Tradewater HFC Reclamation

August 1, 2022

Tradewater, LLC

Table of Contents

A.
PROJECT OVERVIEW

A1. PROJECT TITLE

Tradewater HFC Reclamation (hereinafter referred to as “Project”)

A2. PROJECT TYPE

Industrial Process Emissions – Certified Reclaimed HFC Refrigerants

A3. PROOF OF PROJECT ELIGIBILITY

This project is eligible under the “Methodology for the Quantification, Monitoring, Reporting, and Verification of Greenhouse Gas Emissions Reductions and Removals from Certified Reclaimed HFC Refrigerants V1.1" (hereinafter the “Methodology”). Revised Quantification of emissions that includes end of life emissions is based on version 2.0 of the Methodology. Additional eligibility requirements as noted in the ACR Validation and Verification Standard, Version 1.1 are included below.

Table 1: Applicability requirements from the Methodology section 1.2

Criterion	**Requirement**	**Proof of Project Eligibility**
Project Location	Project must be located in North America	Project location is 650 Morse Ave, Elk Grove Village, IL 60007, USA
Sector and Segment	The project is within a sector and segment which has a low adoption rate for the relevant project activity.	Project meets the eligible refrigerant sectors and segments as listed in Methodology Table 1.
Certified reclaimed HFC refrigerant	The refrigerant meets the definition of certified reclaimed HFC refrigerant found in the Methodology.	Used (recovered) HFC in Project has been reclaimed by an EPA-certified reclaimer to meet the AHRI 700-2015 Standard for Specifications for Fluorocarbon Refrigerants and tested by an AHRI certified refrigerant testing laboratory to meet the AHRI Standard.

Table 2: Applicability Requirements from the ACR Standard v 1.1 section 6

Criterion	**Requirement**	**Proof of Project Eligibility**
Start Date	Non-AFOLU Projects must be validated within 3 years of the project Start Date.	The project start date is December 26, 2019, the date of the first transfer of reclaimed HFC refrigerant.
Minimum Project Term	The Minimum Project Term for specific project types is specified in the relevant ACR sector standard 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.
Crediting Period	The Crediting Period for all project activities is fifteen (15) years.	The crediting period is from December 26, 2019 to December 25, 2034.

