



GreenChill Annual Recognition Event

September 24, 2020



- Kirsten Cappel
GreenChill Program
Manager



Presentation Overview



- GreenChill Program Overview
- Trends and Achievements in 2019 - GreenChill Partners and GreenChill Certified Stores
- Remarks from Office of Atmospheric Programs Director, Chris Grundler
- GreenChill Recognition - Presentation of Awards
- Presentations by Recognition Recipients
 - Weis Markets & Hillphoenix

Program Overview



GreenChill is a voluntary partnership program that works collaboratively with the food retail industry to reduce refrigerant emission 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





Corporate Emissions Reduction Program

- Food Retailers (Supermarkets, grocery stores, supercenters, co-ops, wholesale clubs)
 - Reduce corporate refrigerant emissions by annually setting reduction goals and measuring corporate stocks and emissions
 - Report data to EPA
- Refrigeration Systems Manufacturers
 - Promote the adoption of advanced refrigeration technologies, strategies, and practices
 - Report equipment sales data to EPA
- Chemical Producers
 - Promote the adoption of retrofit chemicals and secondary fluids

GreenChill Partners	
Food Retailers Banners	26 61
Refrigeration Systems Manufacturers	5
Chemical Producers	6

GreenChill Partners Lead the Way



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

*Determines certification level.

Newest GreenChill Partner



Welcome to our newest Partner!
Grocery Outlet joined GreenChill this year





Trends and Achievements in 2019



Food Retail Partners



2007

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

4,500
Stores

7
Partners



2019

12,600
Stores

26
Partners



*Food Marketing Institute Supermarket Facts (2018).

