



EPA REGULATORY UPDATES

Erin Birgfeld

Chief, Alternatives and Emissions Reduction Branch

Stratospheric Protection Division

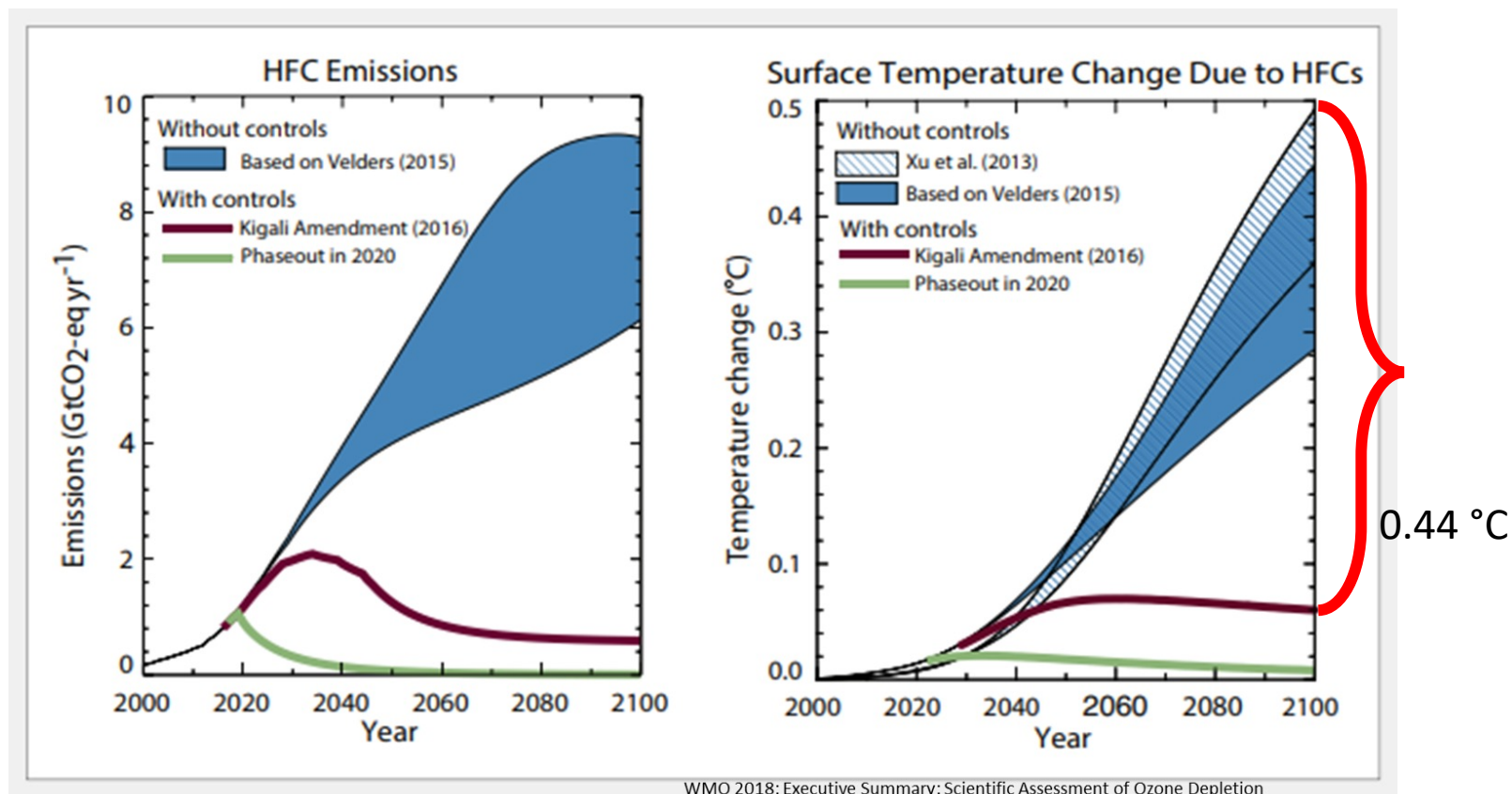
U.S. Environmental Protection Agency

Agenda

- Background on Hydrofluorocarbons (HFCs)
- The American Innovation and Manufacturing (AIM) Act
 - HFC Allocation Framework and Allocation for 2024 and beyond
 - Subsection (i) “Technology Transitions”
 - Subsection (h) “Management of Regulated Substances”
- Clean Air Act (CAA) Title VI Section 612: Significant New Alternatives Policy (SNAP) Program
- Questions & Discussion

A global HFC phasedown is expected to avoid up to 0.5 °C of global warming by 2100

