

## Reducing Refrigerant Emissions in Ann Arbor, Michigan’s Small Food Retailers

Project Title	Reducing Refrigerant Emissions in Ann Arbor, Michigan’s Small Food Retailers
Applicant Name	City of Ann Arbor
Unique Entity Identifier	R9C4BRD4M7L
Project Summary	<p>This project will provide technical and financial assistance to reduce the greenhouse gas emissions associated with high global warming potential (GWP) refrigerants at small food retailers, including liquor stores, grocery stores, and convenience stores throughout the City of Ann Arbor, with priority going to those located in Underserved communities as defined by the EJScreen tool. Through this grant, the City of Ann Arbor Office of Sustainability and Innovations (“The City”) will operate a technical assistance and associated grant program to assist eligible businesses located in the City with upgrading from high-GWP refrigeration units to non-ozone depleting refrigerants, as defined by the <a href="#">EPA’s Significant New Alternatives Policy</a>. The City will further procure and oversee qualified contractors to provide technical knowledge, training, and electronic leak detectors to owners and workers of eligible businesses to assist in performing preventive maintenance of refrigeration systems, monitoring refrigerant levels, and inspecting refrigerant leaks. All technical assistance provided will be aligned with the U.S. Environmental Protection Agency (EPA) <a href="#">Stratospheric Protection Division’s GreenChill Best Practices Guideline for Commercial Refrigeration Leak Prevention and Repairs</a>.</p>
EPA Region	EPA Region 5
Project Leader	Will Garcia, Sustainability Coordinator – Circular Economy   301 E. Huron Street, Ann Arbor, MI 48104   <a href="mailto:Wgarcia@a2gov.org">Wgarcia@a2gov.org</a>   734-794-6000 x 43741.
Administrative Contact	Kim Hoenerhoff, Financial Analyst – Finance Department   301 E. Huron Street, Ann Arbor, MI 48104   <a href="mailto:khoenerhoff@a2gov.org">khoenerhoff@a2gov.org</a>   734-794-6000 x 45104
Total Project Cost	\$150,360
Match Funding	\$26,360
Funding Request	\$124,000
Eligibility	The City of Ann Arbor is an eligible entity per Section III.A of the Notice of Funding Opportunity by virtue of being a local unit of government.

# PROJECT NARRATIVE

## 1. Project Summary and Approach

### A) Project Description

Commercial refrigeration is a major driver of climate change, with most retail businesses using hydrofluorocarbons (HFCs) to keep food and beverages cool. According to the California Air Resources Board, one pound of R-22, the most common commercial refrigerant today, has a similar global warming potential (GWP) to one ton of carbon dioxide. Moreover, research shows that food retail businesses leak an estimated 25% of their refrigerant per year on average (United States Environmental Protection Agency, 2013), leading to significant greenhouse gas emissions.

While many of the larger chain grocers in Ann Arbor, like Aldi, Meijer, Target, and Whole Foods, are EPA GreenChill Food Retail Partners, small businesses generally do not have the capital or technical knowledge to implement low-GWP refrigeration systems and/or follow the best practices for refrigeration system maintenance and leak prevention as outlined by the GreenChill program. This project will therefore focus on retail food businesses with fewer than 100 employees and address two key gaps these markets face in refrigerant management:

1. Gaps in technical knowledge regarding more sustainable refrigeration systems; and
2. A dearth of funding to implement more sustainable refrigeration practices.

To address the first challenge, the project will launch a customized, one-on-one technical assistance program for small retail food businesses. Technical assistance will be provided by a qualified technician who will go to each business site, conduct an on-site refrigerant assessment, and guide folk through appropriate promising practices as outlined in the *GreenChill Best Practices Guideline: Commercial Refrigeration Leak Prevention & Repairs*. This step includes jointly performing a hands-on inspection of the business' refrigerant system using *Appendix A. Supermarket Walk-Thru Checklist* of the GreenChill Best Practices Guideline and providing the site with a leak detector to monitor the efficacy of their existing refrigeration systems. Through this action, the project team will be able to surgically target the needs of each unique site. In addition, the project team will establish peer-to-peer learning opportunities through small business roundtables. This will help to demystify refrigerant management while simultaneously recognizing and honoring early adopters.