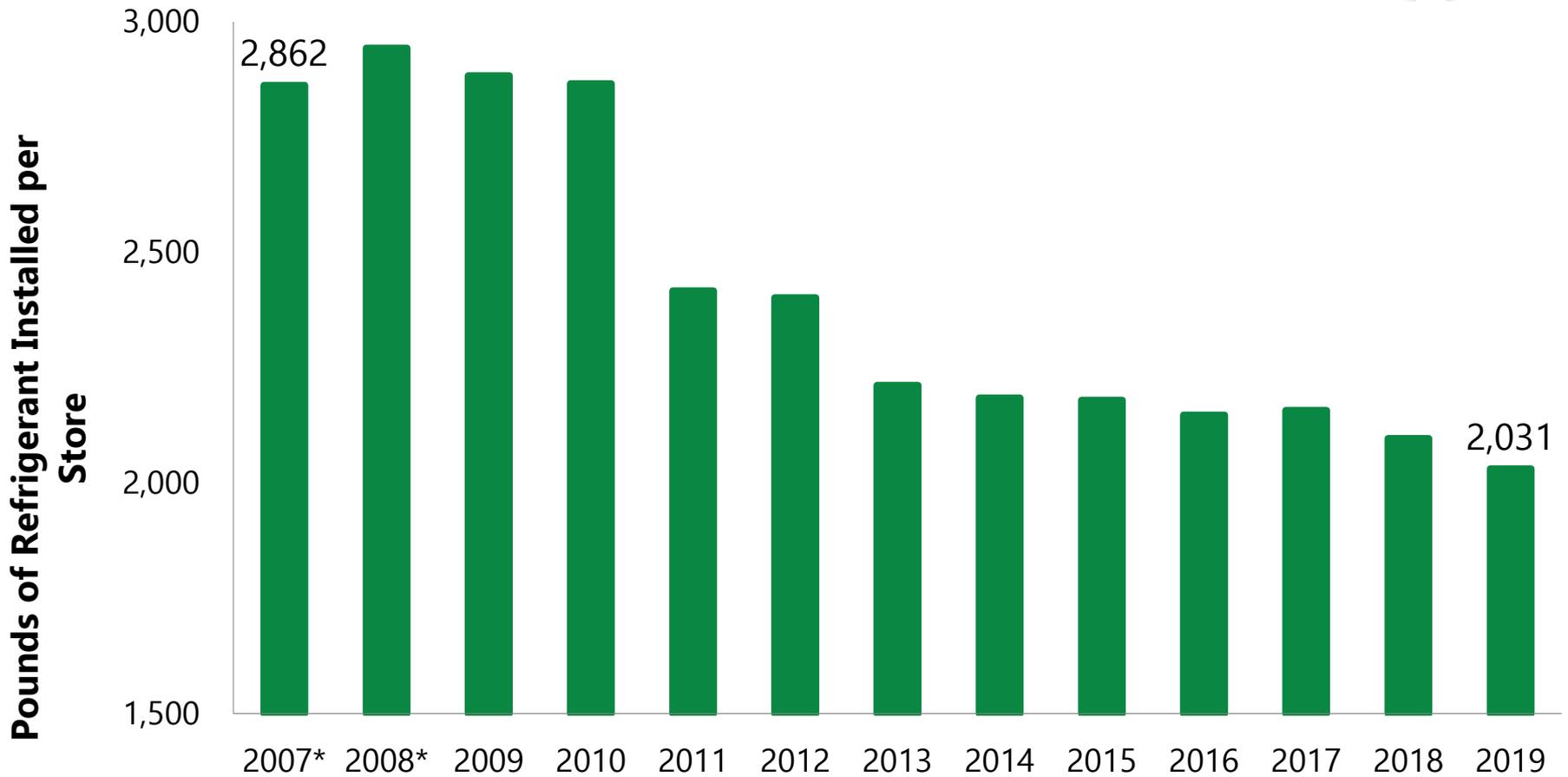
Partner Highlights - 2019



- Partner average emissions rate: 14.3%*
- 16 Partners (~62%) were at or below the Partnership average
- 8 Partners were in the "10% and Under Club"
- 50% of Partners reduced or maintained their emissions rate versus 2018
 - 2 reduced their emissions rate by at least 30%
 - 5 reduced their emissions rate by at least 10%
- 63% of Partners reduced or maintained their emissions rate versus their baseline year
 - 3 reduced their emissions rate by at least 60%
 - 6 reduced their emissions rate by at least 30%
 - 9 reduced their emissions rate by at least 20%
 - 11 reduced their emissions rate by at least 10%

* Includes emissions from commercial systems with a charge ≥ 50 pounds of refrigerant.

Average Installed Refrigerants



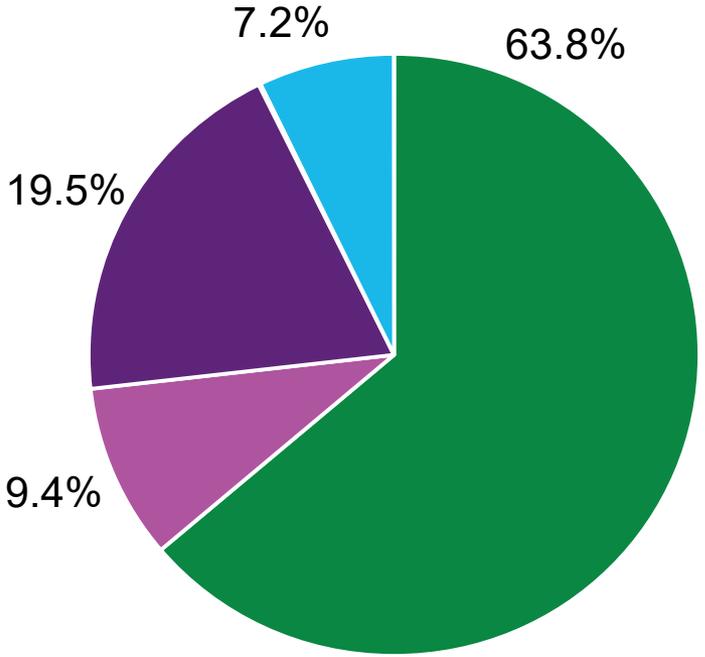
KEY TAKEAWAY

On average, Partners are using about 30% less refrigerant in stores than in 2007

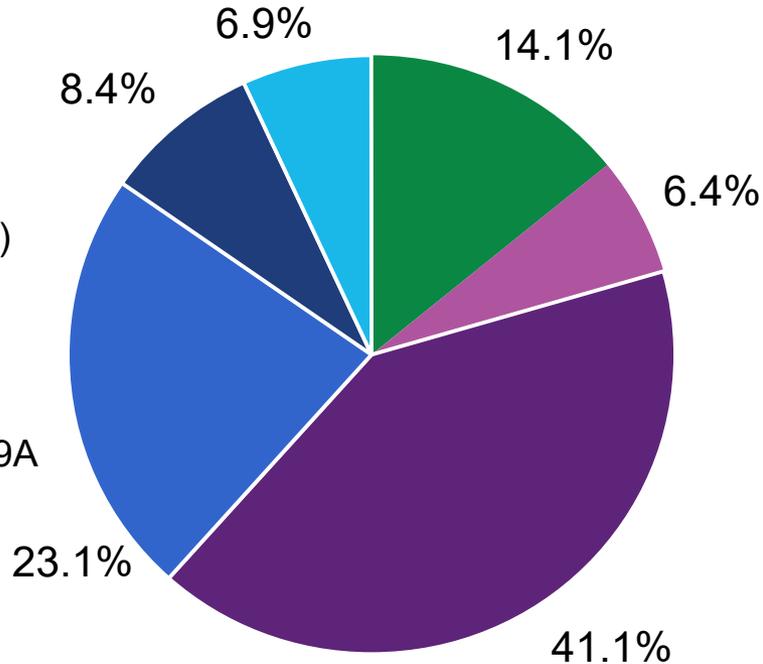
Partnership Installed Refrigerants



2007



2019



Global warming potential values

- R-22 (ODS)
- R-507A
- R-404A
- R-407A
- R-448A/449A
- Other

KEY TAKEAWAY

Partners are transitioning from ozone depleting substances (ODS) and high-global warming potential (GWP) hydrofluorocarbons (HFCs) toward alternatives

Partners' Impact



If every U.S. supermarket met GreenChill Partners' average emissions rate, the supermarket industry would:

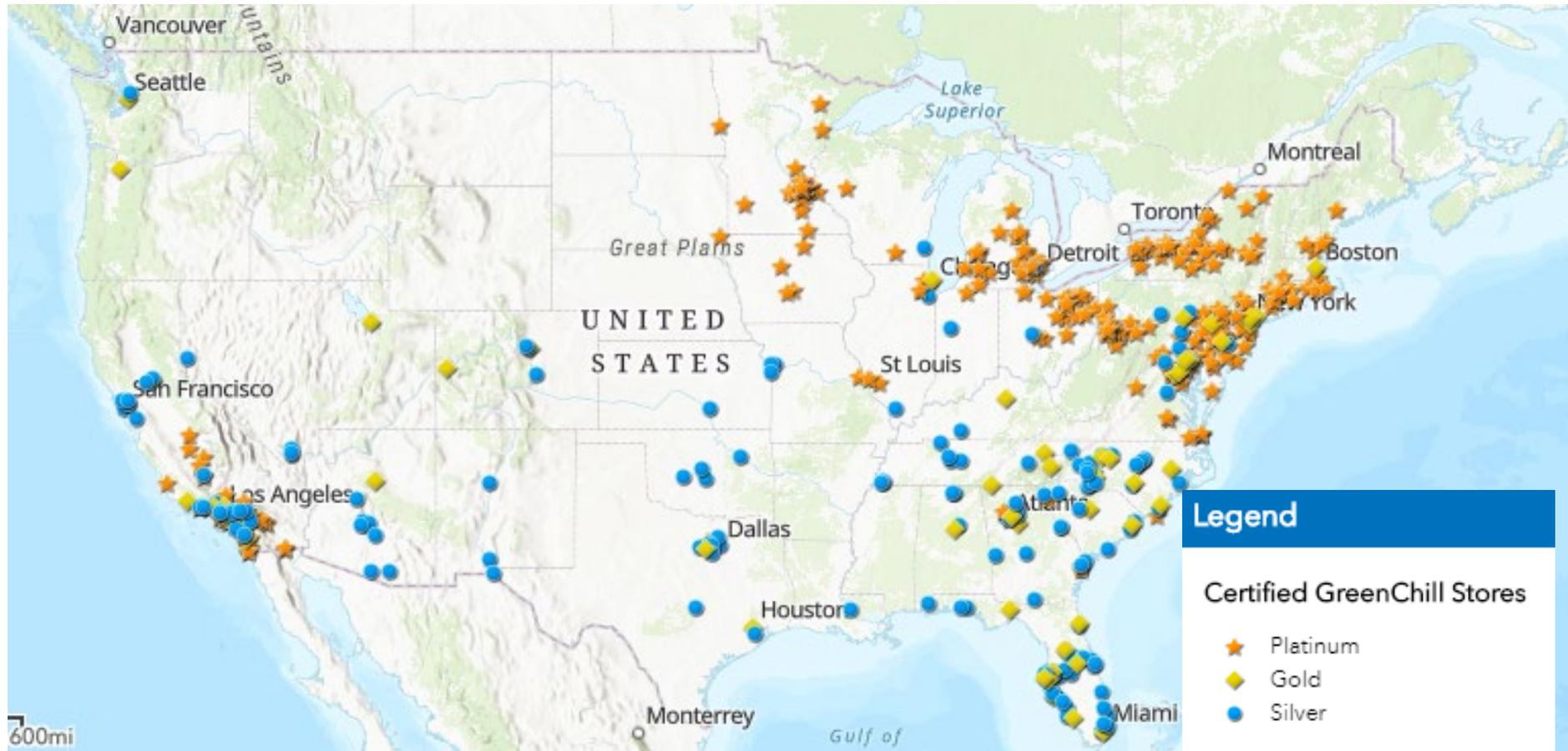
- Save more than **\$160 million** in refrigerant replacement costs
- Reduce annual refrigerant emissions by:
 - **30 million metrics tons carbon dioxide equivalent (MMTCO₂e)**
 - **88 ozone depletion potential metrics tons**

Store Certification Program



*As of August 2020.

GreenChill Certified Stores - 2019



View the interactive map and table of certified stores
www.epa.gov/greenchill/greenchill-store-certifications

Benefits from Certified Stores - 2019



~238,600
MTCO₂e
emissions avoided

Emissions avoided are equivalent to CO₂ emissions from approximately:



40,396 homes' electricity use for one year



30 billion phones charged

Remarks



- Chris Grundler, Director,
Office of Atmospheric
Programs





GreenChill Recognition



Overview



- GreenChill is recognizing 10 companies in 7 categories with a total of 22 achievements across the 2 Programs
- Partnership Program achievements occurred in the 2019 calendar year
- Store Certification Program achievements occurred from July 1, 2019 to June 30, 2020

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, four Partners achieved their 2019 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, one Partner achieved their 2019 "stretch" goal.

Most Improved Emissions Rate

Partner with the most improved emissions rate for commercial systems from the previous year and since the year they joined the Partnership.



Year-to-year and Over Baseline Year.

Best Emissions Rate *Retail Chain*

Lowest refrigerant emissions rate of all Partners.



Best Emissions Rate
Small-Independent

Lowest refrigerant emissions rate of all Partners.





Jennifer Stoltz from Cook County Whole Foods Co-op. Jennifer facilitated the construction of the Co-op's refrigeration systems.



Best of the Best

Certified Store

The best GreenChill certified store in the past year.