- HFCs are used as replacements for ozone-depleting substances (ODS) in refrigeration, air conditioning, foam blowing, aerosols, and fire suppression
- HFCs are climate-damaging greenhouse gases with global warming potentials (GWPs) hundreds to thousands of times higher than carbon dioxide (CO₂)
- Absent effective regulations, HFC use and emissions were expected to continue increasing rapidly worldwide



WMO 2018: Executive Summary: Scientific Assessment of Ozone Depletion

The American Innovation & Manufacturing (AIM) Act

- Lists 18 HFCs as regulated substances
- Phases down HFC production and consumption by 85% by 2036
- The AIM Act authorizes EPA to address HFCs in three main ways:
 - Phase down HFC production and consumption through an allowance allocation and trading program (HFC Allocation Rule; proposed rulemaking for 2024 and later years)
 - Facilitate sector-based transitions to next-generation technologies through restrictions on HFCs (Subsection (i) Technology Transitions proposed rulemaking)
 - Promulgate certain regulations for purposes of maximizing reclamation and minimizing releases of HFCs and their substitutes from equipment (Subsection (h))

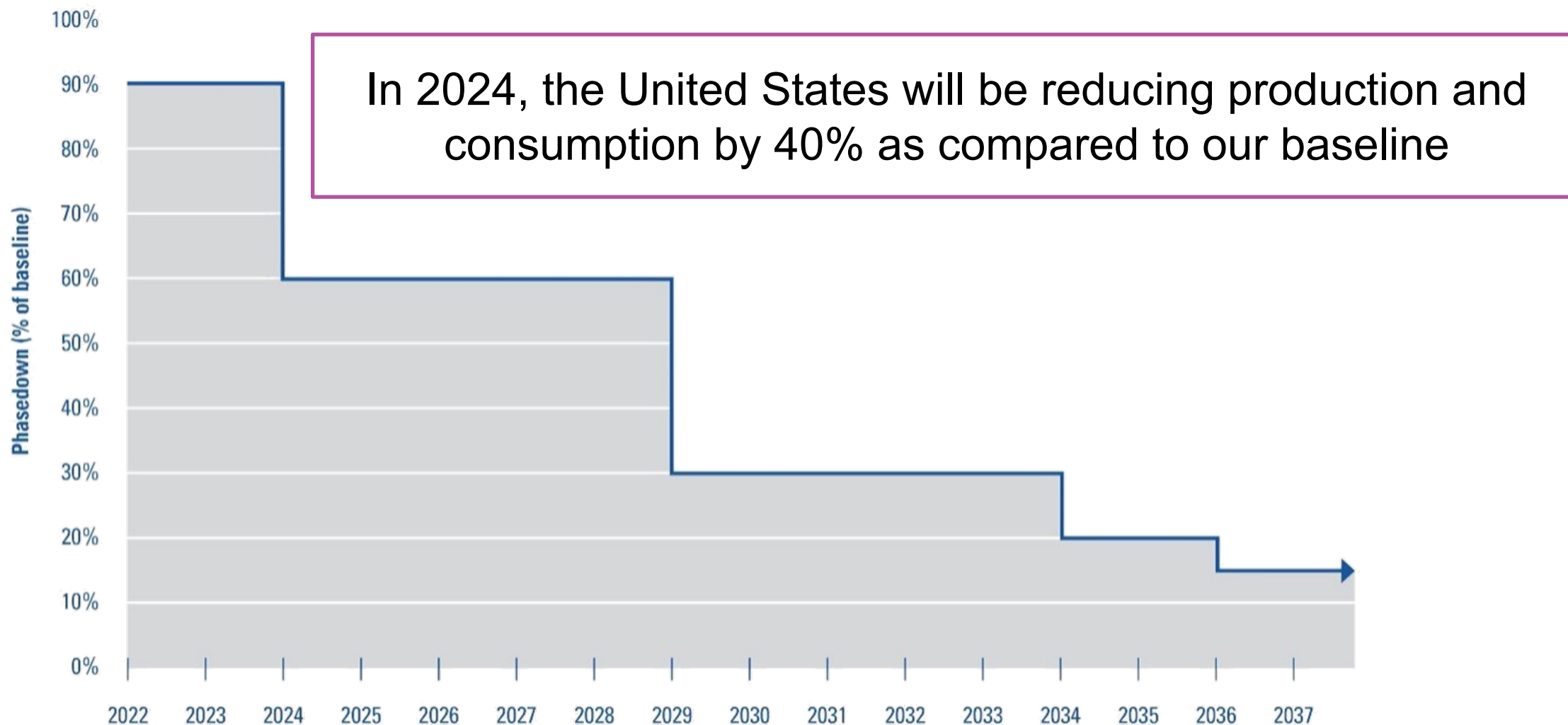
Regulated Substances in the AIM Act

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 CHF ₂ CF ₃	HFC-227ea	3,220
CH ₂ FCF ₂ CF ₃	HFC-236cb	1,340
CHF ₂ CHF ₂ CF 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 CHF ₂ CHF 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 IPCC's 2007 Fourth Assessment Report (AR4).