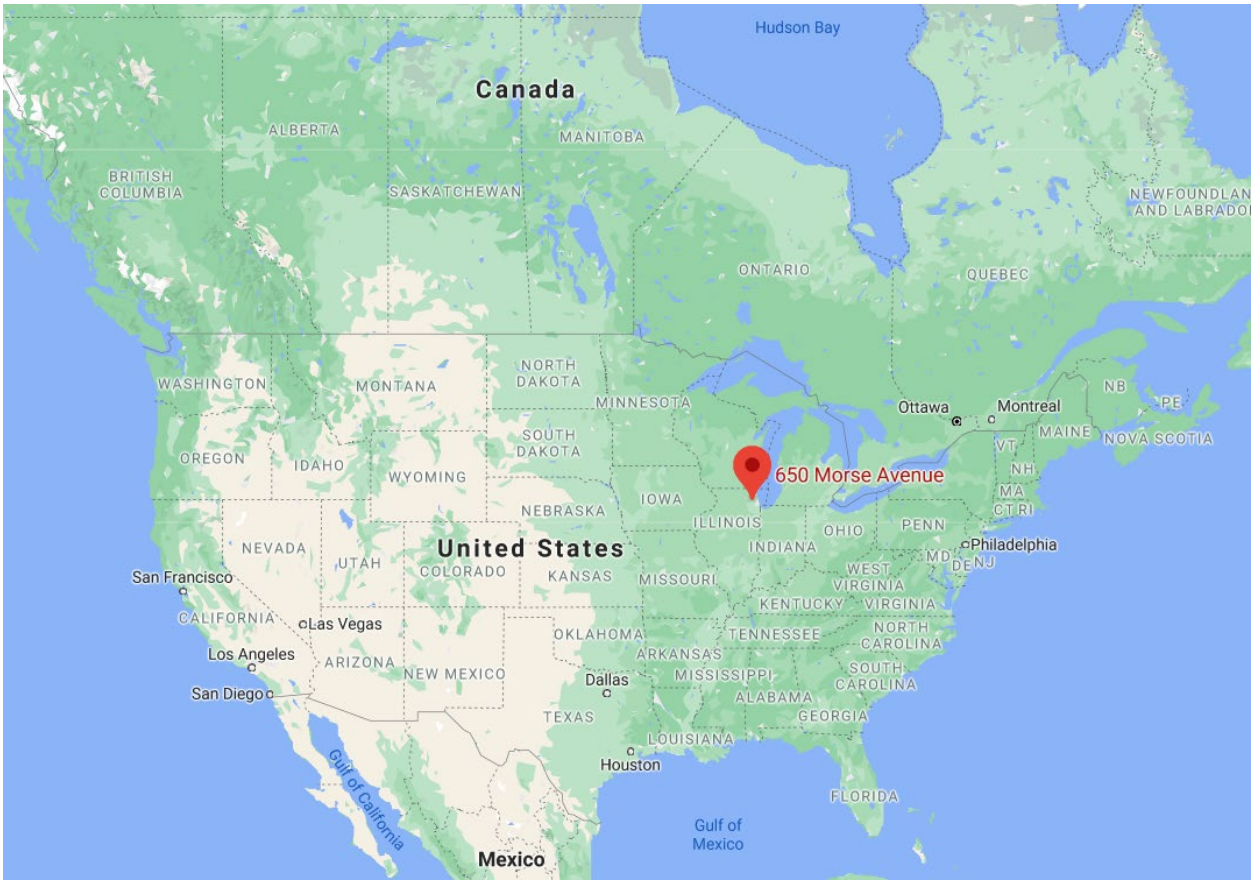
Real	GHG reduction and removals shall result from an emission mitigation activity that has been conducted in accordance with an approved ACR methodology and is verifiable. Credits will not be issued on an ex-ante basis.	The GHG reductions occurred after HFC refrigerants were reclaimed and transferred to a user.
Emission or Removal Origin	Project Proponent shall own, have control, or document effective control over the GHG sources/sinks from which the emissions reductions or removals originate. If the Project Proponent does not own or control the GHG sources or sinks, the Proponent shall document that effective control exists over the GHG sources and/or sinks from which the reductions/removals originate.	Tradewater, LLC has effective control over the GHG sources and sinks associated with this project located in Elk Grove Village, IL. They currently own and operate the facility where the reductions have taken place.
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.
Additional	GHG emission reductions and removal enhancements are additional if they exceed those that would have occurred in the absence of the Project Activity and under a busines-as-usual scenario.	There is no mandate to reclaim HFC refrigerants, or to use reclaimed HFC refrigerants. In the absence of the project, HFCs would release to the atmosphere and users of HFCs would buy virgin material.
Regulatory Compliance	Projects must maintain material regulatory compliance. To maintain material regulatory compliance, a project must complete all regulatory requirements at required intervals. Project Proponents are required to provide a regulatory compliance attestation to a verification body at each verification. This attestation must disclose all violations or other instances of noncompliance with laws, regulations, or other legally binding mandates directly related to project activities.	This project maintains regulatory compliance. Tradewater, LLC has provided the required regulatory compliance attestation for each 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	If applicable, leakage should be removed from project emissions.	In GHG project literature (Methodology 4.1.3), leakage is a term that refers to secondary effects associated with 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 certified reclaimed HFC refrigerant would not increase demand for refrigerant beyond current baseline demand. Therefore, for this Methodology, "leakage" can be disregarded.
Independently Validated and Verified	ACR requires third-party validation and verification, by an ACR-approved Validation/Verification Body (VVB), at specified intervals in order to issue ERTs. Governing documents for validation and verification are the ACR Standard, relevant sector standard, relevant methodology, and the ACR Validation and Verification Guideline.	This project will be validated and verified by a third-party ACR-approved VVB in accordance with the ACR standard.
Community and Environmental Impacts	Projects have the potential to generate positive and negative community and environmental impacts. Appropriate safeguard procedures can identify, evaluate, and manage potential negative impacts. Positive impacts can contribute to sustainable development objectives.	There are specific community and environmental impacts from the project other than the displacement of virgin HFC production.

A4. LOCATION

The project location will be Elk Grove Village, IL, in that all HFC reclamation will occur in Tradewater Refrigerant Solutions facility (650 Morse Ave, Elk Grove Village, IL, USA). Tradewater will transport all used HFC to this EPA-certified reclaiming facility. The GPS coordinates for Tradewater Refrigerant Solutions are:

Latitude: 41.99986
Longitude: -87.9775



A5. BRIEF SUMMARY OF PROJECT

Description of Project Activity

The Project involves the reclamation and use of certified reclaimed HFC refrigerants in refrigeration or air conditioning equipment. Per the Methodology, “reclamation and use” of certified reclaimed HFC refrigerant refers specifically to the production of such refrigerant (by a certified refrigerant reclaimer) and the subsequent sale, title transfer or return to a refrigerant distributor, refrigerant wholesaler, or end-user (either through direct sale, title transfer or return to an end user or through installation conducted via service technician) for use in refrigeration or air conditioning equipment.

