



GreenChill

Annual Recognition Event

September 25, 2024

Event Overview



- Welcome & Opening Remarks
- GreenChill Program Overview
- Trends & Achievements
- GreenChill Recognition – Presentation of Awards
- Store Certification Program Overview and Changes

Chris Orvin



Chris Orvin
Environmental Protection Specialist
U.S. EPA
Stratospheric Protection Division
Email: orvin.chris@epa.gov



Chris joined the Stratospheric Protection Division in March 2023 and has been working on the AIM Act grants funded through the Inflation Reduction Act as well as the GreenChill Store Certification Working Group. Before joining SPD, Chris worked for 13 years in EPA's Office of Water on a variety of budget, performance, Congressional and programmatic matters, including most recently the Urban Waters Federal Partnership in the Office of Wetlands, Oceans and Watersheds.

Annie Kee



Annie Kee
Environmental Protection Specialist
U.S. EPA
Stratospheric Protection Division
Email: kee.annie@epa.gov



Annie is an Environmental Protection Specialist in the Stratospheric Protection Division in EPA's Office of Air and Radiation, where she works on partnership programs and rulemakings under the American Innovation and Manufacturing (AIM) Act. Prior to working in the Stratospheric Protection Division, she worked on EPA's SmartWay program, which helps companies advance supply chain sustainability by improving freight transportation efficiency.

Bella Maranion



Bella Maranion
Senior Advisor
U.S. EPA
Stratospheric Protection Division
Email: maranion.bella@epa.gov



Bella is a Senior Advisor in the Stratospheric Protection Division at EPA where she has worked for over 30 years in developing national regulations and policies and managing domestic and international projects related to ozone layer and climate protection. She has served on various technical committees for various national and international standards organizations. Her work also includes working with specialized sectors of use such as aviation, marine, and the military; promoting partnerships and public sector initiatives to reduce ozone-depleting substances (ODS) and greenhouse gas (GHG) emissions; and supporting sound management and responsible disposal and destruction. She helped launch EPA's GreenChill Partnership in 2007.



Welcome & Opening Remarks





GreenChill Overview



Program Overview

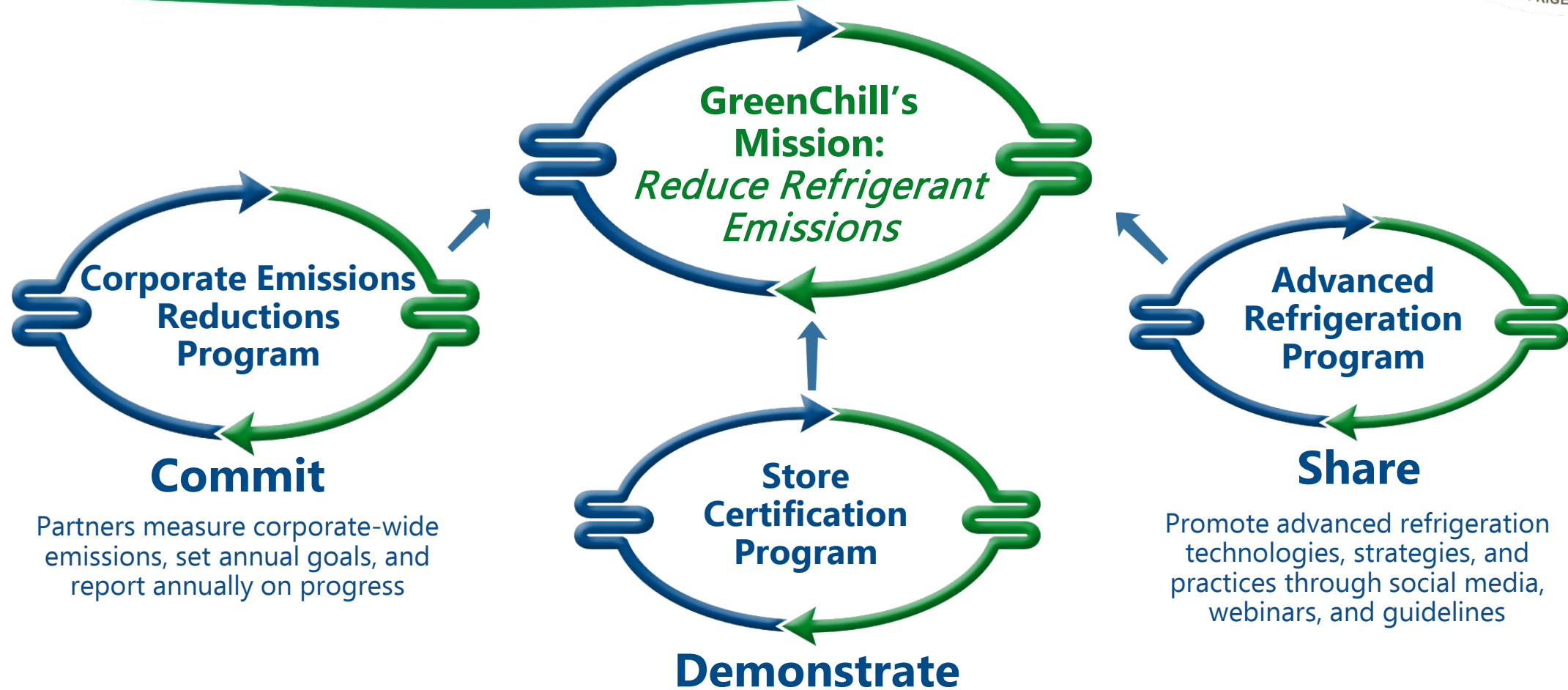


GreenChill is a voluntary partnership program that works collaboratively with the food retail industry to reduce refrigerant emissions and decrease stores' impact on the ozone layer and climate system

GreenChill works to help food retailers:

- Transition to zero ozone depletion potential and lower global warming potential (GWP) refrigerants
- Lower refrigerant charge sizes and eliminate leaks
- Adopt advanced refrigeration technologies and best environmental practices to minimize emissions

GreenChill's Mission



**Corporate Emissions
Reductions
Program**

Commit

Partners measure corporate-wide emissions, set annual goals, and report annually on progress

**GreenChill's
Mission:
Reduce Refrigerant
Emissions**

**Store
Certification
Program**

Demonstrate

Individual stores earn GreenChill certification for meeting highest standards: low charge size, use of less harmful refrigerants, and low leak rates

