

Validation & Verification Report A-Gas US, Inc.

American Carbon Registry

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1. Introduction

First Environment, Inc. (First Environment) provides this validation/verification report to A-Gas US Inc. (A-Gas) as a deliverable of the American Carbon Registry (ACR) project validation and verification process. It covers the validation and verification of the following Project and reporting period:

Project Name	ACR Project ID	Reporting Period
A-Gas V7	ACR678	1/20/2021 – 12/9/2021

The Project reports emission reductions for a single 10-year crediting period beginning on January 20, 2021.

First Environment conducted validation and verification activities from the date of the kickoff meeting through May 20, 2022.

2. Objectives

The purpose of the validation and verification was, through review of appropriate evidence, to establish that:

- the objectives of the ACR Validation and Verification Standard Chapters 1.B and 8.B are met;
- the Project conforms to the requirements of the criteria discussed in Section 3 of this report; and
- the data reported are accurate, complete, consistent, transparent, and free of material error or omission.

Validation activities also include an assessment of the likelihood that implementation of the project will result in the emission reductions as stated by A-Gas in the GHG Project Plan.

3. Validation/Verification Scope & Criteria

Specific scope metrics for the validation/verification are outlined in the table below:

Geographic Boundaries	HFC Reclamation Facility, Bowling Green, OH
Greenhouse Gases Verified	Emissions reductions (expressed in units of Carbon Dioxide equivalents (CO ₂ -e) resulting from HFC reclamation and resale to displace virgin material
Reporting Period	1/20/2021 – 12/09/2021
Data Sources	Historical A-Gas accounting and operational records
Level of Assurance	Reasonable assurance
Definition of Materiality	Misstatements greater than five percent of the emission reductions assertion for the reporting period were considered material. Qualitative non-conformities with and discrepancies in the GHG Project Plan and Monitoring Report between the validation and verification criteria were also considered material.

The following outlines the guidance and protocols used to conduct the validation and verification:

Standards of Validation/Verification	<ul style="list-style-type: none"> • ACR Standard, Version 7.0, December 2020 (ACR Standard) • Methodology for the Quantification, Monitoring, Reporting and Verification of the Greenhouse Gas Emissions Reductions and Removals from Certified Reclaimed HFC Refrigerants, Version 1.2 (the Methodology), including Errata and Clarification issued August 13, 2021
Validation/Verification Process	<ul style="list-style-type: none"> • ACR Validation and Verification Standard, Version 1.1, May 2018 • ISO 14064-3: Specification with guidance for the validation and verification of greenhouse gas assertions, 2006

The GHG Project Plan—the final version of which is dated February 18, 2022—was also used to inform the verification process.

4. Project Description

The Project consists of the reclamation and reuse of HFCs from disposed aerosol products. A-Gas recovers propellant gas from metered dose inhalers (MDIs) supplied by a single customer. This customer also serves as a point of origin for bulk quantities of HFC-134a rejected during aerosol product manufacturing.

All disposed aerosol products are transferred to A-Gas's facility in Bowling Green, Ohio where the propellant gas they contain is reclaimed and processed for resale as certified reclaimed HFC refrigerants. The subsequent reuse of certified reclaimed HFC refrigerants displaces virgin materials and results in a net reduction of HFC emissions.

The GHG Project Plan provides additional details about the Project.

5. Overview of the Validation and Verification Process

To review the Project's GHG information, the following validation and verification process was used:

- conflict of interest review;
- selection of Audit Team;
- initial interaction and kickoff meeting with primary A-Gas contacts;
- development of the validation/verification plans and sampling plan;
- review and evaluation of GHG information systems and data;
- follow-up interaction with A-Gas contacts for corrective action or supplemental data as needed; and
- final statement and report development.

The process was utilized to gain an understanding of the Project's emission sources and reductions, to evaluate and verify the collection and handling of data, the calculations that lead to the results, and the means for reporting the associated data and results.

