



GreenChill

Annual Recognition Event

October 4, 2023

Event Overview



- Welcome and Opening Remarks, Kirsten Cappel
- GreenChill Program Overview, Chris Orvin
- Trends and Achievements in 2022 - GreenChill Partners and GreenChill Certified Stores
- GreenChill Recognition - Presentation of Awards
- GreenChill Partner Remarks

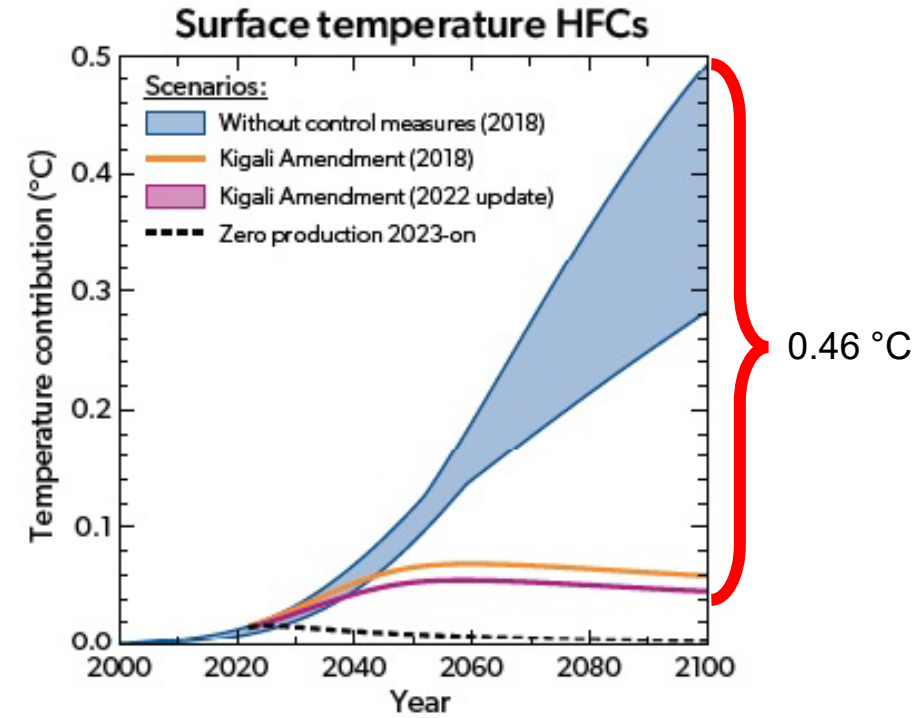
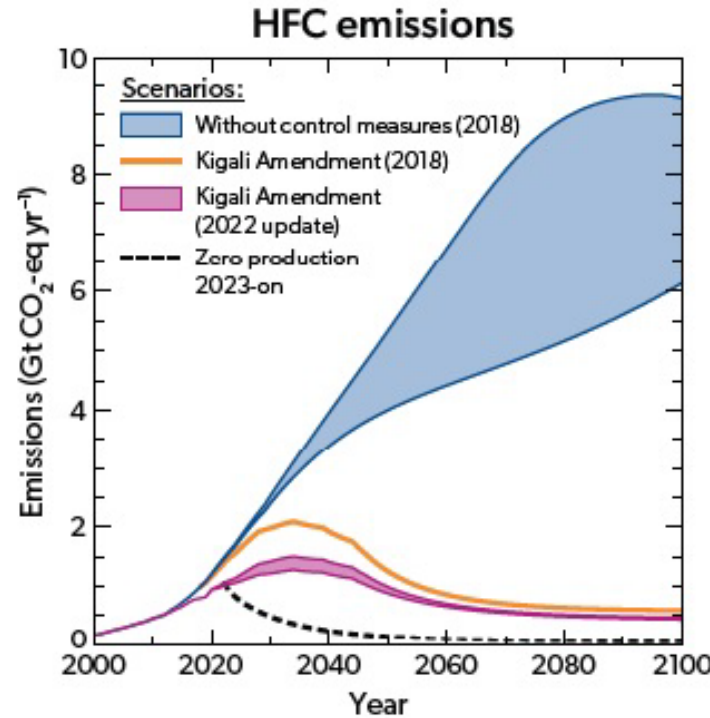


Welcome & Opening Remarks



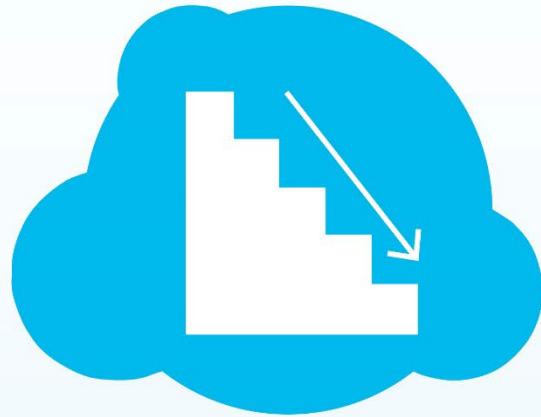
A global HFC phasedown is expected to avoid up to 0.5°C of global warming by 2100

- Hydrofluorocarbons (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 are expected to continue increasing rapidly worldwide



