



Refrigerant Regulations for Food Retailers

EVERY ASPECT OF REFRIGERATION MANAGEMENT, AT EVERY LEVEL,
EXACTLY WHEN YOU NEED IT



Agenda

- Federal Refrigerant Regulations
 - EPA enforcement
 - The AIM Act
- State Refrigerant Regulations
 - CA
 - WA
 - NJ
 - NY
- Resources



Federal/EPA Refrigerant Regulations

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EPA Announces Federal Enforcement Priorities to Protect Communities from Pollution

The 2024-2027 National Enforcement and Compliance Initiatives are:

Mitigating Climate Change - Tackling the climate crisis is an urgent priority. EPA will use its enforcement and compliance tools to reduce greenhouse gas emissions, helping to limit the worst effects of climate change. The initiative will focus on three separate and significant contributors to climate change: (1) methane emissions from oil and gas facilities; (2) methane emissions from landfills; and (3) the use, importation, and production of hydrofluorocarbons (HFCs). EPA has documented widespread noncompliance in all three of these areas, resulting in potentially tens of thousands of tons of unlawful emissions of greenhouse gases and other pollutants. This initiative will help achieve EPA's goals to combat climate change while also addressing significant noncompliance in specific industry sectors.

<https://www.epa.gov/newsreleases/epa-announces-federal-enforcement-priorities-protect-communities-pollution>

EPA Compliance and Enforcement



The 2024-2027 National Enforcement and Compliance Initiatives

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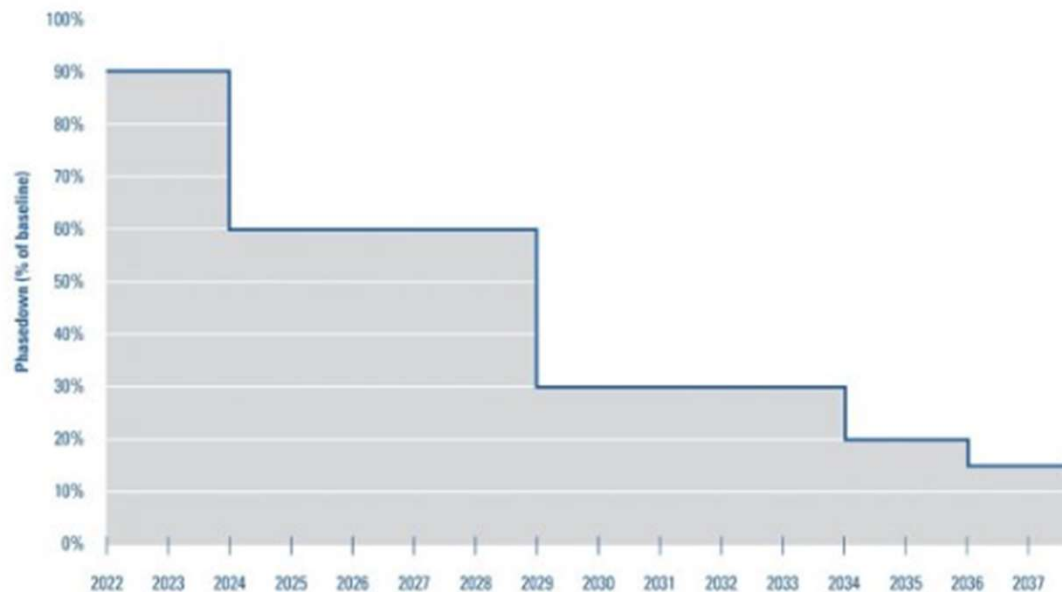


AIM Act: HFC Phasedown/Allocation Rules (Final)



Phasedown Schedule

The following illustrates the HFC production and consumption phasedown schedule as outlined in the AIM Act.



