

Naturally Better Together

2021 Annual Report



NORTH AMERICAN
**Sustainable
Refrigeration
Council**



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The supermarket refrigeration industry showed remarkable resilience in 2021, a year filled with global uncertainty and upheaval in our daily lives. The industry remained steadfast in its ability to provide fresh food and other necessities across the nation. Supermarkets continued to play a critical role in their communities, navigating supply chain issues, workforce shortages and preparing for a 15-year phasedown of Hydrofluorocarbon (HFC) refrigerants under the American Innovation & Manufacturing (AIM) Act.

Simultaneously, an unprecedented number of supermarket retailers demonstrated leadership to reduce HFC emissions by setting ambitious emission reduction targets in 2021. Several large national chains announced that natural refrigerants are now their standard for new stores. Some even set goals to achieve zero emissions refrigeration, an enormous undertaking given that emissions from refrigerants can make up more than 60% of total scope 1 emissions for supermarkets.

As we celebrate those milestones, we can't overlook the more than 63,000 U.S. supermarkets and grocery stores that are still predominantly using HFCs and in need of solutions to transition away from them once and for all. By our estimates, less than 2% of U.S. supermarkets use HFC-free natural refrigerant systems, which translates to an enormous opportunity to cut HFC emissions and a tremendous challenge for the industry. The reality is there aren't currently enough technology solutions, economies of scale for production or a robust workforce to transition at the rate needed.

As the pressures of new refrigerant regulations and the changing climate grow, we can't overstate the urgency of our mission to eliminate the barriers preventing the scaled adoption of natural refrigerants. We must accomplish our core objectives of offsetting capital costs, increasing technology options, and ensuring a ready and trained service workforce. While we've made significant progress on all three fronts, there is more work to be done.

There is no question that these new regulations and trends will completely transform the refrigeration industry over the coming years. But our vision is unwavering, our community is stronger than ever, and we don't doubt that together we can rise to the challenge to build a naturally better future.

Thank you for being a part of this important journey.

Sincerely,

Danielle Wright
Executive Director
NASRC

Board of Directors



Bryan Beitler, President/CEO
CoolSys



Peter Dee, Chair
Danfoss



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SEER2



Todd Washburn, Secretary
True Manufacturing



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Walmart



Frank Davis
Grocery Outlet



Doug Milu
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Whole Foods Market



Darren Russell
Carter Group International



Todd Ernest
Climate Pros



Steve Schuster
Parker Hannifin - Sporlan Division



Derek Gosselin
Hillphoenix



Keilly Witman
H-E-B



Eliminating HFCs could avoid up to 0.5°C of global warming by the end of the century.



OUR MISSION:

NASRC is an environmental 501(c)(3) nonprofit taking action to advance natural refrigerants and shape a more sustainable future for supermarket refrigeration.

OUR VISION:

To significantly lessen the environmental impact of refrigeration through widespread adoption of natural refrigerants and other innovative technology.

Natural refrigerants, such as carbon dioxide, ammonia, and propane, are the most climate-friendly refrigerant alternatives and offer a future-proof solution to high global warming potential (GWP) Hydrofluorocarbon refrigerants (HFCs) commonly used in supermarkets.

Once considered a suitable replacement for ozone-depleting substances (ODS), **HFCs are now the world's fastest-growing GHGs and one of the most potent drivers of climate change.** Pound for pound, these super-pollutants trap thousands of times more heat in the atmosphere than carbon dioxide. Scientists estimate that eliminating HFCs could avoid up to 0.5°C of global warming by the end of the century.

Supermarket refrigeration is considered one of the most impactful and cost-effective opportunities to reduce HFC emissions. **The average supermarket uses large quantities of HFC refrigerant** in each system and has a very high leak rate of approximately 25% of the refrigerant charge annually. The climate impact from supermarket refrigeration leaks alone is estimated to be 55 million Metric Tons of CO₂ equivalent emissions (MTCO₂e) annually or 550 million MTCO₂e over 10 years.

Natural refrigerants have zero or near-zero GWP and are considered technically viable, future-proof, and climate-friendly alternatives to HFCs. However, **less than 2% of U.S. supermarkets use HFC-free natural refrigerant systems.** These meager adoption rates are due to a unique set of market barriers in the U.S., including upfront cost premiums, limited technology options, and service workforce readiness. Today, new policies at the U.S. state and federal levels are driving a transition away from HFCs. Still, they will not create the market conditions to enable the widescale transition to natural refrigerants.