To address the second concern, the project will create a competitive grant program to provide small retail food businesses with funds to upgrade or retrofit high-GWP refrigeration systems with low-GWP alternatives. Grantees will be required to provide a cash match for their project. Specific match requirements and criteria for the scoring of proposals will be created during the scope of this project and in tandem with small businesses – thereby ensuring project buy-in from those the project is targeting. A steering committee of 3-4 local businesses will help create the grant application and selection criteria to ensure it is equitable, accessible, and reflective of real-world conditions. To be eligible for the grant program, participating businesses must:

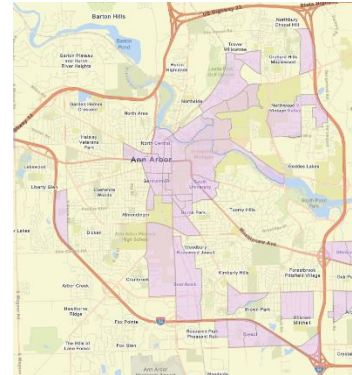
- I. Be food retailers (e.g., grocers, convenience stores, liquor stores) with fewer than 100 employees,
- II. Have a clear need and agree to use grant funds to upgrade, replace, or retrofit a refrigeration system or unit that did not previously use refrigerants from the EPA's Significant New Alternatives Policy, and

III. Purchase only refrigerants and/or refrigeration systems that contain refrigerants from the EPA's Significant New Alternatives Policy.

For replacements of refrigeration units (including chillers, merchandising refrigerators, and walk-in coolers), grantees will receive reimbursement for the documented costs of the new unit. For retrofits of current refrigeration systems (including grocery store refrigeration systems), grantees will receive reimbursement for materials and labor associated with the retrofit. No funds will be distributed without documentation that all refrigerant from the previous system was reclaimed by an EPA-certified reclaimer and properly disposed of.

For both programs, the City will initiate outreach and recruitment in neighborhoods identified as underserved or vulnerable in the EJScreen tool (Figure 1).

By project completion we will have reduced refrigeration emissions from at least 25 businesses by a total of 6,915.9 metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e) from pre-intervention levels and established a replicable model of refrigeration replacement that can scale throughout Washtenaw County.



### ***B) Pollution Prevention to Address Environmental and Human Health Concerns***

This project offers a competitive grant program for area small food retail businesses to substitute high-GWP refrigeration systems with low-GWP alternatives, significantly reducing local greenhouse gas emissions and eliminating a major environmental contaminant. The project additionally teaches small businesses best management practices for monitoring and maintaining refrigeration systems, which reduces refrigerant emissions from leaks through leak identification and preventive maintenance. Following best management practices additionally reduces the energy consumption of refrigerant systems, further reducing local greenhouse gas emissions and saving businesses money.

### ***C) Scope of Work***

#### **ACTIVITY ONE: Technical Refrigerant Assistance Program**

The City of Ann Arbor Office of Sustainability and Innovations (City) will release a competitive request for proposals and, upon selecting the most qualified vendor, enter into a contract with them to provide small food retail businesses with technical assistance in the form of one-on-one site visits to identify strategic refrigerant improvements opportunities as identified in the *GreenChill Best Practices Guideline: Commercial Refrigeration Leak Prevention & Repairs* document. This includes:

- Providing information about the components of a refrigeration system and where leaks generally occur,
- Training businesses on the usual causes of leaks in refrigeration systems,
- Overviewing the importance of establishing business-wide “no-tolerance policies” for refrigerant leaks,
- Detailing the importance of follow-up checks in verifying that refrigeration systems are leak free after repairs are performed,
- Warning signs for faulty refrigeration systems,
- Details on who to contact locally to immediately repair faulty refrigeration systems and/or replace systems with those that have a low GWP, and

- Insights on techniques and funding to improve refrigeration system performance.