5.1 Conflict of Interest Review

Prior to beginning any third-party assessment, First Environment conducts an evaluation to identify any potential conflicts of interest associated with the engagement. No potential conflicts were found for the Project. A project-specific conflict of interest form was also filed with the ACR for the project.

5.2 Audit Team

First Environment's Audit Team consisted of the following individuals who were selected based on their validation and verification experience, as well as familiarity with industrial gas operations:

Team Leader – Michael Carim
Validation/Verification Team – Logan Simpson
Internal Reviewer – James Wintergreen

5.3 Audit Kick-off

The audit process was initiated with a kick-off meeting on February 28, 2022 with the primary A-Gas contacts. The meeting focused on confirming the scope, schedule, and data required for validation and verification.

5.4 Development of the Validation & Verification Plans

The Audit Team formally documented the validation/verification plan as well as determined the data sampling plan. The validation/verification plan was informed by the kick-off meeting where key elements of the validation and verification scopes were discussed including project team members, project level of assurance, materiality threshold, and standards of reporting and evaluation. It also provided an outline of the validation and verification processes and established project deliverables. A-Gas was afforded the opportunity to comment on the key elements of the plans for validation and verification. A separate data-sampling plan was designed to review all project elements in areas of potentially high risk of inaccuracy or non-conformance.

5.5 Site Visit

Mr. Michael Carim performed a site visit at the A-Gas reclamation facility in Bowling Green, Ohio on March 15, 2022 to assess GHG project boundaries, site operations, data collection processes, and information management systems, as well as to conduct interviews with key project personnel. During the site visit and throughout the validation/verification process, First Environment conducted interviews with:

Sandra Hoffman – A-Gas
Amber Medina – A-Gas
Eric Ripley – A-Gas

5.6 Emissions Reduction Data and Calculation Assessment

This assessment used information and insights gained during the previous steps to evaluate the collected data and the reported emissions reduction quantities and identify if either contained material or immaterial misstatements.

5.7 Corrective Actions and Supplemental Information

The Audit Team made requests for corrective action during the validation and verification processes. A-Gas provided sufficient responses to all requests. These requests and A-Gas's responses are described in Appendix A of this report.

5.8 Validation & Verification Reporting

Validation and verification reporting, represented by this report, documents the validation and verification processes and identifies their findings and results. Validation and verification reporting consist of this report for A-Gas, along with a verification statement. Both the report and statement are submitted to ACR as part of the validation/verification reporting process.

6. Validation Results

6.1 Project Boundary

The Project boundary is defined as HFC emissions from leaks during the operation of refrigeration or A/C equipment or system or product (SSR 4) and servicing refrigeration or A/C equipment or system or product (SSR 5). Fugitive emissions of virgin HFC material occurs in the baseline scenario during refrigeration or A/C equipment use and maintenance. Emission reductions occur from the reclamation and reuse of existing HFC material.

The Audit Team assessed the source, sink, and reservoir (SSR) determination included in the GHG Project Plan and found the justification accurate and in accordance with the Methodology.

Overall, A-Gas provided an accurate description of the Project boundary and a comprehensive justification for the project SSRs.

6.2 Baseline Scenario

The baseline scenario is defined as the continued use of virgin refrigerant materials to charge new and existing refrigeration and A/C equipment. A-Gas correctly selected the 10-year emission rates used to characterize the baseline scenario and the associated global warming potentials for project refrigerants from Tables 3 and 4 in the Methodology.

6.3 Emission reduction quantification methodologies and calculations

Emission reductions are quantified in accordance with the procedures described in the Methodology and the ACR Standard. The equations are correctly identified and the calculation of GHG emission reductions is presented in a transparent manner, incorporating all relevant GHG sources, sinks, and reservoirs.

Baseline emissions are quantified according to Equation 1 in the Methodology based on the quantity of eligible HFC sold during the reporting period.

No sources of project or leakage emissions are relevant under the Methodology.

