

Validation Report for True Manufacturing Company, Inc.

American Carbon Registry

December 2020

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1. Introduction

First Environment, Inc. (First Environment) provides this validation report to True Manufacturing Co., Inc. (True) as a deliverable of the American Carbon Registry (ACR) project validation process. It covers the validation of the following Projects and reporting periods:

Project Name	ACR Project ID	Reporting Period
ARS 004	ACR598	January 1 – December 31, 2019
ARS 004B	ACR599	
ARS 004C	ACR600	

Each Project reports emission reductions for a single 10-year crediting period beginning on January 1 of the reporting year.

During the validation/verification process, Dentons US LLP (Dentons) acted as the project advisor for True. As such, First Environment communicated directly with Dentons regarding most validation activities.

First Environment conducted validation activities from the date of the kickoff meeting through December 23, 2020.

2. Objectives

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

- the objectives of the ACR Validation and Verification Standard Chapter 1.B are met; and
- the Project conforms to the requirements of the criteria discussed in Section 3 of this report.

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

3. Validation Scope & Criteria

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

Geographic Boundaries	True manufacturing plants located in: <ul style="list-style-type: none"> • O'Fallon, MO • Bowling Green, MO • Mexico, MO • Pacific, MO
Greenhouse Gases Included	Emissions reductions (expressed in units of Carbon Dioxide equivalents (CO ₂ -e) resulting from refrigerant replacement; Project emissions from use of eligible refrigerant R-290 (propane))
Crediting Period	1/1/2019 – 12/31/2028
Level of Assurance	Reasonable assurance
Definition of Materiality	Non-conformities with the Standards of Validation listed below are considered material

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

Standards of Validation	<ul style="list-style-type: none"> • ACR Standard, Version 6.0, July 2019 (ACR Standard) • Methodology for the Quantification, Monitoring, Reporting and Verification of Greenhouse Gas Emissions Reductions and Removals from Advanced Refrigeration Systems, Version 2.0 (the Methodology)
Validation 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

4. Project Description

True manufactures Stand-Alone Commercial Refrigeration units, an eligible Refrigerant Sector and Segment under the Methodology. The Projects consist of the transition from high-global warming potential (GWP) refrigerants to a low-GWP refrigerant, R-290 (propane), in the manufacture of these refrigeration products. The transition to a low-GWP refrigerant results in a net reduction in greenhouse gas (GHG) emissions over the lifetime of the manufactured refrigeration products.

Each Project will report emission reductions for the crediting period from January 1, 2019 through December 31, 2028.

The GHG Project Plan provides additional details about the Projects.

5. Overview of the Validation Process

The following validation process was used:

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

The validation process was utilized to evaluate whether the Project's approach, as outlined in the GHG Project Plan, is consistent with the ACR Standard and the approved ACR methodology.

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 these Projects. A project-specific conflict of interest form was also filed with the ACR for each Project.

5.2 Audit Team

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

Lead Assessor – Michael Carim
Validation Team – Emily Saul
Internal Reviewer – James Wintergreen

5.3 Audit Kick-off

The audit process was initiated with a kick-off meeting on December 4, 2020 with the primary True contacts. The meeting focused on confirming the scope, schedule, and data required for validation activities.

5.4 Development of the Validation Plan

The Audit Team formally documented the validation plan as well as determined the data sampling plan. The validation plan was informed by the kick-off meeting where key elements of the validation scope 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 processes and established project deliverables. True was afforded the opportunity to comment on the key elements of the plans for validation. 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 True's headquarters and manufacturing facility in O'Fallon, Missouri on November 14, 2019, and a site visit at True's Bowling Green, Missouri manufacturing facility on November 15, 2019 during validation/verification activities for a separate GHG assurance engagement. The site visits included interviews with key personnel and site tours to assess GHG project boundaries, site operations, data collection processes, and information management systems. The data collection and management systems described during these site visits are consistent with same as described in the Project Plan for the current Projects; therefore, no additional on-site inspection was warranted for the current validation process.