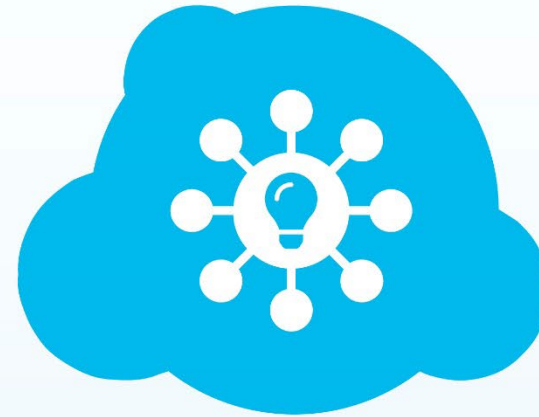
World Meteorological Organization Scientific Assessment of Ozone Depletion: 2022, Global Atmosphere Watch Report No. 278, Figure ES-4

**THE AIM ACT
AUTHORIZES
EPA TO
ADDRESS
HYDRO-
FLUOROCARBONS
(HFCs)**



PHASE DOWN

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



TRANSITION

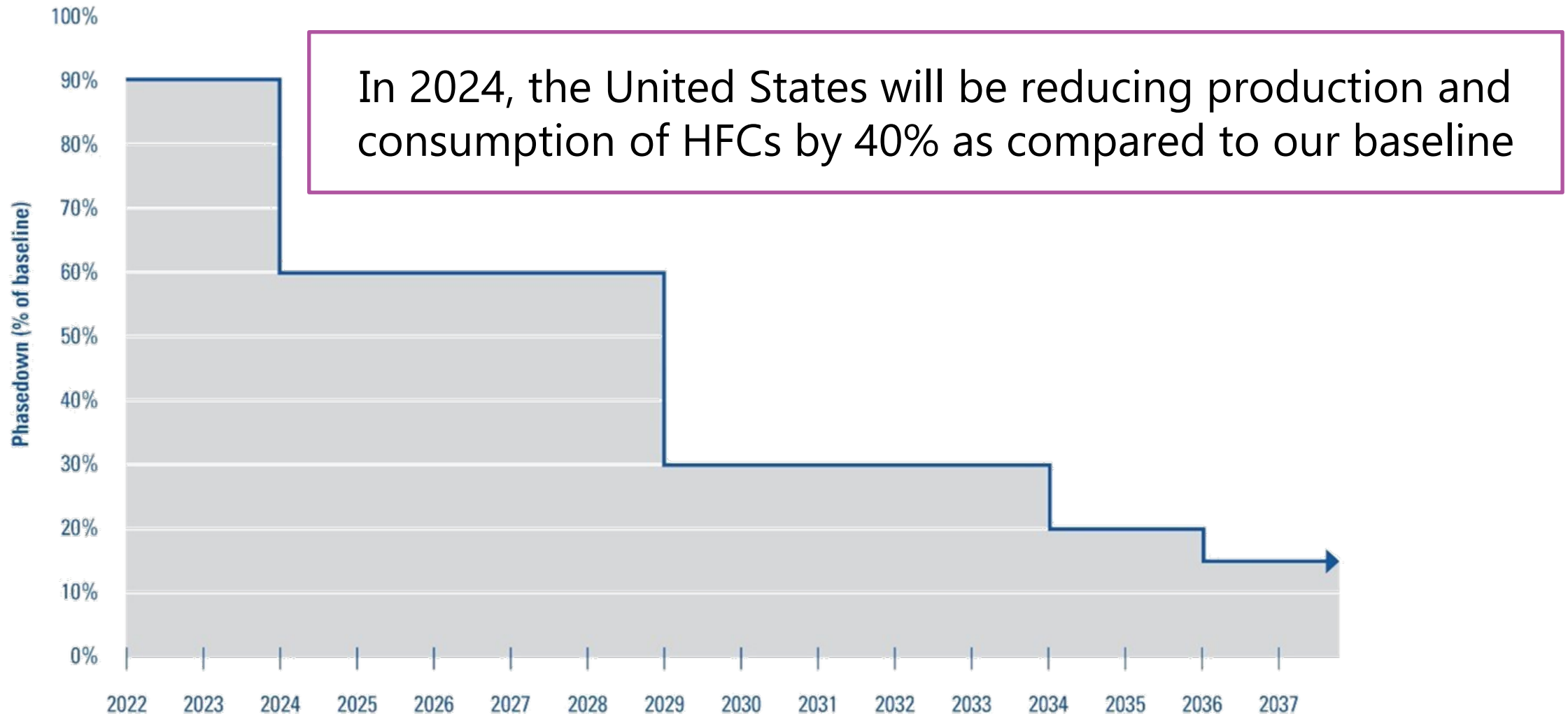
Facilitate **sector-based technology transitions** through restrictions on HFCs



MAINTAIN

Issue regulations to **maximize reclaim and minimize releases** of HFCs

HFC Phasedown Schedule



GreenChill's Leadership

- GreenChill Partners have made important contributions to protect the stratospheric ozone layer
- We look to GreenChill Partners to continue to serve as industry leaders in refrigerant management
- Partners contribute to the goals of the AIM Act and addressing climate change by:
 - Managing refrigerants, reducing refrigerants leaks, and adopting green technologies and best environmental practices



