Tradewater US – ODS - #3

July 28, 2023

Tradewater, LLC

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A.
PROJECT OVERVIEW

A1. PROJECT TITLE

Tradewater US – ODS - #3 (hereinafter referred to as "Project").

A2. PROJECT TYPE

Ozone Depleting Substances

A3. PROOF OF PROJECT ELIGIBILITY

The project is eligible under "The Methodology for the Quantification, Monitoring, Reporting, and Verification of Greenhouse Gas Emissions Reductions and Removals from the Destruction of Ozone Depleting Substances and High-GWP Foam, Version 2.0." Additional eligibility requirements as noted in the ACR Standard, Version 7.0 are included below.

Table 1: Applicability Requirements from the Methodology sections 2.2.1 and 3.

Criterion	Requirement	Proof of Project Eligibility
Location	Project is located in the United States, Canada, or their territories.	Destruction occurred at A-Gas, located in Bowling Green, OH, United States.
ODS Material	Only the destruction of eligible ODS refrigerants CFC-11, CFC-12, CFC-13, CFC-113, CFC-114, CFC-115, HCFC-123 and HCFC-22 are eligible under this Methodology.	The only ODS included for crediting are eligible refrigerants.
Stockpile Limitation	Any refrigerants obtained from a government stockpile or inventory are eligible only if they are not required to be destroyed or converted.	Refrigerants originating from a government stockpile are not required to be destroyed.
Start Date	Project start date is defined as the date on which the earliest destruction activity of a project commences, documented on a Certificate of Destruction.	The project start date and destruction commencement date are the same date as documented on the included Certificate of Destruction.
Reporting Periods	Reporting period must not exceed 12 consecutive months. Project reporting period begins on the project start date.	Project reporting period begins on the project start date and does not exceed 12 months. This reporting period is provided in the included Monitoring Report.
Crediting Periods	Project crediting period is the same as the reporting period.	The project crediting period is the same as the reporting period as indicated on the Monitoring Report.

Table 2: Applicability Requirements from the ACR Standard version 7.0, Chapter 3 (not already covered in the Methodology)

Criterion	Requirement	Proof of Project Eligibility
Minimum Project Term	The duration of the Minimum Project Term for specific project types is defined in the relevant ACR sector requirements and/or methodology. Project types with no risk of reversal after crediting have no required Minimum Project Term.	There is no risk of reversal for this project, so the minimum project term is not applicable.
Real	GHG reduction and removals shall result from an emission mitigation activity that has been conducted in accordance with an approved ACR methodology and is verifiable. Credits will not be issued on an ex-ante basis.	The GHG reductions occurred after the ODS was destroyed, and prior to the verification process and credit issuance.
Emission or Removal Origin	For projects reducing or removing direct emissions, the following requirement applies: The Project Proponent shall own, have control over, or document that effective control exists over the GHG sources and/or sinks from which the emissions reductions or removals originate.	Tradewater LLC is the project proponent and owns the ODS obtained for this project.
Offset Title	Project Proponent shall provide documentation and attestation of undisputed title to all offsets prior to registration, including chain of custody documentation if offsets have ever been sold in the past. Title to offsets shall be clear, unique, and uncontested.	Tradewater, LLC has provided documentation of undisputed title to all offsets. Title to offsets is clear, unique, and uncontested. No offsets have been sold in the past.
Additional	Every project shall use either an ACR-approved performance standard and pass a regulatory surplus test, as detailed in the applicable methodology, or pass a three-pronged test of additionality in which the project must: 1. Exceed regulatory/legal requirements; 2. Go beyond common practice; and 3. Overcome at least one of three implementation barriers: institutional, financial, or technical	The project passes the ACR-approved performance standard and regulatory surplus test. There is no mandate for the destruction of ODS CFC refrigerant. In the absence of this project, the ODS refrigerant would have been vented or leaked into the atmosphere under business-as-usual scenarios. The project sources meet all other requirements of the Methodology.

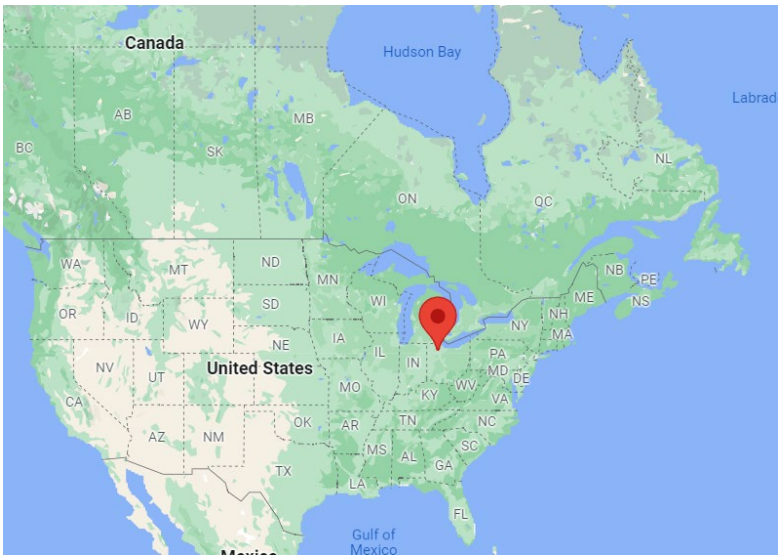
Regulatory Compliance	Projects must maintain material regulatory compliance. To do this, a regulatory body/bodies must deem that a project is not out of compliance at any point during a reporting period.	This project maintains regulatory compliance through the entirety of the reporting period.
Permanent	For projects with a risk of reversal of GHG removal enhancements, Project Proponents shall assess risk using an ACR-approved risk assessment tool.	There is no risk of reversal of GHG removal enhancements for this project type.
Net of Leakage	ACR requires Project Proponents to address, account for, and mitigate certain types of leakage, according to the relevant sector requirements and methodology conditions. Project Proponents must deduct leakage that reduces the GHG emissions reduction and/or removal benefit of a project in excess of any applicable threshold specified in the methodology.	Leakage is not applicable to this project type.
Independently Validated	ACR requires third-party validation of the GHG Project Plan by an accredited, ACR-approved VVB once during each Crediting Period and prior to issuance of ERTs. Validation can be conducted at the same time and by the same VVB as a full verification; however, the deadline for validation is determined by the methodology being implemented and the project Start Date (see above). Governing documents for validation are the ACR Standard, including sector-specific requirements, the relevant methodology, and the ACR Validation and Verification Standard.	This project is validated and verified by a third-party ACR-approved VVB in accordance with the ACR standard.
Independently Verified	Verification must be conducted by an accredited, ACR-approved VVB prior to any issuance of ERTs and at minimum specified intervals. ACR requires verifiers to provide a reasonable, not limited, level of assurance that the GHG assertion is without material discrepancy. ACR's materiality threshold is ±5%.	This project is validated and verified by a third-party ACR-approved VVB in accordance with the ACR standard.