**Advanced
Refrigeration
Program**

Share

Promote advanced refrigeration technologies, strategies, and practices through social media, webinars, and guidelines

Corporate Emissions Reduction Program



Food Retailers

- Partners submit
 - Corporate-wide data on refrigerant installed and emissions
 - Refrigerant Management Plan with goal
- Partners receive
 - Individual benchmark report
 - Recognition for annual achievements

Systems Manufacturers

- Partners submit data on commercial systems sold
- Partners receive aggregated data for all systems sold by Partners

Chemical Producers/Reclaimers

- Promote the adoption of retrofit chemicals and secondary fluids, recycling and reclamation best practices
- Provide technical information and expertise to support development of program analyses, materials, tools, and informational webinars

GreenChill Partners	
Food Retail-Corporate	35
Systems Manufacturers	5
Chemical Producers/Reclaimers	7

Food Retail Partners | 35



Refrigeration Systems Manufacturers | 5



Chemical Producers/Reclaimers | 7



Advanced Refrigeration Program



- Promotes the use of advanced refrigeration technologies, strategies, and best practices
 - GreenChill participants play an important role in tackling climate change by using lower-global warming potential refrigerants and equipment with better, more energy efficient designs
- Provides resources on topics, including:
 - Leak tightness and repair
 - Retrofits
 - Refrigerant management
 - Store maintenance
 - Best practices



For more details, visit the [Advanced Refrigeration Program webpage](#)

Store Certification Program



- Certified stores demonstrate leadership in food retail refrigerant management
- Any food retail store in the United States can apply; not necessary to be a GreenChill Partner





Trends & Achievements



Food Retail Partners



2007

**GreenChill Partners
account for 1/3 of the
supermarket industry***

7
Partners

4,500
Stores



2023

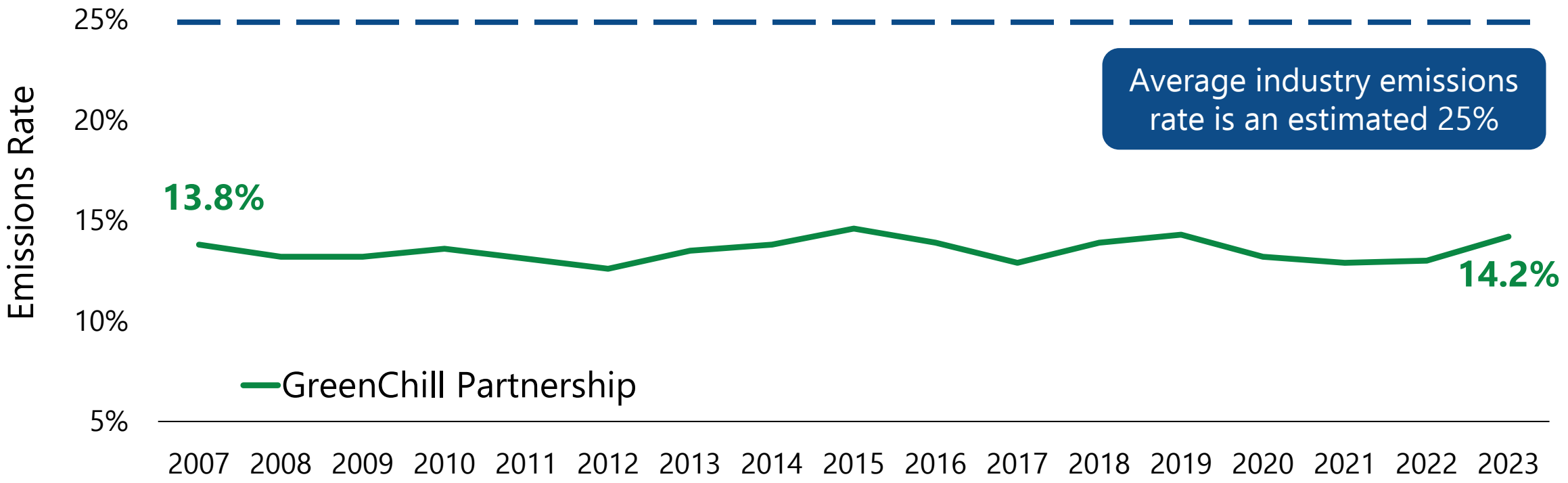
35
Partners

13,532
Stores

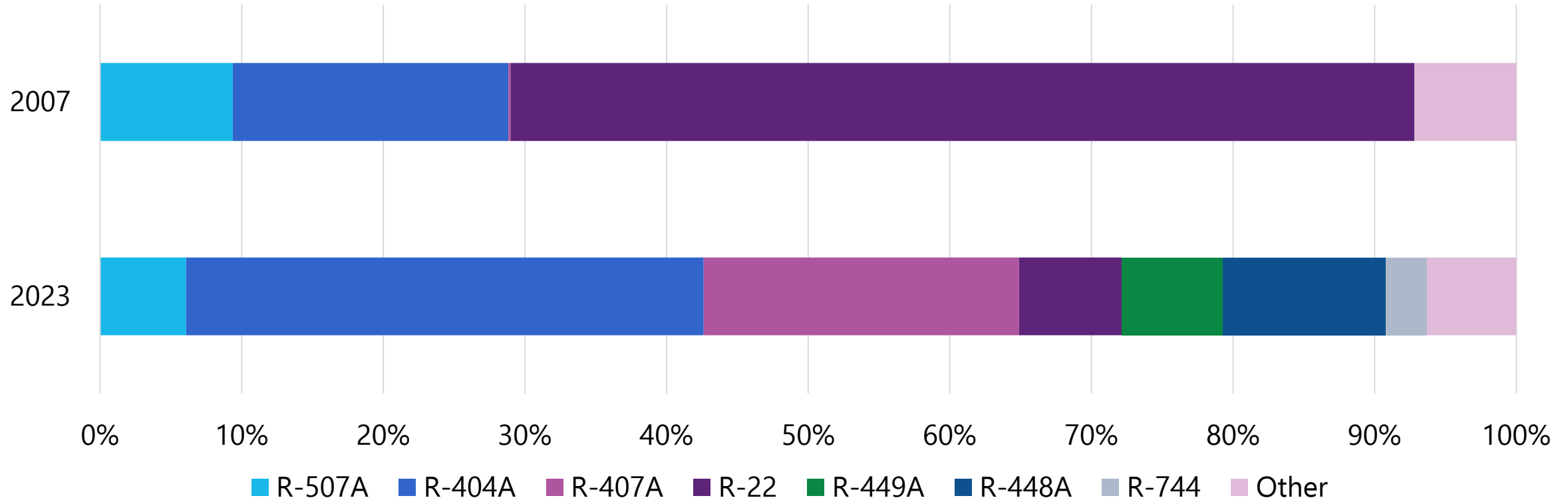


*Food Marketing Institute Supermarket Facts.