GreenChill Overview



Program Overview

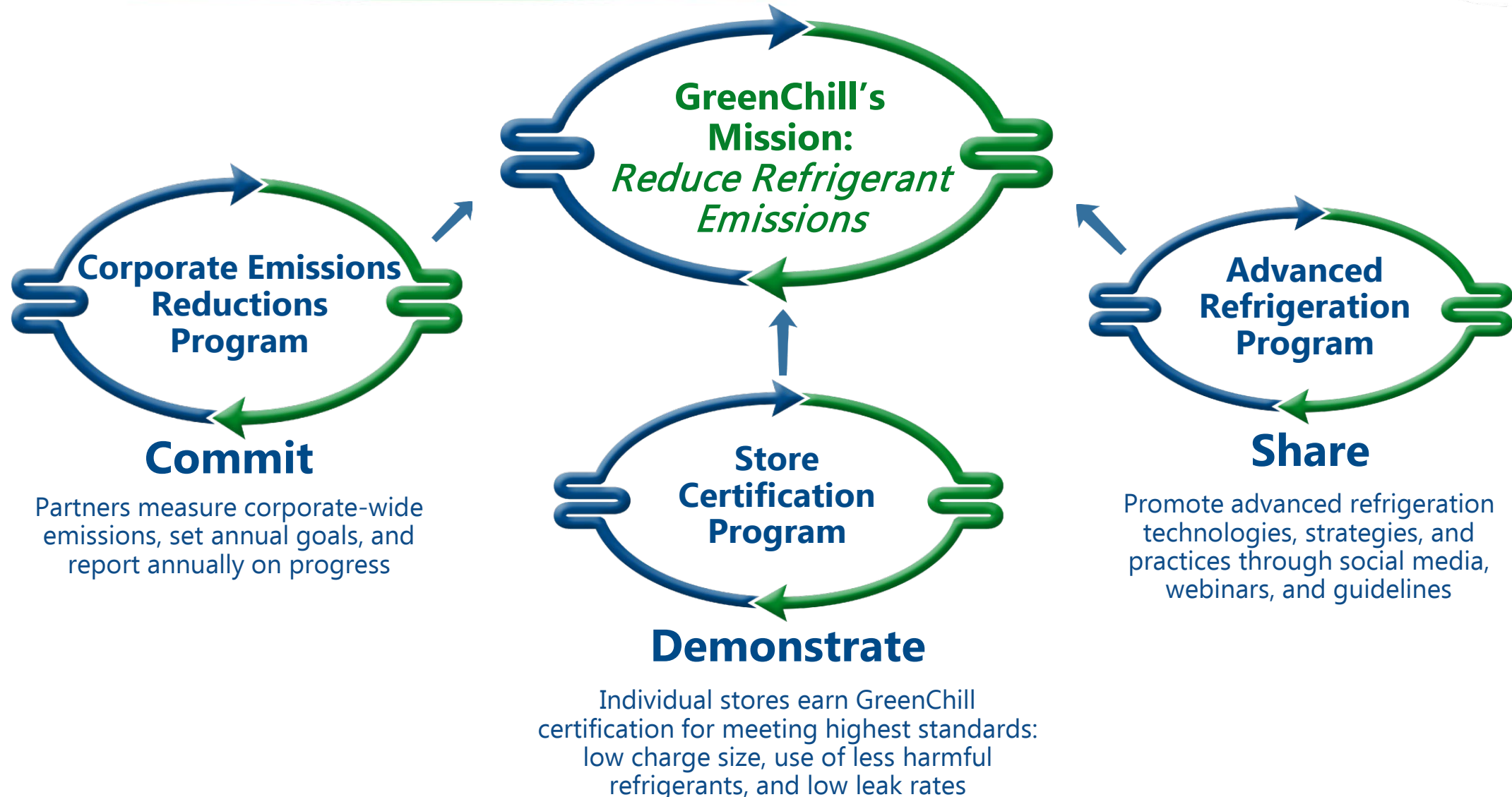


GreenChill is a voluntary partnership program that works collaboratively with the food retail industry to reduce refrigerant emissions and decrease stores' impact on the ozone layer and climate system

GreenChill works to help food retailers:

- Lower refrigerant charge sizes and eliminate leaks
- Transition to environmentally friendlier refrigerants
- Adopt green refrigeration technologies and best environmental practices

GreenChill's Mission



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:
 - Aggregate data for all systems sold by Partners

Chemical Producers

- Promote the adoption of retrofit chemicals and secondary fluids

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

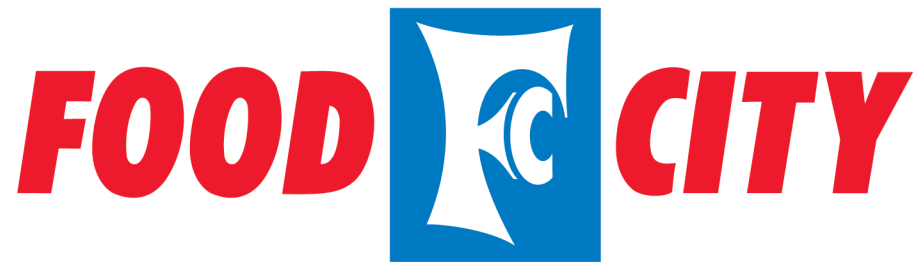
GreenChill Partners Lead the Way



Newest GreenChill Partners



Welcome to our newest Partners



Store Certification Program



- Certified stores demonstrate leadership in food retail refrigerant management
- These stores:
 - Use only non-ozone depleting refrigerants that are Significant New Alternatives Policy program approved
 - Have lower refrigerant charge sizes and leak rates compared to the average food retail store*
- Any food retail store in the United States can apply; not necessary to be a GreenChill Partner