Community and Environmental Impacts	ACR requires that all projects develop and disclose an impact assessment to ensure compliance with environmental and community safeguards best practices. Environmental and community impacts should be net positive, and projects must "do no harm" in terms of violating local, national, or international laws or regulations. Project Proponents must identify in the GHG Project Plan community and environmental impacts of their project(s). Projects shall also disclose and describe positive contributions as aligned with applicable sustainable development goals. Projects must describe the safeguard measures in place to avoid, mitigate, or compensate for potential negative impacts, and how such measures will be monitored, managed, and enforced. ACR does not require that a particular process or tool be used for the impact assessment as long as basic requirements defined by ACR are addressed (See Chapter 8). ACR projects can follow internationally recognized approaches such as The World Bank Safeguard Policies, or can be combined with the Climate Community and Biodiversity Alliance (CCBA) Standard or the Social Carbon Standard for the assessment, monitoring, and reporting of environmental and community impacts.	The Project maintains a net positive impact, as the quantified amount of GHG emissions has been eliminated and serves as an effort against climate change. Upon careful examination, no negative impacts from the project have been identified. Destruction of ODS refrigerant is highly monitored by the destruction facility, and destruction occurred within all applicable regulatory limits for emissions and local environmental impact.

A4. LOCATION

All collected ODS refrigerant was destroyed at A-Gas, located at 1100 Haskins Road, Bowling Green, OH 43402, United States of America.

GPS Coordinates:
Latitude: 41.3915524
Longitude: -83.671193



A5. BRIEF SUMMARY OF PROJECT

Description of Project Activity

The project activity is the destruction of eligible ODS refrigerant, mainly R-22 and R-113, for which ownership was transferred to Tradewater for the purpose of destruction. The ODS was acquired from a variety of sources and included the following 40 states: AL, AZ, CA, CO, CT, DE, FL, GA, IA, ID, IL, IN, KS, KY, LA, MA, MD, MI, MN, MO, NC, NE, NH, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, TN, TX, UT, VA, WA, WI, and WV.

All ODS refrigerant in this project was sourced either through recovery from units such as decommissioned building chillers, from disposable cylinders or drums containing virgin material, or from stockpiles of used or virgin material. One notable source is Lawrence Livermore National Lab (LLNL) located in Livermore, CA. This material was stockpiled by the National Lab and stored until Tradewater won the solicitation for bid of the material. When opening the bid, LLNL did not require that the bid winner destroy the refrigerant, though Tradewater indicated that this would be the end fate of the material. Otherwise, the material would have continued to sit in the stockpile without use, eventually vent through container degradation, or gone to another bidder for another purpose.

In the case of the recoveries, the material was previously recovered by another party or by eligible Tradewater personnel. Under business-as-usual, the refrigerant would either remain in storage until use (in the case of stockpiles) or used in chiller systems still utilizing older refrigerant, like R-113. In either case, the ODS will eventually vent, either through leakage resulting from corrosion of the storage container or through inefficiencies, break- downs, or mishandling of equipment. The refrigerants included in this project were no longer needed for use, and their risk of venting is thereby mitigated by destruction at A-Gas, an eligible destruction facility.

Background Information

Refrigerants such as R-22 were used in cooling systems in residential and commercial spaces, whereas low pressure refrigerants such as R-11 were historically used in centrifugal chillers, as propellants, and

in other cooling systems. All CFC refrigerants under this methodology were banned from production by 1996 under the Montreal Protocol as they were found to be both an ozone depleting substance and contributor to greenhouse gas emissions. Similarly, beginning in 2010, HCFC-22 began to be phased out under the U.S. Clean Air Act in the United States. Although the production was banned, their usage was not, and many chillers and other cooling systems across the United States still use R-22, R-11, R-113 and other CFC refrigerants. Due to decreased supply and the advancement of technologies, as well as the implementation of HFC refrigerants, many R-22 and R-113 chillers are decommissioned or updated to utilize newer and less harmful refrigerants. As such, stockpiles of these refrigerants used for recharging chillers and the material in the chillers themselves require an end-of-life solution, one of which is destruction. As production is banned, there is a net benefit for destroying these refrigerants.

Project Purpose and Objectives

The purpose of this project is to offset the emissions that would have been released by these refrigerants in non-use instead of collected and destroyed.

A6. PROJECT ACTION

Description of Prior Physical Conditions

In the business-as-usual scenario, ODS refrigerants are recovered from old equipment and sold or exchanged for continued use by owners of this antiquated equipment, or left for storage until a use can be determined. Under either scenario, ODS refrigerant will ultimately leak into the atmosphere – either because the containers in which they are held degrade or slowly leak, or the equipment that contains the refrigerant suffer from accidental release during handling and transfer.

