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Regulatory Update— Refrigerants & Decarbonization Trends

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Refrigerants and Decarbonization Trends– Key Topics

- Federal regulations
 - EPA – AIM Act
 - State regulations
- A2L Specific Updates
- Decarbonization and Electrification
 - IRA Tax Credits and Rebates
- Industry Resources



Federal Regulation

American Innovation & Manufacturing (AIM) Act Gives EPA Authority to Regulate HFC Refrigerants



1. Mandates phasedown of HFCs produced and imported (restricts supply)

Directs EPA to establish production and consumption phase-down limits consistent with Kigali Amendment.

GOPELAND

2. Allow sector transition to lower-GWP refrigerants in new equipment (restricts demand)

Gives EPA the authority to regulate HFCs through sector-based rulemaking (GWP limits)

3. Authorizes EPA to establish standards for HFC management: servicing, repair, recovery, recycle, reclaim, etc.; enforced through recordkeeping and reporting (restricts demand)

In addition, EPA continues to use Significant New Alternatives Policy (through Clean Air Act) to approve new refrigerants as substitutes in HVACR end uses.

No federal preemption; defines a few exceptions

[AIM Act text](#)

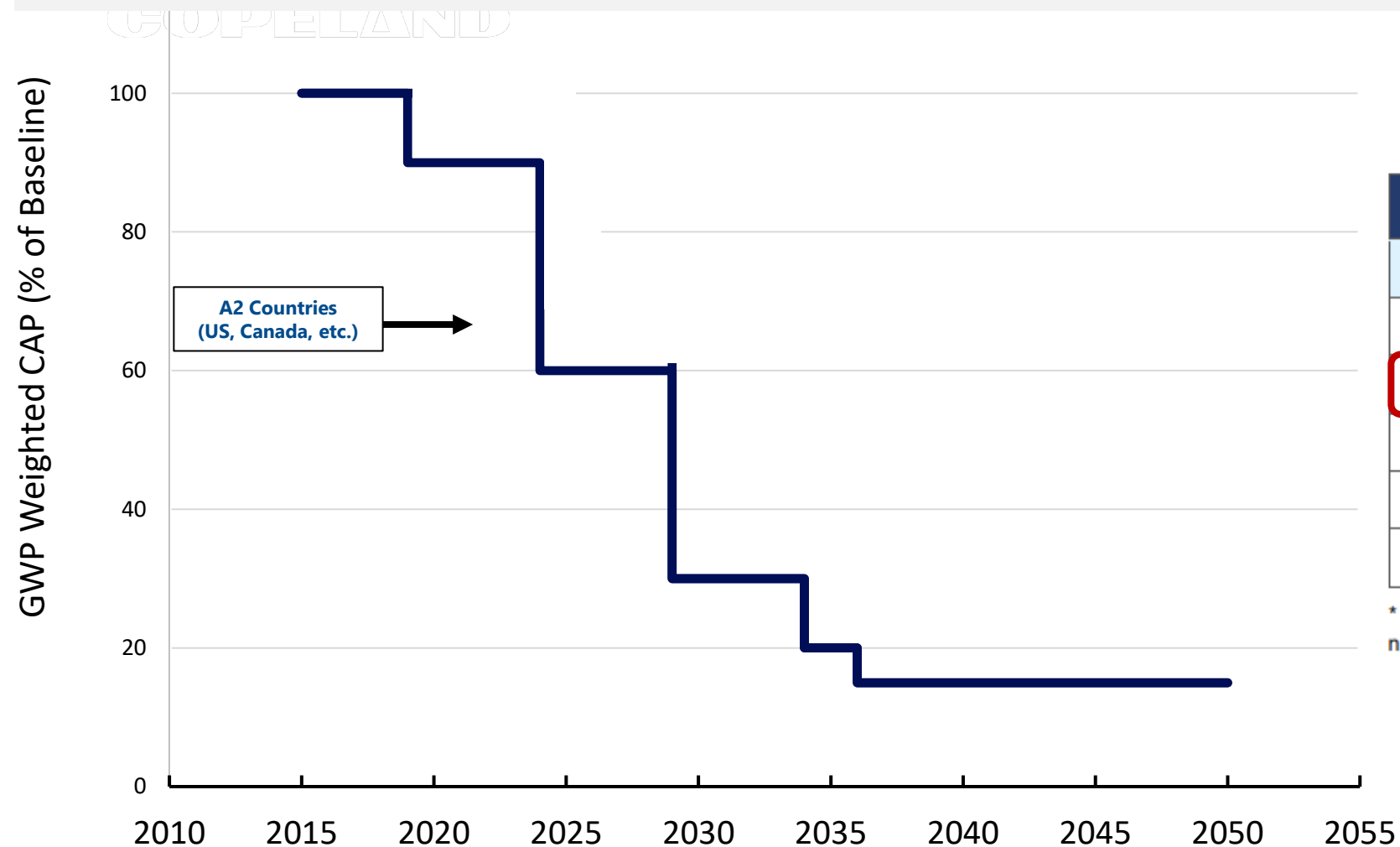
[EPA HFC Reduction](#)

1. Phasedown of HFCs produced and imported will impact availability of supply.

Limit the quantity of HFCs produced and imported

- Directs EPA to establish production and consumption phase-down limits consistent with Kigali Amendment.

EPA issuing calendar year allowances to producers and importers of HFCs through allocation rules



HFC Phasedown Schedule and Consumption & Production Allowance Caps

Year	Consumption & Production Allowance Caps as a Percentage of Baseline	Consumption & Production Allowance Caps in MMTEVe*
Baseline		Consumption: 303.89 MMTEVe Production: 382.55 MMTEVe
2022–2023	90 percent	Consumption: 273.5 Production: 344.3
2024–2028	60 percent	Consumption: 182.3 Production: 229.5
2029–2033	30 percent	Consumption: 91.2 Production: 114.8
2034–2035	20 percent	Consumption: 60.8 Production: 76.5
2036 & after	15 percent	Consumption: 45.6 Production: 57.4

* The baselines and caps are expressed in million metric tons of exchange value equivalent (MMTEVe), which are numerically equivalent to million metric tons of CO₂ equivalent (MMTCO₂e).

2. EPA Technology Transitions Rule

Established GWP Limits and Compliance Dates by Sector

Compliance Based on Definition of Products, Systems, and Specified Components

What are “Products”?

Sealed Refrigerant Loop, Factory Charged



Compliance defined by date of manufacture.

Three year sell through

What are “Systems”?

Assembly of Components Completing Refrigerant Loop



Compliance defined as date of install*

No sell through for full systems (new, add-on, full replacement)

What are Specified Components?



For Service Only – must be labeled as such after compliance date

No limitations relative to refrigerants.

*Good cause rule published Dec 26 will allow 1-year sell through for 410A Residential and Light Commercial AC/HP if manufactured prior to Jan 1, 2025

[HFC Technology Transitions](#)

EPA TT Rule Transition Timing

Sector	GWP limit	Compliance Date
Resi/Lt. Comm'l AC/HP	700	1-Jan-25
VRF	700	1-Jan-26
Data Center	700	1-Jan-27
Chiller - Comfort	700	1-Jan-26
Chiller – IPR > -22F	700	1-Jan-26
Chiller – IPR -22F to -58F	700	1-Jan-27