- Maximum annual production volumes allocated to chemical manufacturers

AIM Act: HFC Phasedown/Allocation Methodology



- Allocations in metric tons of exchange value equivalent (MTEVe) = metric tons of CO2 equivalent
- Chemical manufacturer profits will lead to shortages
- Example: 1,000,000 MTEVe

Refrigerant	GWP	Metric Tons Multiplier	Pounds Manufactured
R-404A	3922	2204.62	~560,000
R-449A	1396	2204.62	~1,600,000

AIM Act: HFC Use Restrictions/Technology Transitions Rule (Final)

- Applies to all HVACR equipment, regardless of charge size
- Existing high-GWP systems can continue to operate
- New terms/new definitions
 - *Product* is functional upon leaving a factory (e.g. packaged rooftop units)
 - *System* is assembled and charged in the field (e.g. refrigeration rack systems)
 - *Install* means to complete a field-assembled system's circuit, including charging with a full charge, such that the system can function and is ready for use for its intended purpose
- Replacing 75% or more of evaporators (by number) and 100% of the compressor racks, condensers, and connected evaporator loads, or increasing the cooling capacity (BTU/hour) will trigger refrigerant bans
- See RMS fact sheet at <https://dcerms.com/Portals/6/rms-assets/docs/RMS's%201-Page%20Fact%20Sheet%20on%20the%20EPA's%20Final%20Technology%20Transitions%20and%20HFC%20Use%20Restrictions%20Rule.pdf>

AIM Act: HFC Use Restrictions/Technology Transitions Rule

- Refrigeration *products*

GWP Limits for New Self-Contained Refrigeration Products in New/Existing Facilities (functional upon leaving a factory)

Products ¹	Prohibited Refrigerants	Manufacture & Import Compliance Date ²
Retail food – refrigeration stand-alone units & vending machines	GWP ≥ 150	1/1/25

¹ Additional requirement for refrigerated food processing and dispensing equipment, automatic commercial ice machines, and refrigerated transport.

² Sale, distribution, and export of these products is prohibited 3 years after the manufacture & import compliance date.

AIM Act: HFC Use Restrictions/Technology Transitions Rule

- Refrigeration *systems*

GWP Limits for New Refrigeration Systems in New/Existing Facilities (assembled and charged in the field)

Sector ¹	Systems	Prohibited Refrigerants	Installation Compliance Date
Cold storage warehouses ²	≥ 200 lb. charge, excluding high temperature side of cascade system	GWP ≥ 150	1/1/26
	< 200 lb. charge	GWP ≥ 300	1/1/26
	High temperature side of cascade systems	GWP ≥ 300	1/1/26
Retail food – remote condensing units	≥ 200 lb. charge, excluding high temperature side of cascade system	GWP ≥ 150	1/1/26
	< 200 lb. charge	GWP ≥ 300	1/1/26
	High temperature side of cascade systems	GWP ≥ 300	1/1/26
Retail food – supermarkets ²	≥ 200 lb. charge, excluding high temperature side of cascade system	GWP ≥ 150	1/1/27
	< 200 lb. charge	GWP ≥ 300	1/1/27
	High temperature side of cascade systems	GWP ≥ 300	1/1/27

¹ Additional requirement for automatic commercial ice machines and refrigerated transport.

² Compliance date for installation is extended 1 year when an approved building permit issued prior to 10/5/23 specifies the use of a regulated substance in a system.

AIM Act: HFC Use Restrictions/Technology Transitions Rule

- Air-conditioning *products*

GWP Limits for Self-Contained Air Conditioning/Heat Pump PRODUCTS in New/Existing Facilities (functional upon leaving factory)

Products	Prohibited Refrigerants	Manufacture & Import Compliance Date ⁵
Light commercial air conditioning & heat pumps	GWP ≥ 700	1/1/25
Chillers – Comfort cooling (as a stand-alone product)	GWP ≥ 700	1/1/25
Data centers, computer room air conditioning, & information technology equipment cooling	GWP ≥ 700	1/1/27

⁵ Sale, distribution, and export of these products is prohibited 3 years after the manufacture & import compliance date.

AIM Act: HFC Use Restrictions/Technology Transitions Rule

- Air-conditioning *systems*

GWP Limits for Air Conditioning/Heat Pump Systems in New/Existing Facilities (field-assembled and field-charged)

Systems	Prohibited Refrigerants	Installation Compliance Date
Light commercial air conditioning & heat pump systems	GWP \geq 700	1/1/26 ⁶
Chillers – Comfort cooling	GWP \geq 700	1/1/25
Variable refrigerant flow systems	GWP \geq 700	1/1/26
Data centers, computer room air conditioning, IT equipment cooling	GWP \geq 700	1/1/27

⁶ EPA amendment issued 12/26/23 gives 1 additional year to install new light commercial AC or heat pump systems when using components manufactured or imported before 1/1/25 (vs. original 1/1/25 date).