Description of how the Project will Achieve GHG Reductions

This Project achieves emissions reductions through the destruction of ODS refrigerant instead of allowing the refrigerant to be redeployed into equipment or systems, or held in containers at risk of eventual leakage or release. This Project measures the amount of assumed emissions if the ODS were vented under business-as-usual scenario against the emissions prevented by the destruction of the same material. Plainly, destruction yields significantly lower net emissions than the business-as-usual scenario.

Description of Project Technologies, Products, Services, and Expected Level of Activity

After the ODS refrigerant is recovered from equipment or aggregated from various storage situations, they are consolidated into half-ton cylinders at the Tradewater facility. From there, the cylinders are consolidated into a single ISO tank, which is sent to a destruction facility for destruction. Please note that this project involved the destruction of two ISO tanks.

Tradewater anticipates future ODS refrigerant projects for as long as the recovery, reclamation, and eventual retirement of ODS refrigerant remains business as usual.

A7. *EX-ANTE* OFFSET PROJECTION

The ex-ante offset projection is not applicable to this methodology, as emissions reductions are calculated for the 10-year crediting period in the first reporting period. The total emissions reductions for this reporting period are 67,967 tCO2e, under version 2.0 of the Methodology.

Project	*Methodology Version*	*Location*	*Vintage*	*Project Emissions (tCO2e)*	*Baseline Emissions (tCO2e)*	*Total ERTS*
Tradewater US - ODS - #3	2.0	North America	2023	97	68,063	67,967

A8. PARTIES

Table 3: Parties involved in Project				
Entity	***Name***	***Role/Title***	***Contact Info***	***Responsibility***
Tradewater, LLC	Timothy H. Brown	Chief Executive Officer	1550 W. Carroll, Suite 213 Chicago, IL 60607 312-273-5122 x 1000	Project Proponent – coordination of validation and verification of project
	Gabriel Plotkin	Chief Operating Officer	1550 W. Carroll, Suite 213 Chicago, IL 60607 312-273-5122 x 1004	Project Proponent – coordination of project implementation
A-Gas	Zach Babb	Environmental Projects Developer	1100 Haskins Rd Bowling Green, OH 43402 419-704-9151	Destruction Facility

Tradewater, LLC – Project Proponent

Tradewater has been in operation since 2016 and is a mission-driven company. Tradewater's aim is to collect and destroy greenhouse gases while creating economic opportunity. Tradewater engages in this work both in the US and internationally and has a goal of eliminating 3 million tons of CO_2e annually.

A-Gas – Destruction Facility

Tradewater engaged A-Gas for the destruction of the ODS refrigerant. A-Gas was founded in 1993 in the UK and expanded to 14 countries. They are engaged in refrigeration supply and management through reclamation, repurposing, and destruction. A-Gas uses plasma-arc technology which is a TEAP-certified technology.

B.
METHODOLOGY

B1. APPROVED METHODOLOGY

The Project uses the Methodology for the Quantification, Monitoring, Reporting and Verification of Greenhouse Gas Emissions Reductions and Removal from the Destruction of Ozone Depleting Substances and High-GWP Foam Version 2.0 (hereinafter referred to as "Methodology").

B2. METHODOLOGY JUSTIFICATION

The Project involves the destruction of ODS refrigerant R-22 and R-113, with trace amounts of R-11, R-12, R-114, R-115, and R-123. There is no requirement in the U.S. that CFC or HCFC refrigerants be destroyed. Because these refrigerants have been phased out and there are less impactful substitutes, and their production has been banned, their destruction will not trigger any additional CFC or HCFC refrigerant production.

B3. PROJECT BOUNDARIES

The geographic boundary of the Project is A-Gas, located at 1100 Haskins Road, Bowling Green, OH 43402. The reporting period is 4/19/2023 to 5/16/2023, which is the same as the crediting period.

B4. IDENTIFICATION OF GHG SOURCES AND SINKS

GHG Source, Sink, or Reservoir (SSR)	Source Description	Gas	Quantification Method
Transport to Destruction Facility	Fossil fuel emissions from the vehicular transport of ODS from aggregation point to final destruction facility.	CO_2	$\boldsymbol{Tr\&Dest} = (\boldsymbol{Q_{ODS}} \times \boldsymbol{EF}) + (\boldsymbol{Q_{BA}} \times \boldsymbol{EF}) + (\boldsymbol{Q_{intf}} \times \boldsymbol{EF})$
Destruction	Emissions of ODS from incomplete destruction at destruction facility.	ODS	$\boldsymbol{Tr\&Dest} = (\boldsymbol{Q_{ODS}} \times \boldsymbol{EF}) + (\boldsymbol{Q_{BA}} \times \boldsymbol{EF}) + (\boldsymbol{Q_{intf}} \times \boldsymbol{EF})$
Destruction	Emissions from the oxidation of carbon contained in destroyed ODS.	CO_2	$\boldsymbol{Tr\&Dest} = (\boldsymbol{Q_{ODS}} \times \boldsymbol{EF}) + (\boldsymbol{Q_{BA}} \times \boldsymbol{EF}) + (\boldsymbol{Q_{intf}} \times \boldsymbol{EF})$
Destruction	Fossil fuel emissions from the destruction of ODS at destruction facility.	CO_2	$\boldsymbol{Tr\&Dest} = (\boldsymbol{Q_{ODS}} \times \boldsymbol{EF}) + (\boldsymbol{Q_{BA}} \times \boldsymbol{EF}) + (\boldsymbol{Q_{intf}} \times \boldsymbol{EF})$

Destruction	Indirect emissions from the use of grid-delivered electricity.	CO_2	$\boldsymbol{Tr\&Dest = (Q_{ODS} \times EF) + (Q_{BA} \times EF) + (Q_{intf} \times EF)}$
Recovered ODS Stockpile	Emissions of ODS from recovered ODS stockpiles and EOL equipment (if not sent for destruction)	ODS	$\boldsymbol{BE_{refr} = \sum_{i} (Q_{ref,i} \times GWP_{i})}$

B5. BASELINE

The baseline scenario selected for the project is that related to ODS refrigerant, in which the emissions rate is 100%.