During these site visits, the technical assistance vendor will also provide businesses with a free handheld electronic leak detector (provided through match funding from the City) and guide the business' owner/workers through a hands-on inspection of the business' refrigerant system using Appendix A: Supermarket Walk-Thru Checklist of the GreenChill Best Practices Guideline. While refrigerant **repairs** are required to be performed by EPA certified technicians, handheld leak detectors are simple to use and a checklist-style inspection can be performed by trained workers.

This activity is aligned with EPA Priority Area 1, "Prevention of Greenhouse Gas Emissions", by offering technical assistance and equipment for small food retailers to help identify refrigerant leaks and minimize the associated emissions by detecting them early.

#### **ACTIVITY TWO: Grant program for low-GWP refrigerants in small food retail businesses**

Based on results from the onsite assessments and technical assistance, the City will establish a small business grant program and provide up to \$100,000 to small, independently owned and operated food retail businesses to upgrade refrigeration systems to use low-GWP refrigerants. The City already runs a successful grant program, the [Sustaining Ann Arbor Together](#) grant program and will use this experience to help shape the refrigerant replacement/repair program. In addition, a small advisory council consisting of 3-4 local business representatives will help to create the grant program's guidelines, application, and review process. In this way, the program will be co-designed with the stakeholders it is intended to support – making the program more likely to be successful technically and culturally. Priority will be given to businesses that go through the technical assistance program (activity one) or can demonstrate that their refrigeration system needs replacement/repair.

This activity is aligned with EPA Priority Area 1, "Prevention of Greenhouse Gas Emissions", by offering financial assistance to help identify and access substitutions for high-GHG refrigerants, a chemical with significant environmental and climate change impacts.

#### **ACTIVITY THREE: Evaluation and business-to-business learning**

As a condition of receiving funding, technical assistance, or equipment through this program, businesses must participate in an interview to provide feedback about the program and information about the practices they've developed to integrate refrigerant management into their operations. Participating businesses will additionally be encouraged to attend annual roundtable refrigerant management meetings with their peers. The purpose of these meetings will be to share best practices for pollution prevention in refrigerant management, facilitate business-to-business learning with regards to implementing these practices, and promote additional resources that businesses can participate in, such as EPA's GreenChill program. At the end of the project, the findings from interviews and roundtable meetings will be synthesized to create a guide for other local governments throughout the region and country to engage with their small food retail businesses in refrigerant management programs.

This work is aligned with EPA Priority Area 3, "Innovative approaches to conservation of materials and resources", by virtue of conducting roundtable meetings to share best practices.

## D) Workplan

WORKPLAN			MONTH																							
Task		Responsible Party	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Activity 1: Technical Assistance Program	Establish program	Create scope of services for technical assistance vendor	Coordinator & Director	x																						
		Publish RFP for technical assistance vendor	Coordinator & Purchasing		x																					
		Evaluate bids on RFP and select vendor	Coordinator			x																				
		Select vendor and achieve administrative approvals (City Council, legal)	Director				x																			
		Administrative contract duties (paying invoices, monitoring vendor performance)	Coordinator					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Promote	Create outreach plan for businesses to access refrigerant technical assistance	Coordinator / Engagement			x	x																			
		Implement outreach plan	Coordinator			x	x	x	x	x																
		Host session at regional business forums to gather feedback	Coordinator / Engagement					x	x	x	x															
	Perform technical assistance	Research refrigerant leak detectors and decide model to purchase	Coordinator/TA Vendor				x																			
		Purchase refrigerant leak detectors	Coordinator					x																		
		Schedule technical assistance visits	Coordinator / TA Vendor					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Perform technical assistance visits, provide training, and provide leak detectors	TA Vendor					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Provide recommendation based on assessment	TA Vendor																							
		Follow-up with businesses two weeks post assessment	TA Vendor						x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		Follow-up with businesses six weeks after assessment	Coordinator						x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Activity 2: Grant	Manage grant program	Convene group of small businesses to create framework for grant program	Coordinator / Committee	x	x	x	x																			
		Create criteria for awarding funds	Coordinator and Committee		x	x	x	x																		
		Create application for awards / grants	Coordinator /		x	x	x	x																		

