

# A-Gas V2

December 18, 2020

A-Gas



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# **A. PROJECT OVERVIEW**

## A1. PROJECT TITLE

A-Gas V2

## A2. PROJECT TYPE

Industrial Process Emissions Use of Certified Reclaimed HFC Refrigerants

## A3. PROOF OF PROJECT ELIGIBILITY

Table 1: Eligibility Requirements

Criterion	Requirement	Proof of Project Eligibility
<b>Start Date</b>	Both AFOLU and non--AFOLU projects with a Start Date of 01 January 2000 or later are eligible for registration.	Project Start Date of December 5, 2019
<b>Minimum Project Term</b>	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 subsequent to crediting have no required Minimum Project Term.	There is no risk of reversal for this project type.
<b>Crediting Period</b>	The Crediting Period for non--AFOLU projects shall be ten (10) years.	The crediting period is 10 years.
<b>Real</b>	GHG reductions and removals shall exist prior to issuance. ACR will not forward issue nor forward register a projected stream of future offsets.	GHG reductions take place at the displacement of virgin HFC production, which takes place prior to the issuance.

<b>Emission or Removal Origin</b>	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.	A-Gas holds and retains title to the HFC Refrigerant and all environmental rights and benefits from the delivery of the metered dosage inhalers that contain HFC-134a aerosol from the customer, through reclamation, up until the sale of the AHRI Certified Reclaimed gas back out to the market.
<b>Offset Title</b>	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.	A-Gas has provided documentation of undisputed title to all offsets. Title to offsets is clear, unique, and uncontested.
<b>Land Title</b>	For U.S. projects, Project Proponent shall provide documentation of clear, unique, and uncontested land title. For international projects, Proponent shall provide documentation and/or attestation of land title; ACR may require a legal review by an expert in local law. Land title may be held by a person or entity other than the Project Proponent, provided the Project Proponent has clear, unique, and uncontested offsets title.	Not applicable to project type.

<p><b>Additional</b></p>	<p>Every project shall use either an ACR--approved performance standard and pass a regulatory surplus test, 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.</p>	<p>This project passes the regulatory surplus test and the ACR--approved practice--based performance test.</p> <p>Regulatory Surplus Test: Currently, there are no restrictions in the US or elsewhere in North America on the quantities of HFC that can be produced, imported, or used. Because of the lack of production controls for HFC, combined with the additional costs to recover, transport, and separate/process refrigerants to virgin purity levels, there is currently little incentive for recovery, reclamation, and re-sale of HFC refrigerants.</p> <p>Practice--Based Performance Standard: A review of US EPA's reclamation data indicates that the HFC refrigerant sector has a low market adoption rate for using certified reclaimed HFCs.</p>
<p><b>Regulatory Compliance</b></p>	<p>Projects must maintain material regulatory compliance. In order 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.</p>	<p>This project maintains material regulatory compliance for the entire reporting period.</p>

<b>Permanent</b>	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 project type.
<b>Net of Leakage</b>	ACR requires Project Proponents to assess, account for, and mitigate certain types of leakage, as summarized in relevant sector standards and approved methodologies. 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.	Projects involving certified reclaimed HFC refrigerant would not increase demand for refrigerant beyond current baseline demand, i.e., use of more reclaimed refrigerant would not cause an increase in virgin HFC production (to the contrary), or increase refrigerant emission rates. Therefore, for this project, "leakage" can be disregarded.
<b>Independently Validated &amp; Verified</b>	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 third--party, ACR--approved, ANAB Accredited Verification Body, Ruby Canyon Environmental



<b>Community &amp; Environmental Impacts</b>	ACR requires community and environmental impacts to be net positive overall. Project Proponents shall document in the GHG Project Plan a mitigation plan for any foreseen negative community or environmental impacts and shall disclose in their Annual Attestations any negative environmental or community impacts or claims of negative environmental and community impacts.	There are no negative community or environmental impacts for this project type.
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## A4. LOCATION

