

FACT SHEET

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

What Are the AIM Act and This Final Rule?

The American Innovation and Manufacturing (AIM) Act was enacted by Congress on December 27, 2020. The AIM Act provides new authority for the U.S. Environmental Protection Agency (EPA) to address hydrofluorocarbons (HFCs) in three ways: (1) phasing down production and consumption, (2) maximizing reclamation and minimizing releases from equipment, and (3) facilitating the transition to next-generation technologies through sector-based restrictions. This final rule focuses on the first area – the phasedown of HFC production and consumption.

What Is the HFC Phasedown?

The AIM Act directs EPA to phase down production and consumption¹ of HFCs (see Table 1) by 85% below historical baseline levels by 2036 through an allowance allocation and trading program. EPA has established U.S. production and consumption baselines using a formula provided by the AIM Act that considers past HFC, hydrochlorofluorocarbon (HCFC), and chlorofluorocarbon (CFC) amounts.² By October 1 of each year, EPA must issue production and consumption allowances for the following calendar year, relative to those baselines. The maximum number of allowances that the EPA may allocate per year is shown in Table 2.

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

² Under the AIM Act, the production baseline is calculated by adding: (i) the average annual quantity of all regulated substances (i.e., regulated HFCs listed in Table 1 of this fact sheet) produced in the United States from January 1, 2011, through December 31, 2013, and (ii) 15% of the production level of HCFCs in calendar year (CY) 1989, and (iii) 0.42% of the production level of CFCs in CY 1989. Similarly, the consumption baseline is calculated by adding: (i) the average annual quantity of all regulated substances consumed in the United States from January 1, 2011, through December 31, 2013, and (ii) 15% of the consumption level of HCFCs in CY 1989, and (iii) 0.42% of the consumption level of CFCs in CY 1989.

About Hydrofluorocarbons (HFCs)

HFCs are potent greenhouse gases (GHGs) developed and manufactured as replacements for ozone-depleting substances (ODS) in refrigeration, air conditioning, aerosols, fire suppression, and foam blowing. 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 carbon dioxide (CO₂). HFC use has been growing worldwide due to the phaseout of ODS and increasing use of refrigeration and air-conditioning equipment globally.

Table 1: 18 Individual HFCs Listed in the AIM Act

Chemical Name	Common Name	Exchange Value*
CHF ₂ CHF ₂	HFC-134	1,100
CH ₂ FCF ₃	HFC-134a	1,430
CH ₂ FCHF ₂	HFC-143	353
CHF ₂ CH ₂ CF ₃	HFC-245fa	1,030
CF ₃ CH ₂ CF ₂ CH ₃	HFC-365mfc	794
CF ₃ CHFCF ₃	HFC-227ea	3,220
CH ₂ FCF ₂ CF ₃	HFC-236cb	1,340
CHF ₂ CHFCF ₃	HFC-236ea	1,370
CF ₃ CH ₂ CF ₃	HFC-236fa	9,810
CH ₂ FCF ₂ CHF ₂	HFC-245ca	693
CF ₃ CHFCHFCF ₂ CF ₃	HFC-43-10mee	1,640
CH ₂ F ₂	HFC-32	675
CHF ₂ CF ₃	HFC-125	3,500
CH ₃ CF ₃	HFC-143a	4,470
CH ₃ F	HFC-41	92
CH ₂ FCH ₂ F	HFC-152	53
CH ₃ CHF ₂	HFC-152a	124
CHF ₃	HFC-23	14,800

* Exchange Value is numerically equivalent to the 100-year GWP of the chemical as given in the Errata to Table 2.14 of the Intergovernmental Panel on Climate Change's 2007 Fourth Assessment Report (AR4).