			Director / Legal																
		Convene a team of City staff to score and award proposals	Coordinator	x															
		Distribute funding	Finance / Coordinator	x x x															
		Evaluate impact of funding	Coordinator	x x															
		Write annual report documenting grant program impact	Coordinator	x x															
	Promote	Create outreach plan for grant	Coordinator / Engagement	x	x	x													
	Implement outreach plan	Coordinator	x x x x x																
Activity 3: Evaluation and peer learning	Evaluate	Develop interview/evaluation questions	Coordinator / Director	x x x x															
		Interview recipients of funding, technical assistance, and/or equipment	Coordinator	x x x x x x x x x x															
	Celebrate	Identify venue, date, and time for refrigerant management roundtables	Coordinator	x x															
		Promote refrigerant management roundtables to participating businesses	Coordinator	x x x x x															
		Host first refrigerant management roundtable	Coordinator	x															
		Host second refrigerant management roundtable	Coordinator	x															
	Replication	Draft replication guide	Coordinator	x x x															
		Finalize replication guide	Coordinator	x															
		Host webinar on program with businesses	Coordinator	x															
		Propose how to institutionalize program in city operations	Coordinator / Director	x															
Final grant reporting		Coordinator / Director	x																



### E) Strategic Plan Linkage

This project supports *Goal 7: Ensure Safety of Chemicals for People and the Environment, Objective 7.2: Promote Pollution Prevention* of EPA's 2022-2026 Strategic Plan by reducing carbon emissions in a manner that is attributed to an EPA pollution prevention grant, furthering progress toward EPA's Long-Term Performance Goal of reducing a total of 6 million metric tons of carbon dioxide equivalent released attributed to EPA pollution prevention grants by September 30<sup>th</sup>, 2026. This occurs through reductions in refrigerant emissions. The proposal further supports Objective 7.2 by facilitating adoption of new, commercially viable chemistries by providing financial and technical assistance for Ann Arbor's small food retail businesses to purchase new, low-GWP refrigerants.

### F) Partnerships and Stakeholders

<b>Stakeholder/Collaborator</b>	<b>Role</b>
Ann Arbor 2030 District	Promote project to network of businesses to increase participation.
Ann Arbor SPARK	Integrate program into the City and SPARK's Green Business Challenge and engagement activities.
Chamber of Commerce	Help promote engagements, technical assistance, and grant program.
Washtenaw Community College	Advertising program and job opportunities to their students, helping grow the technician field.
City of Ann Arbor	Project lead and program administrator
Tradewater	EPA-certified reclaimer available to provide refrigerant management.
Food Retail Businesses	Program participants and co-designs of grant program

## 2. Sustainable Project Strategy and Transferability

### A) Sustainable Project Strategy

#### **Activity 1: Technical assistance program**

Participating food retail businesses gain technical skills in detecting refrigerant leaks and knowledge of best practices that will extend beyond the life of this project, reducing emissions associated with refrigerant use by increasing adoption of preventive maintenance practices and increasing the speed with which leaks are detected and repaired.

#### **Activity 2: Grant program for low-GWP refrigerants in small food retail businesses**

On average, food retail businesses leak an estimated 25% of their refrigerants per year (United States Environmental Protection Agency, 2013). Given the high GWP from refrigerants, the GHG emission reductions associated with upgrading small food retail businesses from high-GWP refrigerants to low-GWP alternatives will have significant GHG reductions, immediately. These reductions will be sustained through the life of the business.

#### **Activity 3: Evaluation and business-to-business learning**

Participating businesses will continue to retain best practice knowledge gained through the refrigerant roundtable and peer-to-peer learning portions of this activity. Additionally, insights gained from program evaluation will inform the City's future refrigerant programming efforts. Lastly, the City will explore how to continue and scale this program, including the business roundtable meetings, to ensure the program is institutionalized locally and regionally.