Wood County, Bowling Green, Ohio USA **Latitude:** 41.3755 **Longitude:** -83.6504



## A5. BRIEF SUMMARY OF PROJECT

### Description of Project Activity:

Reclamation Technologies, Inc., dba A-Gas Voluntary Emission Reduction project, A-Gas V2, was undertaken voluntarily by A-Gas to avoid future production of virgin HFCs and promoting the reclamation of used HFCs. The project HFCs were sourced from one U.S. Domestic source and were reclaimed from medical dose inhalers. The HFC was reclaimed to industry specification standards at the A-Gas facility in Bowling Green, Ohio with the intention to resell into the market. All applicable laws and regulations were followed throughout this project.

### Background Information:

A-Gas has entered into an agreement with [REDACTED] to process their rejected Metered Dosage Inhalers (MDIs) to avoid incineration of the HFC-134a and medicine contents. A-Gas has the capabilities to reclaim and separate the HFC-134a and medicine while also shredding the metal/plastic components of the MDIs to avoid further use.

### Project Purpose and Objective:

The purpose of the business relationship between A-Gas and [REDACTED] has always been the need for a more environmentally friendly way to dispose of the rejected MDIs. As these MDIs can be rejected for any reason against the Pharmaceutical Industry Specifications, the HFC-134a is the highest quality of reclaim currently out in the market. The objective of this project is to develop Voluntary Emission Reductions to increase the environmentally friendly aspect of this reclamation process.

## A6. PROJECT ACTION

- Description of prior physical conditions
  - Customer ships A-Gas their rejected metered dosage inhalers (MDIs) for disposal. The MDIs arrive packaged in their boxes, wrappers, and containers. The containers consist of plastic and metal that are shredded during the process. The contents are a mixture of medicine and HFC-134a. The MDIs need to be unpackaged to be placed in the barrel of “The Shredder”
- Description of how the project will achieve GHG reductions and/or removal enhancements
  - The MDIs are sent through the Shredder process to pull out and separate the medicine and the HFC-134a while shredding the plastic and metal containers to avoid further use. The HFC-134a is then sent through the Distillation Towers for additional reclamation back to industry specifications. The main purpose of this process is to blend lower purity,

reclaimed HFC-134a back to industry specifications to be packaged and resold back to the market. By following this process, A-Gas is continuing the use of reclaimed HFC-134a, avoiding the need for virgin HFC-134a to be produced and introduced into the refrigerant market.

- Description of project technologies, products, services, and expected level of activity
  - As mentioned, A-Gas V2 project activities are A-Gas's business as usual processing.
    - A-Gas uses equipment "The Shredder" to separate the medical and the HFC-134a, as well as shredding the canisters to avoid further use.

### **The Shredder Overview**

The Shredder operation includes the shredder unit, two wheeled, bulk tanks, Super driers, shredder barrels, and gaylords for collection of shredded shrapnel from the MDI canisters. The unpackaged MDIs are placed into the shredder barrels that are then led up the shredder conveyer belt into the shredder unit. The shredder unit then uses a separating procedure to pull out the HFC-134a and medicine, while simultaneously shredding the plastic and metal canisters. The shredder unit is connected to pumps that allow the HFC-134a and the medicine to flow through a super drier to remove additional moisture from the contents. Following the super drier, the HFC-134a and medicine flow into wheeled bulk tanks that will then be moved to the Towers for additional reclamation. The shrapnel from the MDI canisters are collected at from the bottom of the shredder unit into gaylords that will then be sent out for recycling.

- A-Gas then uses equipment "The Towers" to process and reclaim the HFC-134a back to AHRI standards to be resold into the market.