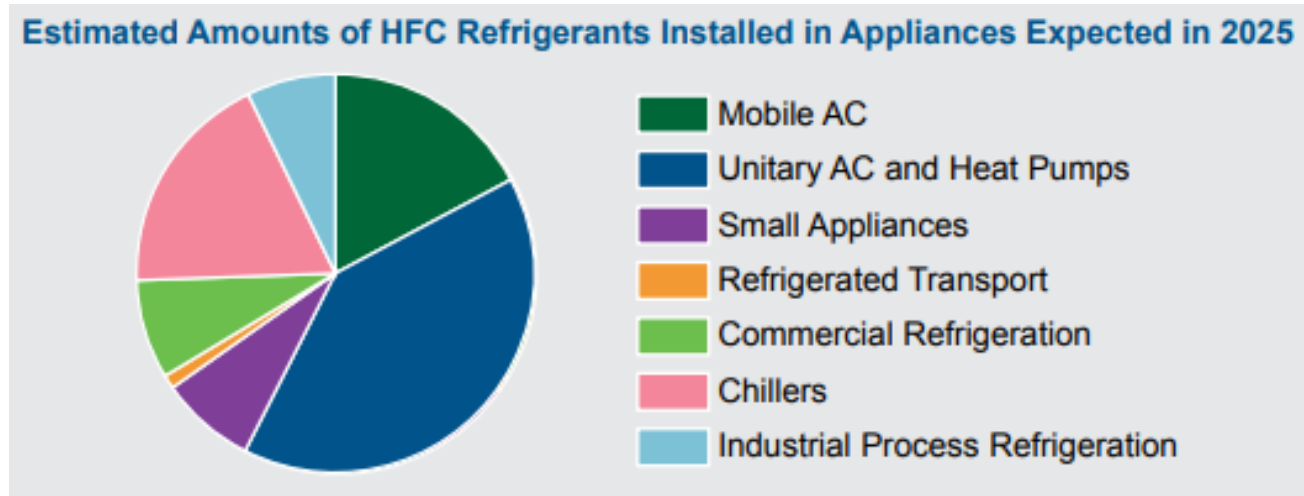
Chillers used in data center regulated as data center.
Chillers operating below -58F are not covered under this rule.

Food processing/dispensing >500 g or remote, Ice Cream Makers, ACIM Batch >1000lb/day / Continuous >1200lb/day / ACIM Remote, Refrigerated Transport – Road and Marine systems have specific refrigerant prohibitions.

Sector	Chrg, lbs	GWP limit	Compliance Date
Retail food – Stand Alone		150	1-Jan-25
Retail food – Self-contained Food Processing	<500g	150	1-Jan-27
Retail food - Supermarket	>200	150	1-Jan-27
Retail food - Supermarket	<200	300	1-Jan-27
Remote Condensing Unit	>200	150	1-Jan-26
Remote Condensing Unit	<200	300	1-Jan-26
HTS cascade-supermarket		300	1-Jan-27
HTS cascade-RCU		300	1-Jan-26
ACIM – Continuous harvest ≤1200 lb/day		150	1-Jan-26
ACIM – Batch ≤1000 lb/day		150	1-Jan-26

3. EPA Proposed HFC Management Rule (Subsection h of AIM Act)

The relevant sections of this NPRM are aimed at achieving those three purposes described in subsection (h)(1) (i.e., (1) maximizing the reclaiming, (2) minimizing the release of a regulated substance from equipment, and (3) ensuring the safety of technicians and consumers)



1. Leak repair for certain equipment that contain HFC refrigerants or their substitutes with GWP > 53 for appliances > 15 lbs, excluding residential and light commercial air conditioning and heat pumps subsector.
2. ALD systems for commercial refrigeration and IPR > 1500 lbs
3. Use of reclaimed HFCs in certain RACHP subsectors,
 - a. First Fill – Residential and Light Commercial AC, Cold Storage Warehouse, IPR, Stand-alone retail food, Supermarket Systems, Refrigerated Transport, ACIM
 - b. Servicing - Stand-alone retail food, Supermarket Systems, Refrigerated Transport, ACIM
4. The fire suppression sector,
5. Recovery of HFCs from cylinders, and
6. Container tracking.

[HFC Use and Reuse](#)

DOE Continues to Finalize Rulemaking At Unprecedented Pace

Department plans to finalize up to 48 energy conservation standard rulemakings between 2022 and end of 2024.



Consumer Products

- Air Cleaners
- Battery Chargers
- Boilers
- Ceiling Fans
- Central Air Conditioners and Heat Pumps
- Clothes Dryers
- Clothes Washers
- Computer and Battery Backup Systems
- Conventional Cooking Products
- Dehumidifiers
- Direct Heating Equipment
- Dishwashers
- External Power Supplies
- Furnace Fans
- Furnaces
- Hearth Products
- Manufactured Housing
- Microwave Ovens
- Miscellaneous Refrigeration
- Pool Heaters
- Portable Air Conditioners
- Portable Electric Spas
- Refrigerators and Freezers
- Room Air Conditioners
- Set-Top Boxes
- Televisions
- Uninterruptible Power Supplies
- Water Heaters

Commercial Products

- Air-Cooled Unitary Air Conditioners and Heat Pumps
- Automatic Commercial Ice Makers
- Circulator Pumps
- Clothes Washers
- Commercial Packaged Boilers
- Commercial and Industrial Air Compressors
- Computer Room Air Conditioners
- Dedicated Outdoor Air Systems
- Dedicated-Purpose Pool Pumps
- Dedicated-Purpose Pool Pump Motors
- Distribution Transformers
- Electric Motors
- Evaporatively Cooled Unitary Air Conditioners
- Fans and Blowers
- Packaged Terminal Air Conditioners and Heat Pumps
- Pumps
- Refrigerated Beverage Vending Machines
- Refrigeration Equipment
- Single Package Vertical Air Conditioners and Heat Pumps
- Small Electric Motors
- Unit Heaters
- Variable Refrigerant Flow Air Conditioners and Heat Pumps
- Walk-In Coolers and Walk-In Freezers
- Warm Air Furnaces
- Water-Cooled Unitary Air Conditioners
- Water Heating Equipment
- Water-Source Heat Pumps

[Fall 2023 DOE Regulatory Agenda](#)
[DOE Standards and Test Procedures](#)