AIM Act: Emissions Reduction and Reclamation Act (Proposed)

- Appliances with full charge of 15+ lbs. of a HFC refrigerant or a substitute with a GWP > 53
- Might not apply to appliances used in residential/light commercial AC and heat pumps sector
- Most requirements are consistent with Section 608
 - Leak repair thresholds, deadlines, requirements
 - Mandatory leak inspections
 - Chronically leaking appliance annual reporting
 - Mandatory record-keeping
- Mandatory automatic leak detection systems (ALDS) for new and existing systems with full charge of 1500+ lbs. of a HFC refrigerant or a substitute with a GWP > 53
- Mandatory use of reclaimed refrigerant for servicing HFC systems starting 01/01/28
- Disposable Cylinders must be sent to reclaimer for removal of refrigerant heel starting 01/01/2025



State Refrigerant Regulations

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California – Refrigerant Management Program

- Applies to refrigeration appliances w/full charge >50 lbs. of high-GWP refrigerant (150+ GWP).
- Mandatory whole appliance leak inspections

Full Charge Size	Frequency
2000+ lbs. (large)	Every 3 months
200 < 2000 lbs. (medium)	Every 3 months
> 50 < 200 lbs. (small)	Annually

- Must also be conducted after the leak is repaired as part of the follow-up verification test; each time refrigerant is added; each time oil residue is observed; and within 24 hours of receiving an ALDS alert.

- Leak Repair:
 - Leaks must be repaired within 14 days of detection, including verification tests
 - If leak can't be repaired, appliance must be retrofitted or retired (within 6 months).
- Registration and Annual Reporting Required
 - Note: CO2 systems with a charge size > 50 lbs. must be registered in the CARB R3 system!

California – Retail Food Refrigeration GWP Limits

- Defines “new facilities” and “new equipment” separately.
- **New Facility**
 - New construction;
 - Existing facility not previously used for retail food refrigeration; or
 - 100% replacement of condensers, AND 100% compressors, AND 75% evaporators by count (per project)

End Use	Prohibited Substances	Compliance Date
Refrigeration Equipment Containing >50 lbs.	100-year GWP of ≥ 150	01/01/2022

- **New Refrigeration Equipment**
 - First installed using new components, used components, or a combination of new and used components;
 - Nominal compressor capacity is increased; or
 - Appliance has undergone cumulative replacements, within any 3-year time period, of components in full or exceeding 50% of the capital cost of replacing the entire system, excluding the cost of the refrigerated display cases

End Use	Prohibited Substances	Compliance Date
Rack Systems and Remote Condensing Units (new and refrigerant retrofits)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	01/01/2019

California – HFC Reduction Measures for Retail Food Facilities

- Refrigeration systems with a charge size > 50 lbs. in retail food facilities

Compliance Requirement	Compliance Date
Weighted-average GWP* must be <2,500; or 2019 baseline GHGp must be reduced by 25% or more	12/31/2026 ¹
Weighted-average GWP must be <1,400; or 2019 baseline GHGp must be reduced by 55% or more	01/01/2030

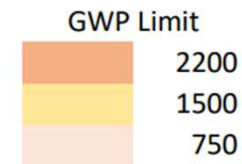
¹ Only applies to companies owning or operating 20 or more retail food facilities in CA, and national supermarket chains operating in CA.

Weighted average GWP = $\sum (\text{charge} \times \text{GWP}) / \sum \text{charge}$

GHGp = the greenhouse gas potential of a company's food retail facilities = $\sum (\text{Charge} \times \text{GWP})$

California's Ban on Sale/Purchase of Virgin Refrigerant

California's Bans of Sale/Purchase of Virgin Refrigerant			
Refrigerant Category	Refrigerant	100-Year GWP (AR4)	Virgin Sale/Purchase Prohibition Date
HFC	R-507A	3,985.00	1/1/2025
HFC	R-404A	3,921.60	1/1/2025
HCFC	R-408A	3,151.90	1/1/2025
HFC	R-422B	2,525.69	1/1/2025
HFC	R-427A	2,138.25	1/1/2030
HFC	R-407A	2,107.00	1/1/2030



California Turns Up the Heat on HFC Refrigerants

- <https://dcerms.com/blog/california-turns-up-the-heat-on-hfc-refrigerants>
- <https://dcerms.com/blog/california-turns-up-the-heat-on-hfc-refrigerants-further-clarification>