The North American Sustainable Refrigeration Council (NASRC) is the 501(c)(3) environmental nonprofit working in partnership with the supermarket refrigeration industry to advance climate-friendly natural refrigerants and eliminate greenhouse gas emissions caused by traditional HFC refrigerants. We collaborate with stakeholders from across the industry—including service contractors, equipment manufacturers, engineering firms, consultants, utilities, trade organizations, and over 38,000 food retail locations—to eliminate the barriers to natural refrigerants in supermarkets.

Our work together goes beyond supermarket aisles to build a climate-friendly future for refrigeration. Read more about the barriers we faced, our solutions, and our progress in 2021.

The Barrier

Like many new technologies, natural refrigerant systems and equipment still cost more than traditional Hydrofluorocarbon (HFC) technologies. This is especially true in existing food retail facilities because natural refrigerants are not a “drop-in” solution and require a costly and logistically challenging full system replacement. The cost burden of transitioning existing stores to natural refrigerants is often millions of dollars for a larger grocery refrigeration system, compared to tens of thousands of dollars to retrofit the system with a drop-in medium-Global Warming Potential (GWP) refrigerant.

NASRC Solutions

Funding mechanisms to offset the cost of natural refrigerant technologies can accelerate the transition away from HFC refrigerants and ultimately drive volumes of adoption towards achieving economies of scale. Funding support is crucial for small and independent food retailers disproportionately impacted by the refrigerant transition and other regulatory pressures. NASRC cost solutions focus on coordinating incentive funding and developing new financial mechanisms to support the transition away from natural refrigerants.

OUR PROGRESS IN 2021

State Funding



Secured \$880,000 in state incentives for 12 natural refrigerant projects through the California F-gas Reduction Incentive Program (FRIP).



Mobilized our members and partners to support renewed California FRIP funding in the 2021 FY budget.



Worked with other states to share lessons learned and outline future incentive programs

National Funding



Authored a tax credit proposal to allocate federal tax credits to food retailers for projects that replace existing HFC systems with natural refrigerant systems.



Developed a carbon financing pilot and secured a buyer for a preliminary package of refrigerant carbon offset credits

Utility Funding



Supported new programs to incorporate refrigerant GWP as a metric for utility incentives, which would allow utilities to provide funding for emission reductions from low-GWP refrigerants and energy efficiency improvements.

Increase Technology Options

The Barrier

A swift transition away from HFC refrigerants necessitates a variety of technology options for food retailers because no single technology will be a solution for all food retail facilities. This is especially true for existing stores, which represent both the most significant opportunity for emissions reduction and the greatest challenge for food retailers. Additionally, due to the low installation rates of natural refrigerant technologies, there is a shortage of credible data on their energy performance and other ongoing costs, further contributing to uncertainty when selecting refrigerant technologies.

NASRC Solutions

Technology solutions enabling the modular transition of existing stores to natural refrigerants offer a cost-effective

alternative to a full system replacement. NASRC is uniquely positioned to leverage our network to accelerate the introduction of new technology solutions to the U.S. market by creating alignment on market needs across the industry and participating in efforts to update codes and standards. We also help fill data gaps by facilitating pilot projects and other field demonstrations of natural refrigerant technologies.



OUR PROGRESS IN 2021

Modular Technology Solutions



Published a report characterizing retailer demand for natural refrigerant-based condensing units to bring more products to the U.S. market.



Participated in the approval of safety standards to increase the propane (R-290) charge limit.

Performance Validation Data



Initiated new field studies and pilot projects on advanced refrigeration technologies to better understand energy performance and other ongoing costs of natural refrigerant solutions.



Contributed to designing a comprehensive measurement and verification (M&V) study, which will assess energy performance of various natural refrigerant systems, as part of the CARB FRIP grant program.

Leak Reduction



Formed a Retailer Best Practices Committee to facilitate a leak reduction initiative in which major food retailers drafted equipment specifications to proactively reduce refrigerant leaks over the lifespan of a system.

Ensure Service Readiness

The Barrier

The commercial refrigeration industry faces a rapidly shrinking service workforce as technician retirements rise and fewer new technicians enter the field. The technician shortage is already a limiting factor in the transition away from HFCs and is expected to become a more significant challenge. Additionally, the low adoption rates of natural refrigerant technologies have historically made it difficult for commercial refrigeration contractors to justify investing their limited time in natural refrigerant training. Without contractor demand for natural refrigerant training, gaps in training resources and opportunities have emerged. As a result, the market may not be prepared for the growth in workforce training needs as the demand for natural refrigerants increases.