Platinum, Gold, and Silver certification levels

Store Certification Workgroup: Context



- **Purpose of GreenChill**
 - Recognize stores that achieve specific environmental performance criteria that go **above and beyond** Federal requirements
- **There is a need to reevaluate the GreenChill store certification criteria**
 - Certification standards were established fifteen years ago and have never been revised
 - To be relevant and meaningful the program should reflect current technology, regulations, and practices
 - Ensure the program still recognizes stores going “above and beyond” regulatory requirements
- **EPA formed a Store Certification Workgroup to discuss potential changes to store certification criteria with partners**



Store Certification Workgroup: Activities



- The workgroup met five times between March and August 2023
- Members included 9 retail partners, 4 equipment manufacturers, and 4 chemical producers
- Key discussion topics included:
 - Adjusting existing criteria (making more stringent) vs. including new criteria, such as incorporating GWP-weighted emissions and/or charge-to-load ratios, and/or a reclaim component
 - Making a distinction between new stores and existing stores in certification
 - The meaningfulness of the low-GWP pathway to platinum
 - Basing methodology for new criteria on a top-down (scenario-based) or bottom-up (data-based) approach

Store Certification Workgroup: Next Steps



- EPA will share a draft proposal which incorporates feedback from stakeholders and proposes a pathway from the various options the workgroup explored
- The workgroup will react to the draft proposal and EPA will incorporate feedback
- Once the proposal is ready, EPA will share this approach with the larger GreenChill partnership for feedback and finalization
- EPA will plan to announce the new criteria well in advance of the 2024 store certification cycle beginning July 1, 2024



Trends and Achievements



Food Retail Partners



2007

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

7
Partners

4,500
Stores



2022

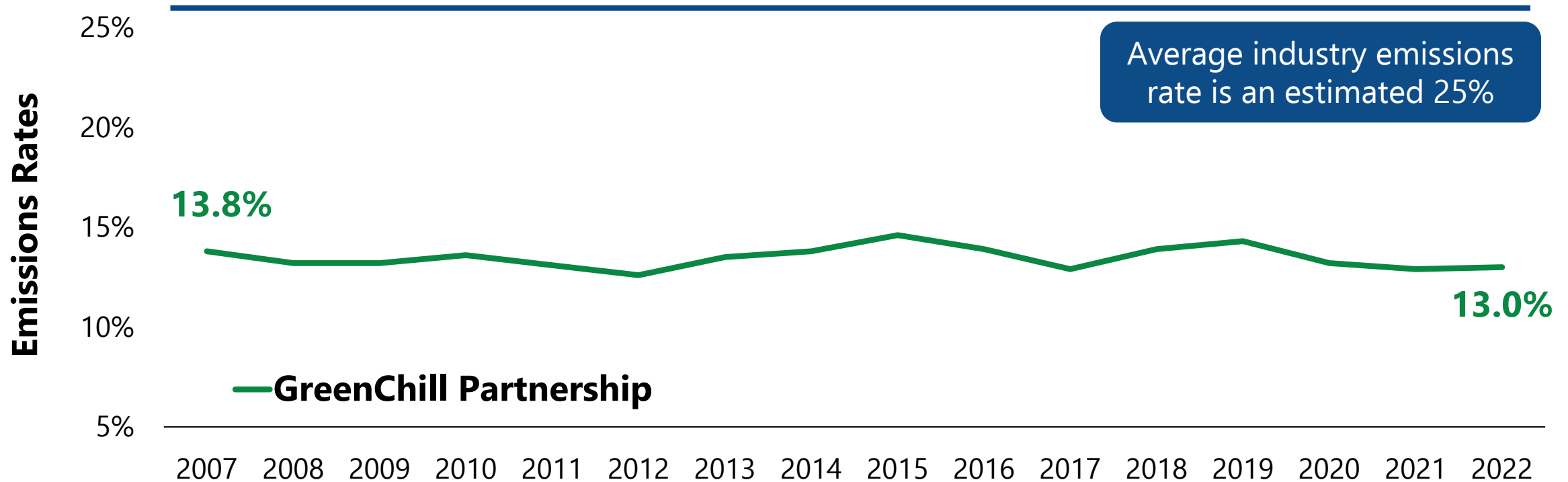
35
Partners

13,262
Stores



*Food Marketing Institute Supermarket Facts.