Background Information

In a majority of situations, virgin (newly produced, never previously used) refrigerant is used to charge new equipment and to “recharge” systems that leak during normal operations. As an alternative to using virgin refrigerant, reclaimed refrigerant can be used. Using reclaimed refrigerant effectively displaces the use and avoids the production – and eventual emissions – of virgin refrigerant.

Project Purpose and Objective

Using reclaimed refrigerant results in a net GHG reduction, because there is capacity to significantly increase reclaimed refrigerant use within the existing reclamation industry (EPA, 2014). Therefore, the Project will result in the reduction of net GHG emissions. By using previously used, reclaimed HFC refrigerants, project participants are displacing new production of virgin HFC.

A6. PROJECT ACTION

Description of prior physical conditions

There are no restrictions on the production of HFCs and little incentive for recovery, reclamation and resale of HFCs. Additionally, there is the additional costs to recover, transport and process back to virgin purity levels. HFCs are powerful GHGs when released into the atmosphere.

Description of how the Projects will achieve GHG reductions and/or removal enhancement

Tradewater will acquire and reclaim HFC refrigerant that has been previously used, recovered from other air conditioning or refrigeration equipment or disposed products, and processed to remove impurities and restored to virgin-grade quality. Using reclaimed refrigerant effectively displaces the use and therefore avoids production and eventual emissions of newly manufactured virgin refrigerant, which will result in a net GHG reduction.

Description of project technologies, products, services and expected level of activity

Eligible HFC Refrigerant is reclaimed by pulling the material out of its original container and through a RefTec BullDog Recovery/Recycle/Reclaim system and desiccant before transferring it into a vacuumed receiving container. This process removes oil and other contaminates, as well as excess moisture. Batches of reclaimed refrigerants may be mixed to achieve specific purity levels. A sample of the resulting reclaimed refrigerant is analyzed by a third-party, AHRI-certified laboratory to assess the qualities of the refrigerant. The HFC Refrigerant may be reclaimed through this process more than once until the sample results indicate that the material meets AHRI standards for the HFC Refrigerant type in question.

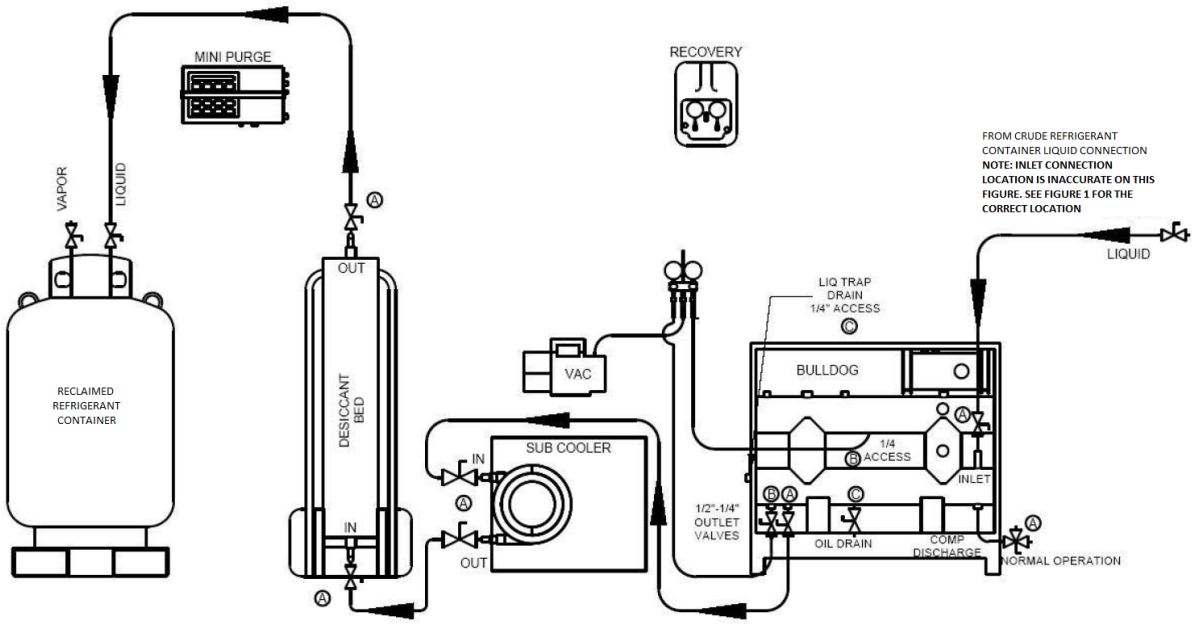


Diagram of RefTec BullDog Recovery/Recycle/Reclaim system

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 version 1.1 of the methodology) in the reporting period. The total emissions reductions for this reporting period is 7,313 tCO2e based on quantification method specified in version 1.1 of the Methodology.