Leak Rate – Historical



Refrigerants in Equipment

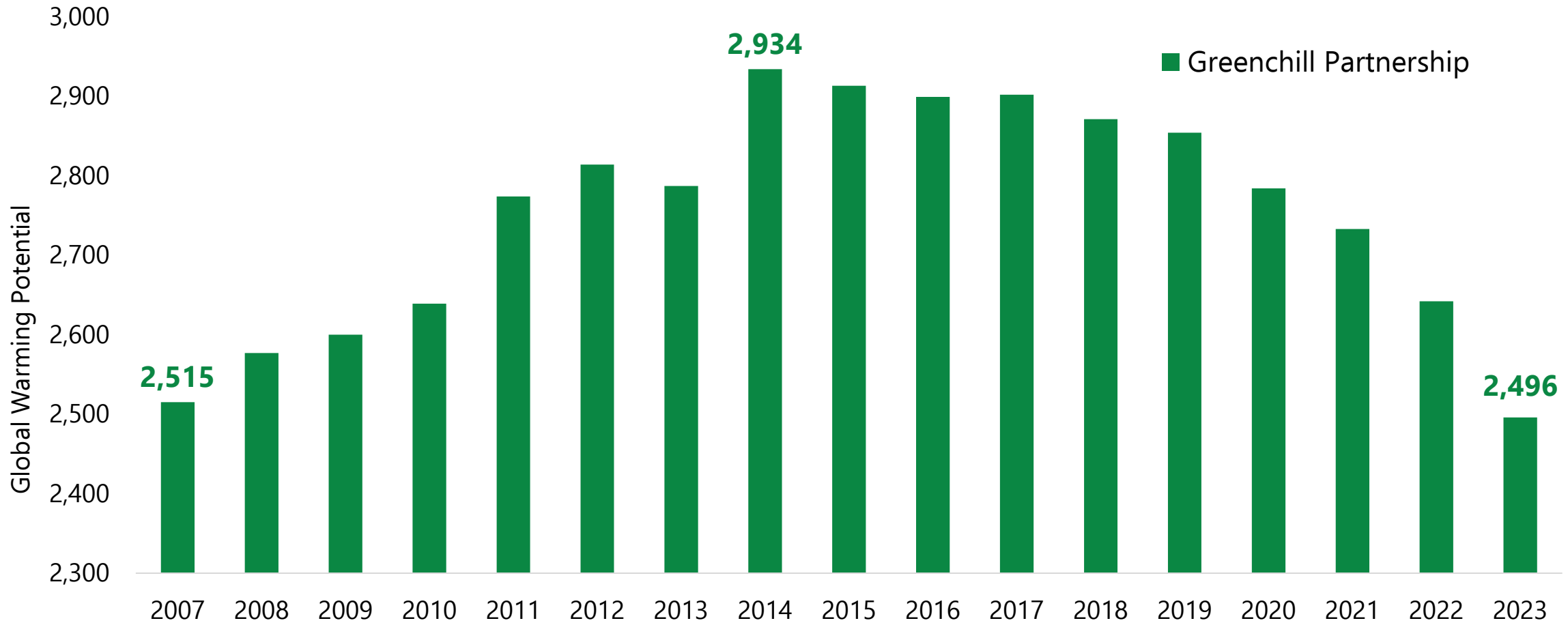


Global warming potential high to low, except "Other" category

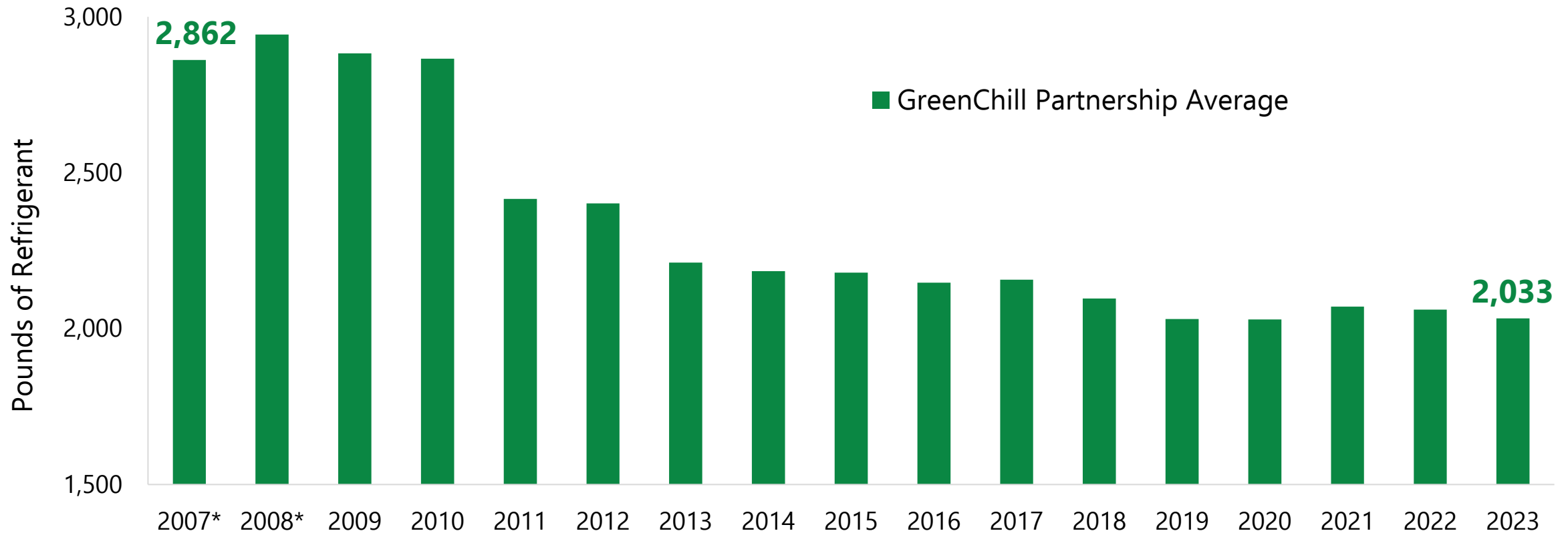
Key Takeaways

- A much broader array of refrigerants are used today as compared to the past
- In 2023, R-22 represents less than 10% of refrigerants in equipment