There is no law or regulation mandating the destruction of ODS refrigerant, although the CFC refrigerants have been phased out of production and import since January 1, 1994, with the HCFC refrigerants following suit in 2010. The refrigerants still in use in the United States were manufactured prior to the ban and are either used in existing equipment or in storage until a use can be found. As many systems are modernized to accept currently manufactured refrigerant (HFCs), there is less of a need for CFC and HCFC refrigerants. Many sources are looking for an end solution for stockpiled or otherwise obsolete refrigerant, with destruction being one solution.

Further, excess CFCs and HCFCs without a particular use remain in storage, where they risk leaking. The ultimate fate of these refrigerants is release into the atmosphere, either slowly overtime from leaks in equipment or storage, or in accidental venting during routine maintenance of existing systems. Such use and leaks are accounted for in the emissions rates.

B6. PROJECT SCENARIO

The project scenario is the destruction of eligible CFC refrigerants which would otherwise be removed from decommissioned equipment, reclaimed and used in existing antiquated systems, or stored indefinitely until a use for the refrigerants could be found. With the ban on production for these refrigerants, more and more systems and chillers are being retrofitted or decommissioned and can no longer support the use of these refrigerant types.

B7. REDUCTIONS AND ENHANCED REMOVALS

Through this project, greenhouse gas reductions are achieved by preventing the inevitable release of the refrigerant ODS into the atmosphere—either through leakage from degrading systems and storage, or from accidental venting during routine maintenance. The reductions are calculated by baseline emissions minus the project emissions.

B8. PERMANENCE

There is no risk of reversal for these project offsets, as once destroyed the associated GHG reductions are fixed.

C.
ADDITIONALITY

C1. REGULATORY SURPLUS TEST

In order to pass the regulatory surplus test, a project must not be mandated by existing laws, regulations, statutes, legal rulings, or other regulatory frameworks in effect as of the start date that directly or indirectly affect the credited offsets. CFC and HCFC refrigerants are regulated under the Clean Air Act, 40 CFR Part 82, Subpart F. Neither these regulations, nor any other existing laws, regulations, statutes, legal rulings, or other regulatory frameworks in effect as of April 2023 require the project activity and its associated GHG emission reductions/removal enhancements. Therefore, the project passes the Regulatory Surplus test.

C.2 COMMON PRACTICE TEST

Not applicable.

C.3 IMPLEMENTATION BARRIERS TEST

Not applicable.

C4. PERFORMANCE STANDARD TEST

Refrigerant ODS in a business-as-usual scenario is used only when the existing systems are old enough to still process this type of refrigerant. When this is not the case, ODS refrigerant is either stored in their original disposable containers for possible use, recovered and stored in larger containers for possible use, or recovered from existing systems in the process of decommissioning or retrofitting, thereby requiring an end-of-life solution for that material. All ODS sourced for this project came from the United States, not from any government stockpiles or installations for which the refrigerant was required to be destroyed, and was destroyed at an eligible destruction facility.

ODS	100-year Global Warming Potential (MT CO2e/MT ODS)	10-Year Cumulative Emission Rate (%/10 years)
CFC-11	4,663	100%
CFC-12	10,239	100%
CFC-13	13,893	100%
CFC-113	5,824	100%
CFC-114	8,592	100%
CFC-115	7,665	100%
HCFC-22	1,764	100%
HCFC-123	79	100%

The GWP for each refrigerant species is above. The GHG emissions generated by the project are significantly less than the business-as-usual scenario for all refrigerant types, and the emissions reductions are greater than those in the baseline scenario.

The ODS sourced for this project, along with the project activities, meet the eligibility requirements:

- This material would otherwise eventually be vented into the atmosphere in the business-as-usual scenario
- The material was destroyed via an eligible destruction facility
- Tradewater has monitored the applicable SSRs within the project boundary
- The emissions have been quantified aligned with Chapter 5 of the Methodology, as indicated in section E and shown in the Quantification of Emissions Reductions (Appendix A).

D.
MONITORING PLAN

D1. MONITORED DATA AND PARAMETERS

Data or Parameter Monitored	Legal Requirement Test
Unit of Measurement	N/A
Description	Emissions reductions achieved through this project and methodology must not be required by any existing law or regulation
Data Source	US EPA
Measurement Methodology	N/A
Data Uncertainty	Low
Monitoring Frequency	Once per project
Reporting Procedure	Review of existing laws around ODS refrigerant management
QA/QC Procedure	Regular review of current laws and regulations surrounding ODS refrigerants, particularly CFCs.
Notes	

Data or Parameter Monitored	Mass of ODS mixture in each container
Unit of Measurement	Pounds
Description	The total quantity of ODS refrigerant in a container.
Data Source	Weight tickets taken pre and post destruction for each individual container
Measurement Methodology	Section 5.1 of Methodology
Data Uncertainty	Low
Monitoring Frequency	Once per project
Reporting Procedure	Gross weight of cylinders using calibrated scale, taken before and after destruction
QA/QC Procedure	Scale calibrations performed monthly; CEMs data confirms destruction and weight throughout process
Notes	

Data or Parameter Monitored	Concentration of ODS mixture in each container
Unit of Measurement	Percent
Description	The distribution of ODS refrigerant in each container (along with any other contaminants, moisture, or HBR)
Data Source	Sample data via lab analysis provided by an AHRI-certified, third party laboratory.
Measurement Methodology	Appendix C of Methodology