NASRC Solutions

NASRC centers our solutions on preventing training resources or technician shortages from becoming a bottleneck in the transition away from HFC refrigerants. Our strategy focuses on filling training gaps and building up the technician workforce to ensure a robust service workforce with adequate access to natural refrigerant training opportunities.

OUR PROGRESS IN 2021

HVACR School Curriculum



Drafted a CO2 curriculum for trade schools and community colleges with ESCO Group, industry stakeholders, and Heating Ventilation Air Conditioning and Refrigeration (HVACR) schools to expose students to natural refrigerants before entering the field and build a future workforce that is well-versed in natural refrigerants.

Technician Training Resources



Connected technicians with existing natural refrigerant training resources through our CO2 and R290 training libraries.

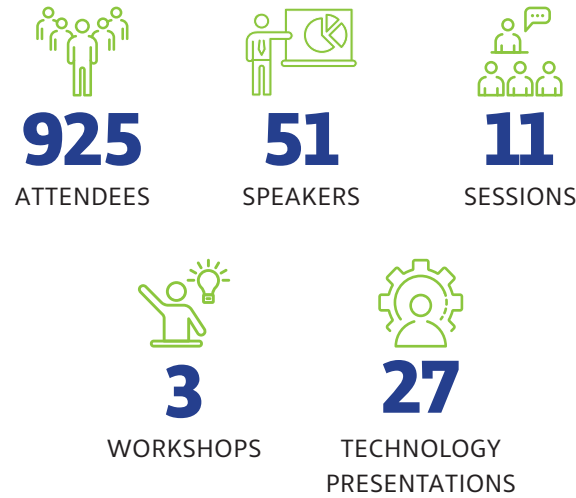
Workforce Development



Kicked off a NEW workforce development plan to rebuild the technician workforce. More information to come!

Education & Awareness

In 2021, we hosted the first-ever Sustainable Refrigeration Summit, bringing together over 900 grocery refrigeration stakeholders, government agencies, and policymakers to address the challenges to achieving zero emissions in supermarket refrigeration.



5 KEY TAKEAWAYS

- 1 Natural refrigerants are becoming standard in new stores**, but given the low rate of new construction, we can't achieve zero emissions without addressing existing stores.
- 2 Existing stores are the biggest opportunity for HFC emissions reduction**—and the most significant challenge. Retailers need more solutions to modularly transition facilities.
- 3 Service workforce constraints will slow the transition away from HFCs**, and a successful phasedown will require a robust technician workforce with access to natural refrigerant training.
- 4 Funding is needed to accelerate the transition** and offset the cost premiums of climate-friendly technologies, especially for small and independent food retailers.
- 5 Effective policies can address challenges** and support the transition to move the industry forward together.

Most importantly, it was clear across the summit that solutions to these challenges require a coordinated effort from all stakeholders. NASRC, our members, and partners are leading that effort.

Policymaker Engagement

2021 led to new and strengthened relationships with policymakers at the state and federal levels. Over 60 policymakers from 16 states and federal agencies attended our Sustainable Refrigeration Summit and participated in our three state policy workshops, including:

- Refrigerant Regulations & Utility Incentives in Washington State
- Future HFC Rulemakings in New York State
- State Solutions for Small & Independent Food Retailers

These relationships allowed us to inform effective policies addressing challenges and supporting the transition to climate-friendly refrigerants.

Raising Awareness

NASRC continued to raise awareness of natural refrigerants as a leading climate solution and the need to expand support for the transition away from HFCs throughout 2021. We experienced a tremendous boost in our reach and impact in the media compared to 2020.



175%
INCREASE IN
**MEDIA
COVERAGE**



100%
INCREASE IN
**PODCAST
INTERVIEWS**



15%
INCREASE IN
**SPEAKING
ENGAGEMENTS**



Membership & Finance

Membership Matters

NASRC members make up a powerful network of experts from across every sector of the supermarket refrigeration industry. They are the backbone of our work to eliminate the barriers to natural refrigerants in supermarkets and consistently demonstrate the power of having “all-hands-on-deck” to achieve our mission. See a complete list of 2021 NASRC members at the end of this report.