A2L Specific Updates

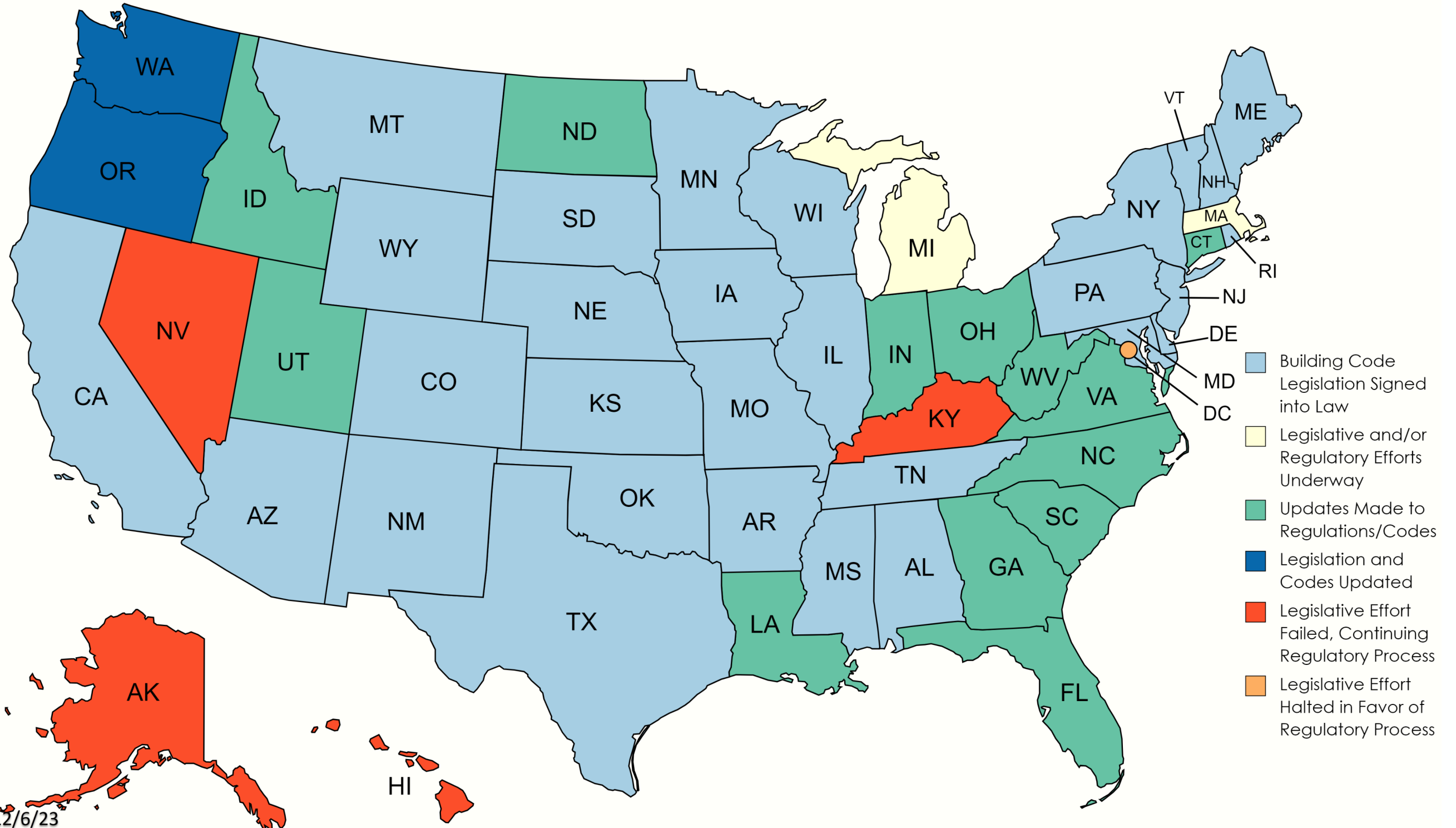
BUILDING CODES

- Updates are needed to the International Mechanical Code and Uniform Mechanical Code to allow A2L equipment to be installed in homes.
- Changes have been adopted, waiting on model codes to be published.
- Some states are pursuing code changes through legislation.



**Underwriters
Laboratories**

LOW GWP BUILDING CODE STATUS



TRANSPORTATION OF A2LS

- DOT Letter of Interpretation/special permits: No change needed for transport of pre-charged equipment containing less than 500lbs/system of A2L refrigerant
 - Limit on number of systems is based on weight of units not refrigerant amounts
- Special permit to allow transport of cylinders horizontally

FUTURE STORAGE OF A2L REFRIGERANTS



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PRE-CHARGED EQUIPMENT EXEMPTED

- Chapter 50 Hazardous Materials – General Provisions
 - 5001.1 Scope. Prevention, control and mitigation of dangerous conditions related to storage, dispensing, use and handling of hazardous materials shall be in accordance with this chapter.

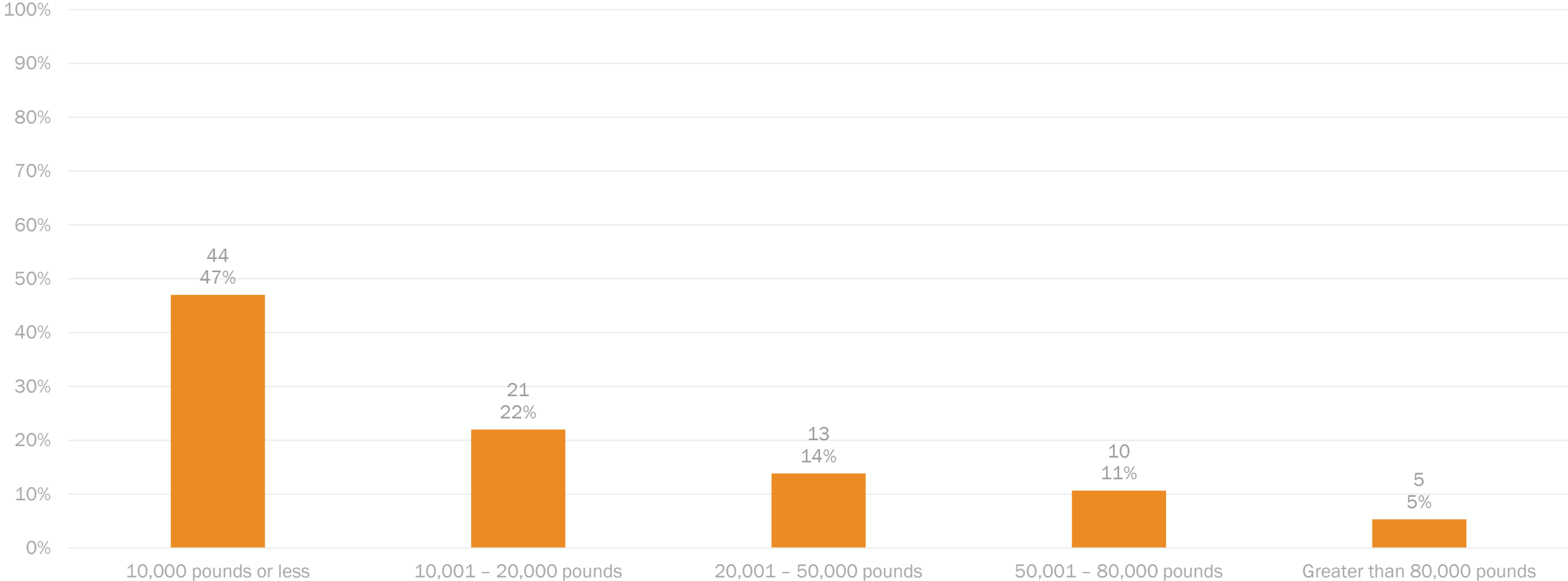
This chapter shall apply to all hazardous materials, including those materials regulated elsewhere in this code, except that where specific requirements are provided in other chapters, those specific requirements shall apply in accordance with the applicable chapter. Where a material has multiple hazards, all hazards shall be addressed.
 - Exemptions
 - 6. Refrigeration systems (see Section 605).
 - Definition from IFC Chapter 2: REFRIGERATING (REFRIGERATION) SYSTEM. A combination of interconnected refrigerant-containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting heat.

HOW MUCH FLAMMABLE GAS CAN BE STORED IN A STORAGE OCCUPANCY BUILDING (WAREHOUSE) UNDER 2018 FIRE AND BUILDING CODES?

- In storage occupancy buildings, the IBC/IFC limits the storage of flammable gases to 150 lbs* per control area
 - 300 lbs per control area with automatic sprinkler system
 - 600 lbs per control area when stored in approved storage cabinets, day boxes, gas cabinets, gas rooms or exhausted enclosures
 - **IBC definition: GAS ROOM.** A separately ventilated, fully enclosed room in which only *compressed gases* and associated equipment and supplies are stored or *used*.
- At grade (ground level) the International Fire Code allows four control areas per building
- Outdoor control area limited to 300 lbs of flammable gases

REFRIGERANT STORED

How many pounds of refrigerant (in cylinders) do you store in a single warehouse or branch location at the peak of cooling season?



ADOPTED CHANGE TO IFC FOR M AND S OCCUPANCIES

Flammable Gas Category	Maximum allowable quantity per control area ^a	
Category 1B (Low BV) ^d	Sprinklered in accordance with Note B	Nonsprinklered
Gaseous	390,000 cu. ft.	195,000 cu. Ft.
Liquefied	40,000 lbs. ^c	20,000 lbs.

a. Control areas shall be separated from each other by not less than a 1-hour fire barrier.

b. The building shall be equipped throughout with an approved automatic sprinkler system with minimum sprinkler design density of Ordinary Hazard Group 2 in the area where flammable gases are stored or displayed.

c. Where storage areas exceed 50,000 square feet in area, the maximum allowable quantities area allowed to be increased by 2 percent for each 1,000 square feet of area in excess of 50,000 square feet, up to not more than 100 percent of the table amounts. Separation of control areas is not required. The aggregate amount shall not exceed 80,000 pounds.

d. "Low BV" Category 1B flammable gas has a burning velocity of 3.9 in/s (10 cm/s) or less.

