseline	Consumption: 299 MMTEVe Production: 375 MMTEVe	
2022–2023	90 percent	Consumption: 269.1 Production: 337.5
2024–2028	60 percent	Consumption: 179.4 Production: 225.0
2029–2033	30 percent	Consumption: 89.7 Production: 112.5
2034–2035	20 percent	Consumption: 59.8 Production: 75.0
2036 & after	15 percent	Consumption: 44.9 Production: 56.3

* Baselines are expressed in million metric tons of exchange value equivalent (MMTEVe), which is numerically equivalent to one million metric ton of CO₂ equivalent (MMTCO₂e).

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

EPA's proposed HFC baselines are based on currently available data and is included in this NPRM. EPA released Greenhouse Gas Reporting Program (GHGRP) data from 2011-2013 related to the production, import, export, and destruction of HFCs as part of an earlier Notice of Data Availability (NODA) published in the FR in February 2021. EPA is seeking additional data or information that could help inform the final HFC baseline. More information on the data EPA is seeking and how to submit data to EPA is available at <https://www.epa.gov/climate-hfcs-reduction> and in section V of the proposed rule.

How is EPA proposing to allocate allowances?

EPA is proposing to establish the framework and criteria for issuing allowances to specific companies, and is taking comment on our proposed approach. For 2022 and 2023, EPA is proposing to issue allowances to:

- Companies that produced and/or imported bulk HFCs in 2020, based on past production and consumption, would receive calendar-year production and/or consumption allowances. The Agency is seeking comment on what years between 2011-2019 to use as the basis for issuing allowances.
- Companies that use HFCs in one of six applications listed in the AIM Act would receive application-specific allowances. The six applications include:
 - 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;
 - Mission-critical military end uses, such as armored vehicle engine and shipboard fire suppression systems and systems used in deployable and expeditionary applications; and
 - On board aerospace fire suppression.

EPA intends to issue allowances for 2022 by October 1, 2021. EPA is also proposing set aside allowances for companies identified late and for new market entrants, which would 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 is seeking 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 V of the proposed rule.

Am I potentially eligible for allowances?

If you produced and/or imported bulk HFCs, and/or you used HFCs in one of the six applications listed above, you may be eligible to receive allowances if the rule is finalized as proposed. Please review the proposed rule and ensure that you submit data to EPA as soon as possible, and before the end of the comment period (if you'd like to be eligible for allowances by EPA's October 1, 2021, intended allocation date). If you submit information after the close of the comment period, you may be eligible for allowances from the proposed set aside pool.

More information on the data EPA is seeking 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 V of the proposed rule.

Will there be a public hearing for the proposed HFC Allocation Rule?

A virtual public hearing was held on June 3, 2021. A transcription of the hearing is available in the public docket for the proposed rulemaking at <https://www.regulations.gov/document/EPA-HQ-OAR-2021-0044-0071>.

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

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 will 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 proposed regulation may contribute to employment impacts caused from increased international demand for products manufactured by U.S. firms due to those products contributing fewer GHG emissions. U.S. business groups commissioned a study that estimates U.S. ratification will result in 33,000 new U.S. manufacturing jobs, \$12 billion of increased economic output, and \$5 billion of increased exports by 2027.

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

Americans are expected to benefit from transitioning away from HFCs to environmentally safer alternatives and more energy-efficient cooling technologies. In addition, 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 ozone-depleting substances, the HFC phasedown may not be noticeable to most consumers.

How will EPA enforce these regulations and avoid illegal imports?

EPA is proposing a robust and agile compliance and enforcement system with strong enforcement and compliance measures to prevent or 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 with attempts to illegally introduce fluorinated gases into the U.S. market and will include coordination with other federal agencies. The proposal's strong compliance and enforcement provisions 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;
- Packaging (including requiring use of refillable cylinders) and labeling requirements;
- Increased oversight of imports;
- Establishment of a comprehensive tracking system using QR codes or similar digital technology to track the movement of HFCs through commerce; and
- Recordkeeping and reporting; third-party auditing; and data transparency.

See the proposed rule, in particular sections VIII and IX, for more information.

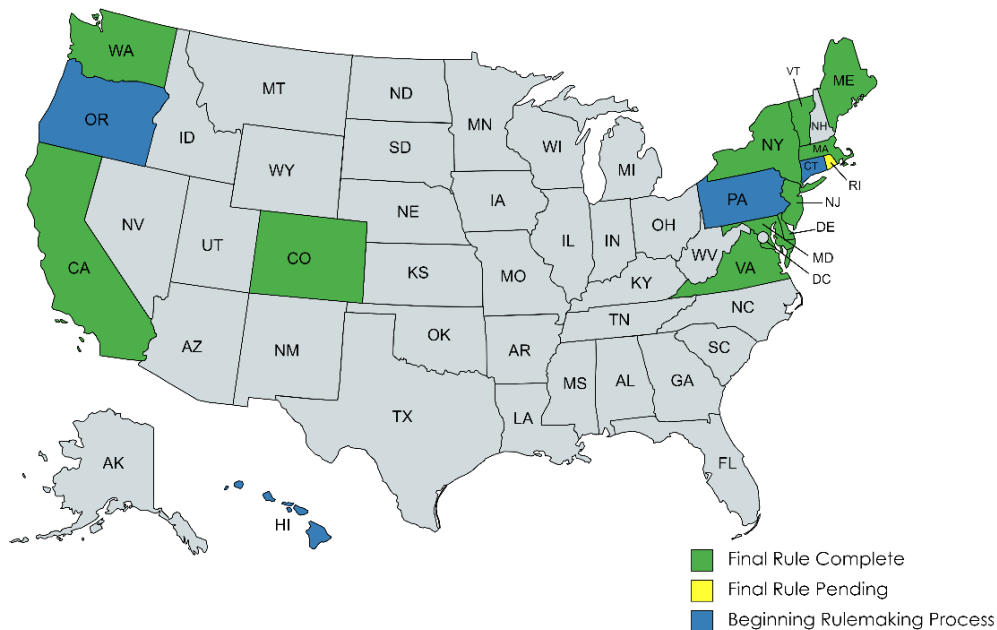
Where can I learn more about the AIM Act? EPA regulations? Global activities?

More information is available at www.epa.gov/climate-hfcs-reduction.

Are there state regulations? Where can I go to learn more?

Several states have HFC regulations (as indicated in the map below) that restrict certain HFCs or blends with higher GWP in particular applications. EPA encourages interested readers to explore these states' regulations.

States with HFC Regulations (as of 6/16/2021)



Created with mapchart.net

Is EPA proposing to address emissions of HFC-23?

HFC-23 is a regulated substance under the AIM Act. Congress assigned HFC-23 the highest exchange value of any regulated substance of 14,800, almost 5,000 more than the next closest regulated substance (HFC-236fa at 9,810). HFC-23 can be used in applications such as semiconductor etching or very low temperature refrigeration. However, HFC-23 can be unintentionally created and vented to the atmosphere. EPA has data available through the GHGRP indicating that there are emissions of HFC-23, which absent control can be significant, but it is occurring at fewer than four facilities in the country that produce other HFCs or HCFCs. EPA is proposing 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.



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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