Grand River Ave
Detroit, MI

This Meijer store achieved the highest estimated avoided emissions of any store in the award cycle.

Store Certification Excellence

Supermarket

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





Aaron Sumida and Amber Hardy from ALDI with a carbon dioxide system.

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 Re-Certification Excellence

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



Carthage, NY
Webster, NY



Southport, NC



North Berwick, ME



Germantown, TN
Hurst, TX
Marietta, GA
Oakland, CA
Roswell, GA
San Rafael, CA
Wheat Ridge, CO

This year, 11 stores reached this achievement for 5 years.

“Food Lion is pleased to have earned five annual certifications, and be recognized with the Store Re-certification Excellence achievement. The GreenChill recognition is one more indication of the sustainability efforts Food Lion continues to make. We are committed to protecting our environment by decreasing our energy consumption and reducing our carbon footprint.”

**Wayne Rosa, Director of Maintenance for Food Lion,
Retail Business Services**





Presentations by Recognition Recipients





Weis Markets





Joseph Jennings

Store Service/

Refrigeration Maintenance Manager

Weis Markets

Email: jjennings@weismarkets.com



Joseph has been working in the supermarket refrigeration industry since 1980. He joined Weis Markets in November 2016 and leads Weis' involvement in the GreenChill Program.

Refrigerant Management Program



- Founded in 1912
- Headquartered in Sunbury, Pennsylvania
- 198 stores in seven eastern states
- Joined GreenChill Partnership in 2008
- Initial leak rate 18.3%
- 2019 leak rate 7.2%
- Multi-faceted leak prevention and reduction efforts are focused on using high-quality equipment, training, supervision, and a technician incentive plan

Leak Identification



- Provide best possible refrigerant leak detectors
- Immediate notification of refrigerant leak alarms through the Energy Management System
- Monthly review of 'Leak Rate' reports with supervisors and technicians
- Dedicate additional time leak checking stores with high leak rates

Refrigerant Management/Tracking



- Sphera's Refrigerant Compliance Management Software program maintained by in-house administrator
- Tracks all appliances containing refrigerant
 - Listed by store, manufacturer, model, serial, refrigerant type, and amount
- Data updated with any refrigerant additions daily
 - Technicians required to submit Service Order Input Form
 - Bi-weekly reports: uncompleted calls, excessive usage, current leak rate
- Monthly reports
 - Refrigerant usage reports
- Quarterly refrigerant audits – all types of refrigerant stored at each supermarket

Technician Refrigerant Incentive/ Bonus Program



- Annual bonus program started in 2012
- Rewards and recognizes the performance of the 24 technicians who maintain low emissions rates
- Encourages the lower-performing technicians to improve
- The plan rewards performance on various levels:
 - Below 10%
 - Below our GreenChill goal
 - Below our stretch goal
 - Most improved over the previous year
 - Larger dollar amounts for technicians with the lowest leak rates:
4th → 1st place
- The cash awards are additive. Technicians can earn multiple awards