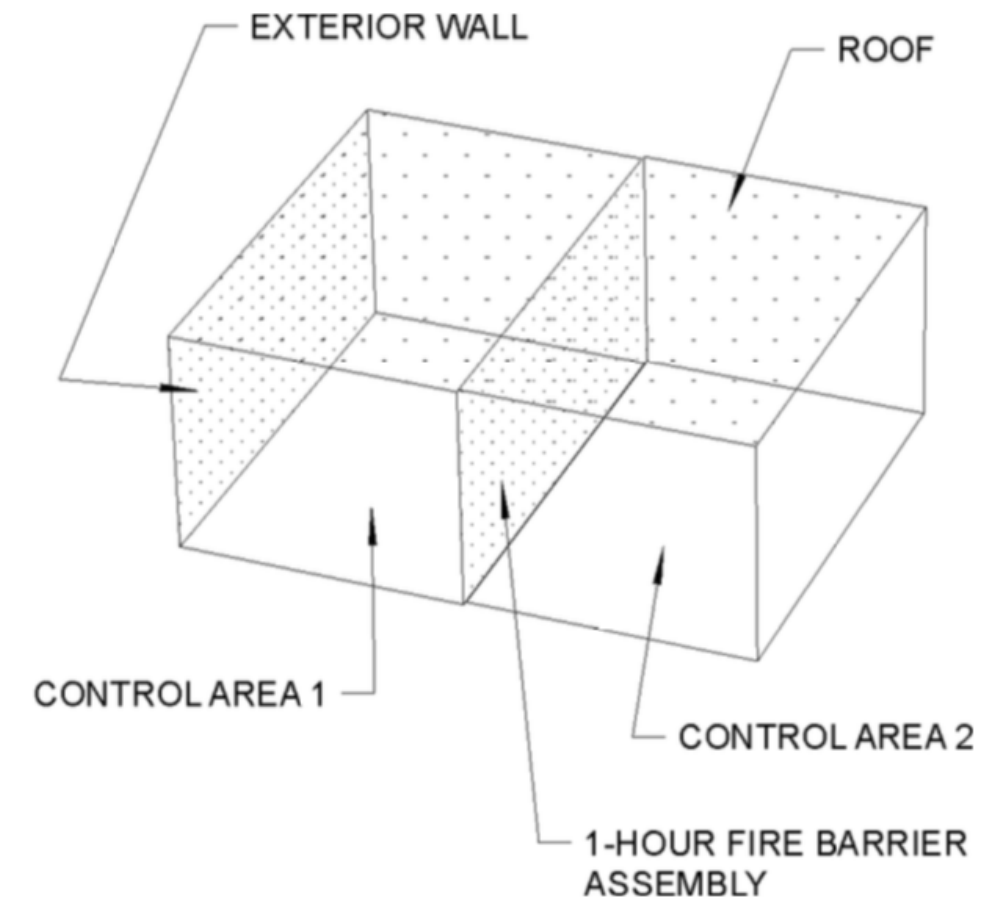
STORAGE HEIGHT LIMITS

5003.11.2.1 Fire protection and storage arrangements. Fire protection and container storage arrangements for quantities of Category 1B flammable gases permitted by Table 5003.11.2 shall be in accordance with the all of the following:

1. Storage of the Category 1B flammable gases on shelves shall not exceed 6 feet (1829 mm) in height, and shelving shall be metal.
2. Rack storage, pallet storage or piles of the Category 1B flammable gas greater than 6 feet 6 inches (1981 mm) in height shall be provided with an automatic sprinkler system with a minimum design of Extra Hazard Group 1.
3. Combustible commodities shall not be stored above the Category 1B flammable gases.
4. Flammable liquids shall be separated from the Category 1B flammable gases by a distance 20 feet (6096 mm). The separation is permitted to be reduced to 10 feet (3048 mm) where secondary containment or diking is provided to retain a flammable liquid spill at a distance of 10 feet (3048 mm) from the Category 1B flammable gas storage.

WHAT IS A CONTROL AREA?

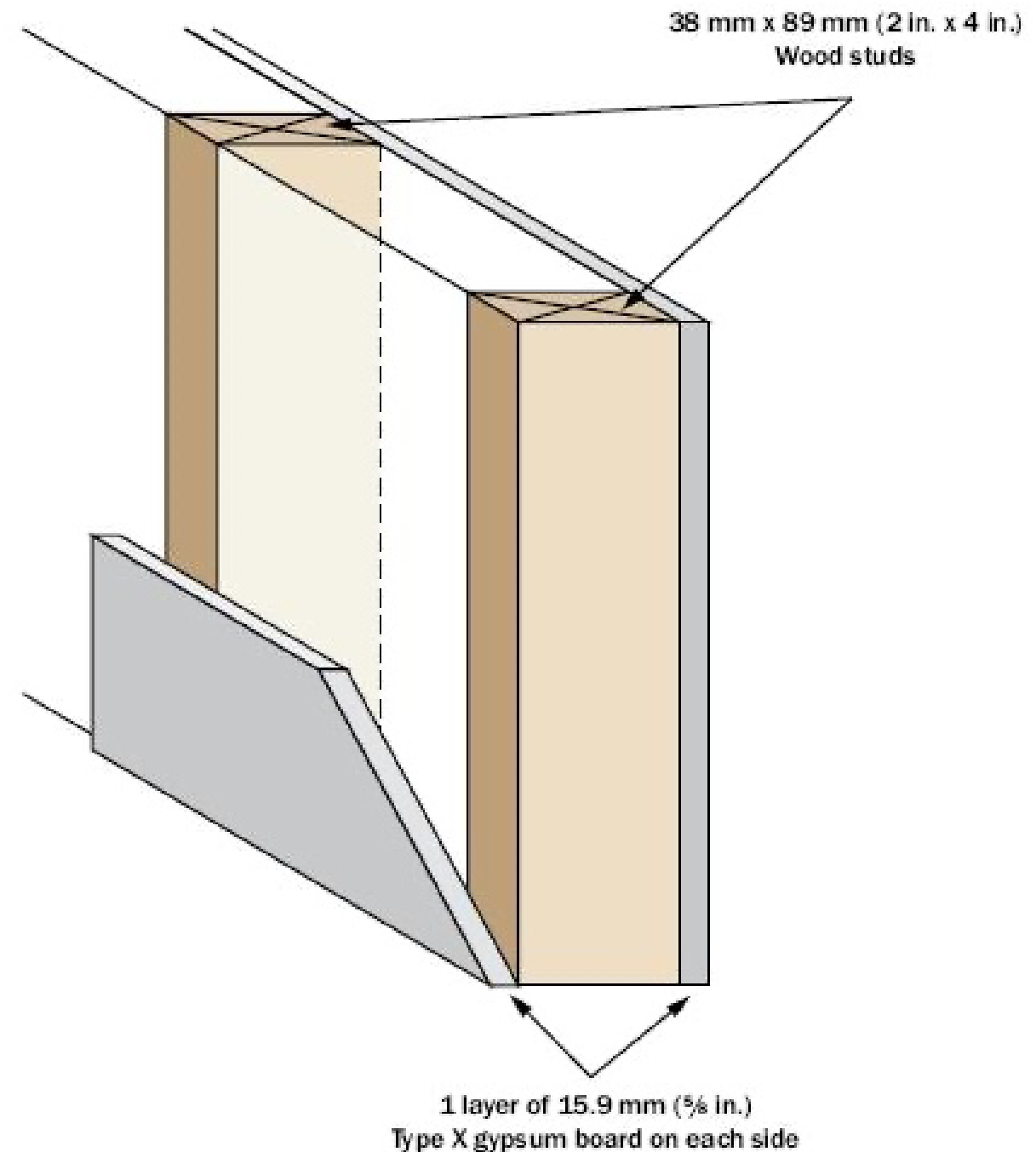
- **IBC Definition: CONTROL AREA.** Spaces within a building where quantities of *hazardous materials* not exceeding the maximum allowable quantities per control area are stored, dispensed, used or handled.
 - A separate area enclosed by a one-hour fire barrier used to store hazardous materials up to the maximum allowable quantity