HFC Phasedown Schedule



Kigali Amendment signed Oct. 26



A screenshot of a tweet from President Joe Biden. The tweet is displayed in a white box with a light blue border. On the left side of the box, there are three icons: a blue Twitter bird, a black hashtag symbol, and a grey gear icon. The tweet itself is titled "Tweet" and is from "President Biden" (@POTUS), who is verified and identified as a "United States government official". The text of the tweet reads: "I'm proud to sign the Kigali Amendment – a historic, bipartisan win for American manufacturing and global climate action. My Administration is phasing down super-polluting chemicals so the U.S. can lead the clean technology markets of the future and unlock thousands of new jobs." The tweet is dated "5:45 PM · Oct 27, 2022" and is from "The White House".

  **Tweet**

 **President Biden** 
@POTUS
 United States government official

I'm proud to sign the Kigali Amendment – a historic, bipartisan win for American manufacturing and global climate action.

My Administration is phasing down super-polluting chemicals so the U.S. can lead the clean technology markets of the future and unlock thousands of new jobs.

5:45 PM · Oct 27, 2022 · The White House

HFC Allocation Framework Rule

- HFC Allowance Allocation Final Rule
 - Published in the Federal Register on Oct. 5, 2021 (86 FR 55116)
 - Establishes an HFC allowance allocation and trading system (licensing system) to phase down HFCs
 - From 2022 to 2050, cumulative net benefits are estimated to be about \$270 billion, and total emission reductions are projected to be the equivalent of 4.6 billion metric tons of CO₂ or nearly equal to three years of U.S. power sector emissions at 2019 levels
- HFC allowances for calendar year 2023 to be issued by Oct. 1, 2022

Date	Consumption & Production Caps, Relative to Baseline
2022–2023	90 percent
2024–2028	60 percent
2029–2033	30 percent
2034–2035	20 percent
2036 & after	15 percent

HFC Allocation and Framework Rule

The HFC Allocation and Phasedown Framework Rule (Finalized Oct 2021)

- Established the HFC production and consumption baselines from which reductions will be made
- Codified the phasedown schedule given in the AIM Act
 - As of January 1, 2022, allowances are needed to produce or import bulk HFCs
- Established a methodology for issuing allowances for 2022 and 2023
 - First issued to companies in the six applications listed in AIM Act
 - Next issued to companies that produced and/or imported HFCs in 2020, based on an average of their three highest years from 2011 – 2019 (do not have to be consecutive years)
 - Set-aside some allowances for application-specific end-users and small importers identified late, and new market entrants
- Limited emissions of HFC-23, the most potent HFC listed in the AIM Act

HFC Allocation Final Rule: Enforcement and compliance mechanisms



The final rule:

- Establishes an electronic tracking system for movement of HFCs through commerce (universal QR codes)
- Over 5 years, phases in required use of refillable cylinders rather than single-use disposable cylinders
 - Exception for small cans containing less than two pounds of HFCs that have a self-sealing valve (e.g., motor vehicle servicing)
- Establishes administrative consequences (e.g., revocation or retirement of allowances) for noncompliance that are in addition to potential civil and criminal enforcement action
- Establishes recordkeeping and reporting, labeling, third party auditing, and data transparency requirements
 - Requires advance reporting to monitor imports in real time

Proposed Allocation Rule for 2024 and Later Years

- On Oct.19 the EPA Administrator signed a proposed rule this covering 2024 and later years
 - 45 day comment period
- Among other topics, the proposal will takes public comment on a methodology to distribute allowances in 2024 and later years
- Reminder: In 2024, the total number of allowances allocated will decrease to 60 percent of baseline

AIM Act Subsection (i), “Technology Transitions”

- On its own initiative, EPA may by rule restrict, fully, partially, or on a graduated schedule, the use of a regulated substance in a sector or subsector in which the regulated substance is used
- A person may also petition EPA to promulgate such a rule for the restriction on use of a regulated substance in a sector or subsector
 - Extensive list of factors to consider in determining whether to grant or deny the petition
 - Petitions must be made available within **30 days**, acted upon within **180 days**, and if granted, EPA must complete a rulemaking within **2 years**



AIM Act Subsection (i) Petitions Overview

- Petitions to Restrict Use of HFCs:
 - EPA received petitions to issue rules to restrict HFCs in refrigeration and air conditioning and heat pump (RACHP), foam, and aerosol sectors
 - Petitioners were environmental NGOs, industry trade associations, states, and private companies
 - EPA granted or partially granted many of the petitions on October 7, 2021 (86 FR 57141)
 - Granting petitions does not mean EPA will propose or finalize requirements identical to the petitioners' requests

Air Conditioners



Foam Products



Refrigerators



Aerosol Cans

What will the Technology Transitions NPRM cover?