2021 NASRC Membership

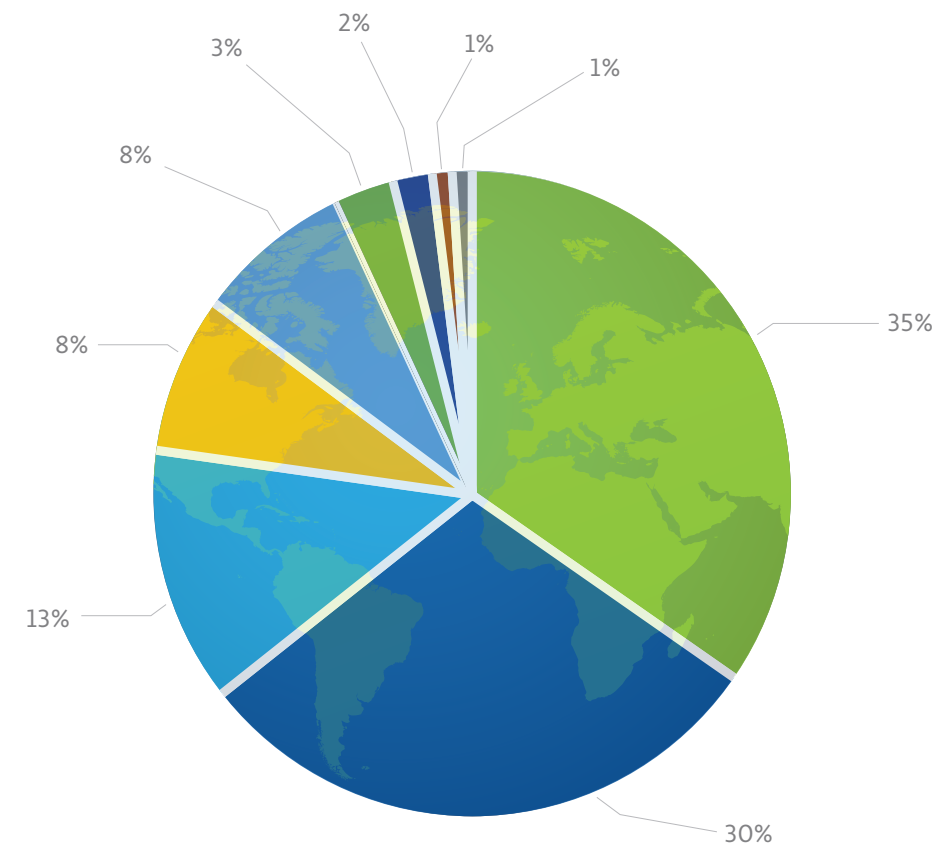
150+
Member
Organizations

38,000+
Food Retail
Locations

62% of US Supermarket Locations

2021 Membership by Type

End-user	35%
OEM/Manufacturer	30%
Service Contractor	13%
Consulting	8%
Engineering & Design	8%
Software	3%
Trade Organization	2%
College	1%
Utility	1%



MEMBERSHIP GROWTH

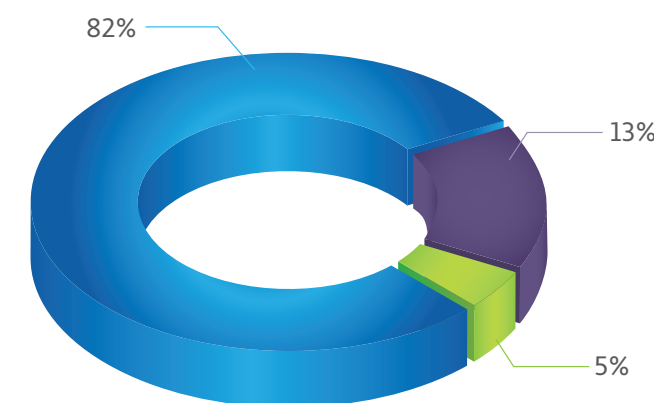
88%
Growth

from 2017-2021



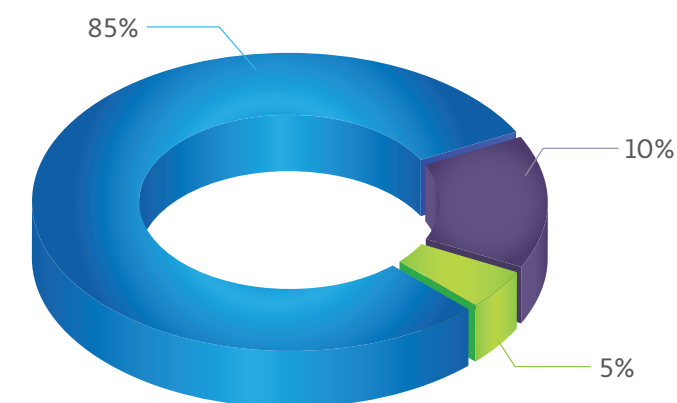
2021 FINANCES

2021 Revenue



- Membership Contributions
- Sponsorships
- Donations

2021 Expenses



- Programs
- Communications
- Admin

Our Esteemed Members

Thank you to our 2021 members!
None of this would be possible without your support.