**Commentary Figure 414.2
CONTROL AREAS**

ONE-HOUR FIRE BARRIER

- Multiple ways to build an interior one-hour fire barrier
 - Minimum is wood stud wall sheathed with type X gypsum board
 - Type X gypsum is made to be fire resistant
 - Steel studs, wool insulation, double sheets of drywall/fire resistant sheathing are common materials used to build one-hour fire walls

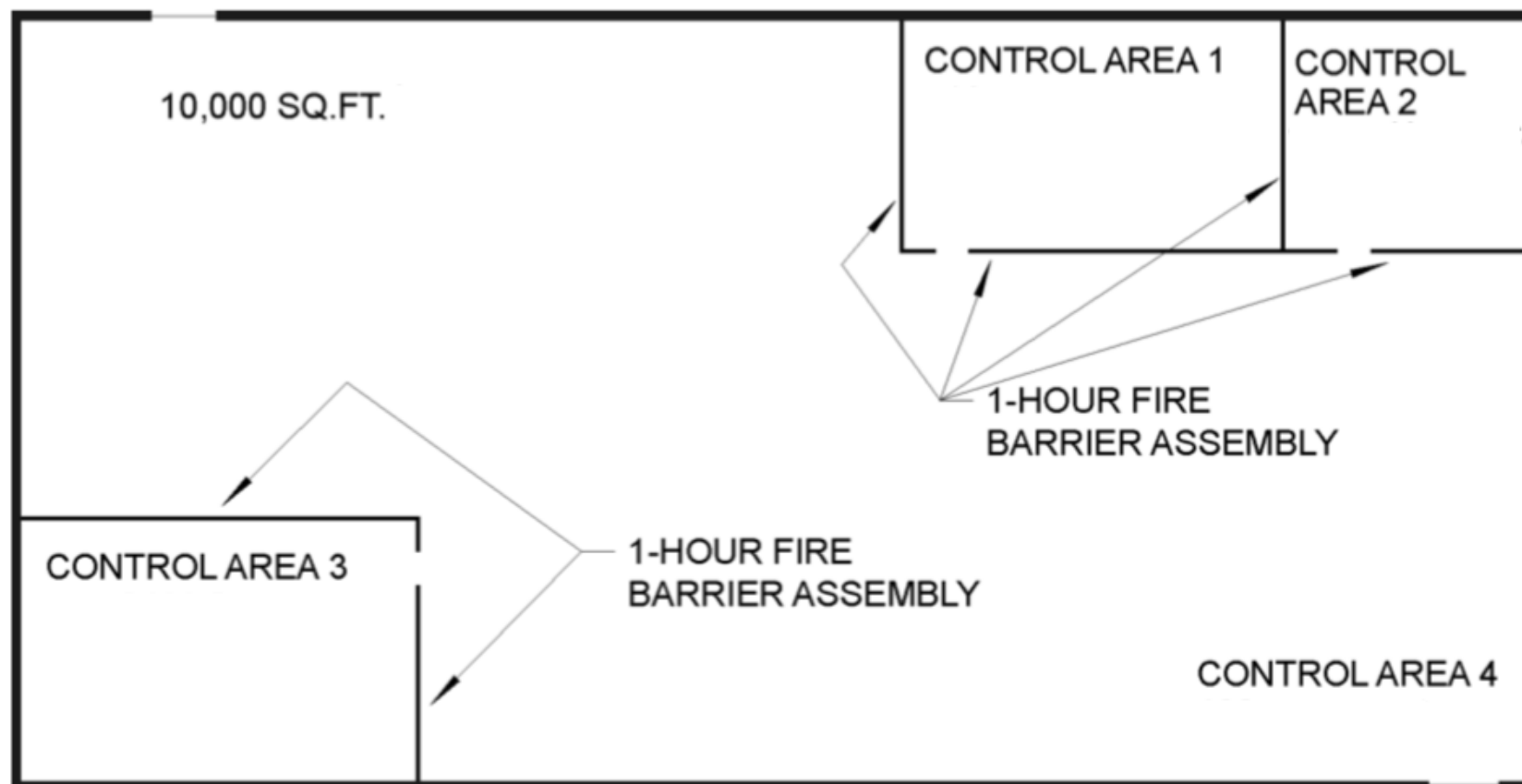


ACCESS TO CONTROL AREAS

- Doors must also be classified as one-hour fire barrier assemblies
 - Rolling shutters with a fire rating meet this requirement and can be left open if it has an automatic closure in case of a fire



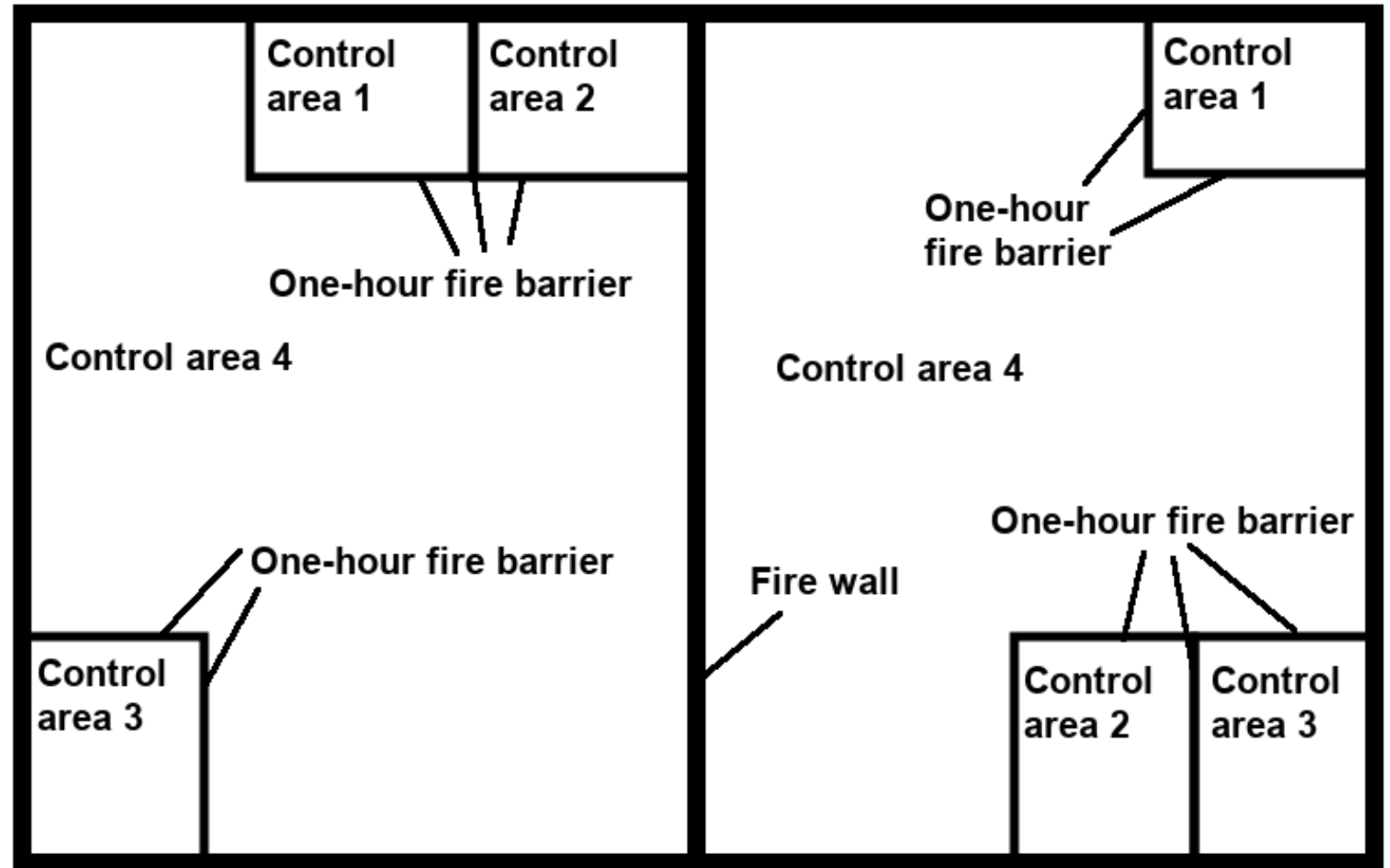
EXAMPLE PLACEMENT OF CONTROL AREAS



- Four control areas per "building"
 - One example, three separate rooms, plus main floor
 - With proper density sprinklers would allow 160,000 lbs, with regular sprinkler density or no sprinklers would allow 80,000 lbs.