Hillphoenix Advanced Energy Solutions for CO₂ Booster Systems

A GreenChill Platinum Store Certification



Scott Martin

Director of Research, Industry
Relations and Development
Hillphoenix

Email: scott.martin@hillphoenix.com



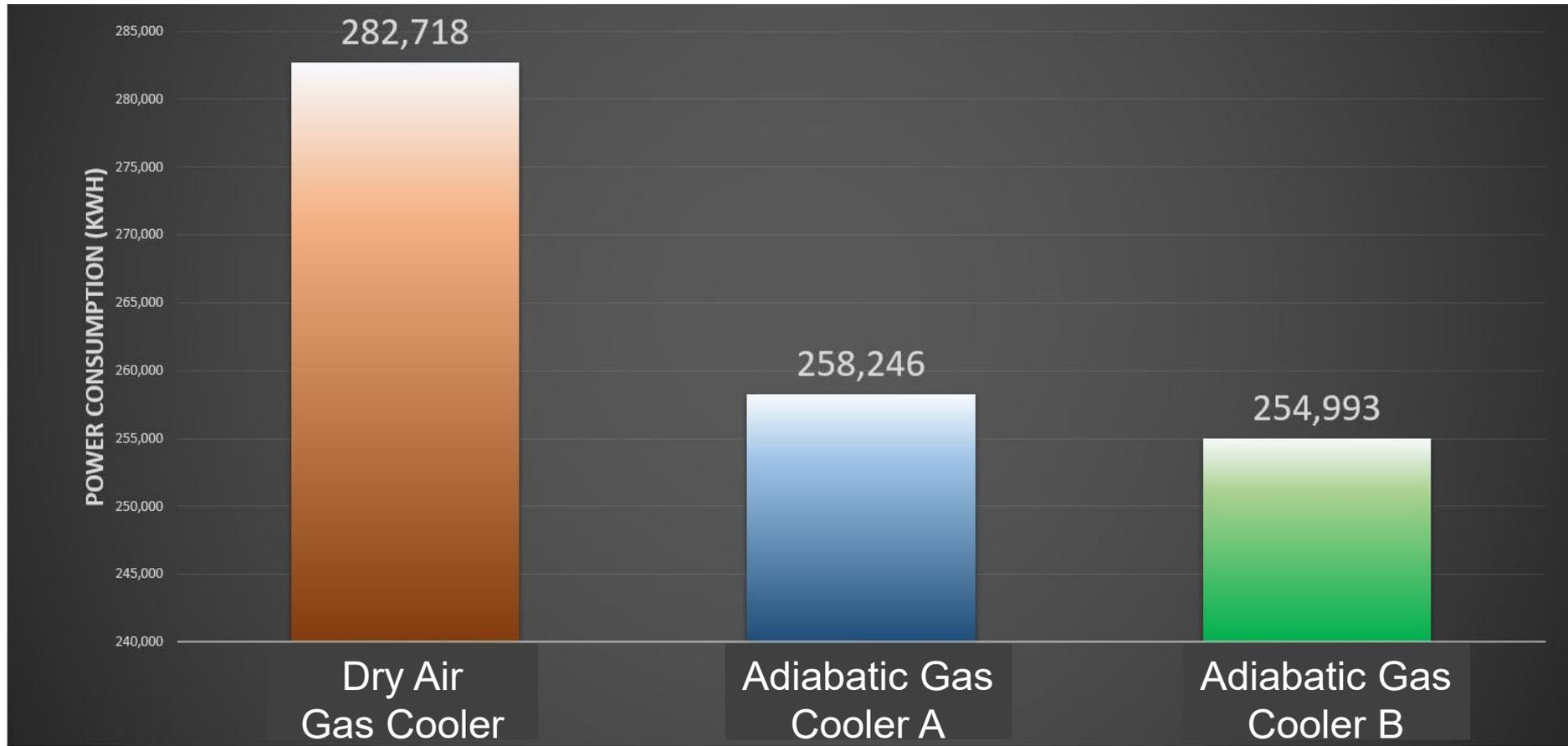
Scott is a third generation Refrigeration Engineer. Scott has held a wide variety of industry roles including Product Manager, Director of Engineering and Research & Development, and Director of Sustainable Technologies. At Hillphoenix, Scott is committed to providing product and technology answers that help retailers supply higher quality food products while advancing environmental stewardship.

Benefits of Adiabatic Gas Coolers



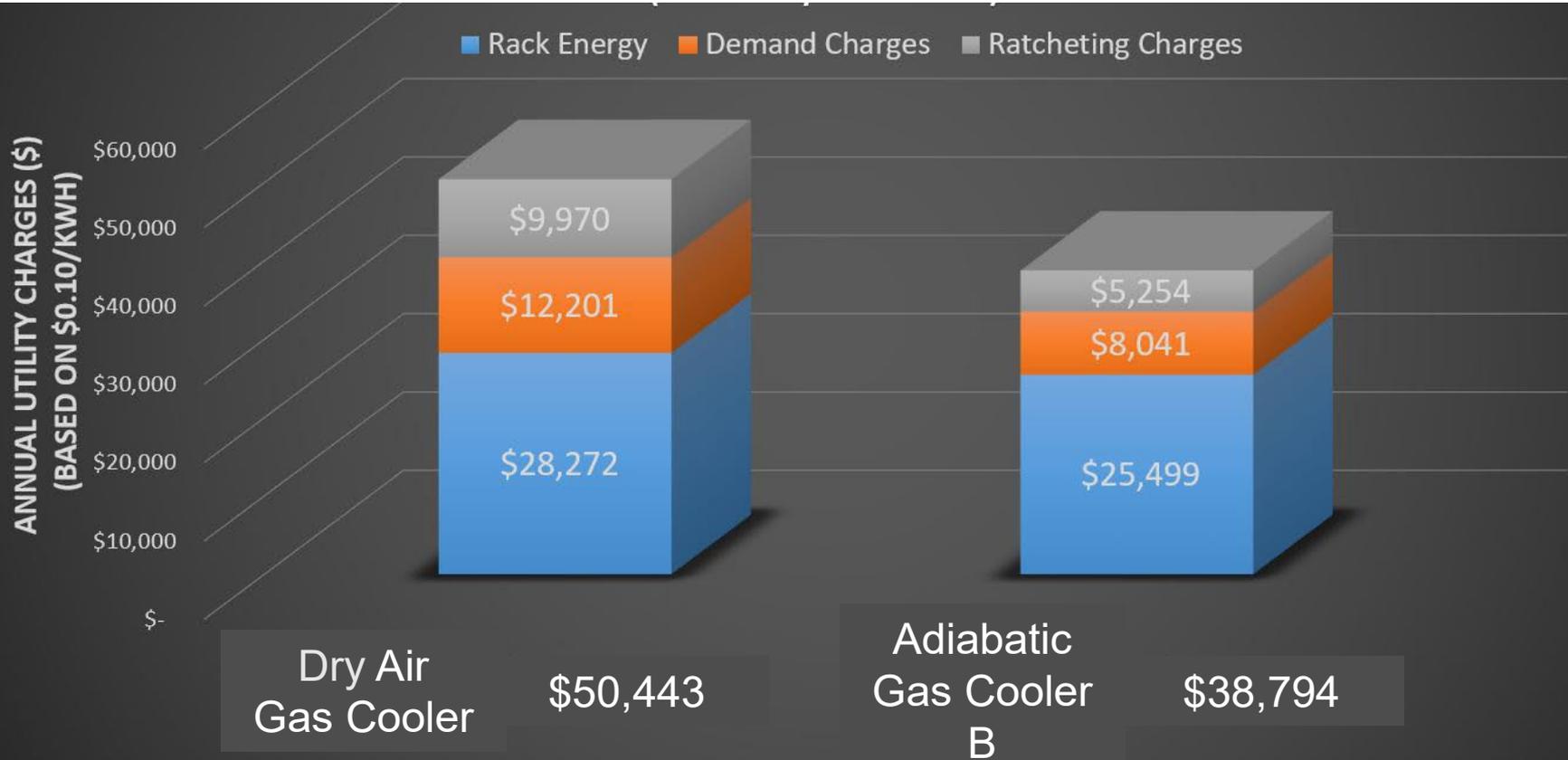
CO₂ Booster System Energy Analysis for a Georgia Site