Partnership Average GWP per Pound of Refrigerant In Use



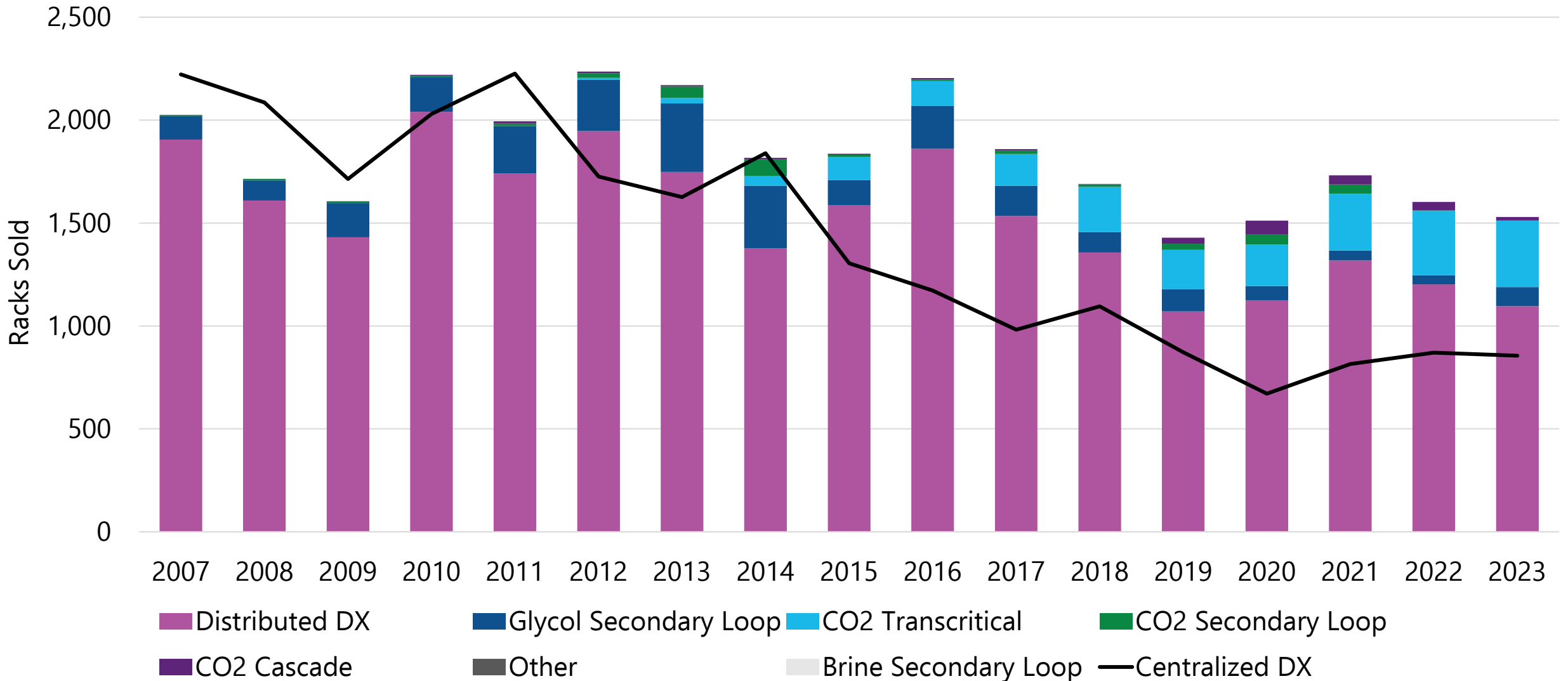
Average Pounds of Refrigerants Used in Commercial Systems



The downward trend can be likely attributed to:

- Partners are transitioning to the use of more distributed systems and other advanced technologies that use lower refrigerant charge sizes.