Total net emission reductions are determined according to Equation 2 in the Methodology by setting total emission reductions during the reporting period equal to total baseline emissions.

After reviewing the quantification procedure and supporting evidence, the Audit team concluded that the methodologies and the applicable tools have been applied correctly to calculate baseline emissions and net GHG emission reductions and removals.

6.4 Data Monitoring and Management System

The monitoring plan described within the GHG Project Plan includes all relevant data and parameters required to obtain a reliable result of generated emission reductions and meets the requirements of the Methodology. The primary variable monitored in order to determine and account for emission reductions is presented in Table 1 below.

TABLE 1: Monitoring Parameters

Monitoring Parameter	Method of Estimation	Frequency of Measurement	Unit of Measurement	Frequency of Recording
Total quantity of virgin HFC refrigerant j that would have been used to recharge equipment during the reporting period ($VR_{HFC,j,rp}$)	Sales invoices	As sold throughout reporting period	Kilograms	As sold throughout reporting period

The GHG Project Plan includes a complete description of the frequency, responsibility, and procedures for recording, storing, monitoring, and measuring all project data. All requirements in Section 5.1 of the Methodology are addressed by the monitoring plan contained with the GHG Project Plan.

The sections below discuss relevant aspects of the monitoring plan as they relate to the requirements for data collection and parameters to be Monitored in Section 5.2 of the Methodology.

6.4.1 Refrigerant Recovery

Disposed aerosol products are recovered directly from a sole supplier in either MDIs or bulk containers. A-Gas coordinates the shipping logistics for the transfer of disposed aerosol products from the customer location in North Carolina to the A-Gas reclamation facility. The bulk supply arrives in containers with unique identifiers and the MDIs arrive in gaylords identified by the purchase order number. Shipment statements and other associated recovery records are logged and retained in A-Gas's data management system.

Shipment statements described above identify the name and address of the entity delivering the disposed aerosol material to A-Gas, cylinder or container information such as serial number and gross and net weight, and the date of receipt at the reclamation facility. Upon receipt at the reclamation facility, cylinders are scanned and logged in A-Gas's Cyltrak inventory management system. The Cyltrak system records all cylinder movements within the facility. The records and data management systems described above are sufficient to meet all point of origin documentation requirements in the Methodology for disposed aerosol products.

6.4.2 Refrigerant Reclamation

A-Gas is an EPA-certified reclaimers.

Refrigerants are processed through A-Gas's reclamation equipment and sent to bulk storage tanks on-site. Bulk quantities are processed directly by reclamation equipment while MDIs are

first processed by the shredder or the crusher to extract refrigerant material, which is then sent to reclamation equipment for purification. Prior to dispensation into individual cylinders, a sample is taken and sent for analysis at the A-Gas reclamation facility's lab. The A-Gas lab was confirmed to be an AHRI-certified refrigerant testing laboratory. Certificates of analysis generated during laboratory analyses confirm that all testing is performed according to the AHRI-700 standard and that all reclaimed refrigerants in the project activity meet the definition of Certified Reclaimed Refrigerants.

The Cyltrak inventory management system records the dispensation of reclaimed HFC material into individual cylinders. The fill weight is recorded and archived electronically. Certificates of analysis are matched to individual dispensations to confirm the type and purity of the certified reclaimed HFC filled. Data recorded in the Cyltrak database is later compared to sales receipts and serves as documentation that the same (or lesser) quantity of reclaimed HFC refrigerant is transferred, sold, or returned to a refrigerant wholesaler, distributor, or end-user.

6.4.3 Sale of Reclaimed Refrigerants

Sales of reclaimed refrigerants are tracked in A-Gas's financial system. An individual customer invoice documenting the type and net quantity of reclaimed refrigerant sold is generated for every transaction in the reporting period. Customer data stored in A-Gas's financial system further confirms that all material is used in an eligible refrigerant sector and segment as defined by the Methodology.