### B) Replicability and Transferability

All three proposed project activities are replicable due to the pervasiveness of small, independently owned, and operated food retailers throughout the United States. The capital and technical assistance needs of such businesses are universal, making this project of interest to other entities looking to increase adoption of best management practices and low-GWP refrigerants in small food retail businesses. Moreover, as part of receiving funding, equipment, and/or technical assistance through this project, participating businesses will be required to participate in a brief interview conducted by the City of Ann Arbor Office of Sustainability and Innovations to evaluate the program. Additionally, participants will be encouraged to attend a business-to-business roundtable to discuss refrigerant management practices and their personal stories. The findings from the roundtable meeting and evaluations will be synthesized and compiled into a guide for other entities looking to engage small food retail businesses in refrigerant management programs. Lastly, food retail businesses that upgrade to low-GWP refrigerants will be encouraged to apply for an EPA GreenChill certification to be able to participate in EPA's national business-to-business learning, thereby growing the program and the impact of this work.

### 3. Budget, Timeline, and Measuring Success

#### A) Budget Description

	Grant	Match	Notes
<b>Personnel</b>	\$0	\$16,000	10% of Sustainability Coordinators time to manage project. \$60k year one; \$65k year 2 x 10% = \$12,500; 5% of Engagement Specialists time over 2 years at \$70k salary
<b>Fringe</b>	\$0	\$0	No fringe included in grant
<b>Travel</b>	\$0	\$110	5 miles / trip x 50 trips @ .44 cents/mile
<b>Equipment</b>	\$0	\$0	No equipment requested
<b>Supplies</b>	\$9,000	\$250	25 leak detectors at \$350 each plus \$50 for pens, paper, light refreshments per meeting for 5 meetings
<b>Contractual</b>	\$15,000	\$10,000	Estimated based on existing city programs at \$200/hr. for 3 hours for 25 businesses + 45 hours for administrative/program set-up
<b>Other Direct</b>	\$0	\$0	No other direct costs
<b>Indirect</b>	\$0	\$0	No indirect costs
<b>Participant Support Costs</b>	\$100,000		Rebates for purchase of pollution control equipment
	\$124,000	\$26,360	17.5% Match
<b>TOTAL</b>	<b>\$150,360</b>		

**Personnel – Total: \$16,000.** The Sustainability Coordinator (Coordinator)– Circular Economy will oversee the program and spend 10% of their time fulfilling the tasks outlined by the workplan. This individual's salary is \$60,000 in year one and \$65,000 in year two. This is part of the City's match.

**Fringe Benefits – Total: \$0.** We will not be attributing any fringe benefits to this grant.

**Travel – Total: \$110.** It is estimated that the Coordinator make 50 roundtrip vehicle trips, averaging 5 miles, in furtherance of the technical assistance and grant activities of this program to eligible businesses. At current IRS rates, this is \$110. This is part of the City's match for the project.

**Supplies – Total: \$9,250.** The technical assistance program will require 25 refrigerant leak detectors at a cost of \$350 each for a total of \$9,000. This is based on the Amazon.com price of a Fieldpiece



DR58, the best-selling heated diode refrigerant leak detector. An additional \$250 is budgeted to support public engagement activities (e.g., buying pens, flipcharts, light refreshments).

**Contractual – Total: \$25,000.** Includes cost for a technical assistance vendor to perform 25 hands-on trainings to area businesses. Based on previous inspection programs within our office that involve building trades professionals, we anticipate this to cost approximately \$200/hr. with each training taking 3 hours on average (1 hour for EPA GreenChill Best Practices, 1.5 hours for inspection, 0.5 hours for how to use the leak detector) for a rate of \$600 per training. Also includes 45 hours for administration, program design, and program set-up time. A portion of this (\$10,000) will be a part of the City’s match for the project.

**Participant Support Costs (Subawards) – Total: \$100,000.** The grant program for low-GWP refrigerants will award \$100,000 to small food retail businesses to upgrade, replace, or retrofit existing refrigeration systems to use new, low-GWP refrigerants in line with SNAP.

## B) Timeline

See workplan section for a detailed timeline and specific program activities and responsible parties.

