Refrigerant Phase-Down Timeline for Building Owners

The AIM Act refrigerant transition reference for Alabama commercial buildings.

1. Overview

The EPA American Innovation and Manufacturing (AIM) Act, signed in December 2020, establishes the U.S. framework for phasing down hydrofluorocarbon (HFC) refrigerant production and consumption through 2036. This timeline reference is for commercial building owners, facility managers, and property managers planning HVAC equipment lifecycle and refrigerant management against the AIM Act schedule.

2. Historical Context — R-22 Phase-Out

R-22 (an HCFC under the Montreal Protocol) was the dominant commercial HVAC refrigerant through the 1990s and early 2000s. Phase-out milestones:

- 2010 — Production of R-22 equipment prohibited
- 2020 — Manufacture of new R-22 refrigerant prohibited in the U.S.
- Present — R-22 equipment serviced with reclaimed refrigerant only; pricing substantial; most R-22 equipment is end-of-life on age alone

3. R-410A Current State

R-410A (blend of R-32 and R-125) was the dominant commercial HVAC refrigerant from approximately 2010 through 2024. Under the AIM Act:

- Existing R-410A equipment: can be serviced indefinitely with allocated or reclaimed R-410A
- Production allocations: declining year-over-year through 2036
- Service pricing trajectory: trending higher; 2028-2032 will be materially above 2024-2025 benchmarks
- Reclaimed R-410A share: growing as decommissioned equipment feeds the reclaim supply

4. R-454B and R-32 — New Refrigerants

R-454B (blend of R-32 and R-1234yf) and R-32 (pure) are the primary replacement refrigerants for new commercial HVAC equipment post-January 1, 2025 in regulated categories.

Refrigerant	GWP	Safety Class
R-22	1,810	A1 (non-flammable)
R-410A	2,088	A1
R-454B	466	A2L (mildly flammable)
R-32	675	A2L

5. A2L Refrigerant Service Protocols

ASHRAE Standard 15-2022 covers A2L refrigerant safety. Service protocol changes:

- Installation-clearance requirements around potential ignition sources
- Electronic refrigerant leak detectors rated for A2L flammability class
- Technician training on A2L ignition-source awareness
- Equipment design: ignition-source-free motor selection, bonded electrical components

For new R-454B or R-32 commercial equipment commissioning, verify your service contractor is current on A2L protocols.

6. Retrofit vs Replacement Decision

Retrofit existing R-410A equipment to a drop-in replacement refrigerant? In most cases: no. Drop-in R-410A replacements exist (e.g., R-32 retrofits) but carry meaningful operational trade-offs — reduced capacity, higher discharge temperatures, warranty implications, and ASHRAE 15 A2L compliance requirements on equipment not designed for A2L. Most commercial building owners continue servicing R-410A on existing equipment and transition to R-454B or R-32 at the end-of-life replacement window, which is cleaner operationally and aligns with code-compliant new-installation requirements.

7. Commercial Equipment Timeline by Category

Packaged Rooftop Units (RTU)

- Pre-2025 installs: R-410A, serviced indefinitely with allocated/reclaimed refrigerant
- Post-2025 installs: R-454B or R-32 (regulated category)

- Replacement cycle: year 12-20 typical; refrigerant transition synchronizes with natural replacement

Chillers

- R-134a centrifugal: AIM Act phase-down; long-term service pricing trending up
- R-123 low-pressure: past production phase-out 2030; R-514A and R-1233zd are modern replacements
- New installations: R-1233zd, R-513A, R-514A, R-450A depending on platform
- Replacement cycle: year 20-25 typical

VRF/VRV

- Pre-2025 installs: R-410A, often exceeds Section 608 50-lb threshold from day one
- Post-2025 installs: R-454B (Daikin VRV), R-32 (Mitsubishi), A2L service required

Commercial Refrigeration

- R-404A and R-507A: AIM Act phase-down active
- New installations: R-454A, R-448A, R-513A, R-450A (platform dependent)
- Walk-in systems often exceed Section 608 50-lb threshold

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8. AIM Act Milestone Timeline

Year	Milestone
2020 Dec	AIM Act signed into law
2022	First HFC production allocation
2024	Allocation reduction stage
2025 Jan 1	Sector-based restrictions — new commercial HVAC in regulated categories uses A2L refrigerants
2026-2029	Continuing allocation reductions; reclaim becomes larger share
2030	R-123 production phase-out
2033-2035	Further sector restrictions expected
2036	Final allocation approximately 15% of 2011-2013 baseline

9. Operational Planning Checklist

- Document refrigerant type and charge for every piece of commercial HVAC equipment
- Flag systems over 50 lb charge for Section 608 annual leak-rate tracking
- Project service refrigerant pricing over 5-10 year horizon under AIM Act schedule
- Identify R-22 equipment for replacement (end-of-life on refrigerant cost alone)
- Plan post-2025 replacement equipment selection around A2L refrigerants
- Verify service contractor A2L training for new (2025+) installations
- Integrate refrigerant management with corporate sustainability reporting (GHG Protocol)

10. Sources and References

- U.S. EPA — AIM Act — epa.gov/climate-hfcs-reduction/aim-act
- U.S. EPA — Technology Transitions Rule — epa.gov/technology-transitions
- U.S. EPA — Section 608 — epa.gov/section608
- ASHRAE — Position Document on Refrigerants
- ASHRAE Standard 15-2022 — Refrigeration Systems Safety (A2L sections)
- ASHRAE Standard 34 — Refrigerant Designation and Safety Classification
- AHRI — Refrigerant transition guidance — ahrinet.org
- AHRI Directory — ahridirectory.org

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