Data Uncertainty	Low
Monitoring Frequency	Once per project
Reporting Procedure	Lab analysis report
QA/QC Procedure	Composition and concentration are analyzed at an AHRI-certified laboratory that is not affiliated with the project proponent using the AHRI Standard 700.
Notes	

Data or Parameter Monitored	$Q_{refr,i}$
Unit of Measurement	Pounds
Description	The total weight of ODS refrigerant sent for destruction.
Data Source	Weight tickets taken both pre- and post-destruction coupled with lab analysis
Measurement Methodology	Section 5.1 of Methodology
Data Uncertainty	Low
Monitoring Frequency	Once per project
Reporting Procedure	Net weight of cylinders using calibrated scale
QA/QC Procedure	Scale calibrations performed monthly; CEMs data confirms destruction; lab analysis confirms mass percentage and identification of ODS refrigerant
Notes	

Data or Parameter Monitored	Q_{ODS}
Unit of Measurement	Pounds
Description	The total quantity of ODS refrigerant sent for destruction.
Data Source	Weight tickets taken both pre- and post-destruction coupled with lab analysis and quantifications
Measurement Methodology	Section 5.2 of Methodology
Data Uncertainty	Low
Monitoring Frequency	Once per project
Reporting Procedure	Net weight of cylinders using calibrated scale; lab analysis
QA/QC Procedure	Scale calibrations performed monthly; CEMs data confirms destruction; lab analysis confirms mass percentage and identification of ODS refrigerant
Notes	

E.
QUANTIFICATION

E1. BASELINE

The baseline emissions are: 68,063 tCO_2e. For details, please see Appendix A (Quantification of Emissions Reductions).

Total Baseline Emissions:

$$BE_{refr} = \sum_i (Q_{ref,i} \times GWP_i$$

Where		Units
BE_{refr}	Total quantity of refrigerant project baseline emissions during the reporting period	MT CO_2e
$Q_{ref,i}$	Total quantity of refrigerant ODS sent for destruction by the offset project	
GWP_i	Global warming potential of ODS	MT CO_2e / MT ODS

E2. PROJECT SCENARIO

The project emissions are: 97 tCO_2e. Please see Appendix A for details (Quantification of Emissions Reductions).

Total Project Emissions:

$$PE_t = Rem_f + Tr\&Dest$$

Where		Units
PE_t	Total quantity of project emissions during the reporting period	MT CO_2e
Rem_f	Total GHG emissions from removal of high GWP foam in a non-enclosed equipment de-manufacturing system	MT CO_2e
$Tr\&Dest$	Total GHG emissions from transportation and destruction of ODS and high-GWP insulation foam/blowing agents	MT CO_2e

Project Emissions from Transportation and Destruction Using the Default Emission Factors:

$$Tr\&Dest = (Q_{ODS} \times EF) + (Q_{BA} \times EF) + (Q_{intf} \times EF)$$

Where		Units
$Tr\&Dest$	Total GHG emissions from ODS and high-GWP insulation foam/blowing agent transportation and destruction, as calculated using default emission factors	MT CO_2e
Q_{ODS}	Total quantity of refrigerant, medical aerosol, and/or fire suppressant ODS sent for destruction in the project	MT ODS

Q_{BA}	Total quantity of high-GWP blowing agent extracted from insulation foam and sent for destruction in the project	MT BA
Q_{intf}	Total mass of intact foam with entrained high-GWP blowing agent sent for destruction	MT
EF	Default emission factor for transportation and destruction of ODS or High-GWP Blowing Agent foam (7.5 for refrigerant, medical aerosol, fire suppressant or extracted blowing agent projects, 7.5 for intact high-GWP foam projects)	MT CO_2e/ MT ODS/ MT BA or MT

E3. LEAKAGE

As defined by the ACR Standard V 7.0, leakage is a term that refers to secondary effects where the GHG emission reductions of a project may be negated by shifts in market activity or shifts in materials, infrastructure, or physical assets associated with the project. Projects involving the destruction of CFC refrigerant would not encourage the increase of CFC production. Therefore, for this Methodology, "leakage" is not applicable.

E4. UNCERTAINTY

Calculating uncertainty is not applicable because the methodology as written does not require statistical sampling, nor is it a requirement within the quantifications.

E5. REDUCTIONS AND REMOVAL ENHANCEMENTS

The emissions reductions are: 67,967 tCO_2e. The project emissions are quantified using the below equation indicated in the Methodology, and further details are available in Appendix A:

$$\mathbf{ER_t = BE_t - PE_t}$$

WHERE		UNITS
ER_t	Total quantity of GHG emission reductions during the reporting period	MT CO_2e
BE_t	Total quantity of project baseline emissions during the reporting period	MT CO_2e
PE_t	Total quantity of project emissions during the reporting period	MT CO_2e

E6. EX-ANTE ESTIMATION METHODS

Ex-ante estimation methods are not applicable to this methodology as the emissions reductions for the crediting period are equivalent to the time period and reductions of the reporting period.

F.
COMMUNITY & ENVIRONMENTAL IMPACTS

F1. NET POSITIVE IMPACTS

The net positive impacts from the project include the reductions of inevitable emissions of CFC and HCFC refrigerants from the older equipment and storage via leaks, testing, accidental venting, or from container degradation. By destroying ODS refrigerants recovered from end-of-life equipment or from long storage, there is incentive to transition to safe and effective refrigerant alternatives, including many with reduced or little climate impact. Destruction of ODS refrigerants will not trigger any additional production because of the complete phaseout of CFCs worldwide, and phaseout in process for HCFCs. This further encourages innovation within development of more sustainable refrigeration and cooling technologies, as well as encouraging the entire sector to develop technologies that are more responsible and aligned with climate goals.