ACR updated the methodology to version 2.0 in April 2022. Version 2.0 updated the quantification method to include end of life emissions allowing 100% of emissions to be accounted for in quantifying offsets. Using the updated quantification method, the new total emission reductions from this project is 10,352 tCO2e.

Methodology Version	Vintage	Baseline Emissions (tCO2e)	Project Emissions (tCO2e)	Emissions Reductions (tCO2e)	Total Emissions Reductions (tCO2e)
1.1	2019	112	0	112	7,313
1.1	2020	7,201	0	7,201	
2.0	2019	158	0	158	10,352
2.0	2020	10,193	0	10,193	
Outstanding Emissions Reductions					**3,039**

A8. PARTIES

Tradewater, LLC is the Project Proponent and owner of all offsets created by this project. Tradewater, LLC owns and operates the Elk Grove Village, IL facility where all HFC reclamation and sales occur.

Parties involved in Project			
Name	***Role/Title***	***Contact Info***	***Responsibility***
Timothy H. Brown	Chief Executive Officer	1411 W. Carroll, Suite N Chicago, IL 60607 312-273-5122 x 1000	Project Proponent – coordination of validation and verification of project
Gabriel Plotkin	Chief Operating Officer	1411 W. Carroll, Suite N Chicago, IL 60607 312-273-5122 x 1004	Project Proponent – coordination of project implementation

B.
METHODOLOGY

B1. APPROVED METHODOLOGY

The Project will use Methodology for the Quantification, Monitoring, Reporting, and Verification of Greenhouse Gas Emissions Reductions and Removals from Certified Reclaimed HFC Refrigerants V1.1 (hereinafter referred to as "Methodology") Updated quantifications is based on version 2.0 of this Methodology.

B2. METHODOLOGY JUSTIFICATION

The Project involves reclaiming HFC refrigerants to virgin-grade refrigerant purity to recharge existing systems that require servicing, or in newly manufactured equipment. The project will displace new production of virgin refrigerant that would otherwise need to be manufactured to meet that demand. The chosen Methodology focuses on HFCs and the methodology for the quantification, monitoring, reporting and verification of certified reclaimed HFC refrigerants.

B3. PROJECT BOUNDARIES

The geographic boundary of the Project is North America. The temporal boundaries are those that are defined in the Methodology; the project crediting period is 12/26/2019 to 12/25/2029.

B4. IDENTIFICATION OF GHG SOURCES

The sources of GHG emissions are from the operations of the refrigeration and air conditioning equipment.

Table 2: Greenhouse Gases and Sources (source: Methodology)

GHG Source, Sink, or Reservoir (SSR)	Source Description	Gas	Quantification Method
Equipment Operations	HFC leaks from the operation of the refrigeration or A/C equipment or system or product	HFCs	Equation 1
Service Equipment	HFC emissions from servicing refrigeration or A/C equipment or System to replace leaked refrigerant	HFCs	Equation 1

$$BE_{HFC_{rp}} = \sum_{n}^{y} [(VR_{HFC,j,rp} \times GWP_{HFC,j})] \times (1 - RR_{BL}) \div 1000$$

WHERE	
$BE_{HFC_{rp}}$	Baseline emissions during the reporting period (MT CO_2e)
$VR_{HFC,j,_{rp}}$	Total quantity of virgin HFC j used to recharge equipment during the reporting period (kgs), derived from the quantity of monitored certified re-claimed HFCs that is documented according to the procedures in Section 3.1 and Section 5
$GWP_{HFC,j}$	The global warming potential of HFC or HFC Blend j (see Table 3)

B5. BASELINE

Under normal operating conditions, between 1 and 50% of the refrigerant in stationary and mobile air conditioning and refrigeration systems leaks each year (Methodology section 3.1). To maintain proper performance, leaky equipment and systems require periodic servicing to replace the lost refrigerant. In the majority of situations, virgin (newly produced, never previously used) refrigerant is used both to charge newly manufactured equipment and systems, and to "recharge" systems that leak during normal operations.

As an alternative to using virgin refrigerant, reclaimed refrigerant can be used. Reclaimed refrigerant has been previously used, recovered from other air conditioning or refrigeration equipment, and processed to remove impurities and restored to virgin grade quality. Using reclaimed refrigerant effectively displaces the use and avoids production of virgin refrigerant.

B6. PROJECT SCENARIO

The project scenario is based on the Methodology and assumes the entire quantity of certified reclaimed HFCs charged to an end-use equipment to be emitted within the crediting period.