### **The Towers System Overview**

The Distillation Column operation along with the associated tanks is for cleaning, separating and/or, reclaiming Halons and refrigerants. The process uses many types of storage tanks such as feed tanks, storage tanks, or reclaim tanks from clients. The reclaim tanks from clients are pumped into larger tanks for cleaning operations using a column or

Mobile Air Removal System (MARS). The MARS unit is a separate process of the operation used for degassing and will not be covered in this document. The Columns are used to perform the separation of different halons or refrigerants by using their individual temperature properties as a means of separating them. After the halons or refrigerants are cleaned or separated, the productions are stored in storage tanks.

### **General Description of the Distillation Column Process**

The Distillation process starts with a Feed tank that supplies a refrigerant to the middle position (or any position) of the column where some of it will immediately boil off to gas and some will flow as liquid to the reboiler tank at the bottom of the column. The reboiler tank at the bottom of the column contains an electric heater element that is used to heat the refrigerant in the tank to create gas that will flow up the column to the condenser. The condenser is part of an external refrigeration system that has a condensing cooling coil in the condenser tank where gas will form back to a liquid. The liquid in the bottom of the condenser tank is collected for a set time value and then some of the liquid refrigerant is sent via the reflux valve to the receiving tanks as top product. The rest of the product that is in the condenser is sent through the reflux valve back into the column as reflux gas. The reflux gas will go through the heating and cooling process multiple times where only a small amount will be sent to the receiving tank. On the bottom of the reboiler tank is a recirculation pump that pumps product continuously through a desiccant filter back into the bottom of the reboiler. A small amount of the product that is recirculated will be collected into a separate set of receiving tanks and this product is called bottoms product.

## **A7. EX ANTE OFFSET PROJECTION**

The following is the GHG emission reduction and removal enhancements from the reporting period stated in tonnes CO<sub>2</sub>e.

Table 2: EX ANTE Baseline Emissions

Refrigerant Type	Lbs Reclaimed and Sold	Annual Consumption (kgs)	10-yr Emission Rate	GWP	Baseline Emissions	Rounded Baseline Emissions
HFC-134a aerosol	39,000	17,690	100%	1,430	23,045.40834024000	23,045

## A8. PARTIES

### Project Proponent & Reclamation Facility: A-Gas

A-Gas is one of the world leaders in the supply and life cycle management of specialty chemicals such as refrigerants, hydrocarbon blowing agents, and clean agent fire protection. A-Gas offers a full range of environmental services for the recovery and reclamation of environmentally sensitive products such as CFCs, HCFCs, HFCs, Halons and associated products.

Our decades of experience, depth of knowledge, and commitment to environmental solutions is unrivaled in the industries we serve.

Project activities of A-Gas: Receiving metered dosage inhalers (MDIs), Processing through the equipment called the “Shredder”, reclamation through our Tower processing, testing during and after processing at A-Gas’ onsite AHRI Certified Laboratory, and shipping of AHRI Certified reclaimed R134a back into the market.

Contact:

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Website: [www.agas.com](http://www.agas.com)

HFC refrigerant supplier for project A-Gas V2: [REDACTED]

[REDACTED] business has a broad portfolio of innovative and established medicines in respiratory, HIV, immuno-inflammation and oncology. We are strengthening our R&D pipeline through a focus on immunology, human genetics and advanced technologies to help us deliver transformational new medicines for patients.

[REDACTED] sends their rejected MDIs to A-Gas for processing and disposal of their cannisters for eliminate further use. Additional resource on [REDACTED]  
[REDACTED]

Contact:

[REDACTED]

Facilities Services Contract Manager

[REDACTED]

Buyers of AHRI Certified & Reclaimed HFC-134a for project A-Gas V2

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**B.**  
**METHODOLOGY**

## B1. APPROVED METHODOLOGY

This project will be certified according to ACR Standard, Version 6.0 set forth by the American Carbon Registry (ACR). It will also follow the rules and calculations as described in ACR's methodology,

“Emission Reduction Measurement and Monitoring Methodology for the Use of Certified Reclaimed HFC Refrigerants and Advanced Refrigeration Systems v 1.1”.