The adequacy of the data management systems described in the monitoring plan was assessed during the site visit by reviewing data management system procedures and controls with A-Gas personnel as well as during the desktop assessment through tracing data back to its origin.

6.5 QA/QC Procedures

The GHG Project Plan includes QA/QC procedures for data that meet the requirements of the Methodology.

A-Gas's internal Quality Control department reviews all weight and materials transfers within the reclamation facility. The Finance department is responsible for customer billing and reconciles all invoiced quantities internally. Environmental Services staff collect all information required for GHG emission reduction reporting and perform data validation prior to submission for verification.

Further, all sales data used in emission reduction calculations serves as the basis for customer billing by A-Gas and are subject to accounting controls and procedures, thereby providing an additional layer of quality assurance.

Due to the strong QA/QC and inventory tracking procedures surrounding recorded and reclaimed refrigerant quantities, minimal data uncertainty is foreseen.

6.6 Project-specific conformance to ACR eligibility criteria, including additionality

The Project meets the eligibility requirements set forth in the ACR Standard as described in Table 2 below.

TABLE 2: ACR Eligibility Criteria

Eligibility Requirement	Conformance Details	Validation Conclusion
Start Date	The start date is January 20, 2021	Consistent with requirement.
Minimum Project Term	N/A – project type does not contain risk of emission reduction reversal	N/A
Crediting Period	Ten years – January 20, 2021 through January 19, 2031	Consistent with requirement.
Real	HFC reclamation activities are performed in accordance with an approved ACR methodology to produce verifiable evidence of emissions mitigation.	Consistent with requirement.
Emission or Removal Origin	The project proponent reduces non-energy direct emissions by end users utilizing reclaimed HFCs.	Consistent with requirement. A-Gas retains ownership of emission reductions via contractual agreements with upstream and downstream customers.
Offset Title	A-Gas retains rights to GHG emission reductions associated with the reclaimed HFC material through the terms and conditions agreed upon with its customers.	Consistent with requirement. A-Gas retains ownership of emission reductions via contractual agreements with upstream and downstream customers.
Additional	Project satisfies additionality test in approved methodology and Regulatory Test in ACR Standard.	Project conforms to ACR additionality criteria. See Section 6.7 below for conformance details.
Regulatory Compliance	Reclamation facility was in compliance with regulatory requirements during the reporting period.	A-Gas provided an attestation to First Environment to confirm regulatory compliance throughout the reporting period.
Permanent	N/A – project type does not contain risk of emission reduction reversal.	N/A
Net of Leakage	N/A – leakage does not apply under the Methodology	N/A
Independently Validated and Verified	A-Gas contracted First Environment, Inc. to provide independent, trustworthy, and objective third-party validation and verification services to the Project.	First Environment is an ANAB-accredited and ACR-approved validation/verification body. Audit activities were performed independently and in accordance with all ACR requirements.
Environmental & Community Assessments	No negative community or environmental impacts are identified. Net positive impact due to lower GHG emission and contributions to UN SDGs.	Consistent with requirement. Project occurs at a private industrial facility. No negative external environmental or community impacts are created from the activity.

The Project activities comply with the applicability requirements of the Methodology. The table below lists the relevant applicability requirements and identifies how the Project meets them.

TABLE 3: Methodology Criteria

Eligibility Requirement	Conformance Details	Validation Conclusion
Location	The reclamation facility is located in Bowling Green, OH. All refrigerant recovery occurs in the United States.	Consistent with requirement.
Sector/Segment	A-Gas maintains tax forms and customer profiles that confirm customers purchasing reclaimed refrigerants fall within an eligible Sector/Segment. Where Rapid Recovery technicians service customer equipment and directly install reclaimed refrigerants, service records demonstrate that the material is installed in an eligible end use.	Consistent with requirement. Reclaimed refrigerants are used in the following Refrigerant Sectors from Table 1 in the Methodology: <ul style="list-style-type: none"> • Domestic Refrigeration • Commercial Refrigeration, also known as Retail Food Refrigeration • Industrial Process Refrigeration • Stationary Air Conditioning
Certified Reclaimed HFC Refrigerant	Reclaimed refrigerant Certificates of Analysis from A-Gas Americas, Inc..	Consistent with Requirement All reclaimed refrigerant analyses performed to AHRI-700 standard. All laboratories provided analytical services to the Project are AHRI-accredited.