Tradewater purchases or acquires previously used, recovered refrigerant from air conditioning or refrigeration equipment that would otherwise be neglected, disposed of, or released into the atmosphere – either quickly because it is not captured from equipment at end of life, or slowly, because it is captured and placed in storage with no future use. Tradewater processes the recovered refrigerant to remove impurities and restore to virgin-grade quality, making it reclaimed refrigerant. Tradewater transfers or sells the reclaimed refrigerant to refrigerant distributors, wholesalers, other equipment manufacturers, service technicians, or refrigerant end-users who are in the business of selling or using HFC refrigerant for use in refrigeration or air conditioning equipment. This activity displaces the production of virgin refrigerant, preventing the inevitable release of that virgin refrigerant to the atmosphere.

B7. REDUCTIONS AND ENHANCED REMOVALS

Through the collection, reclamation, and sale of HFC refrigerants, the project will achieve greenhouse gas reductions by preventing the inevitable release of virgin refrigerant to the atmosphere. Currently, there is little incentive to reclaim and reuse HFC refrigerants because of the low costs associated with virgin HFC production. Using reclaimed refrigerant effectively displaces the use – and therefore avoids production and eventual emissions – of virgin refrigerant. Within the existing reclamation industry, there is capacity to significantly increase reclaimed refrigerant use, and this protocol will incentivize other companies to increase their reclamation numbers. Thus, using reclaimed refrigerant would result in a new GHG reduction.

B8. PERMANENCE

There is no risk of reversal for the project offsets.

C.
ADDITIONALITY

C1. REGULTORY 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. The following affect the project activity:

- Clean Air Act
    - 40 CFR Part 82, Subpart F
    - Appendix A of 40 CFR Part 82 Subpart F

None of the above or any other existing laws, regulations, statues, legal rulings, or other regulatory frameworks in effect as of December 26, 2019 (or during this updated period to August 1, 2022) require the project activity and its associated GHG emission reductions/removal enhancements. Therefore, the project passes the Regulatory Surplus test.

Tradewater, LLC is a certified reclaimer and uses a certified lab to ensure reclaimed refrigerant meets the specs as stated in Appendix A of 40 CFR Part 82 Subpart F.

C2. PRACTICE-BASED PERFORMANCE STANDARD TEST

The Project avoids the emissions of refrigerant gases by the reclamation of used HFCs and the use of certified reclaimed HFC refrigerants to service existing and newly manufactured refrigeration and air conditioning equipment. Tradewater is a certified refrigerant reclaimer. Tradewater sells or transfers all reclaimed refrigerant to eligible segments as stated in the Methodology Table 1 (shown on following page). Table 4 lists the GWPs of the HFC refrigerants for both the baseline and project scenario calculations.

Table 1: Eligible Refrigerant Sectors and Segments

Sectors that are eligible under this Methodology.

PROJECT ACTIVITY	REFRIGERANT SECTOR	ELIGIBLE SEGMENTS IN SECTOR
Use of Certified	Domestic Refrigeration	Residential refrigerators and freezers
Reclaimed HFC Refrigerants	Commercial Refrigeration, also known as Retail Food Refrigeration	Equipment used to store and display chilled and frozen goods for commercial sale such as in supermarkets, convenience stores, bakeries, and restaurants. This equipment includes centralized supermarket systems, remote condensing units, and stand-alone equipment (e.g., beverage vending machines, stand-alone display cases).
	Cold Storage Warehouses	Storage for meat, produce, dairy products, and other perishable goods.
	Industrial Process Refrigeration	Chemical, pharmaceutical, petrochemical and manufacturing industries, industrial ice machines and ice rinks.
	Transport Refrigeration	Refrigerated truck trailers, railway freight cars, ship holds, and other shipping containers.
	Mobile Air Conditioning	Automobiles, trucks, buses, and other motor vehicles.
	Stationary Air Conditioning	Comfort cooling for homes and commercial buildings, including multi-family buildings, office buildings, hospitals, universities, shopping malls, airports, sports arenas.

Table 4: GWPs of Predominant HFC Refrigerants

	GLOBAL WARMING POTENTIAL (GWP)	
HFC REFRIGERANT	UP TO 2020 VINTAGES[13]	FROM 2021 VINTAGES[14]
HFC-152a	124	137
HFC-32	675	676
HFC-134a	1,430	1,301
R-407C	1,774	1,624
R-417C	1,820	1,643
R-410A	2,088	1,923
R-407A	2,107	1,923
R-422B	2,525	2,289
R-422D	2,730	2,473
R-422C	3,085	2,794
HFC-125	3,500	3,169
HFC-227ea	3,220	3,348
R-404A	3,922	3,945
R-507A	3,985	3,987
R-508B	13,400	11,710
HFC-23	14,800	12,400