260 mbh @ +25°F / 73 mbh @ -21°F



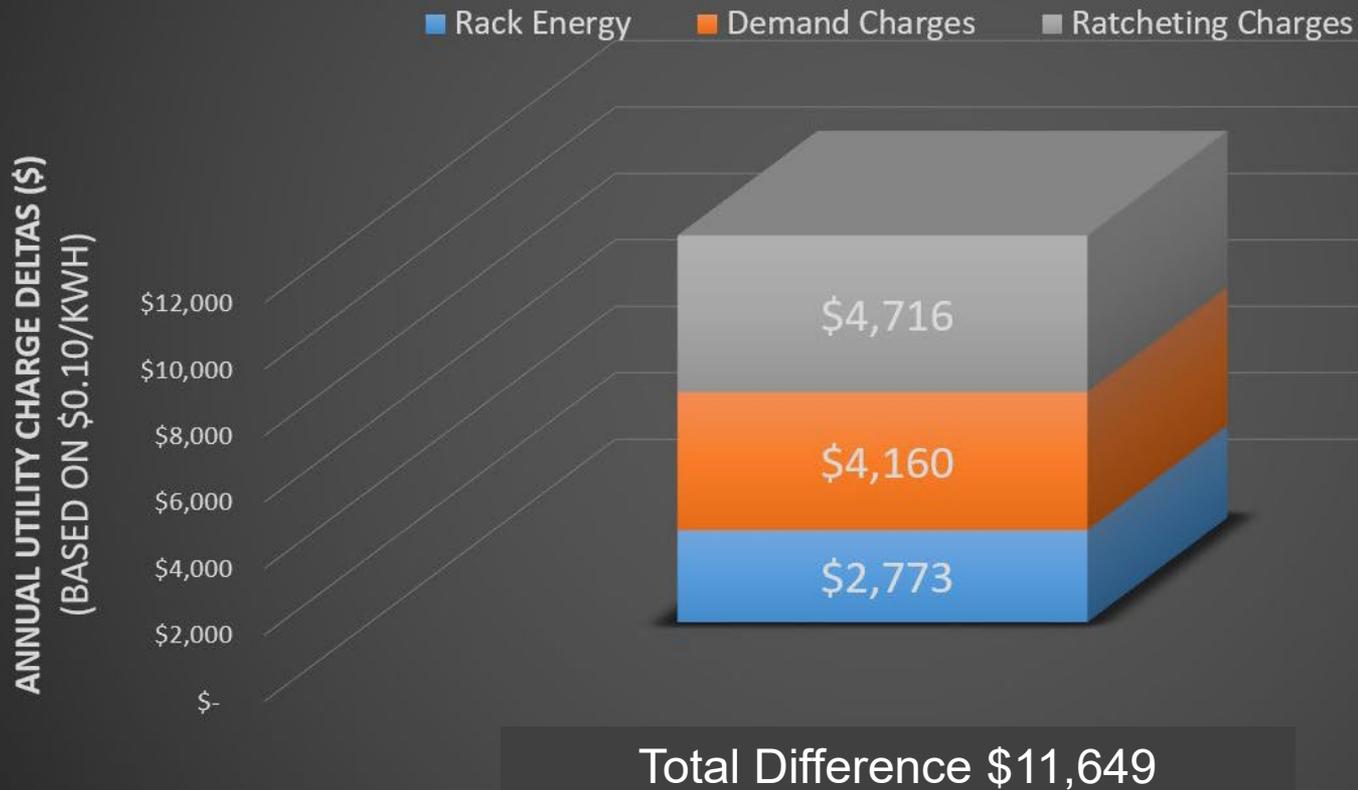
CO₂ Booster System Energy Analysis for a Georgia Site