Table 2: HFC Phasedown Schedule and Consumption & Production Allowance Caps

Year	Consumption & Production Allowance Caps as a Percentage of Baseline	Consumption and Production Allowance Caps in MMTEVe*
Baseline	Consumption: 302.5 MMTEVe Production: 382.5 MMTEVe	
2020–2023	90 percent	Consumption: 273.5 Production: 344.3
2024–2028	60 percent	Consumption: 181.5 Production: 229.5
2029–2033	30 percent	Consumption: 90.8 Production: 114.8
2034–2035	20 percent	Consumption: 60.5 Production: 76.5
2036 & after	15 percent	Consumption: 45.4 Production: 57.4

* Baselines and caps are expressed in million metric tons of exchange value equivalent (MMTEVe), which is numerically equivalent to million metric tons of CO₂ equivalent (MMTCO₂e). The baselines and annual caps listed in Table 2 reflect adjustments to the production and consumption baselines finalized in July 2023 (see [40 CFR 84.7](#)).

Who Is Affected by This Final Rule?

Companies that produce, import, export, destroy, use as a feedstock, reclaim, package, or otherwise distribute HFCs may be affected by the final rule. Companies may also be affected if they use HFCs to manufacture refrigeration and air-conditioning equipment, foams, aerosols, and fire suppressants, or use HFCs in one of the six applications specified in the AIM Act.³

What Are the Costs and Benefits of This Final Rule?

American consumers are expected to benefit from transitioning from HFCs to environmentally safer alternatives and more energy-efficient cooling technologies.

EPA estimates that the present value of the cumulative net benefits of this action are \$272.7 billion from 2022 through 2050. In 2036 alone, the year the final reduction step is made, this rule is expected to prevent 171 MMTCO₂e emissions – roughly equal to the annual GHG emissions from one out of every seven passenger vehicles registered in the United States.

EPA conducted an environmental justice analysis that determined overall reductions in GHG emissions from this rule will benefit populations that may be especially vulnerable to damages associated with climate change, such as the very young, elderly, economically disadvantaged, disabled, and indigenous populations.

What Are Key Provisions of the Final Rule?

To implement the allowance allocation and trading program, EPA has:

- Established the HFC production and consumption baselines from which reductions must be made according to the formulas provided in the AIM Act.
- Codified the phasedown schedule (as shown in Table 2).
- Established an initial methodology for issuing allowances for 2022 and 2023 that:
 - Issued allowances to companies that produced and/or imported HFCs in 2020, based on the three highest non-consecutive years of production or import between 2011 – 2019.
 - Issued “application-specific allowances” directly to the entities that operate within the six applications listed in the AIM Act. These entities will be able to confer their allowances to producers or importers to acquire needed HFCs.

³ The AIM Act requires EPA “allocate the full quantity of allowances necessary, based on projected, current, and historical trends” for six specific applications for five years following enactment. The six applications are: propellants in metered-dose inhalers; defense sprays (e.g., bear spray); structural composite preformed polyurethane foam for marine use and trailer use; etching of semiconductor material or wafers and the cleaning of chemical vapor deposition chambers within the semiconductor manufacturing sector; mission-critical military end-uses; and onboard aerospace fire suppression. The allowances EPA is allocating for these applications are for the exclusive use in one of the six applications.

- Set aside some allowances for application-specific end users, small importers that were only identified after the public comment period ended, and new market entrants.
- Established a methodology for trading allowances between companies, while requiring an offset of allowances to further benefit the environment. The offset is 5% of the amount transferred and is reduced from the transferor's allowance balance.

To ensure compliance with the phasedown limits, this final rule:

- Established administrative consequences (e.g., revocation or retirement of allowances) for noncompliance that would be in addition to any civil and criminal enforcement action;
- Requires third-party auditing of companies' recordkeeping and reporting; and
- Provides transparency of HFC production and consumption data for the general public and participants in the market, and supports enforcement and compliance efforts.

In addition, to prevent illegal trade in HFCs, EPA is coordinating with other federal agencies, in particular, U.S. Customs and Border Protection.

While this 2021 HFC Allocation Framework rule included quick response (QR) code container tracking and refillable cylinder regulations, the U.S. Appeals Court for the District of Columbia Circuit found that the EPA had not cited adequate authority for the QR code container tracking and refillable cylinder regulations in the 2021 HFC Allocation Framework Rule and thus vacated and remanded certain provisions of the rule to the agency. EPA has since removed those requirements at 40 CFR 84.5(h), 40 CFR 84.23, and related auditing provisions for container tracking in 40 CFR 84.33 from the Code of Federal Regulations.



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