The Project has not participated in any other GHG emission trading or compliance programme nor has it been rejected by another GHG programme.

6.7 ***Additionality***

The Project satisfies the requirements for the demonstration of additionality specified by the ACR Standard by passing an approved practice-based performance standard and a regulatory surplus test.

Certified reclaimed HFCs are used in eligible Refrigerant Sectors and Segments as defined by the Methodology; therefore, the Project satisfies the performance standard specified by the Methodology.

Additionally, A-Gas provided a management attestation confirming that HFC reclamation activities were not mandated by law.

6.8 ***Approved Variance or Deviations***

The Project did not obtain deviations from ACR during the validation/verification process.

7. Verification Results

During the verification process, First Environment reviewed the Project's Monitoring Report, GHG emission reduction assertions, and supporting documentation for the current reporting period to ensure consistency with the GHG Project Plan and the Methodology. Discrepancies between Project documentation and the verification criteria were considered material and identified for corrective action. Additionally, First Environment assessed the GHG emission reduction assertions and underlying monitored data to determine if either contained material or immaterial misstatements. The results of these reviews are discussed in greater detail below.

7.1 GHG Information Verified

Emission reduction calculations were reviewed to ensure accuracy in the formulas used and the raw data used as inputs. Formulae were tested to ensure they were consistent with the calculation methodology described in the Methodology and GHG Project Plan. Total baseline emissions were quantified in accordance with Equation 1 from the Methodology. The amount of HFC reclaimed and sold into the market is determined from A-Gas sales records during the reporting period. The leakage rates ($ER_{10HFC,j}$) of the reclaimed refrigerants and their corresponding GWPs ($GWP_{HFC,j}$) were determined from Tables 3 and 4 in the Methodology. Total emission reductions were computed using Equation 2 from the Methodology. All emission sources within the project boundary are properly accounted for in calculations.

7.2 Verification Assessment Techniques and Processes Employed

Copies of the raw data used in the calculations, including the quantities of refrigerants recovered, reclaimed, and sold, were compared with the data used in the final calculations and tested for transcription or mathematical errors. First Environment sampled all areas identified as being of high risk of inaccuracy, uncertainty, or misstatement and reviewed evidence such as laboratory Certificates of Analysis and performed other data checks in order to assess whether the project sufficiently mitigated data uncertainty. First Environment also performed reviews for a subsample of inbound material records, reclaimed refrigerant sales invoices, and customer refrigerant sector/segment information to inform the verification process and assess the robustness of A-Gas's document management systems. The assessments performed on this data, as described above, confirmed the reliability of the evidence provided and verified the accuracy of the information flow. Additionally, First Environment performed recalculations of emission reductions for the entire reporting period to assess whether they were free of material misstatement. First Environment found the emission reduction calculations to be free of material misstatement.

The evidence provided was consistent with the requirements of the Methodology and the validated GHG Project Plan and meets generally accepted evidentiary standards for best practices in GHG accounting.

8. Audit Findings

A-Gas provided good documentation for the emissions estimates as well as the procedures surrounding the data collection process. To complete the validation and verification processes, First Environment issued corrective action requests. Through communications with the Audit Team, A-Gas was able to resolve all requests made by First Environment during the validation and verification processes.

The findings issued, as well as A-Gas's responses, are summarized in Appendix A of this report.