Finally, the emissions reductions resulting from this project help to achieve climate goals by eliminating additional contributors to climate change and global warming.

SDG Statement

The following Sustainable Development Goals (SDGs) are relevant to this project:

- SDG 9: Industry, Innovation, and Infrastructure
- SDG 12: Responsible Consumption and Production
- SDG 13: Climate Action

SDG 9: Industry, Innovation, and Infrastructure: As ODS refrigerants are either destroyed or utilized, innovation is required to replace the refrigerants with a less harmful, yet equally as effective, alternative to meet the needs for cooling, refrigeration, and climate controlled transport throughout the world.

SDG 12: Responsible Consumption and Production: By eliminating harmful CFCs, entities requiring refrigerant for their operations will need to shift to a more sustainable and climate-friendly approach. Consumers will naturally move in the direction of lower impact refrigerants as old systems utilizing CFCs break down or CFC sources become harder to find.

SDG 13: Climate Action: By eliminating ODS refrigerants through destruction, these high GWP and ozone depleting substances will not be released into the atmosphere, whether through accidental release via maintenance or mishandling, or from storage degradation overtime. The reduction of greenhouse gas emissions is a key step to reach the goals of the Paris Agreement, namely keeping global temperature increase under 2 degrees Celsius above pre-industrial levels.

F2. STAKEHOLDER COMMENTS

Not applicable for this project.

G.
OWNERSHIP AND TITLE

G1. PROOF OF TITLE

Tradewater, LLC is the Project Proponent. Tradewater possesses the title and rights to all refrigerants destroyed under this Project, which is demonstrated by Refrigerant Purchase Agreements (RPAs) or other similar documentations. As such, the rights and title to all carbon offset credits created by this Project belong to Tradewater, LLC.

G2. CHAIN OF CUSTODY

Chain of custody is not needed in this project because the offsets have not been bought or sold previously, and the project does not have a forward option contract.

G3. PRIOR APPLICATION

The project proponent has not applied for GHG emission reductions or removal credits for the project through any other GHG emissions trading system or program.

H.
PROJECT TIMELINE

H1. START DATE

The Project start date is April 19, 2023-- the date on which the earliest destruction activity of the project commenced. The Project start date determination is consistent with the ACR Standard and Methodology.

H2. PROJECT TIMELINE

Relevant Project Activities	Timeline
Project Listed/Initiation of Project Activities	April 3, 2023
Project Term	N/A
Crediting Period	April 19, 2023 – May 16, 2023
Reporting Period	April 19, 2023 – May 16, 2023
Frequency of Monitoring, Reporting, and Verification	Once per reporting period

Appendix A: Quantification of Emissions Reductions

Reference Values Obtained from ACR Destruction of Ozone Depleting Substances and High-GWP Foam V2.0

		CFC-12	CFC-11	CFC-13	CFC-113	CFC-114	CFC-115	HCFC-22	HCFC-123	
CFC-12 10-Year Cumulative Emissions Rate (%/10 Years)	ER	100%	100%	100%	100%	100%	100%	100%	100%	Sec. 5.1.1 (Table 5.2)
Refrigerant Substitute Emissions Factor (tCO2e/tODS)	SE	0	0	0	0	0	0	0	0	Sec 5.2.1 (Table 5.4)
Global Warming Potential (tCO2e/tODS)	GWP	10239	4663	13893	5824	8592	7665	1764	79	Sec. 5.1 (Table 5.1)
Default Emission Factor for Transportation and Destruction of ODS (tCO2e/tODS)	EF	7.5								Sec. 5.2.3