## C) Outputs and Outcomes

Activities	Outputs	Outcomes	Assumptions
Technical Assistance Program	25 businesses receive technical assistance and leak detectors (4 small grocery stores; 21 small food retailers)	Small grocery stores: 3444.2 MTCO <sub>2</sub> e	Grocery store has refrigeration system with 2,000 lb (lower than GreenChill average of 3,500 lb) of R-404a refrigerant at an average leak rate of 25% (GreenChill average), reduces leak rate to 12.9% (GreenChill participant average) after learning best practices and receiving leak monitor.
Grant Program	3 small grocery stores with retrofitted refrigeration systems	Small food retailers: 16.8 MTCO <sub>2</sub> e	Average non-grocery food retailer has 120 oz of R-404a refrigerant at an average leak rate of 10%, reduces leak rate to 7% after learning best practices and receiving leak monitor.
Business-to-business program	12 small food retailers with upgraded closed-loop units	Small grocery stores: 3449.6 MTCO <sub>2</sub> e  Small food retailers: 5.3 MTCO <sub>2</sub>	Grocery store has refrigeration system with 2,000 lb of R-404A refrigerant at an average leak rate of 25% (GreenChill average), replaces with R448A refrigerant with no change to leak rate.  Average small food retail closed-loop unit has 20 oz. of R-404a refrigerant, refrigerant leaks at an average leak rate of 10% (closed-loop systems leak less than grocery-style systems), business replaces with 0-GWP refrigerant.  Assumes retrofits range from \$30,000 - \$40,000 and upgraded closed-loop systems range from \$1,500-\$2,500.

## 4. Programmatic Capability and Past Performance

### A) Past Performance

1. United States Department of Agriculture – Agricultural Conservation Easement Program (FY2022), Assistance Number: 10.931
2. United States Department of Treasury – Coronavirus State and Local Fiscal Recovery Funds (FY2022), Assistance Number 21.027
3. United States Environmental Protection Agency – Surveys, Studies, Research Investigations, Demonstrations and Special Purpose Activities Related to the Clean Air Act – Clean and Healthy Neighborhoods (FY2023), Assistance Number 66.034
4. United States Department of Agriculture – Agricultural Conservation Easements Program (FY 2023), Assistance Number 10.931
5. United States Department of Housing and Urban Development – Community Development Block Grants (FY2023), Assistance Number 14.218

### B) History of Meeting Reporting Requirements

The City of Ann Arbor fully complied with all reporting requirements for the grants listed above. In all cases, this included regular progress reporting and final report completion. All financial documentation and proof of expenditures were submitted on time and in the required formats. Notes were made in reports about alignment and variance from expected outputs and outcomes with final materials being made publicly available through the City's website, project reports, and presentations to relevant Boards and Commissions. For a complete list of the City of Ann Arbor's recent grants and compliance with reporting, please see our [Single Audit report](#).

### C) Organizational Experience

The City of Ann Arbor's Office of Sustainability and Innovations (OSI) is the keeper of the community's climate and equity plan and programs (A<sup>2</sup>ZERO). OSI works with more than 100 community organizations to achieve a just transition to community-wide carbon neutrality by 2030 through the creation and implementation of programs and policies such as green rental housing, commercial benchmarking, Solarize, and more.

### D) Staff Expertise

Will Garcia (he/him) is the Sustainability Coordinator within OSI who coordinates the Office's Circular Economy initiatives and will serve as Project Leader on this grant. He has extensive experience with hazardous materials management, including implementing refrigerant collection at a hazardous household waste facility. He is experienced in writing RFPs, evaluating bids for contracted services, and managing vendor relationships. Additionally, through organizing programs such as OSI's Neighborhood Swap Day program, he has built collaborative relationships with organizations in the Ann Arbor community to promote sustainability initiatives. Dr. Missy Stults, the Director of the Office of Sustainability and Innovations, will provide support to Mr. Garcia, providing technical and logistical support and Mr. Jordan Larson, the City's Community Engagement Specialist, will aid in the design and execution of all community outreach and engagement activities.