Refrigeration System Sales Over Time





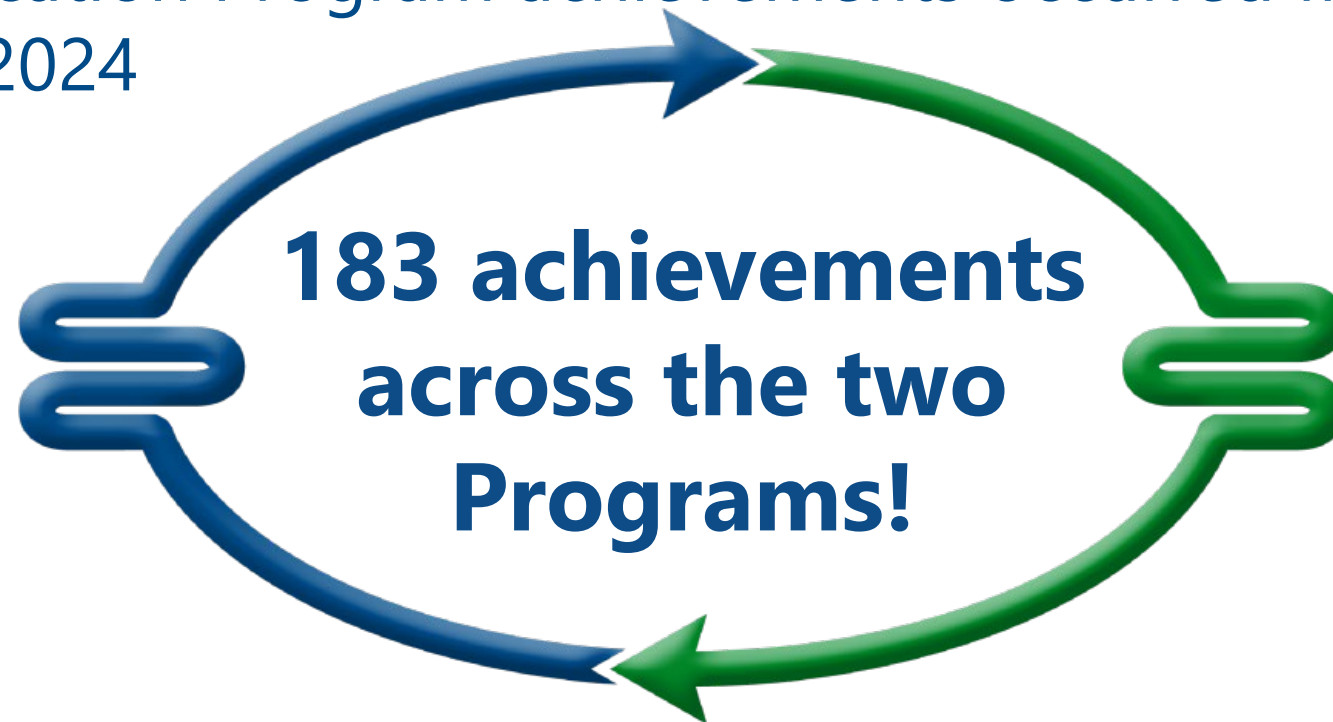
GreenChill Recognition



Record-Breaking Achievements in 2023!

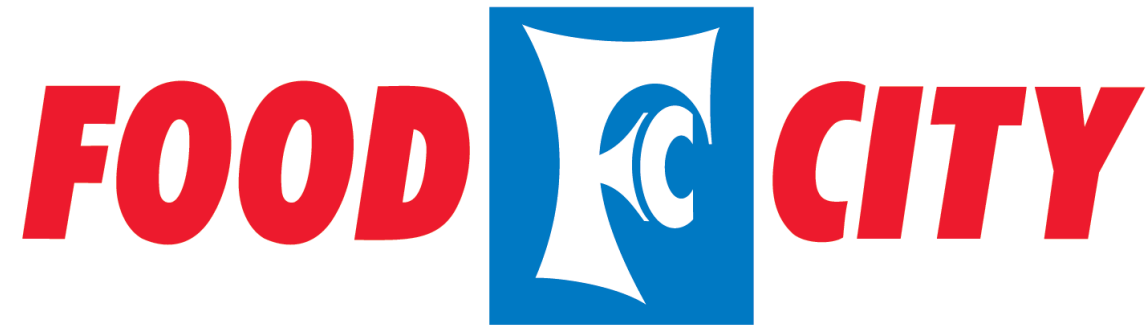


- 9 companies earned recognition in 5 categories
- Partnership Program achievements occurred in the 2023 calendar year
- Store Certification Program achievements occurred from July 1, 2023, to June 30, 2024



Exceptional Goal Achievement

Partner that achieves its "stretch" refrigerant emissions reduction goal.



Exceptional Goal Achievement

Partner that achieves its "stretch" refrigerant emissions reduction goal.

The HyVee logo is displayed in a bold, red, sans-serif font. The word "HyVee" is written in a stylized manner, with a white dot on the vertical stem of the letter 'y'. A registered trademark symbol (®) is located to the right of the word.

Most Improved Emissions Rate

Partner with the most improved emissions rate for commercial systems from the previous year.

BRIARPATCH FOOD CO-OP



Most Improved Emissions Rate

*Partner with the most improved emissions rate for commercial systems
from the baseline year.*



Best Emissions Rate

Lowest refrigerant emissions rate of all small and independent Partners.



Best Emissions Rate

Lowest refrigerant emissions rate of all retail chain Partners.



Store Leadership



TARGET

San Antonio, Texas

This store completed a remodel including installation of a transcritical CO₂ system and an adiabatic gas cooler

Store Certification Excellence

Supermarket

The supermarket company that achieves the most GreenChill store certifications in the past year.



**734
Stores!**

Store Certification Excellence

Systems Manufacturer

The commercial systems manufacturer with the most systems installed in GreenChill certified stores in the past year.

Hillphoenix[®]

A **DOVER**[™] COMPANY

777 Stores!

Store Recertification Excellence 5 Years

Each supermarket that renewed its GreenChill Store Certification for five consecutive years.

This year, 174 stores reached this achievement for five years.

Congratulations to the following companies...

Store Recertification Excellence



*164 Stores
in 23 States*

Allison Park, PA
Ankeny, IA
Ann Arbor, MI
Ashland, OH
Austin, MN
Baltimore, MD
Battle Creek, MI
Bay City, MI
Belle Vernon, PA
Bensalem, PA
Bethel Park, PA
Blaine, MN
Bloomfield Hills, MI
Bolingbrook, IL
Bridgeville, PA
Buffalo, NY
Burton, MI
Central Valley, NY
Champlin, MN
Chanhassen, MN
Chaska, MN
Chesterfield, VA
Cicero, NY
Clinton, MD
Cloquet, MN
Clovis, CA
Coal Township, PA
Concord, NC
Coon Rapids, MN
Crofton, MD
Delano, CA

Dover, DE
Egg Harbor Township, NJ
Elk Grove Village, IL
Elkton, MD
Encinitas, CA
Essex, MD
Fairview Heights, IL
Fall River, MA
Falls Church, VA
Fargo, ND
Farmington Hills, MI
Forked River, NJ
Fort Dodge, IA
Fort Worth, TX
Gardena, CA
Gates, NY
Grand Blanc, MI
Grand Rapids, MI
Greece, NY
Grove City, PA
Hagerstown, MD
Hamburg, PA
Hanford, CA
Hanover, MD
Harrisburg, PA
Hazle Township, PA
Hazlet, NJ
Howell, MI
Hyattsville, MD
Ilion, NY
Jenison, MI
Johnston, RI

Kalamazoo, MI
King of Prussia, PA
Lake Orion, MI
Lakeville, MN
Lancaster, PA
Langhorne, PA
Lansdale, PA
Latrobe, PA
Laurel, MD
Little Canada, MN
Livonia, MI
Lyndhurst, OH
Malvern, PA
Marshall, MN
Martinsburg, WV
Mason City, IA
Massena, NY
McMurray, PA
Medford, MA
Medina, NY
Middlefield, OH
Middletown, CT
Minneapolis, MN
Mishawaka, IN
Mt. Pleasant, PA
Nanuet, NY
Naperville, IL
New Haven, CT
North Huntingdon, PA
North Olmsted, OH