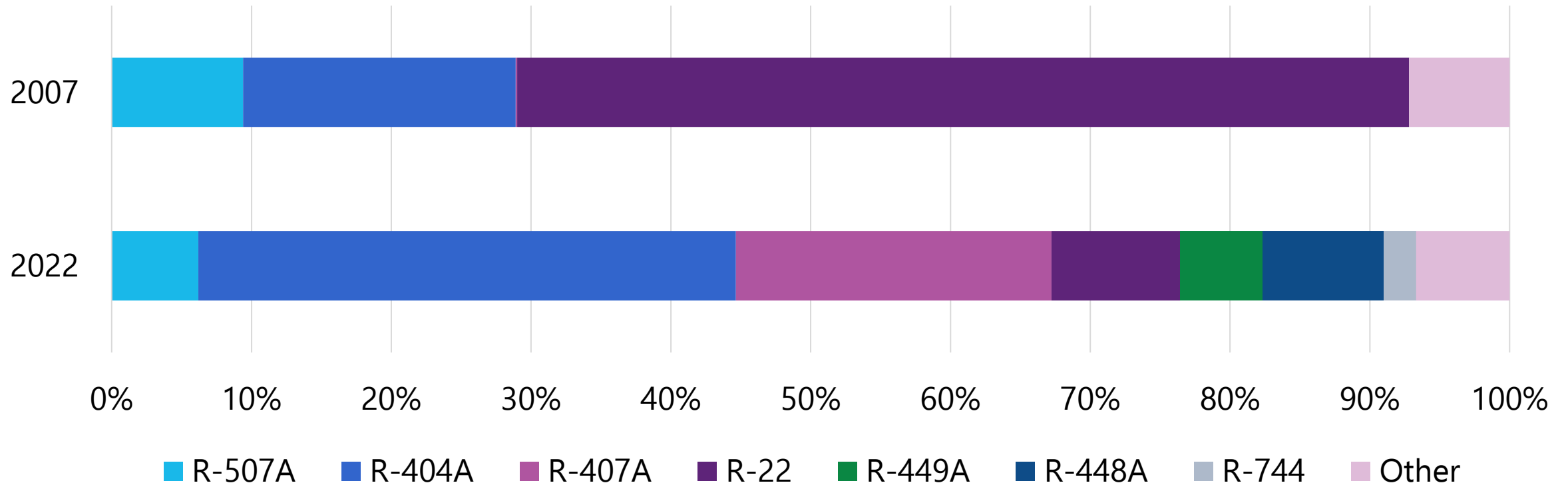
Leak Rate – Historical



Key Takeaways

- Existing Partners continue to achieve relatively lower leak rates while adding new stores
- GreenChill has added new Partners with additional stores/equipment that are improving leak rates

Partnership Installed Refrigerants

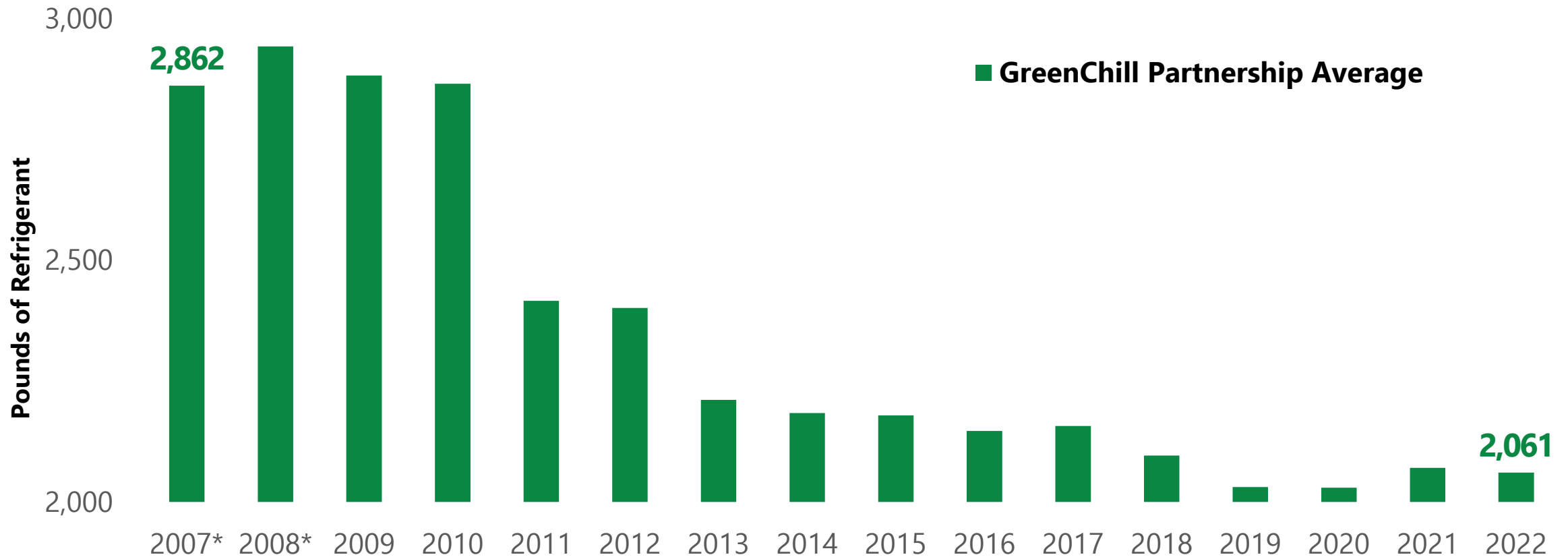


Global warming potential high to low, except "Other" category

Key Takeaways

- A much broader array of refrigerants are installed today as compared to 2007
- R-22, represents less than 10% of installed refrigerant in 2022