MULTIPLE BUILDINGS WITH FIRE WALL

- The addition of a fire wall can make a single structure into two separate buildings, doubling the number of control areas
- **IBC Definition: FIRE WALL.** A fire-resistance-rated wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.



GENERAL REQUIREMENTS FOR STORAGE OF HAZARDOUS MATERIALS FROM IFC (CHAPTER 50)

- Permit from fire code official
 - Hazardous Materials Management Plan
 - Hazardous Material Inventory Statement
- Equipment must be listed or approved by a third-party testing agency
- Requires visible hazard identification signs (NFPA 704 sign)
- No smoking signs
- No open flames or high temperature devices (could include warehouse heaters)



MISCELLANEOUS

- Empty tanks/cylinders
 - Must be free of residual material and vapor before storage for reuse
- Safety Data Sheets
 - SDS must be available on site

Cylinder Requirements and Handling

National Fire Safety Storage Requirements

- All A2L refrigerant cylinders, according to AHRI Guideline N, should have a red stripe indicating it is a flammable gas.
- All A2L refrigerant cylinders should be stored with the vapor space in contact with the pressure relief device, unless the cylinder is under 1.2L, according to 49 CFR 173.301.
- All A2L refrigerant cylinders over 1.2L or 2.2 lbs. are required to have a relief valve and not a rupture disc, according to DOT regulations.

Disposal: Non-sparking
pick for piercing →



- Permit from local fire code official
- Hazardous Materials Management Plan
- Hazardous Material Inventory Statement
- Requires visible hazard identification signs (NFPA 704 sign) around storage area
- No smoking signs around the storage area
- No open flames or high temperature devices (could include warehouse heaters) in storage area
- Empty tanks/cylinders with heels to be stored and handled as a filled cylinder until placed under a full vacuum
- SDS must be available on site
- Upright storage to keep the vapor space in contact with the relief valve

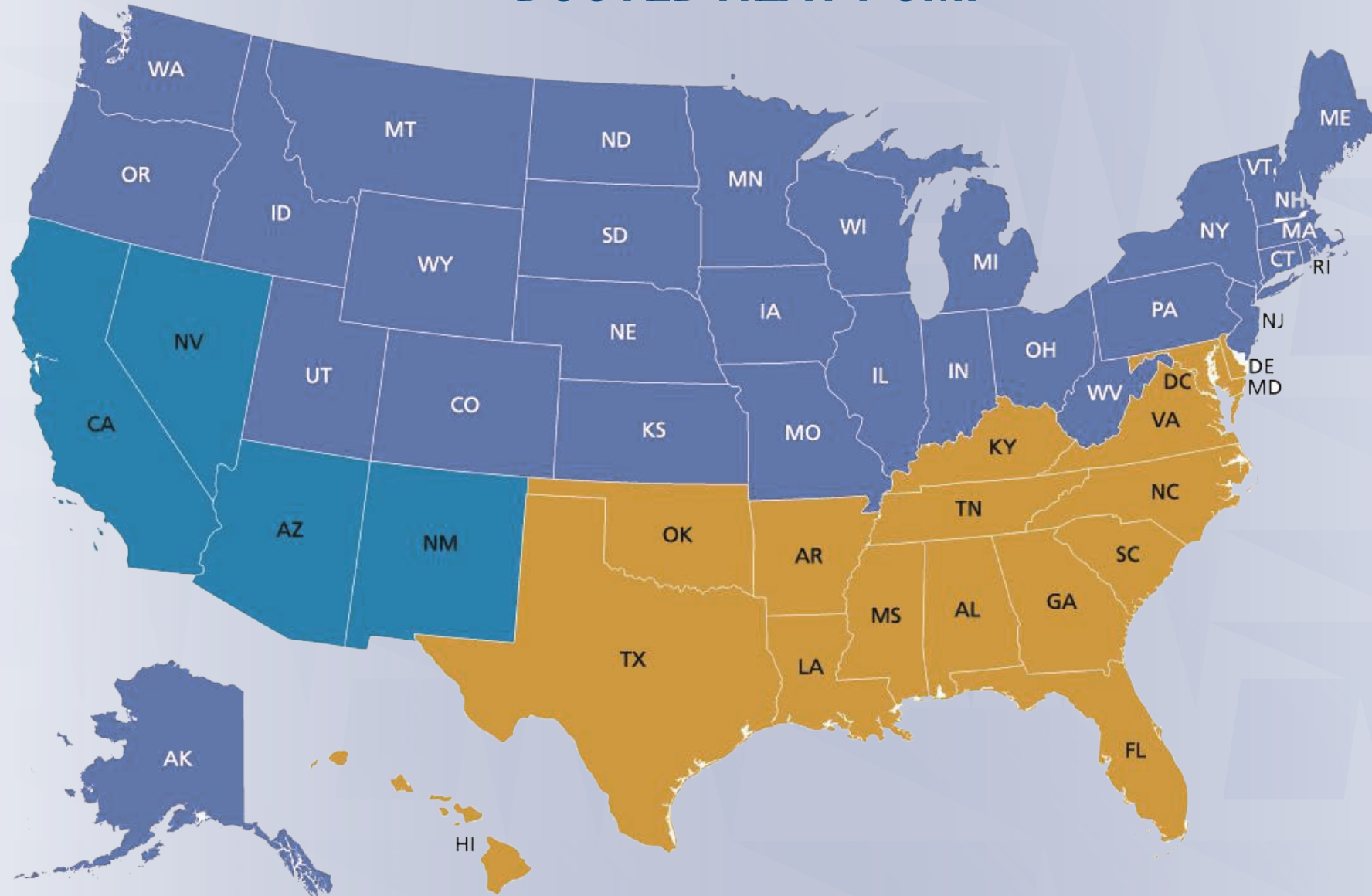
Decarbonization and Electrification

INFLATION REDUCTION ACT ***EXISTING TAX CREDITS***

Tax Section	Name	Individual Amount	Length	Performance Requirement
25C	Nonbusiness Energy Property Credit	30% of installation cost - Up to \$600 AC - Up to \$600 Furnace - Up to \$2,000 HP	1/1/2023 - 12/31/2032	Highest efficiency CEE tier excluding any advanced tier
25D	Residential Energy Efficient Property	Geothermal HP 30% cost 2022 - 2032 26% cost 2033-2034 22% cost 2034-2035	1/1/2022 - 12/31/2034	Geothermal HP Energy Star
45L	New Energy Efficient Home Credit	\$2,500 SF or \$5,000 zero-energy SF \$500/unit MF or \$1000/unit zero-energy MF \$1,000/Unit or \$5000/unit zero energy prevailing wage	1/1/2022 - 12/31/2032	New Home Requirement 3.1
179D	Efficient Commercial Building Deduction	\$2.50-\$5.00/sq ft total - Increases based eff and wage req	none	Minimum of 25% efficiency increase to ASHRAE 90.1

Chart Courtesy of Carrier

CEE REGIONAL TAX CREDIT DUCTED HEAT PUMP



NATIONAL **SOUTHWEST** **SOUTHEAST**

CEE M1 AC CRITERIA DUCTED (\$600 Federal Tax Credit)

Tier 1 – NATIONAL (N, SE, SW)