Annual Energy Cost

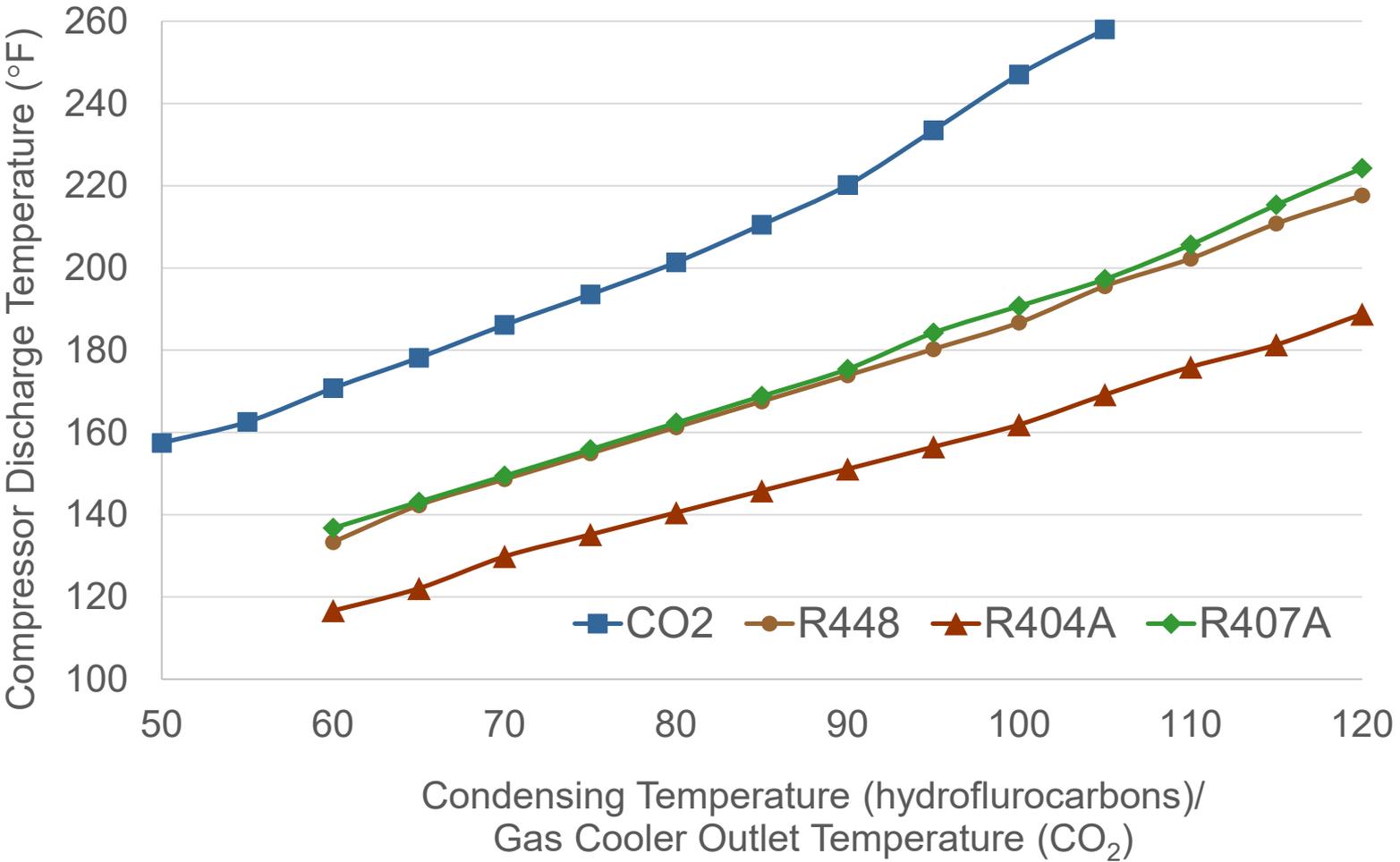


CO₂ Booster System Energy Analysis for a Georgia Site

Annual Energy Cost Savings



Utilization of Compressor Discharge Gas for Store Heating



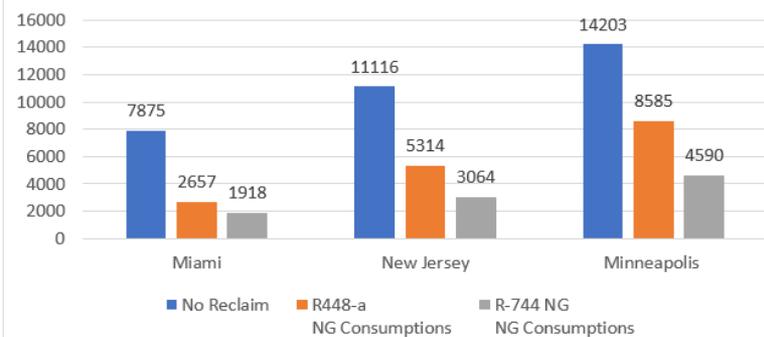
Heat Reclaim Savings for Typical Supermarkets: R448 vs CO₂



Type 1 - 10,000 SF Consumptions (Therms)

	R448-a		R-744 NG		Co2 vs 448 Saving %	
	No Reclaim	NG Consumptions	Savings	NG Consumptions		Savings
Miami	7875	2657	5218	1918	5957	14%
New Jersey	11116	5314	5802	3064	8052	39%
Minneapolis	14203	8585	5618	4590	9613	71%
Energy Cost (\$)					Co2 vs 448 Saving \$	
Miami @ \$1.11\$/therm	\$ 8,710	\$ 2,939	\$ 5,771	\$ 2,121	\$ 6,588	\$ 817
New Jersey @ \$0.84\$/therm	\$ 9,337	\$ 4,464	\$ 4,874	\$ 2,574	\$ 6,764	\$ 1,890
Minneapolis @ \$0.58\$/therm	\$ 8,181	\$ 4,945	\$ 3,236	\$ 2,644	\$ 5,537	\$ 2,301