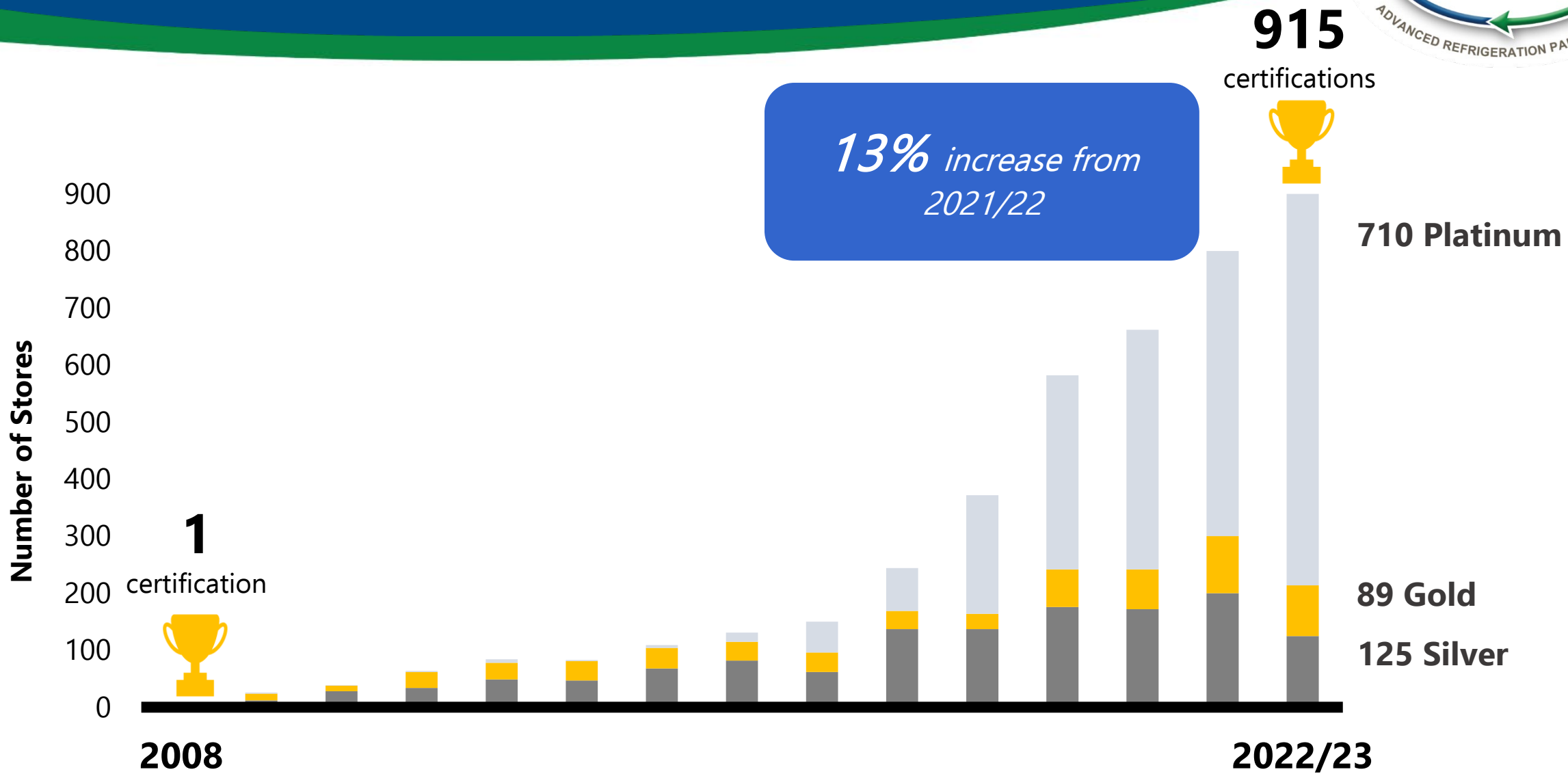
Average Pounds of Installed Refrigerants in Commercial Systems