SEER2: 16.0

EER2: 12.0

CEE M1 HP CRITERIA DUCTED (\$2000 Federal Tax Credit)

Tier 1

NORTH

SEER2: 15.2

HSPF2: 8.1

EER2: 10.0

COP 1.75 @ 5F

5F/47F Capacity Maintenance

70% or 17F/47F Capacity

Maintenance 58%

SOUTHEAST & SOUTHWEST

SEER2: 15.2

HSPF2: 7.8

EER2: 11.7

Chart Courtesy of Carrier

INFLATION REDUCTION ACT **REBATE PROGRAMS**

New Rebates	Total Amount	Individual Amount	Length	Performance Requirement	Recipient Requirement	Disbursement
Home Electrification and Appliance Rebates (Electrification)	\$4.5B	<ul style="list-style-type: none"> • Up to \$8,000 for all-electric HP • Up to \$4,000 for electrical load service center • Up to \$2,500 for wiring • Max for all \$14,000 	~2023 – 9/30/2031 or funding is depleted	Energy Star	LMI households <ul style="list-style-type: none"> • 100% of cost up to max for income <80% median • 50% for income 80%-150% of median 	State Energy Offices
Home Efficiency Performance Rebates (HOMES)	\$4.3B	CONTRACTORS <ul style="list-style-type: none"> • \$200 for DA homes identified INDIVIDUALS <ul style="list-style-type: none"> • \$2,000 or up to 50% cost 20% to 35% EE savings • \$4,000 or up to 50% cost > 35% EE savings • \$2,000 or up to 50% cost 15-20% EE savings (measured) MULTI-FAMILY <ul style="list-style-type: none"> • \$2,000/dwelling up to \$200K for 20-35% EE savings • \$4,000/dwelling up to \$400K for >35% EE savings 	~2023 – 9/30/2031 or funding is depleted	Modeled or measured energy savings	Single family amounts increase 2X and up to 80% of cost when homes are occupied by LMI family	State Energy Offices

Chart Courtesy of Carrier

HOME ENERGY REBATES

- DOE released guidance and state applications for Home Energy Rebates - \$8.6 billion
 - Home Efficiency Rebate: improve whole home efficiency
 - \$4.3 billion
 - Home Electrification and Appliance Rebate (HEAR): incentive for low-to-moderate-income households to switch to efficient electric appliances, including heat pumps and heat pump water heaters
 - \$4.275 billion
 - \$225 million for Tribes to implement HEAR rebates

HOME ELECTRIFICATION AND APPLIANCE REBATE (HEAR)

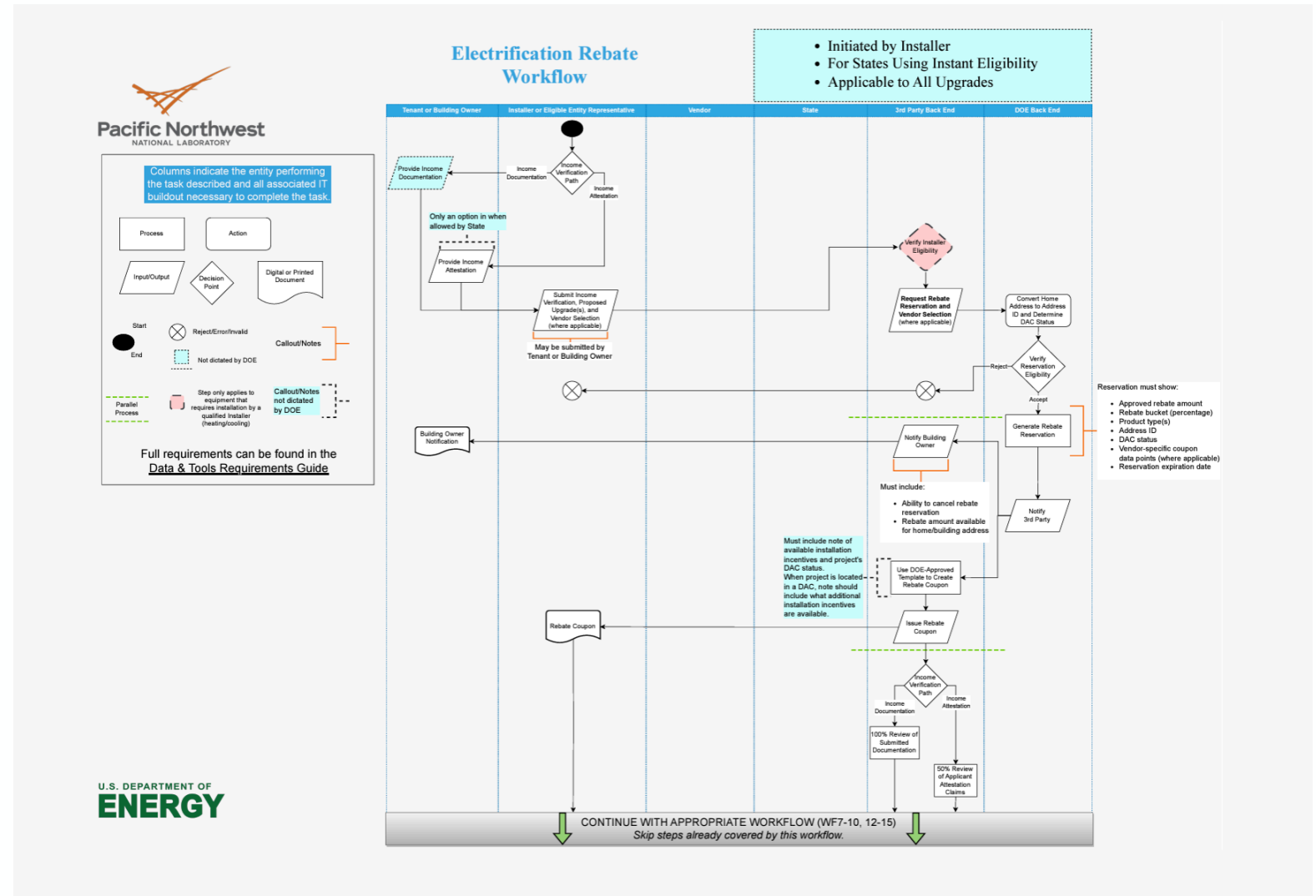
- Home Electrification Projects for low- to moderate-income households by eligible contractors
 - Changing to a heat pump, HP water heater, electric range/cooktop/oven, or brand-new construction
- Qualify based on area median income from Housing and Urban Development
 - Low-income household (<80% AMI): 100% of install up to maximum amount
 - Moderate-income household (>80% and <150% AMI): 50% of install up to maximum amount
- \$8,000 for heat pump HVAC
- \$1,750 for heat pump water heater
- \$4,000 for service center upgrade
- \$1,600 for insulation, air-sealing, and ventilation improvements
- \$2,500 for electric wiring changes
- \$840 for electric stove/cooktop/oven, heat pump clothes dryer
- Max rebate total: \$14,000
- Total approved funds: \$4.275 billion

HOME ELECTRIFICATION AND APPLIANCE REBATE (HEAR)

- Provides a “point of sale” rebate to consumers for electrification projects
 - “point of sale” means contractor in most cases
- Energy Star-certified equipment
- Incentives for contractors to do projects in LMI communities
- Start date for rebates depends on state energy offices
 - States fitting into 6 buckets
 - Winter 23/24, Spring 24, Summer 24, Fall 24, Winter 24, 2025
 - Quick start option available to states to begin in 2023
- Heard 30 states have applied for funds so far

PNNL API WORKFLOW

- Pacific Northwest National Laboratory has developed an API for states to provide information to DOE
- 18 workflows based on circumstances and products



IMPORTANT PARTS OF THE WORKFLOW

- Income eligibility is determined through an online form, not by the contractor
 - Income attestation, if allowed by the state, falls on the state to verify eligibility
- The API “reserves” funds and provides a “coupon” to the installer
 - Ensures contractors will receive the funds after the installation is complete
- Outlines installation verification before reimbursement
 - The contractor and building owner submit information