## B2. METHODOLOGY JUSTIFICATION

This project tracks source, reclamation, and sale documentation for the use of certified reclaimed HFC refrigerants to quantify emission reductions from displacing the production and eventual emissions of virgin HFC refrigerants. The chosen methodology provides the quantification framework for the creation of carbon credits from the reductions in GHG emissions resulting from the use of certified reclaimed HFC refrigerants. In Table 3, eligible segments and sectors relevant to this project are highlighted.

Table 3: Eligible Refrigerant Sector & Segment		
Project Activity	Refrigerant Sector	Eligible Segments in Sector
Use of Certified Reclaimed HFC refrigerants	Industrial Process Refrigeration	Chemical, pharmaceutical, petrochemical and manufacturing industries, industrial ice machines and ice rinks.



### **B3. PROJECT BOUNDARIES**

Physical boundary: The physical boundary is A-Gas located at 1100 Haskins Road in Bowling Green, Ohio 43402. A-Gas is an EPA certified refrigerant reclaimer. It is the physical and geographical site where the recovered HFC refrigerant is reclaimed in the project for use in equipment operations and servicing/recharging to replace refrigerant that leaks or to charge newly manufactured refrigeration or air conditioning equipment.

Temporal boundary: Per the methodology, projects shall have one reporting period not to exceed 12 months in length. Per the ACR Standard, the project Start Date is the date on which the project began to reduce GHG emissions against its baseline. The reporting period for this project is December 5, 2019 – August 27, 2020. This is one reporting period that is less than 12 months in length, which complies with the temporal boundary stated in the methodology.

## B4. IDENTIFICATION OF GHG SOURCES AND SINKS

Table 4: Greenhouse Gases and Sources (*Stated within Methodology*)

GHG Source, Sink, or Reservoir (SSR)		Source Description	Gas	Included (I) or Excluded (E)	Justification
1	HFC Production	Fossil Fuel emissions from the production of HFCs	CO <sub>2</sub>	E	N/A
			CH <sub>4</sub>	E	N/A
		HFC leaks during HFC production	HFCs	E	N/A
2	Refrigerant Transport	Fossil Fuel emissions from the transport of HFCs	CO <sub>2</sub>	E	N/A
			CH <sub>4</sub>	E	N/A
			N <sub>2</sub> O	E	N/A
4	Equipment Operations	HFC leaks during HFC transport	HFCs	E	N/A
			HFCs	E	N/A
		Emissions of HFCs during manufacture or installation of refrigeration or A/C equipment or system or product	HFCs	E	N/A
4	Equipment Operations	Fossil Fuel emissions from the operation of the refrigeration or A/C equipment or system	CO <sub>2</sub>	E	N/A
			CH <sub>4</sub>	E	N/A
			N <sub>2</sub> O	E	N/A
5	Service Equipment	HFC leaks from the operation of the refrigeration or A/C equipment or system or product	HFCs	I	Equation 1
			HFCs	I	Equation 1
		Fossil Fuel emissions from servicing refrigeration or A/C equipment or system to replace leaked refrigerant	CO <sub>2</sub>	E	N/A
5	Service Equipment	Fossil Fuel emissions from servicing refrigeration or A/C equipment or system to replace leaked refrigerant	CH <sub>4</sub>	E	N/A
			N <sub>2</sub> O	E	N/A
		Fossil Fuel emissions from servicing refrigeration or A/C equipment or system to replace leaked refrigerant	CO <sub>2</sub>	E	N/A

## **B5. BASELINE**

The baseline scenario is the amount of emissions that would take place without the use of certified reclaimed HFC refrigerant. It is equal to the total amount of reclaimed HFC refrigerant produced and the subsequent 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. In the absence of this project, most of the refrigerant used to recharge the system would have come from virgin HFC production along with some small portion of reclaimed HFCs (current reclamation rate).