D.
MONITORING PLAN

D1. MONITORED DATA AND PARAMETERS

Data or Parameter Monitored	$VR_{HFC,j,rp}$
Unit of Measurement	Kilograms
Description	Total quantity of virgin HFC refrigerant j used to recharge equipment during the reporting period, derived from the quantity of monitored certified reclaimed HFC refrigerant that is documented according to the procedures in Methodology Section 3.1 and Section 5
Data Source	Order Fulfillment forms that document reclaimed HFC ownership transfers
Measurement Methodology	Section 5.2.1 of the Methodology v1.1
Data Uncertainty	Low
Monitoring Frequency	Determined once for each project
Reporting Procedure	Net weight of cylinders using a calibrated scale
QA/QC Procedure	AHRI-700 lab report documenting that HFC meets reclamation standards is associated with each batch. Cylinders of reclaimed HFC are associated with a batch. All associations are documented in an internal data system. Weight scales used are calibrated every 6 months and certificates are maintained.
Notes	

Sourcing HFC Refrigerant

HFC Refrigerant is procured from eligible sources in the following sectors: domestic refrigeration, commercial refrigeration, cold storage warehouses, industrial process refrigeration, transport refrigeration, mobile air conditioning, stationary air conditioning, which is documented in the Project Assertion Spreadsheet. The Refrigerant is recovered by EPA Section 608 Technician and/or Universal Certifications.

Collection and Transport of HFC Refrigerant

HFC Refrigerant is collected in DOT-certified containers suitable for ground shipment. It is transported to the Project location primarily through ground shipment, either via commercial carrier or conveyed in individually owned or rented vehicles. The containers containing the HFC Refrigerant are packaged securely and shipped in accordance with DOT regulations, and documentation pertaining to such transportation, including but not limited to Bills of Lading, Point of Origin riders, and attestations, are stored in Tradewater's records.

HFC Reclamation

Eligible HFC Refrigerant is reclaimed by pulling the material out of its original container and through a RefTec BullDog Recovery/Recycle/Reclaim system and desiccant before transferring it into a vacuumed receiving container. This process removes oil and other contaminates, as well as excess moisture. Batches of reclaimed refrigerants may be mixed to achieve specific purity levels. A sample of the resulting reclaimed refrigerant is analyzed by a third-party, AHRI-certified laboratory to assess the qualities of the refrigerant. The HFC Refrigerant may be reclaimed through this process more than once until the sample results indicate that the material meets AHRI standards for the HFC Refrigerant type in question.

HFC Ownership Transfer

Reclaimed HFC Refrigerant is transferred to eligible recipients, including refrigerant wholesalers, distributors, retailers, reclaimers, mechanical contractors, chief engineers, and HVAC industry technicians. In instances where a recipient does not meet end user eligibility requirements, the recipient is prompted to provide Tradewater with an attestation that the reclaimed HFC Refrigerant will be transferred to an eligible end user in compliance with all applicable laws and regulations. Material is securely packaged in DOT-compliant containers suitable for shipment, and is transported to recipients via commercial carrier or conveyed in individually owned or rented vehicles in compliance with DOT regulations. Documentation pertaining to ownership transfer, shipment and/or delivery of reclaimed Refrigerant transportation, including but not limited to Order Fulfillment forms, Bills of Lading, and certificates of resale, are stored in Tradewater's records.

Staff

Reclamation processing and refrigerant handling in support of this Project is performed by Tradewater employees who have attained EPA Section 608 Technician and/or Universal Certifications. Staff supporting this Project perform their work in alignment with Tradewater-produced Standard Operating Procedures (SOPs) and receive training upon these SOPs annually.

Data Collection Procedures

Through Refrigerant Purchase Agreements, Purchase Orders, Point of Origin Riders, Attestations, and/or cylinder exchange refrigerant cylinder collection forms, as appropriate, Tradewater collects the following data when acquiring used HFC Refrigerant: a facility name and address where HFC was recovered, dates of recovery and/or refrigerant acquisition, refrigerant weights and types, identifying data pertaining to the cylinders and equipment used during recovery, and the EPA certification numbers for the technicians recovering and/or receiving the material. These forms are completed by persons with personal knowledge of the information documented therein.

Tradewater collects data pertaining to the shipment and transport of the material, including gross weights, dates and locations of shipment and delivery, method of transport, and container quantities, in

various documents such as Bills of Lading, Receiving Reports, Delivery Confirmation Forms, etc, as appropriate.

Upon acquisition, each container of used HFC Refrigerant is assigned a unique index number and is inventoried.

Data pertaining to material reclaimed is collected in individual Batch Logs during the reclamation process, including the list of unique index numbers reclaimed as part of that particular batch. Each batch is assigned a unique batch identification number. The qualities of each batch are measured by a third-party AHRI certified refrigerant testing laboratory analysis, the results of which are collected and stored in Tradewater records and are identified by the assigned unique batch identification number.