North Wales, PA
Oceanside, CA
Panorama City, CA
Penn Yan, NY
Phenix City, AL
Philadelphia, PA
Pittsburgh, PA
Pittsburgh PA
Plainwell, MI
Plattsburgh, NY
Pocono Summit, PA
Pooler, GA
Porterville, CA
Powell, OH
Princeton, MN
Redlands, CA
Reisterstown, MD
Richfield, MN
Richmond, IN
River Falls, WI
Riverside, CA
Rochester Hills, MI
Rochester, NY
Rockville, MD
Saginaw, MI
Salisbury, MD
San Diego, CA
Sandusky, OH
Saranac Lake, NY
Savannah, GA
Sicklerville, NJ
Simi Valley, CA

South Haven, MI
Springville, NY
St. Ann, MO
St. Louis Park, MN
St. Paul, MN
Sterling Heights, MI
Sterling, VA
Stoughton, WI
Sylvania, OH
Syracuse, NY
Woodbury, MN
Wooster, OH
Wyandotte, MI
Ypsilanti, MI
Timonium, MD
Uniontown, PA
Upland, CA
Vineland, NJ
Virginia, MN
Waldorf, MD
Wall Township, NJ
Walnut, CA
Waterbury, CT
Waukee, IA
Wentzville, MO
West Branch, MI
West Mifflin, PA
Westerville, OH
Westland, MI

Store Recertification Excellence 5 Years



Irvine, CA
Lawndale, CA
Lexington, SC
Los Angeles, CA (2)
Miami Beach, FL
New York, NY
Seattle, WA (2)
Spring Valley, CA

10 Stores



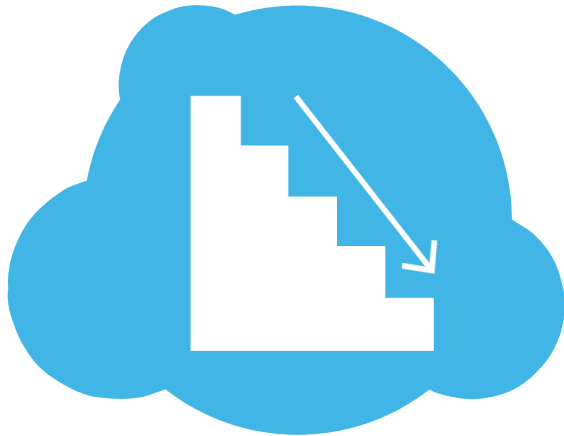
Store Certification: Overview & Changes



The American Innovation & Manufacturing Act



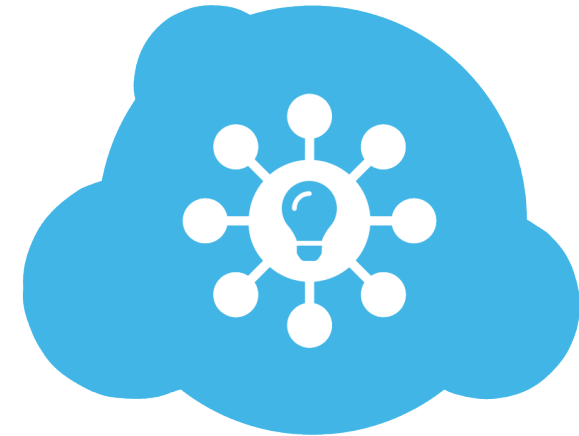
The AIM Act authorizes EPA to address HFCs in **three main ways**:



Phase down HFC production and consumption through an allowance allocation and trading program



Manage use and reuse of HFCs and their substitutes by maximizing reclamation and minimizing releases



Transition sectors to next-generation technologies through restrictions on HFCs

Overview of Regulatory Actions to Date



HFC Allocation Program

Subsection (e) – Phasedown of Production and Consumption of HFCs



Emissions Reduction and Reclamation Program

Subsection (h) – Management of Regulated Substances



Technology Transitions Program

Subsection (i) – Technology Transitions

HFC Allocation Framework Rule	10/5/2021 (86 FR 55116)	Notice of Data Availability	10/17/2022 (87 FR 62843)	Technology Transitions Rule	10/24/2023 (88 FR 73098)
Allocation Rule for 2024 and Later Years	7/20/2023 (88 FR 46836)	Emissions Reduction and Reclamation Proposed Rule	10/19/2023 (88 FR 72216)	Residential & Light Commercial AC & Heat Pump Subsector IFR	12/26/2023 (88 FR 88825)
Application-Specific Allowance Review Proposed Rule	9/16/2024 (89 FR 75898)	Emissions Reduction and Reclamation	9/20/2024 (signed)	Variable Refrigerant Flow Proposed Rule	6/26/2024 (89 FR 53373)