COD		Refrigerant Type	Measured Values: Mass of ODS in COD in LBS	Measured Values: Concentration of ODS in Tranche	Gross Quantity of Refrigerant Destroyed (lbs)	Moisture Reduction	High Boiling Residue Reduction	Total Eligible Refrigerant Destroyed (lbs)	Quantity of Refrigerant Detroyed (metric tonnes)	GHG Emissions from Substitute Refrigerants	Quantity of ODS Transported to Destruction Facility	Transportation and Destruction Default Emissions Factor (tCO2e)	Total Project Emissions (tCO2e)	Total Project Baseline Emissions (tCO2e)	Total GHG Emissions Reductions (tCO2e)
			m	c	Q_g	mr	hbr	Q_t	Q_{ref}	Sub_{ref}	Q_t	Def	PE	BE_{ref}	ER
					$Q_g = m \times c$			$Q_t = Q_g - (Q_g \times mr) - (Q_g \times hbr)$	$Qref = Q_t \times .45359/1000$	$Sub_{ref} = Qref \times SE$		$Def = Q_t \times EF$	$PE = Sub_{ref} + Def$	$Be_{ref} = Q_{ref} \times ER \times GWP$	$ER = BE_{ref} - PE$
TMLU925103-1-A1	TMLU925103-1-A1	CFC-12	19430.0	27.26%	5296.62	0.000110	0.00484	5270.40	2.39	0.00	8.81325	66.10	66	24477	45757
	TMLU925103-1-A1	CFC-11		0.18%	34.97			34.80	0.02	0.00				74	
	TMLU925103-1-A1	CFC-13		0.00%	0.00			0.00	0.00	0.00				0	
	TMLU925103-1-A1	CFC-113		0.01%	1.94			1.93	0.00	0.00				5	
	TMLU925103-1-A1	CFC-114		1.73%	336.14			334.48	0.15	0.00				1304	
	TMLU925103-1-A1	CFC-115		17.85%	3468.26			3451.09	1.57	0.00				11999	
	TMLU925103-1-A1	HCFC-22		51.49%	10004.51			9954.98	4.52	0.00				7965	
	TMLU925103-1-A1	HCFC-123		0.00%	0.00			0.00	0.00	0.00				0	
TMLU925103-1-A2	TMLU925103-1-A2	CFC-12	19430.0	27.48%	5339.36	0.000110	0.00321	5321.64	2.41	0.00	8.81325	66.10	66	24715	45982
	TMLU925103-1-A2	CFC-11		0.19%	36.92			36.79	0.02	0.00				78	
	TMLU925103-1-A2	CFC-13		0.00%	0.00			0.00	0.00	0.00				0	
	TMLU925103-1-A2	CFC-113		0.01%	1.94			1.94	0.00	0.00				5	
	TMLU925103-1-A2	CFC-114		1.80%	349.74			348.58	0.16	0.00				1358	
	TMLU925103-1-A2	CFC-115		17.74%	3446.88			3435.44	1.56	0.00				11944	
	TMLU925103-1-A2	HCFC-22		51.29%	9965.65			9932.56	4.51	0.00				7947	
	TMLU925103-1-A2	HCFC-123		0.01%	1.94			1.94	0.00	0.00				0	
TMLU925103-1-B1	TMLU925103-1-B1	CFC-12	8990.0	0.11%	9.89	0.000038	0.01980	9.69	0.00	0.00	4.07777	30.58	31	45	22209
	TMLU925103-1-B1	CFC-11		21.29%	1913.97			1876.00	0.85	0.00				3968	
	TMLU925103-1-B1	CFC-13		0.00%	0.00			0.00	0.00	0.00				0	
	TMLU925103-1-B1	CFC-113		78.14%	7024.79			6885.43	3.12	0.00				18189	
	TMLU925103-1-B1	CFC-114		0.01%	0.90			0.88	0.00	0.00				3	
	TMLU925103-1-B1	CFC-115		0.07%	6.29			6.17	0.00	0.00				21	
	TMLU925103-1-B1	HCFC-22		0.18%	16.18			15.86	0.01	0.00				13	
	TMLU925103-1-B1	HCFC-123		0.02%	1.80			1.76	0.00	0.00				0	
TMLU925103-1-B2	TMLU925103-1-B2	CFC-12	8990.0	0.13%	11.69	0.000049	0.01770	11.48	0.01	0.00	4.07777	30.58	31	53	22225
	TMLU925103-1-B2	CFC-11		21.90%	1968.81			1933.87	0.88	0.00				4090	
	TMLU925103-1-B2	CFC-13		0.00%	0.00			0.00	0.00	0.00				0	
	TMLU925103-1-B2	CFC-113		77.44%	6961.86			6838.29	3.10	0.00				18065	
	TMLU925103-1-B2	CFC-114		0.01%	0.90			0.88	0.00	0.00				3	
	TMLU925103-1-B2	CFC-115		0.09%	8.09			7.95	0.00	0.00				28	
	TMLU925103-1-B2	HCFC-22		0.23%	20.68			20.31	0.01	0.00				16	
	TMLU925103-1-B2	HCFC-123		0.02%	1.80			1.77	0.00	0.00				0	
Quantifications Excluding Oil															
TMLU925103-1-A1-NOOIL	TMLU925103-1-A1-NOOIL	CFC-12	19430.0	27.26%	5296.62	0.000110	0.00000	5296.04	2.40	0.00	8.81325	66.10	66	24596	45980
	TMLU925103-1-A1-NOOIL	CFC-11		0.18%	34.97			34.97	0.02	0.00				74	
	TMLU925103-1-A1-NOOIL	CFC-13		0.00%	0.00			0.00	0.00	0.00				0	
	TMLU925103-1-A1-NOOIL	CFC-113		0.01%	1.94			1.94	0.00	0.00				5	
	TMLU925103-1-A1-NOOIL	CFC-114		1.73%	336.14			336.10	0.15	0.00				1310	
	TMLU925103-1-A1-NOOIL	CFC-115		17.85%	3468.26			3467.87	1.57	0.00				12057	
	TMLU925103-1-A1-NOOIL	HCFC-22		51.49%	10004.51			10003.41	4.54	0.00				8004	
	TMLU925103-1-A1-NOOIL	HCFC-123		0.00%	0.00			0.00	0.00	0.00				0	
TMLU925103-1-A2-NOOIL	TMLU925103-1-A2-NOOIL	CFC-12	19430.0	27.48%	5339.36	0.000110	0.00000	5338.78	2.42	0.00	8.81325	66.10	66	24795	46131
	TMLU925103-1-A2-NOOIL	CFC-11		0.19%	36.92			36.91	0.02	0.00				78	
	TMLU925103-1-A2-NOOIL	CFC-13		0.00%	0.00			0.00	0.00	0.00				0	
	TMLU925103-1-A2-NOOIL	CFC-113		0.01%	1.94			1.94	0.00	0.00				5	
	TMLU925103-1-A2-NOOIL	CFC-114		1.80%	349.74			349.70	0.16	0.00				1363	
	TMLU925103-1-A2-NOOIL	CFC-115		17.74%	3446.88			3446.50	1.56	0.00				11983	
	TMLU925103-1-A2-NOOIL	HCFC-22		51.29%	9965.65			9964.55	4.52	0.00				7973	
	TMLU925103-1-A2-NOOIL	HCFC-123		0.01%	1.94			1.94	0.00	0.00				0	
TMLU925103-1-B1-NOOIL	TMLU925103-1-B1-NOOIL	CFC-12	8857.0	0.11%	9.74	0.000038	0.00000	9.74	0.00	0.00	4.07777	30.58	31	45	22323
	TMLU925103-1-B1-NOOIL	CFC-11		21.29%	1885.66			1885.58	0.86	0.00				3988	
	TMLU925103-1-B1-NOOIL	CFC-13		0.00%	0.00			0.00	0.00	0.00				0	
	TMLU925103-1-B1-NOOIL	CFC-113		78.14%	6920.86			6920.60	3.14	0.00				18282	
	TMLU925103-1-B1-NOOIL	CFC-114		0.01%	0.89			0.89	0.00	0.00				3	
	TMLU925103-1-B1-NOOIL	CFC-115		0.07%	6.20			6.20	0.00	0.00				22	
	TMLU925103-1-B1-NOOIL	HCFC-22		0.18%	15.94			15.94	0.01	0.00				13	
	TMLU925103-1-B1-NOOIL	HCFC-123		0.02%	1.77			1.77	0.00	0.00				0	
TMLU925103-1-B2-NOOIL	TMLU925103-1-B2-NOOIL	CFC-12	8857.0	0.13%	11.51	0.000049	0.00000	11.51	0.01	0.00	4.07777	30.58	31	53	22291
	TMLU925103-1-B2-NOOIL	CFC-11		21.90%	1939.68			1939.59	0.88	0.00				4102	
	TMLU925103-1-B2-NOOIL	CFC-13		0.00%	0.00			0.00	0.00	0.00				0	
	TMLU925103-1-B2-NOOIL	CFC-113		77.44%	6858.86			6858.52	3.11	0.00				18118	
	TMLU925103-1-B2-NOOIL	CFC-114		0.01%	0.89			0.89	0.00	0.00				3	
	TMLU925103-1-B2-NOOIL	CFC-115		0.09%	7.97			7.97	0.00	0.00				28	
	TMLU925103-1-B2-NOOIL	HCFC-22		0.23%	20.37			20.37	0.01	0.00				16	
	TMLU925103-1-B2-NOOIL	HCFC-123		0.02%	1.77			1.77	0.00	0.00				0	
													97	68063	67967