DOE REQUIRING MINIMUM FUNDING ALLOCATIONS FOR LOW-INCOME HOUSEHOLDS

State/ Territory	High Efficiency Electric Home Rebate Allocations	Max 20% Ceiling for Program Administration for Electrification Rebates	% of Low-Income Households (<80% AMI) in the State ⁷²	Min Allocations for Low-Income HHs	Min 10% Low-Income Multifamily Allocation	Max Open Electrification Rebate Allocation
North Carolina	\$104,307,840	\$20,861,568	40.5%	\$33,807,294	\$8,344,627	\$41,294,351

- North Carolina as an example
- Breaking down spending by possible installs
 - Low-income households and multifamily
 - ~2,900 installs
 - Moderate-income households
 - ~2,900-4,100 installs
 - Installs can include the electrification of appliances such as stoves and clothes dryers

HOME EFFICIENCY REBATE (HOMES)

- Provides a rebate for achieving modeled or measured energy efficiency increase for single-family or multi-family homes
- Increased rebates for low-income households (<80% AMI)
 - 2x rebate amounts
- Energy Star certified equipment
- Full home assessment and energy modeling required before installation
- 20-34% modeled energy reduction
 - Lesser of \$2,000 or 50% of the project cost (max \$200,000 for multi-family building)
- >35% modeled energy reduction
 - Lesser of \$4,000 or 50% of the project cost (max \$400,000 for multi-family building)
- >15 measured energy reduction
 - Lesser of per kWh equivalence to \$2,000 for 20% reduction or 50% of project cost

REMAINING OPEN QUESTIONS (NOT EXHAUSTIVE)

- State's requirements for approved contractor lists
 - State licensing? Special certifications?
- What states have applied?
 - Timeline for state rollouts?
- Will states narrow the scope of eligible households
 - i.e., all funds directed to low-income or categorical eligibility applicants

STACKING INCENTIVES

State and local/
utility rebates



Tax
incentives



Heat Pump OR Homes
Rebates



THE FINE PRINT

- Incentives are stackable but also affect each other
- For example, the HEAR program reduces the value of 25C
 - Example
 - \$20,000 install with full \$14,000 rebate = Taxpayer cost of \$6,000
 - $\$6,000 \times 30\% = \$1,800$ rebate

STATE & TERRITORY HOME ENERGY REBATE ALLOCATIONS

Alabama	\$146 M	Iowa	\$121 M	New Mexico	\$88 M	Virginia	\$189 M
Alaska	\$75 M	Kansas	\$106 M	New York	\$318 M	Washington	\$166 M
Arizona	\$153 M	Kentucky	\$134 M	North Carolina	\$209 M	West Virginia	\$88 M
Arkansas	\$105 M	Louisiana	\$213 M	North Dakota	\$74 M	Wisconsin	\$149 M
American Samoa	\$50 M	Maine	\$72 M	Ohio	\$249 M	Wyoming	\$69 M
California	\$582 M	Maryland	\$137 M	Oklahoma	\$129 M		
Colorado	\$140 M	Massachusetts	\$146 M	Oregon	\$114 M		Allocation of \$225M designated for Indian Tribes has not yet been determined.
Connecticut	\$99 M	Michigan	\$211 M	Pennsylvania	\$259 M		Up to 20% of these funds may be used for program administration.
District of Columbia	\$59 M	Minnesota	\$148 M	Puerto Rico	\$85 M		
Delaware	\$66 M	Mississippi	\$105 M	Rhode Island	\$64 M		
Florida	\$346 M	Missouri	\$151 M	South Carolina	\$137 M		
Georgia	\$219 M	Montana	\$71 M	South Dakota	\$69 M		
Guam	\$51 M	Northern Marianas	\$50 M	Tennessee	\$167 M		
Hawaii	\$68 M	Nebraska	\$91 M	Texas	\$690 M		
Idaho	\$81 M	Nevada	\$96 M	Utah	\$101 M		
Illinois	\$264 M	New Hampshire	\$70 M	Vermont	\$59 M		
Indiana	\$182 M	New Jersey	\$183 M	U.S. Virgin Islands	\$51 M		

California, New Mexico, New York, and Hawaii have applied for Electrification program funding.

[Home Rebate Program Status](#)
[NASEO IRA Task Force](#)

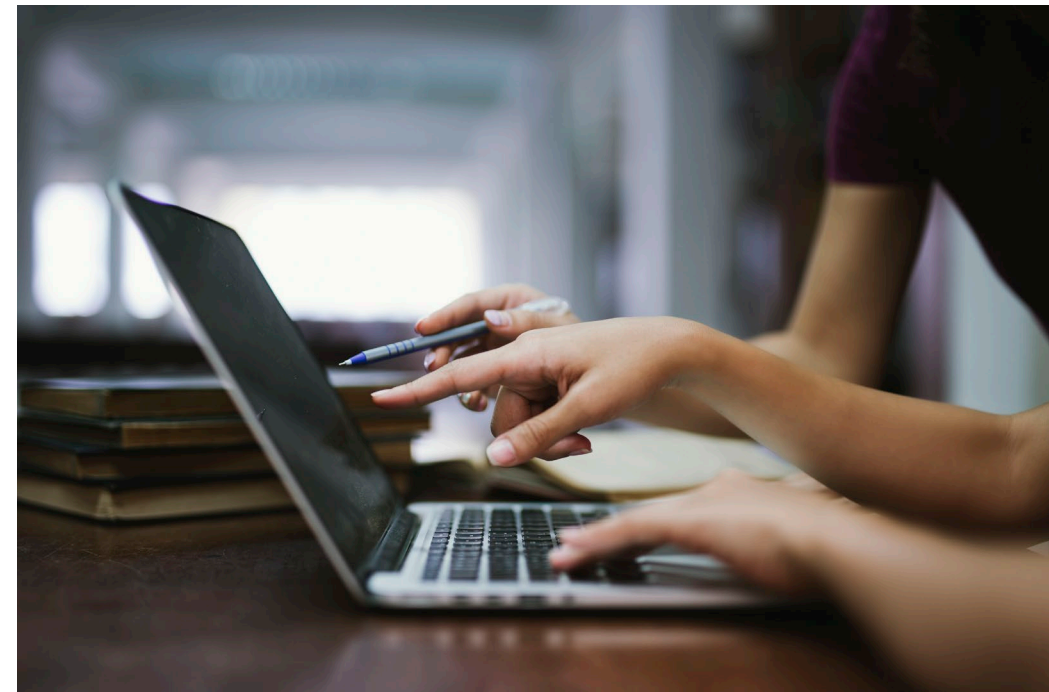
Chart Courtesy of Carrier



Resources

Refrigerant Transition Industry Resources

- AHRI - <https://www.ahrinet.org/advocacy/safe-refrigerant-transition>
- HARDI - <https://hardinet.org/>
- ACCA - <https://www.acca.org/home>
- ESCO Group - <https://www.escogroup.org/>
- OEM Resources on latest products
- Copeland E360 Hub - <https://e360hub.copeland.com/>



What Should I Take Away?

Resources are available to aid in the transition to lower-GWP!

- Equipment redesigns must meet both energy efficiency and refrigerant regulation.
- HFC refrigerant supply will decrease over the next 12 years, which means higher-GWP refrigerants will become more limited and likely increase in cost.
- Demand for higher GWP in new systems and for service must be cut to align with available supply.
 - New AC/HP systems to transition to <700 GWP in 2025
 - Commercial refrigeration less certain. 150–300 GWP range in 2025 - 2028
 - Many lower-GWP replacements are considered mildly flammable.
 - Building code changes needed to support A2L
 - Recovery of refrigerant will be important to boost quantity of reclaim available for service.
 - State actions are likely to continue — with several states (CA, WA, NY, and potentially others) taking more aggressive action to meet decarbonization goals.
- Incentives available to assist with cost of electrification of space and water heating.



Questions?