Washington – Refrigerant Management Program

- Applies to HVACR appliances with a full charge ≥ 50 lbs. of a high-GWP refrigerant (≥ 150 GWP)
- Requirements are being phased in based on the charge size of the appliance
- Requirements that started 01/01/2024
 - 50+ lb. appliances:
 - Recordkeeping. Must maintain records for a minimum of 5 years.
 - Leaks must be repaired within 14 days of detection, including verification tests. If leak can't be repaired, appliance must be retrofitted or retired. Retrofit or retirement plan must be completed within 6 months
 - 1500+ lb. appliances:
 - Facilities with at least one 1500+ lb. appliance required to register by 03/15/2024
 - Required to install an ALDS on refrigeration appliances by 01/01/2025
 - Monthly whole appliance leak inspections
 - Notify Dept. of Ecology w/in 30 days if 365-day rolling leak rate is exceeded

End Use	Leak Rate Threshold
Commercial Refrigeration (Cold Storage Warehouse & Retail Food Refrigeration)	16%
Air Conditioning	8%
Industrial Process Refrigeration (includes Data Center & Computer Room Cooling)	24%

Washington – HFC Prohibitions for New Equipment

- **What is new refrigeration equipment?**
 - First installed using new components, used components, or a combination of new and used components
 - New construction in a new or existing facility
 - Nominal compressor capacity is increased; or
 - 100% replacement of condensers, AND 100% compressors, AND 75% evaporators by count (over lifetime of appliance)

End Use	Prohibited Substances	Compliance Date
Commercial Refrigeration: Retail food refrigeration including chillers with a full charge >50 lbs. (New)	100-year GWP of ≥ 150	01/01/2025
Commercial Refrigeration: Retail food refrigeration including chillers with a full charge >50 lbs. (Refrigerant Retrofit)	100-year GWP of ≥ 150	01/01/2029

New Jersey Greenhouse Gas Monitoring and Reporting Rule

- Applies to refrigeration systems and chillers with charge sizes ≥ 50 lbs of refrigerant with a GWP 150
 - Must register facilities
 - Must keep records of refrigerant usage
 - Must report annually: facility info; equipment info; and info on refrigerant purchases, usage, recovery, storage, reclamation, and destruction

New York – Proposed Regulations

- GWP Limits (AR6 20-year)
 - 01/01/2025: Systems \geq 50 lbs. GWP >580
 - 01/01/2025: New facilities \geq 50 lbs. GWP >10
 - 01/01/2034: Systems GWP >10

- Refrigerant Sales Ban

Prohibited Substances	Prohibition Date
GWP ₂₀ \geq 4600	01/01/2025
GWP ₂₀ \geq 4200	01/01/2030
GWP ₂₀ \geq 3000	01/01/2033
GWP ₂₀ \geq 1600	01/01/2027

- Refrigerant Management Program
 - Requirements being phased in beginning 01/01/2025 for HVACR appliances for leak inspections, leak repairs, ALDS, recordkeeping, labeling, registration, and annual reporting
- Refrigerant Replacement Program
 - All retail food chain refrigeration equipment \geq 200 lbs. must be <10 GWP by 2035, or comparable annual emissions

AR6 20-year GWP Values for Common Refrigerants

Refrigerant	AR4 100-Year GWP	AR6 20-Year GWP
R-290	3.00	0.07
R-404A	3,921.60	7,208.00
R-407A	2,107.00	4,890.00
R-407C	1,773.85	4,456.50
R-410A	2,087.50	4,715.00
R-448A	1,386.07	3,321.91
R-449A	1,396.29	3,382.89
R-454B	465.39	1,853.97
R-513A	629.76	1,822.61
R-744	1.00	1.00

NY State 20-year GWP values for common supermarket refrigerants available at <https://dcerms.com/portals/6/rms-assets/docs/Refrig%20Calcs%20for%20NY.pdf>

Resources

- RMS Resources Webpage: <https://dcerms.com/Resources>
- NASRC Refrigerant Transition Hub: <https://nasrc.org/hub>
- The EPA's GreenChill Partnership:
<https://www.epa.gov/greenchill>
- Supermarket Refrigeration Management LinkedIn Group:
<https://www.linkedin.com/groups/6664843/>

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Questions??

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