The baseline HFC refrigerant reclamation rate has been set to the 2013 (most recent EPA vintage model) reclamation rate for R-22 (8.9%). Reclaimers in the US are required to report to the EPA the quantities for CFCs and HCFCs reclaimed annually. Currently, there are no reporting requirements for HFC reclamation.

## B6. PROJECT SCENARIO

For this project, refrigerant gas HFC-134a was recovered from the rejected metered dosage inhalers (MDIs) that were all sourced from [REDACTED]. [REDACTED] is a leading pharmaceutical company that produces these prescription devices. [REDACTED] has contracted A-Gas to separate, reclaim, and dispose of these MDIs. [REDACTED] coordinates the shipment of the rejected MDI gaylords from their facility to A-Gas in Bowling Green. A-Gas is an EPA certified refrigerant reclamation facility.

A-Gas receives the rejected MDIs, separates the HFC-134a and medicine, shreds the MDI canisters to avoid further use, and reclaims the refrigerant to AHRI standards for resale into the refrigerant aftermarket. A-Gas specializes in aggregating, reclaiming, and mixing refrigerants. Their knowledge and expertise include understanding the relationship between refrigerants, oil, and contaminants, as well as the operation of chiller and refrigerant systems. Additionally, A-Gas has an AHRI Certified Laboratory onsite in Bowling Green.

A-Gas took title to the HFC refrigerant upon delivery and retained title throughout the transportation and reclamation processes. A-Gas sold the certified reclaimed gas to various HVAC industry companies to go into the refrigerant aftermarket. According to the methodology, it is assumed that any refrigerant sold or otherwise transferred from the reclaimer to a distributor, wholesaler, service technician, or an end-user that refrigerant will be used. The sale of reclaimed refrigerant to A-Gas HVAC customers, displaced the production and eventual emissions of virgin refrigerant gas.

## B7. REDUCTIONS AND ENHANCED REMOVALS

All refrigerant that is produced will eventually reach the atmosphere unless destroyed. 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. Thus, using reclaimed refrigerant would result in a new GHG reduction. Reclaimed refrigerant can be used both to “charge” newly manufactured equipment and systems, and to “charge” systems that leak during normal operations.

## B8. PERMANENCE

There is no risk of reversal of GHG removal enhancements for project type.

## **C. ADDITIONALITY**

*ACR requires that every project either pass an approved performance standard and a regulatory additionality test, or pass a three-pronged test to demonstrate that the project activity is beyond regulatory requirements, beyond common practice, and faces at least one of three implementation barriers.*

## **C1. REGULATORY SURPLUS TEST**

Currently, there are no restrictions in the United States or elsewhere in North America on the quantities of HFCs that can be produced, imported, or used. There are no requirements on the quantities of reclaimed HFC refrigerants that must be used for any application. Users are free to use virgin HFC, stockpiled HFC, recycled or reclaimed HFC refrigerant in any amount of their choosing. There are regulatory requirements pertaining to certification of the equipment used to recover ODS refrigerants for servicing equipment and the service technicians that handle ODS refrigerants, as well as certification requirements for refrigerant reclaimers. All these regulatory requirements that apply to ODS refrigerants must be complied with as part of projects involving HFC refrigerants for this project.

Because of the lack of production controls for HFCs, combined with the additional costs to recover, transport, and separate/process refrigerants back to virgin purity levels, there is currently little incentive for recovery, reclamation, and re-sale of HFC refrigerants. Based on U.S. EPA data on reclamation of HCFC-22 (for which there is a strong incentive to recover and reclaim), and industry information, the percentage of available HFCs that are reclaimed in the U.S. is extremely low. For purposes of this Methodology, a conservative assumption is made that the rate by which HFC refrigerants are reclaimed under the baseline scenario is the same (8.9%) as the R-22 reclaim rate based on the most recent data.