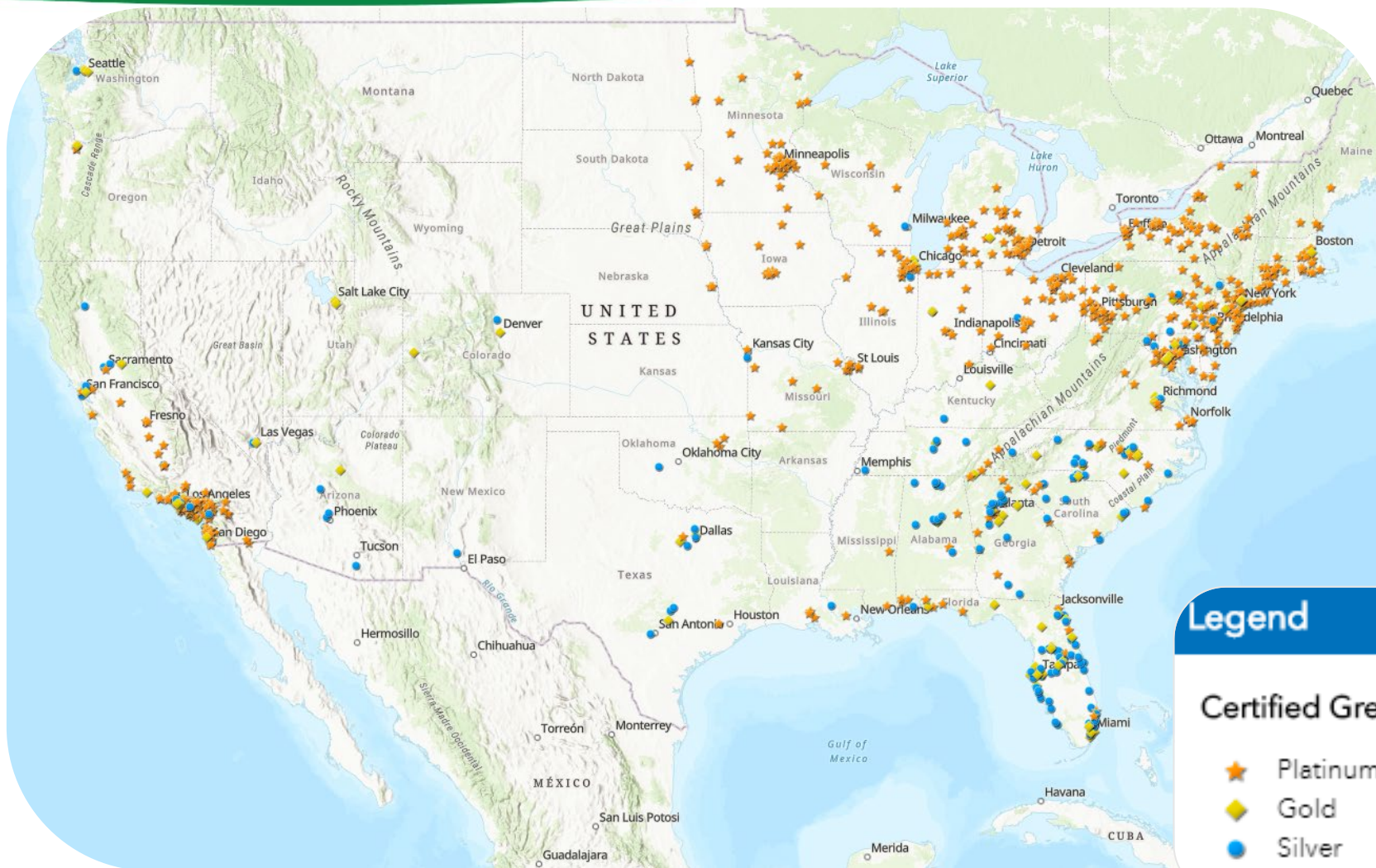
The downward trend can be likely attributed to:

- Partners transitioning to more distributed systems and other advanced technologies with lower refrigerant charge sizes

Store Certification Program



Store Certification Map*



Legend

Certified GreenChill Stores

- ★ Platinum
- ◆ Gold
- Silver

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

*As of 6/23/2023



GreenChill Recognition



Overview



- GreenChill is recognizing 13 companies in seven categories with a total of 134 achievements across the two Programs
- Partnership Program achievements occurred in the 2022 calendar year
- Store Certification Program achievements occurred from July 1, 2022 to June 30, 2023

Superior Goal Achievement

*Partner that achieves its annual refrigerant emissions reduction goal.
Goal must be below the leak rate achieved the year before.*



This year, seven Partners achieved their 2022 refrigerant emissions rate goals.

Exceptional Goal Achievement

*Partner that achieves its "stretch" refrigerant emissions reduction goal.
This goal is more difficult to achieve than Superior Goal Achievement.*



This year, two Partners achieved their 2022 "stretch" goal.

Most Improved Emissions Rate

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





New Refrigeration Racks



New Leak Detection System

Best Emissions Rate

Retail Chain

Lowest refrigerant emissions rate of all Partners.



Best Emissions Rate

Small-Independent

Lowest refrigerant emissions rate of all Partners.



Store Leadership

KWIK TRIP™

La Crosse, WI

This Kwik Trip is the first convenience store to
earn GreenChill Certification

Store Certification Excellence

Supermarket

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



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

Store Recertification Excellence 5 Years

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

This year, 118 stores reached this achievement for five years.

Congratulations to the following companies...



*109
Stores*

Alhambra, CA
Alliance, OH
Altoona, PA
Amsterdam, NY
Anderson, SC
Arroyo Grande, CA
Bakersfield, CA
Baldwinsville, NY
Beaver Falls, PA
Brockton, MA
Brunswick, OH
Canastota, NY
Canton, OH
Cazenovia, NY
Chardon, OH
Chippewa Falls, WI
Chula Vista, CA
Clifton Park, NY
Clinton Township, MI
Compton, CA
Concord, NH
Corona, CA
Cortland, NY
Coshocton, OH
Cranston, RI
Decatur, GA
Dundalk, MD

Eagan, MN
East Amherst, NY
East Hartford, CT
Escondido, CA
Evans Mills, NY
Fairfax, VA
Faribault, MN
Ferndale, MI
Flint, MI
Fulton, NY
Garden Grove, CA
Glendora, CA
Greensburg, PA
Hamden, CT
Harrisonburg, VA
Henrietta, NY
Hesperia, CA
Indiana, PA
Ithaca, NY
Johnstown, PA
La Habra, CA
Laguna Woods, CA
Lakewood, OH
Lancaster, CA
Laurel, MD
Liverpool, NY
Livingston, NJ