9. Validation & Verification Conclusion

First Environment was retained to provide validation and verification services to A-Gas for the Project's GHG emission reductions assertions based on the following fundamentals:

- *Level of assurance:* Reasonable assurance.
- *Validation/Verification objectives:* To assure project conformance with the validation/verification criteria and that the requirements of the ACR Validation and Verification Standard, Chapters 1.B and 8.B are met. Validation objectives also include an assessment of the likelihood that implementation of the Project will result in the emission reductions stated in the GHG Project Plan.
- *Validation/Verification criteria:* American Carbon Registry Standard, Version 7.0, December 2020; Methodology for the Quantification, Monitoring, Reporting and Verification of the Greenhouse Gas Emissions Reductions and Removals from Certified Reclaimed HFC Refrigerants, Version 1.2, including Errata and Clarification.
 - The verification process was also informed by the GHG Project Plan
- *Definition of materiality:* Misstatements of greater than five percent of the GHG reduction assertion and qualitative non-conformities with validation and/or verification criteria are considered material.
- *Scope, including:*
 - *Boundaries of the assertion:* A-Gas reclamation facility;
 - *The physical infrastructure, facilities, and activities within the assertion:* Refrigerant reclamation equipment; and
 - *GHG sources, sinks, and reservoirs included within the assertion:* Baseline emissions from the use of virgin HFCs in refrigeration or air conditioning equipment.
 - *The time period for the assertion:* January 20, 2021 to December 9, 2021.

Based on the assessments performed and the historical evidence collected, First Environment concludes that the GHG Project Plan is in conformance with the specified validation criteria and the Project GHG emissions reductions, due to the reclamation and resale of recovered HFC material for the below referenced time period, can be considered with a reasonable level of assurance:

- consistent with the GHG Project Plan,
- in conformance with the ACR Standard and the Methodology, and
- without material discrepancy.

Verified results show:

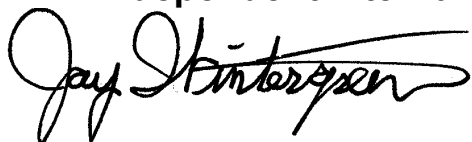
January 20 to December 9, 2021	Total
Baseline Emissions (tCO ₂ e)	186,441
Project Emissions (tCO ₂ e)	N/A
Emissions Reductions (tCO ₂ e)	186,441

10. Lead Verifier Signature



Michael M. Carim
Senior Associate

11. Independent Internal Reviewer Signature



James Wintergreen
Senior Associate

Appendix A – Validation/Verification Findings

ID	Corrective Action Request	Summary of Participant Response	VVB Conclusion
1	<p>The Project Plan contains omissions or is inconsistent with the requirements of the ACR template in the following sections:</p> <ul style="list-style-type: none"> Section A5 does not address bulk aerosols reclaimed Section A7 is missing the vintage year of the emission reductions Section H2 does not describe Relevant project activities in each step of the GHG project cycle" 	The Project Plan was revised in A5, A7, and H2 to resolve the issues.	Response is acceptable.
2	Section 8 of the Monitoring Report does not identify the number of consecutive years that the VVB has verified the Project.	Section 8 of the Monitoring Report was revised to resolve the issue.	Response is acceptable.
3	The volume of reclaimed refrigerant assigned to CofA #345276 appears to overstate the actual quantity filled or is missing a second CofA that needs to be mapped to the Cyltrak data. See rows 195 to 209 on the tab 'EXFU5227888CIM 11_2020-6_2021' in 'V7 AHRI COA Volume.xlsx'	A-Gas provided an additional Certificate of Analysis to match to the unmapped quantity that was recorded in the Cyltrak data set to resolve the issue.	Response is acceptable.
4	5,900 lbs.of reclaimed HFC material is incorrectly assigned to CofA #369931. See row 27 on the tab 'EXFU5227888CIM 11_2020-6_2021' in 'V7 AHRI COA Volume.xlsx'	A-Gas revised the total quantity of reclaimed material assigned to CofA #369931 to resolve the issue.	Response is acceptable.

ID	Clarification Request	Summary of Participant Response	VVB Conclusion
<i>No requests for clarification were issued during the validation/verification process.</i>			