While packaging reclaimed material for transfer of ownership, each container of reclaimed material is assigned a unique inventory number and is tracked in an inventory database. When transferring ownership, an Order Fulfilment form is generated identifying the applicable containers by their unique inventory number, as well as by the unique batch identification number from which they were filled.

Project Assertion Spreadsheet

All project data is aggregated and listed in an excel document entitled *Tradewater HFC Reclamation Project Assertion Spreadsheet*. The Project Assertion Spreadsheet lists transaction IDs, amount of reclaimed HFC refrigerant transferred, sourcing of HFC refrigerant, links to lab results for each batch and GHG calculations.

Monitoring

Monitoring of total quantity of virgin HFC that would have been used to recharge equipment during the reporting period is determined once for each project.

Data Archiving

Hard copies of all documents are scanned and saved on the Tradewater server located at our home office in Chicago which is backed up daily to a third-party cloud system. All records are saved for at least fifteen years.

E.
QUANTIFICATION

E1. BASELINE

Emissions were initially calculated based on version 1.2 of the methodology. Revised calculation was carried out to include end-of-life emissions as per version 2.0. Per the Methodology, for projects using certified reclaimed HFC refrigerant, the baseline emissions are calculated by using the following equation (Equation 1) and referencing Table 4 above:

Version 2.0

$$BE_{HFC_{rp}} = \sum_{n}^{y} \left[\left(VR_{HFC,j,rp} \times GWP_{HFC,j} \right) \right] \times (1 - RR_{BL}) \div 1000$$

Version 1.1

$$BE_{HFC_{rp}} = \sum_{n}^{y} \left[\left(VR_{HFC,j,rp} \times ER10_{HFC,j}\, GWP_{HFC,j} \right) \right] \times (1 - RR_{BL}) \div 1000$$

$BE_{HFC_{rp}}$	Baseline emissions during the reporting period (MT CO_2E)
$VR_{HFC,j,rp}$	Total quantity of virgin HFC refrigerant j used to recharge equipment during the reporting period (kgs), derived from the quantity of monitored certified reclaimed HFC refrigerant that is documented according to the procedures in Methodology Section 3.1 and Section 5
$GWP_{HFC,j}$	The global warming potential of HFC refrigerant j (see Methodology Table 4)
RR_{BL}	Baseline Refrigerant Reclamation Rate (% per year)
$ER10_{HFC,j}$	The 10-year loss rate of HFC refrigerant from j from equipment (%)

E2. PROJECT SCENARIO

The baseline emissions are quantified according to Section 4.1 of the Methodology Equation 1 outlined below. This is the amount of baseline emissions that would take place without the use of certified reclaimed HFCs. It is equal to the total amount of reclaimed HFC refrigerant produced and sale, title transfer or return to a refrigerant distributor, refrigerant wholesaler, or an end-user for use in refrigeration or air conditioning equipment during the reporting period. Without the Project, most of the refrigerant used in its place would have come from virgin HFC production.

Version 2.0

$$BE_{HFC_{rp}} = \sum_{n}^{y} \left[\left(VR_{HFC,j,rp} \times GWP_{HFC,j} \right) \right] \times (1 - RR_{BL}) \div 1000$$

Version 1.1

$$BE_{HFC_{rp}} = \sum_{n}^{y} \left[\left(VR_{HFC,j,rp} \times ER10_{HFC,j}\, GWP_{HFC,j} \right) \right] \times (1 - RR_{BL}) \div 1000$$

$BE_{HFC_{rp}}$	Baseline emissions during the reporting period (MT CO_2E)
$VR_{HFC,j,rp}$	Total quantity of virgin HFC refrigerant j used to recharge equipment during the reporting period (kgs), derived from the quantity of monitored certified reclaimed HFC refrigerant that is documented according to the procedures in Methodology Section 3.1 and Section 5
$GWP_{HFC,j}$	The global warming potential of HFC refrigerant j (see Methodology Table 4)
RR_{BL}	Baseline Refrigerant Reclamation Rate (% per year)
$ER10_{HFC,j}$	The 10-year loss rate of HFC refrigerant from j from equipment (%)

As stated in Section 3 of the Methodology, by using previously used, reclaimed HFC refrigerants, project participants are displacing new production of virgin HFC. Per the Methodology, any project related emissions from using reclaimed refrigerant are considered negligible and outside the project boundary. Therefore, the project activity emissions can be disregarded.

E3. LEAKAGE

In GHG project literature (Methodology 4.1.3), leakage is a term that refers to secondary effects associated with 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 certified reclaimed HFC refrigerant would not increase demand for refrigerant beyond current baseline demand. Therefore, for this Methodology, “leakage” can be disregarded.