Medina, OH
Middletown, NY
Milford, CT
Monrovia, CA
Mounds View, MN
Mt. Pleasant, MI
Newington, CT
North Ridgeville, OH
North Windham, CT
Oak Park Heights, MN
Old Bridge, NJ
Oxnard, CA
Oxnard, CA
Penfield, NY
Phillipsburg, NJ
Pico Rivera, CA
Pittsburgh, PA
Pittsburgh, PA
Pottstown, PA
Raynham, MA
Reading, PA
Rialto, CA
Rocky Hill, CT
Rosemount, MN
Saginaw, MI
San Diego, CA
San Jacinto, CA

Santa Ana, CA
Seneca Falls, NY
Seven Hills, OH
Sioux Falls, SD
Southington, CT
Springfield, MA
Strongsville, OH
Suffolk, VA
Temecula, CA
Three Rivers, MI
Torrington, CT
Vernon, CT
Virginia Beach, VA
Virginia Beach, VA
Virginia Beach, VA
Waconia, MN
Wareham, MA
Warrington, PA
Waterford, CT
Watertown, NY
West Long Branch, NJ
Westminster, CA
Wexford, PA
Williamsville, NY
Wyncote, PA
Wyoming, MI
Yorkville, NY
Youngstown, OH



Publix®

5 Stores

Chapin, SC
Concord, NC
Moody, AL
Weaverville, NC
Winston-Salem, NC



TARGET

2 Stores

Evanston, IL
Tallahassee, FL



Danville, PA



Marysville, OH

Store Recertification Excellence

10 Years

Each supermarket that renewed its GreenChill Store Certification for 10 consecutive years.



Turner, ME



GreenChill Participant Remarks





E+Sd Energy
& Store
Development



Founding GreenChill Partner Hillphoenix

Scott Martin

Senior Director of Industry Relation and Compliance, *Hillphoenix*

Partnership from the Beginning

E+Sd Energy & Store Development



2007 GreenChill Launch Event



2009 Ozone Layer Protection Award



Hillphoenix is proud to be a founding member of EPA's GreenChill Program



GreenChill Store Certification Program Guidance

The following document provides guidance on meeting the GreenChill store certification requirements and completing either the [newly constructed store](#) or [operational store](#) application form.

Table 1: Equipment Included in Each Certification Criterion

CERTIFICATION CRITERIA	INCLUDED EQUIPMENT		
	Self contained commercial refrigeration equipment	Remote commercial refrigeration equipment	HVAC Equipment
Refrigerant charge (lbs.)		✓	
Total load (MBTU/Hr)		✓	
Refrigerant emissions rate (lbs.)		✓	
Non-ozone-depleting refrigerant	✓	✓	✓
SNAP-approved refrigerant	✓	✓	✓
GreenChill's Installation leak Tightness standards (newly constructed stores only)		✓	

GreenChill Best Practices Guideline Ensuring Leak-Tight Installations of Commercial Refrigeration Equipment

U.S. Environmental Protection Agency
Stratospheric Protection Division



GreenChill Store Certification Program



Certification Standards

Food retail stores can achieve either platinum-, gold-, or silver-level certification.

- **Platinum Level.** The store must use only non-ozone-depleting refrigerants that are approved by EPA's Significant New Alternatives Policy (SNAP) program. In addition, the store must meet one of the following sets of conditions:
 - The store must achieve an average HFC refrigerant charge of no more than 0.5 pounds of refrigerant per 1,000 BTU per hour total evaporator cooling load and a store-wide annual refrigerant emissions rate of no more than 5%.
 - or
 - All refrigerants used in the store's commercial refrigeration system must have global warming potentials lower than 150.
- **Gold Level.** The store must use only non-ozone-depleting refrigerants that are approved by the SNAP program. It must also achieve an average HFC refrigerant charge of no more than 1.25 pounds of refrigerant per 1,000 BTU per hour total evaporator cooling load and a store-wide annual refrigerant emissions rate of no more than 15%.
- **Silver Level.** The store must use only non-ozone-depleting refrigerants that are approved by the SNAP program. It must also achieve an average HFC refrigerant charge of no more than 1.75 pounds of refrigerant per 1,000 BTU per hour total evaporator cooling load and a store-wide annual refrigerant emissions rate of no more than 15%.

Thank you

Scott Martin

Senior Director of Industry
Relation and Compliance

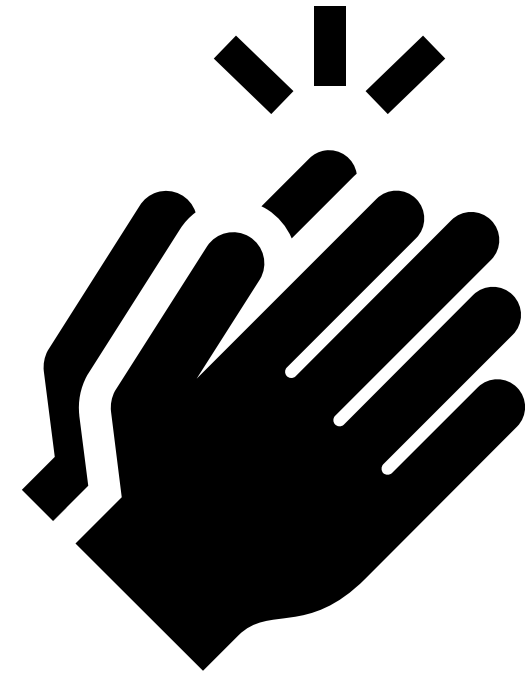
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Acknowledgments



- 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

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