TITANIUM MEMBER



CLIMATE PROS



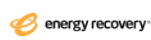
PLATINUM MEMBER



GOLD MEMBER



SILVER MEMBER



END USER

Albertson's
ALDI
Arizona Grand Resort
Ashland Food Coop
Boulder Organic Foods
Brattleboro Food Coop
BriarPatch Food Co-op
Brookshire Brothers
Campbell Soup Company
Chavez Supermarkets
Coborn's Inc.
Cook County Whole Foods Co-op
Costco
Draeger's Supermarkets
East Aurora Co-op Market
Food Lion
Genentech, Inc.
Giant Eagle
Grocery Outlet
H-E-B
Hannaford
Harp's Food Stores
Harris Teeter LLC
Holiday Market
Loblaws
Longo's
Lowe's Market
Mom's Organic Market
National Co-op Grocers
Nature's Path Foods
New Leaf Markets
New Seasons Market
Nugget Market
Palace Market
Park Slope Food Coop
PCC Community Markets
Publix Super Markets
Raley's Family of Fine Stores
Red Bull North America
Sprouts Farmers Market
Stater Bros. Markets
Sugar Creek Packing Co
Target
The Fresh Market
The Kroger Co.
The North West Company
United Natural Foods
Vallarta Supermarkets
Walmart
Weis Markets
Whatley Convenience Stores
Whole Foods Market

SERVICE CONTRACTOR

Accutherm Refrigeration
Arctic Cooling Systems
Classic Refrigeration SoCal
■ **Climate Pros LLC**
Compass Refrigeration, Inc.
■ **CoolSys**
Crosby-Brownlie, Inc.
■ **Fazio Mechanical Services**
Key Mechanical
Omni Mechanical Solutions
Professional HVAC/R Services
■ **Remco, Inc.**
RMC Refrigeration
South-Town Refrigeration & Mechanical
St. Cloud Refrigeration
■ **The Arcticom Group**
Turner Piping & Refrigeration
ENGINEERING & DESIGN
Aislamientos Constructivos
Benchmark Group
Cushing Terrell
DC Engineering
Energy Efficiency Services (e2s)
Enreps LLC
Henderson Engineers
kW Engineering
■ **SEER2**
VaCom Technologies
CONSULTING
2050 Partners, Inc.
Certified Energy Consultants
■ **effecterra**
Optimized Thermal Systems
R3 Retail Development
Ratio Institute
Refrigerant Management Solutions
Supermarket Technical Services
Therm Solutions, Inc.
VEIC
OEM/MANUFACTURER
■ **3M Company**
Aeropres Corporation
■ **AHT Cooling Systems USA, Inc.**
■ **Alfa Laval US**
Area Cooling Solutions
Arneg
■ **Baltimore Aircoil Company**
■ **BITZER Canada**
■ **BITZER US**
■ **CAREL USA**
Carlyle Compressor

■ **Carter Retail Equipment LTD**
Conex Bänninger
■ **Danfoss**
ebm-papst Inc.
■ **Embraco-Nidec Global Appliance**
■ **Emerson**
■ **Energy Recovery**
Evapco Inc.
Evapco LMP
■ **Frascold USA**
■ **Güntner US LLC**
Heat Transfer Product Group
Heatcraft Worldwide Refrigeration
■ **Hillphoenix**
■ **Howe Corporation**
■ **Hussmann**
■ **Kysor Warren**
■ **LEER INC.**
M&M Carnot Refrigeration
Mitsubishi Electric US, Inc. Cooling
& Heating Division
Nitto Inc
MSA Bacharach
Novum
■ **Officine Mario Dorin**
■ **Parker Sporlan**
■ **Rivacold America, Inc.**
■ **Secop**
Southern CaseArts
Tecumseh Products Company LLC
■ **Temprite**
Therma-Stor LLC
■ **True Manufacturing**
Westermeyer Industries, Inc.
Zero Zone, Inc.
COLLEGE
Mt. San Antonio College
UTILITY
■ **Southern California Edison**
SOFTWARE COMPANY
Axiom Cloud Inc.
Bueno
ServiceChannel
Trakref
TRADE ORGANIZATION
ConnexFM
■ **HARDI**

Membership Levels

- Titanium
- Gold
- Platinum
- Silver



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nasrc.org