## **C2. COMMON PRACTICE TEST**

A market adoption analysis laid out in the methodology was conducted for the relevant HFC refrigerant sectors and segments. Review of US EPA's reclamation data indicates that the sectors and segments have a low market adoption rate for using certified reclaimed HFCs. Therefore, project activities within these sectors and segments qualify for offset credit creation under this Methodology.

## **D. MONITORING PLAN**

## D1. MONITORED DATA AND PARAMETERS

<i>Data or Parameter Monitored</i>	$VR_{HFC, j, rp}$
<i>Unit of Measurement</i>	kg
<i>Description</i>	Total quantity of virgin HFC refrigerant j that would have been used to recharge equipment during the reporting period, derived from the quantity of monitored certified reclaimed HFC refrigerant that is documented according to the methodology.
<i>Data Source</i>	<i>Purchase orders, operating records, &amp; Sales packets</i>
<i>Measurement Methodology</i>	<i>Reclaimer weighs the individual containers of reclaimed HFC refrigerant using calibrated weight scales</i>
<i>Data Uncertainty</i>	<i>Low</i>
<i>Monitoring Frequency</i>	<i>Determined once per reporting period</i>
<i>Reporting Procedure</i>	<i>Purchase orders, operating records, &amp; Sales packets</i>
<i>QA/QC Procedure</i>	<i>Multiple A-Gas departments work in parallel during each process</i>
<i>Notes</i>	



## **E.**

# **QUANTIFICATION**

## E1. BASELINE

The baseline emissions are the emissions that would take place without the use of certified reclaimed HFCs. It is equal to the amount of HFC refrigerant reclaimed and the subsequent 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. In the absence of the project, most of the refrigerant used to recharge the system would have come from virgin HFC production, and some would come from HFCs that would normally be reclaimed. The baseline calculation takes into consideration the 8.9% estimated, current HFC refrigerant reclamation rate.

The baseline emissions are calculated as follows:

$$BE_{HFCrp} = \sum_n^y [(VR_{HFC,j,rp} \times ER10_{HFC,j} \times GWP_{HFC,j})] \times (1 - RR_{BL}) \div 1000$$

$BE_{HFCrp}$	=	Baseline emission during the reporting period (tonnes CO <sub>2</sub> e)
$VR_{HFC,j,rp}$	=	Total quantity of virgin HFC refrigerant j used to recharge equipment during the reporting period (kgs)
$ER10_{HFC,j}$	=	The 10-year loss rate of HFC refrigerant j from equipment (%)
$GWP_{HFC,j}$	=	Global warming potential of HFC refrigerant j
$RR_{BL}$	=	Baseline Refrigerant Reclamation Rate (% per year). This is the percentage of HFC that would be reclaimed in the business-as-usual case, currently estimated to be 8.9% per year.

A-Gas V2, baseline calculation:

Parameter	Value
<b>BE<sub>HFCrp</sub></b>	23,045 tonnes CO <sub>2</sub> e
<b>VR<sub>HFC,j, rp</sub></b>	17,690 kgs
<b>ER<sub>10HFC, j</sub></b>	100%
<b>GW<sub>HFC, j</sub></b>	1,430
<b>RR<sub>BL</sub></b>	8.90%

## E2. PROJECT SCENARIO

By using previously used, reclaimed HFC refrigerants, this project displaces new production of virgin HFC. Any project related emissions from using reclaimed refrigerant, for example, from transport of certified reclaimed HFCs, are considered negligible and outside the project boundary. Project emissions can be disregarded.

## E3. LEAKAGE

Projects involving certified reclaimed HFC refrigerant would not increase demand for refrigerant beyond current baseline demand, i.e., use of more reclaimed refrigerant would not cause an increase in virgin HFC production or increase refrigerant emission rates. For this project, leakage can be disregarded.

## E4. UNCERTAINTY

For the purposes of this methodology, it is assumed that from the time any reclaimed HFC refrigerant is sold or otherwise transferred from the reclaimer to a distributor, wholesaler, service technician, or an end-user that refrigerant will be used. There is no ex post uncertainty accounted for in this methodology.