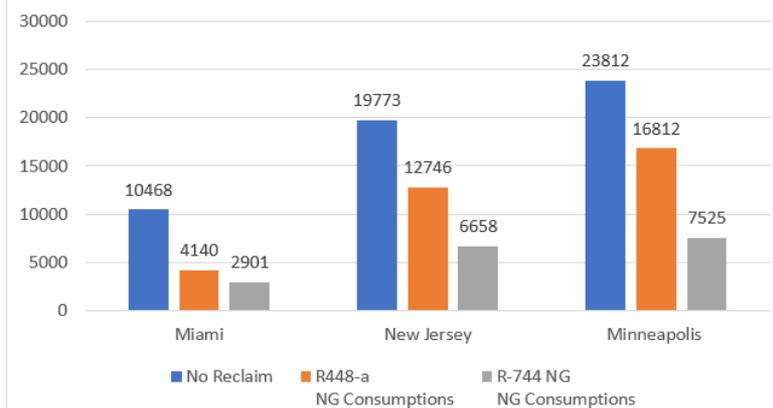
Type 1 - 10,000 SF Consumptions



Type 2 - 40,000 SF Consumptions (Therms)

	R448-a		R-744 NG		Co2 vs 448 Saving%	
	No Reclaim	NG Consumptions	Savings	NG Consumptions		Savings
Miami	10468	4140	6328	2901	7567	20%
New Jersey	19773	12746	7027	6658	13115	87%
Minneapolis	23812	16812	7000	7525	16287	133%
Energy Cost (\$)					Co2 vs 448 Saving \$	
Miami @ \$1.11\$/therm	\$ 11,578	\$ 4,579	\$ 6,999	\$ 3,209	\$ 8,369	\$ 1,370
New Jersey @ \$0.84\$/therm	\$ 16,609	\$ 10,707	\$ 5,903	\$ 5,593	\$ 11,017	\$ 5,114
Minneapolis @ \$0.58\$/therm	\$ 13,716	\$ 9,684	\$ 4,032	\$ 4,334	\$ 9,381	\$ 5,349

Type 2 - 40,000 SF Consumptions



Analysis provided by: **CES**

SF: Square feet
NG: Natural gas

Thank You



Delivering insight and comprehensive solutions that empower our customers to create unique food experiences.



Looking Forward



- We are looking for opportunities to expand GreenChill
- We welcome new Partners to the Partnership and new stores to the Store Certification Program
 - If interested, contact us GreenChill@epa.gov

Reducing refrigerant emissions is good for the environment and good for business!

GreenChill Webinars



- Upcoming webinars

Date	Webinar Topic
Oct 27	Defense Commissary Agency's Experience with Transcritical Carbon Dioxide

- Join our webinar invitation list or suggest topics for future webinars: EPA-GreenChill@abtassoc.com

2020 Ozone Layer Protection Milestones



Visit our microsite for highlights on the many achievements made possible because of Title VI of the Clean Air Act – Stratospheric Ozone Protection

Ozone Layer Protection Milestones of the Clean Air Act

Strat City, USA
Explore how successful ozone layer protection is a part of our everyday life through this [interactive webpage](#).

Throughout 2020 we will be highlighting the many achievements made possible because of the [Clean Air Act Title VI - Stratospheric Ozone Protection](#).

From Discovery to Recovery: Follow our highlights for in-depth information on how we protect the stratospheric ozone layer.

Overview

2020 is a milestone year for [ozone layer protection](#) in the United States. In the thirty years since Congress amended the Clean Air Act (CAA) to add Title VI: Stratospheric Ozone Protection, EPA has worked with many partners to develop and implement flexible, innovative, and effective approaches to [phase out ozone-depleting substances \(ODS\)](#) and heal the ozone layer. By restoring the ozone layer, we reduce the risks of skin cancer and cataracts.

Ozone-depleting substances have been used in many household, industrial, and military applications. In response to significant concern for our ozone layer, through the [Montreal Protocol](#) and CAA Title VI, the United States has been substituting ODS with [safer alternatives](#). At the same time, global demand for refrigeration and cooling technologies continues to expand. Most transitions to safer alternatives have been seamless for consumers who use these products in their daily lives.

Today, we see signs that the [ozone layer](#) is healing. For Americans, full implementation of the Montreal Protocol is expected to [result in the prevention of](#) no less than 280 million cases of skin cancer and at least 45 million cases of cataracts in the United States alone. This remarkable success is due to the important and cooperative achievements that continue to be made by people, programs, and organizations working together to protect the Earth's ozone layer.

[Contact Us](#) to ask a question, provide feedback, or report a problem.

www.epa.gov/ozone-layer-protection-milestones-clean-air-act

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.linkedin.com/groups/1426947/
@EPAgreenchill](https://www.linkedin.com/groups/1426947/@EPAgreenchill)

www.epa.gov/greenchill

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