Destruction Information

Certificate of Destruction ID Number	Weight of Material Destroyed	Destruction Start Date	Destruction Facility	Certificate of Destruction Link:	End Date of Destruction
TMLU925103-1-A1	19430	4/19/2023	A-Gas	COD	4/27/2023
TMLU925103-1-A2	19430	4/19/2023	A-Gas		4/27/2023
TMLU925103-1-B1	8,990	5/11/2023	A-Gas	COD	5/16/2023
TMLU925103-1-B2	8,990	5/11/2023	A-Gas		5/16/2023

Start Weight	Weight of Residue	Heel Weight
19580	0	150
19580	0	150
9130	133	140
9130	133	140

Destruction Information Exclusive of Residue

Certificate of Destruction ID Number	Weight of Material Destroyed	Destruction Start Date	Destruction Facility	Certificate of Destruction Link:	End Date of Destruction	Start Weight of Material Destroyed
TMLU925103-1-A1-NOOIL	19430	4/19/2023	A-Gas	COD	4/27/2023	19430
TMLU925103-1-A2-NOOIL	19430	4/19/2023	A-Gas		4/27/2023	19430
TMLU925103-1-B1-NOOIL	8857	5/11/2023	A-Gas	COD	5/16/2023	8990
TMLU925103-1-B2-NOOIL	8857	5/11/2023	A-Gas		5/16/2023	8990

Sampling Information						Purity									
Cylinder Number	Date of Sample	Time of Sample	Technician Taking Sample	Sampling Company	Ambient Air Temperature (degrees F)	R12 Purity (%) of ODS	R11 Purity (%) of ODS	R-13 Purity (%) of ODS	R113 Purity (%) of ODS	R114 Purity (%) of ODS	R115 Purity (%) of ODS	R22 Purity (%) of ODS	R123 Purity (%) of ODS	Moisture Level (PPM)	High Boiling Residue (%)
TMLU925103-1-A1	4/13/2023	8:26AM	Mark Dulaney	A-Gas	71.6	27.26	0.18	0	0.01	1.73	17.85	51.49	0	110	0.484
TMLU925103-1-A2	4/13/2023	8:26AM	Mark Dulaney	A-Gas	71.6	27.48	0.19	0	0.01	1.8	17.74	51.29	0.01	110	0.321
TMLU925103-1-B1	5/2/2023	9:51AM	Nick Alsip	A-Gas	75.9	0.11	21.29	0	78.14	0.01	0.07	0.18	0.02	38	1.98
TMLU925103-1-B2	5/2/2023	9:51AM	Nick Alsip	A-Gas	75.9	0.13	21.9	0	77.44	0.01	0.09	0.23	0.02	49	1.77

Sampling Information with oil removed						Purity									
Cylinder Number	Date of Sample	Time of Sample	Technician Taking Sample	Sampling Company	Ambient Air Temperature (degrees F)	R12 Purity (%) of ODS	R11 Purity (%) of ODS	R-13 Purity (%) of ODS	R113 Purity (%) of ODS	R114 Purity (%) of ODS	R115 Purity (%) of ODS	R22 Purity (%) of ODS	R123 Purity (%) of ODS	Moisture Level (PPM)	High Boiling Residue (%)
TMLU925103-1-A1	4/13/2023	8:26AM	Mark Dulaney	A-Gas	71.6	27.26	0.18	0	0.01	1.73	17.85	51.49	0	110	0
TMLU925103-1-A2	4/13/2023	8:26AM	Mark Dulaney	A-Gas	71.6	27.48	0.19	0	0.01	1.8	17.74	51.29	0.01	110	0
TMLU925103-1-B1	5/2/2023	9:51AM	Nick Alsip	A-Gas	75.9	0.11	21.29	0	78.14	0.01	0.07	0.18	0.02	38	0
TMLU925103-1-B2	5/2/2023	9:51AM	Nick Alsip	A-Gas	75.9	0.13	21.9	0	77.44	0.01	0.09	0.23	0.02	49	0