## E5. REDUCTIONS AND REMOVAL ENHANCEMENTS

Project emission reductions during reporting period equals baseline emissions of HFC refrigerant during reporting period.  $ER_{rp} = BE_{hfcrp}$

Parameter	Value
<b>BE<sub>HFCrp</sub></b>	23,045 tonnes CO <sub>2</sub> e
<b>ER<sub>rp</sub></b>	23,045 tonnes CO <sub>2</sub> e

## E6. EX-ANTE ESTIMATION METHODS

Emission reductions from project A-Gas V2 used the equations within the Methodology to calculate the GHG reductions in 1 year, the reporting period. There is one reporting period for this project.

Project	Vintage	Total ERTs (tonnes CO <sub>2</sub> e) <sub>2</sub>
A-Gas V2	Total	23,045 tonnes CO <sub>2</sub> e
	2019	1,182 tonnes CO <sub>2</sub> e
	2020	21,863 tonnes CO <sub>2</sub> e

**F.**  
**COMMUNITY & ENVIRONMENTAL**  
**IMPACTS**

## **F1. NET POSITIVE IMPACTS**

Positive community impacts from the project include the reduction of emissions and economic benefit to refrigerant reclamation facilities. HFC refrigerants are the ozone friendly alternative to CFC and HCFC refrigerants, but HFC refrigerants are powerful greenhouse gases. Currently, there is no phase out plan proposed for reducing the production of HFC refrigerants. As discussed, there is currently no incentive to reclaim and reuse HFC refrigerants because of the low costs associated with virgin production. Because all HFC refrigerants produced eventually reach the atmosphere, decreasing virgin production creates an emissions reduction. The purpose of this methodology is to transition the refrigerant industry from using virgin HFC refrigerants to using reclaimed HFC refrigerants.

There are no negative community or environmental impacts for this project. The Sustainable Development Goals set forth by the United Nations are met initially by the 9<sup>th</sup> goal to build a resilient infrastructure, promote include, and sustainable industrialization, and foster innovation by promoting the recovery and reclamation of used HFCs that reduces the reliance on virgin HFC production, eliminating the potential of being released into the atmosphere. Goal 12, Ensure sustainable consumption and production patterns, is also met as more HFC users are adopting a more sustainable infrastructure with the use of reclaimed HFCs, adding in the reduction of the future environmental costs of climate change. Additionally, Goal 13 of taking urgent action to combat climate change and its impacts are served by the reuse of HFCs before any mandates or regulations enforce such action, as the HFC recovered and reclaimed are done so voluntarily by all parties.

## **F2. STAKEHOLDER COMMENTS**

Not applicable for A-Gas V2

## **G.**

# **OWNERSHIP AND TITLE**

## **G1. PROOF OF TITLE**

Please refer to the purchase orders and contract agreements between [REDACTED] and A-Gas that clearly states title to the HFC refrigerant and all environmental benefits upon delivery to A-Gas.

Additional evidence can be found on the A-Gas website:

<https://www.agas.com/us/products-services/carbon-offsets/>

## **G2. CHAIN OF CUSTODY**

The offsets from this project have not been bought or sold previously. There is no forward option contract for the offsets from this project.

## **G3. PRIOR APPLICATION**

A-Gas has not applied for GHG emission reduction or removal credits for this project through any other GHG emissions trading system or program.

## **H.**

# **PROJECT TIMELINE**



## H1. START DATE

The reporting period start date for this project is December 5, 2019. The reporting period begins on the date that the initial volume of certified reclaimed HFC was sold to an A-Gas HVAC customer.

## H2. PROJECT TIMELINE

- Initiation of project activities: December 5, 2019
- Project term: December 5, 2019 – August 27, 2020
- Crediting period: December 5, 2019 – December 4, 2029
- Frequency of monitoring, reporting and verification: Once during reporting period.