Store Certifications Over Time



GreenChill Store Certifications by Calendar Year

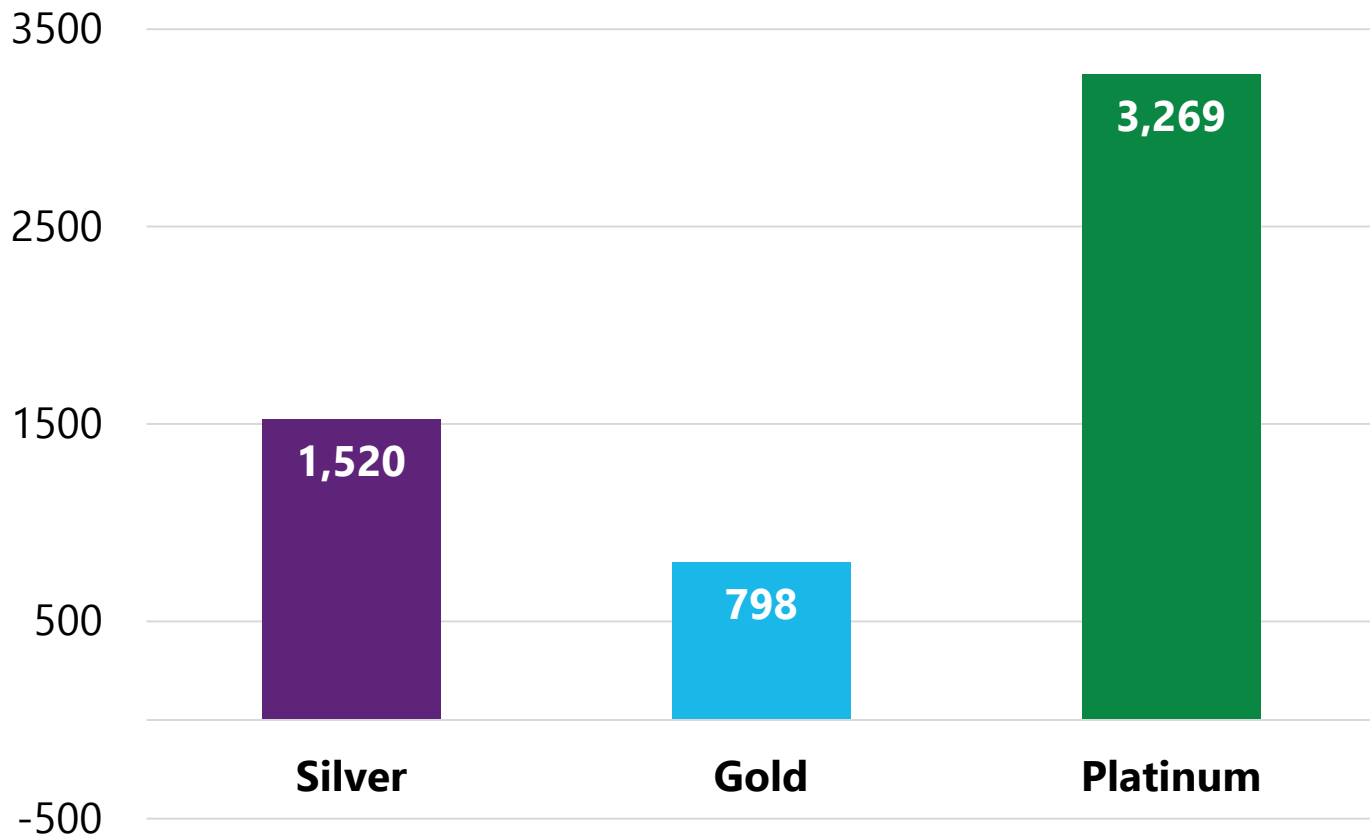


Total Certifications by Level



*5,282 certifications
of 1,496 stores
since 2009!*

GreenChill Store Certifications by Level



Top 10 Retailers with the Most GreenChill Certified Stores



1



2



3

SPROUTS
FARMERS MARKET

4



5



6



7

STATER BROS.
markets

8

meijer

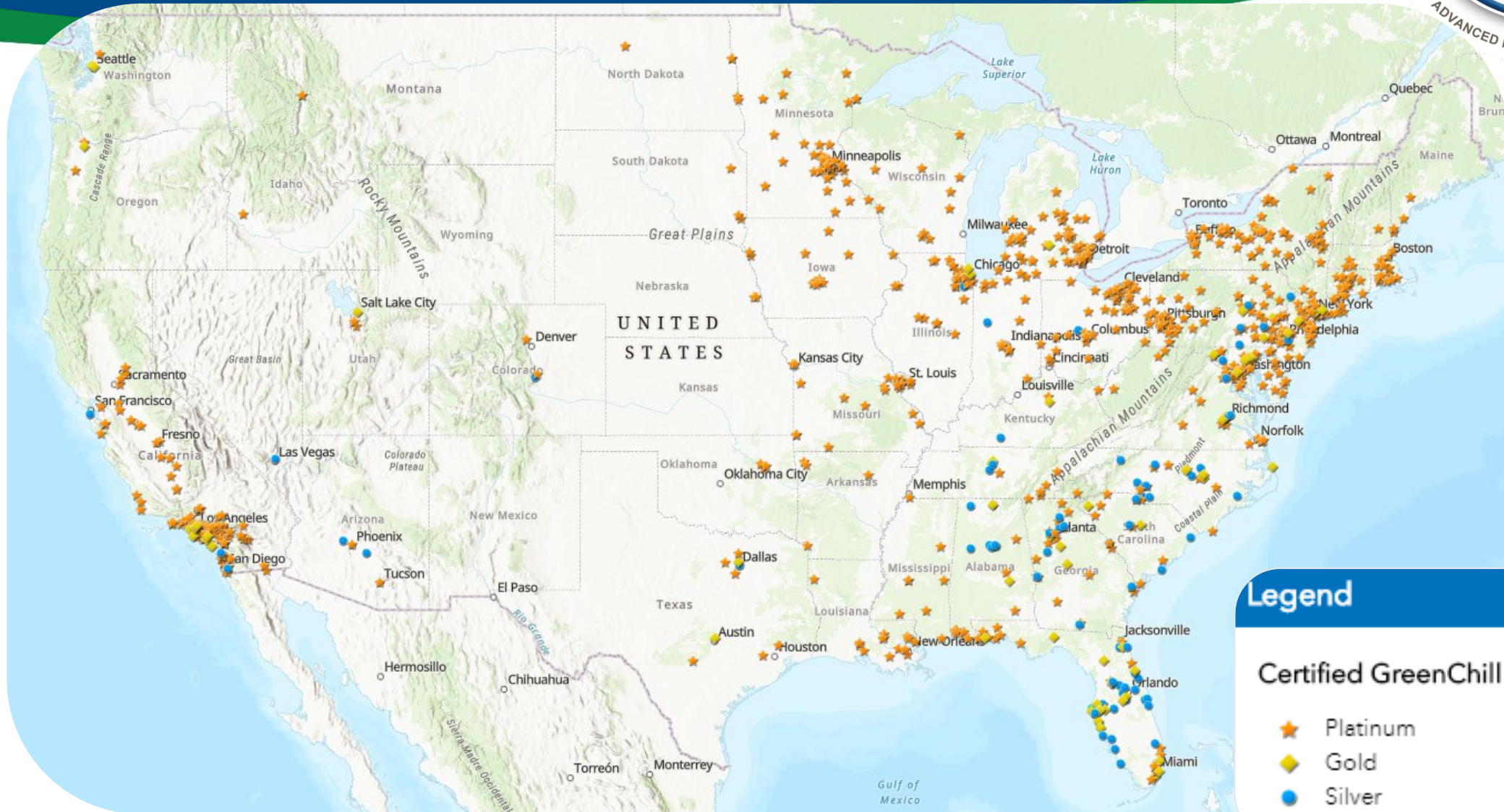
9

COSTCO
WHOLESALE

10



Store Certification Map



Legend

Certified GreenChill Stores

- ★ Platinum
- ◆ Gold
- Silver

www.epa.gov/greenchill/greenchill-certified-stores

Original Store Certification Criteria



- Original criteria were established 15 years ago and have not been updated since.