- Technology Transitions NPRM will cover ~40 applications in refrigeration, air conditioning and heat pump sector, foams, and aerosols
- We plan to address the granted petitions in a single rulemaking
 - Many cover the same or similar uses
- We also plan to propose establishing framework elements and definitions for implementation of subsection (i), as well as enforcement and compliance provisions

Statutory Factors in Developing the NPRM

As per subsection (i)(4), EPA shall, to the extent practicable, factor in:

- A. the best available data;
- B. the availability of substitutes for uses of the regulated substance that is the subject of the petition, taking into account:
 - technological achievability
 - commercial demands
 - safety
 - consumer costs
 - building codes
 - appliance efficiency standards
 - affordability for residential and small business consumers
 - other relevant factors, including the quantities of regulated substances available from reclaiming, prior production, or prior import
- C. overall economic costs and environmental impacts, as compared to historical trends; and
- D. the remaining phase-down period for regulated substances under the final rule issued under subsection.

Next Steps

- Rulemaking will be proposed later this year, followed by a public comment period
 - Rule delivered to OMB for interagency review on August 26
- Statutory deadline for a final rule is two years after granting petition: October 7, 2023

AIM Act Subsection (h), “Management of Regulated Substances”

- To maximize reclaiming and minimize the release of a regulated substance from equipment, and ensuring safety of technicians and consumers, EPA will promulgate regulations
- EPA may coordinate with any other similar regulations (e.g., CAA 608 and 609 regulations)
- Subject to appropriations, EPA shall establish a grant program for small businesses for purchase of recycling, recovery, or reclamation equipment for HFC substitutes (e.g., R-1234yf), including for MVAC servicing

Draft HFC Reclamation Report and Stakeholder Meeting

- EPA posted a draft report on the HFC reclamation market on Oct. 17 and requests comment on topics contained in the draft report, including but not limited to:
 - Current reclamation process, practices, and technologies
 - Supply chain of reclaimed refrigerants (e.g., recovery, collection, stockpiling, destruction)
 - Costs of reclamation (e.g., price of refrigerants, transport, storage, operating costs of reclamation systems)
 - Incentives for reclamation
 - Safety of technicians and consumers (e.g., outreach, best practices)
 - Barriers and challenges to reclamation (e.g., contamination and accommodation of blends and cylinders with mixed refrigerants, market demand).
- Virtual stakeholder meeting on Nov. 9 at 11 am.
- Report and stakeholder registration: www.epa.gov/climate-hfcs-reduction/regulatory-actions-and-notices-related-subsection-h-aim-act

CAA Title VI Section 612: Significant New Alternatives Policy (SNAP) Program

Evaluates & lists alternatives as:

- **Acceptable** - those that reduce overall risk to human health & environment
- **Acceptable with use restrictions** - if needed to ensure safe use
- **Unacceptable**

Sectors include:

- Aerosols; Foams; Refrigeration and Air-Conditioning (AC); Solvents; Fire Suppression; Adhesives, Coatings, Inks, etc.

Considers:

- Ozone Depletion Potential
- Global Warming Potential
- Flammability
- Toxicity
- Local Air Quality
- Ecosystem Effects
- Occupational & Consumer Health/Safety

CAA Title VI Section 612: Significant New Alternatives Policy (SNAP) Program (Cont.)

- Proposed rule issued July 28, 2022
 - Lists several substitutes as acceptable subject to use conditions or acceptable subject to narrowed use limits
 - Modifies use conditions for one refrigerant (HFC-32)
 - References latest versions of UL 60335-2-40, UL 61010-2-011, and ASHRAE 15-2019
- Industrial sectors covered
 - Refrigeration & air conditioning
 - Fire suppression
- Public comment period closed September 12, 2022
- Additional acceptable listings in upcoming rulemaking (SNAP Rule 26)

Next Steps

- Address public comments in a SNAP Final Rule 25
- Develop SNAP Proposed Rule 26
- Continuing evaluation of substitutes for potential next acceptability listings

Additional Information

<https://www.epa.gov/climate-hfcs-reduction>



<https://www.epa.gov/snap>



<https://www.epa.gov/ozone-layer-protection>



Thank you

Erin Birgfeld

Birgfeld.erin@epa.gov

Stratospheric Protection Division

Office of Atmospheric Programs, Office of Air and Radiation

US Environmental Protection Agency