E4. UNCERTAINTY

There is no ex-post uncertainty to account for in the project. Baseline and project emissions are calculated using the actual quantities of reclaimed HFC refrigerant.

E5. REDUCTIONS

The project emission reductions are quantified using 4.1.4 of the Methodology Equation 2.

$$ER_{rp} = BE_{HFC_{rp}}$$

ER_{rp}	Project emission reductions during reporting period (MT CO_2E)
$BE_{HFC_{rp}}$	Baseline emissions of HFC refrigerant during reporting period (MT CO_2E)

E6. EX-ANTE ESTIMATION METHODS

The net GHG emission reductions are finally quantified using Methodology Section 4.1 Equation 1.

F.
COMMUNITY & ENVIRONMENTAL IMPACTS

F1. NET POSITIVE IMPACTS

The net positive impacts from the project include the reduction of GHG emissions from the use of certified reclaimed HFC refrigerants. No negative impacts to the environment are expected. No risks to the project are expected.

The Project meets and fulfills the applicable sustainability goals as articulated by the United Nations Department of Economic and Social Affairs.

- Goal #9, [Industry, Innovation and Infrastructure]: the use of reclaimed refrigerant effectively displaces the use, and avoids the production and eventual emissions, of virgin refrigerant. The industry has little incentive to use reclaimed refrigerant because of the low cost of virgin HFC production and because of the unique costs and barriers incurred by reclaiming HFCs. Within the existing reclamation industry, there is capacity to significantly increase reclaimed refrigerant use.

- Goal #12, [Responsible Consumption and Production]: the Project avoids the emissions of refrigerant gases by the use of certified reclaimed HFC refrigerants to service existing and newly manufactured refrigeration and air conditioning equipment. Additionally, the use of reclaimed refrigerant avoids the production and subsequent consumption of virgin HFCs, assuming that reclaimed material is used in place of virgin material. Reclamation of HFCs is expensive, requiring start-up capital and infrastructure to successfully perform the reclamation. The revenue from carbon offsets creates an incentive for companies to do this work, as they would recoup some or all of the cost.

- Goal #13, [Climate Action]: reclaimed HFC refrigerant is used voluntarily by all parties with the purpose of combating climate change and reducing the impacts caused by refrigerant gas emissions. It not only prevents the creation of new, virgin HFCs but also eliminates the current risk of those HFC containers leaking the used, unreclaimed refrigerant into the atmosphere. Overall, the net stockpile of HFCs is reduced thanks to the reuse of the reclaimed HFCs and the reduced need for virgin material.

F2. STAKEHOLDER COMMENTS

Not applicable for this project.

G.
OWNERSHIP AND TITLE

G1. PROOF OF TITLE

Tradewater, LLC is the project proponent and sole owner of these emission reductions. They own and operate the reclamation facility in Elk Grove Village, IL.

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 ACR Standard v2.0 defines the project start date for all projects other than AFOLU as the date on which the project began to reduce GHG emissions against its baseline. The Project start date is December 26, 2019 -- the date Tradewater transferred the initial volume of certified reclaimed HFC to an EPA certified refrigerant supplier, effectively displacing the use and avoiding production of virgin refrigerant. Using reclaimed refrigerant would result in a net GHG reduction. The Project start date determination is consistent with the ACR Standard and Methodology.

H2. PROJECT TIMELINE

- Project listed on July 20, 2020
- Project term is not applicable.
- Crediting period: December 26, 2019 – December 25, 2034
- Frequency of monitoring, reporting and verification: Once per reporting period
- Relevant project activities in each step of the GHG project cycle: Quantification, monitoring report, and verification will be completed at the end of each project reporting period.

I. METHODOLOGY UPDATE VERSION

This version of the Tradewater HFC Reclamation Project Plan has been edited to reflect changes implemented by the current version of the Methodology as of July 2022 (Methodology for the Quantification, Monitoring, Reporting, and Verification of Greenhouse Gas Emissions Reductions and Removals from Certified Reclaimed HFC Refrigerants, Propellants, and Fire Suppressants V2.0). The chart below demonstrates the change in emissions reductions from the time of initial verification to present as well as the outstanding credits.

Methodology Version	Vintage	Baseline Emissions (tCO2e)	Project Emissions (tCO2e)	Emissions Reductions (tCO2e)	Total Emissions Reductions (tCO2e)
1.1	2019	112	0	112	7,313
1.1	2020	7,201	0	7,201	
2.0	2019	158	0	158	10,352
2.0	2020	10,193	0	10,193	
Outstanding Emissions Reductions					**3,039**