Certification Level	Average HFC Refrigerant Charge (lbs. per 1,000 BTU/hr)	Store-wide Annual HFC Refrigerant Emissions Rate
Silver	<1.75	<15%
Gold	<1.25	<15%
Platinum*	<0.5	<5%

**Platinum can alternatively be achieved if all refrigerant in the store's commercial refrigeration equipment has a global warming potential (GWP) < 150*

Store Certification Workgroup



- Much has changed since the criteria were originally established:
 - New technologies and refrigerants
 - New practices in store operations
 - New regulations at state and federal level
- Store Certification Workgroup established spring of 2023 to review current criteria and propose changes to better align with current trends and practices.

Store Certification Criteria Update



Given changes in regulations and technology, GreenChill will have **different criteria** for stores based on **the age of their equipment**

- Program goals and assumptions remain unchanged, i.e., continue transition away from ODS; going above and beyond regulatory requirements; better than industry average (for ex. leak rate, charge-to-load ratio)
- **Category 1 equipment:** Equipment installed **before** January 1, 2025, must meet criteria based on their GWP-weighted charge-to-load ratio and emissions rate
- **Category 2 equipment:** Equipment installed **after** January 1, 2025, would need to meet a different set of more rigorous criteria to show they are going above and beyond regulatory requirements

Category 1 Criteria



- Criteria for Category 1 stores (equipment installed before January 1, 2025):

Level	GWP x Refrigerant Charge/Load (lbs/MBTU/hour)	GWP x Annual Emissions/Load (MTCO ₂ e/MBTU/hour)
Platinum	<1,600	<0.03
Gold	1,600 – 2,000	0.03 – 0.08
Silver	2,000 – 2,400	0.08 – 0.13

Category 2 Criteria



- Criteria for Category 2 Stores (equipment installed after January 1, 2025):
 - **To qualify, all stores must meet the following criteria:**
 - GWP <150
 - Low GWP weighted charge-to-load ratio (Platinum-level thresholds for Category 1 stores)
 - Low GWP weighted emissions rate (Platinum-level thresholds for Category 1 stores)
 - **Additionally, stores must meet 2 of the following 5 criteria:**
 - Low GWP in primary refrigeration system (<10 GWP)
 - Lower-GWP refrigerant in HVAC (<400 GWP)
 - Use of advanced refrigeration technology
 - Use of reclaimed refrigerant
 - Use of a technician training program

Summary of Changes and Timing



- **Certification Levels:**

- Category 1 stores will still certify as **Silver, Gold, Platinum**
- To distinguish that Category 2 stores attained GreenChill Certification under different criteria, these stores will be simply **"GreenChill Certified"**

- **Timing:**

- The current criteria will continue through December 31, 2024
- The new criteria will take effect on January 1, 2025
- EPA planning training webinar(s) this Fall

GreenChill Partnership: Looking Forward



- Supporting and showcasing continued industry leadership that protects the environment, saves money
- Meeting the challenges of growing commercial refrigeration demand in all communities
- Using best practices and advanced technologies
- Recognizing achievements
- Sharing lessons
- Preparing for a sustainable future



Become a GreenChill Partner!



**Join your
Industry Peers!**

*GreenChill is
actively recruiting
new Food Retail
Partners*



Request a
partnership packet



Sign the partnership
agreement



Meet eligibility
requirements



Become a GreenChill
partner!

The GreenChill Partnership Process

For more details, visit [the Partnership webpage](#)

Upcoming Webinars



- **October 9**, 2pm Eastern – GreenChill Webinar: *The American Innovation and Manufacturing (AIM) Act: Emissions Reductions & Reclamation Final Rule*
 - Register at: www.epa.gov/greenchill/events-and-webinars
- **October 17 and 22**, 2pm Eastern – US EPA Webinar: *Understanding the Compliance Requirements for the Technology Transitions Program*
 - Register at: www.epa.gov/climate-hfcs-reduction/public-meetings
- **November, TBD** – GreenChill Webinar: *Store Certification New Criteria Training*

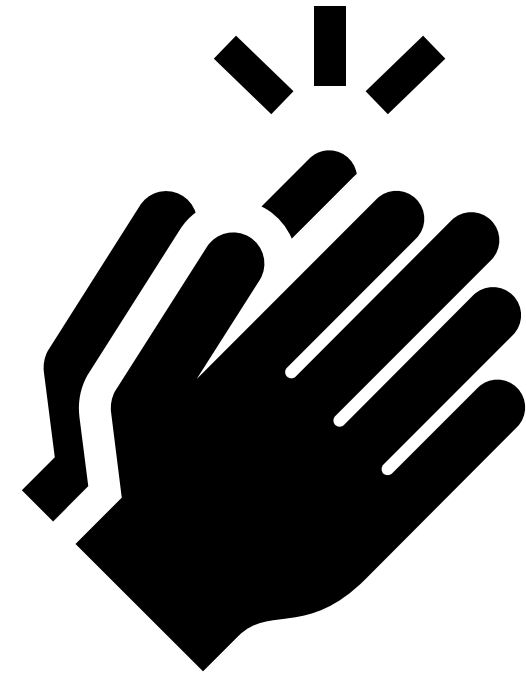
Have ideas for a future webinar or would like to present?

Email: GreenChill@epa.gov

Acknowledgments



- Congratulations to each recognition recipient!
- Thank you to our GreenChill Partners and GreenChill Certified Stores – we value and appreciate your participation in and contribution to GreenChill
- Thank you to our supporters - all play a role through data reporting, store certifications, refrigerant management plans, webinar presentations, and input on GreenChill programs and resources



Thank You!



www.epa.gov/greenchill

GreenChill@epa.gov

 [@EPAair](https://twitter.com/EPAair)