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 and clarification during the validation process. True provided sufficient responses to all requests. These requests and True's responses are described in Appendix A of this report.

5.8 Validation Reporting

Validation reporting, represented by this report, documents the validation process and identifies its findings and results. Validation reporting consists of this report for True, along with a validation conclusion. The report is submitted to ACR as part of the validation reporting process.

6. Validation Results

6.1 Project Boundary

The Project boundary is defined as emissions from Equipment Operation (SSR 5), Equipment Service/Recharges (SSR 6), and EOL/Equipment Disposal (SSR 7). Fugitive emissions of refrigerants occur in the baseline and project scenarios during the operation, servicing, and end-of-life of the refrigeration products. Emission reductions occur from the replacement of high-GWP refrigerants with a low-GWP refrigerant, R-290.

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, True 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 the baseline refrigerants in the manufacture of Stand-Alone Commercial Refrigeration units. The baseline scenario was determined consistent with Table 4 of the Methodology in conjunction with the approved deviation described in Section 6.8 below. The table below shows the baseline refrigerant selected for each Project.

TABLE 1: Baseline Refrigerants

Project Name	ACR Project ID	Baseline Refrigerants
ARS 004	ACR598	R-404A and HFC-134a
ARS 004B	ACR599	R-404A and HFC-134a R-513A ¹
ARS 004C	ACR600	R-404A and HFC-134a

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 in the GHG Project Plan 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 refrigerant used in the baseline system and the annual amortized emission rate of the baseline refrigerants. The quantity of refrigerant used is based on the quantity and default refrigerant charge size of each equipment type produced during the Projects.

¹ Applies only to new medium temperature stand-alone refrigerators with a compressor capacity of 2,200 Btu/hour or less and without a flooded evaporator. See details in Section 6.8 below.

Project emissions are quantified according to Equation 2 in the Methodology based on the quantity of alternative refrigerant used in the project system and an annual amortized emission rate set equal to that used in the baseline system. The quantity of alternative refrigerant used is assigned a default value of 150 g (0.15 kg) per unit of ARS equipment, which is the maximum allowable charge size for propane in stand-alone commercial refrigeration equipment under federal regulations. This is conservative.

Leakage emissions are not required under the Methodology and therefore are not quantified.

Total net emission reductions are determined according to Equation 3 in the Methodology by subtracting project emissions from 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, project 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 variables to be monitored in order to determine and account for emission reductions are presented in Table 2 below.

TABLE 2: Monitoring Parameters

Monitoring Parameter	Method of Estimation	Frequency of Measurement	Unit of Measurement	Frequency of Recording
Quantity of refrigerant used in the baseline system ($Q_{BR,j,i}$)	Sales records and Table 4 of Methodology	Each sale of refrigeration units	Kilograms	Each sale of refrigeration units
Quantity of alternative refrigerant used in the project system ($AR_{k,i}$)	Sales records and US EPA SNAP Regulation	Each sale of refrigeration units	Kilograms	Each sale of refrigeration units
Annual amortized emission rate of refrigerant in baseline system ($ER_{REF,j}$)	Table 4 of Methodology	Once at validation	Percentage	Once
Annual emission rate of alternative refrigerant in project system ($ER_{REF,k}$)	Set equal to emission rate of baseline system	Once at validation	Percentage	Once
GWP of the baseline refrigerant ($GWP_{REF,j}$)	Table 4 of Methodology ²	Once at validation	Dimensionless	Once
GWP of alternative refrigerant used in project system ($GWP_{REF,k}$)	Table 3 of Methodology	Once at validation	Dimensionless	Once

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

² Certain equipment within the scope of ARS 004B (ACR599) utilize a GWP of 1410. See Section 6.8 below.

Sections 5 of the Methodology are addressed by the monitoring plan contained within the GHG Project Plan.

The adequacy of the data management systems described in the monitoring plan was assessed during site visits conducted for previous validation/verification activities for True through reviewing data collection procedures and system controls with plant personnel and interviews with True management staff.

6.5 QA/QC Procedures

The GHG Project Plan includes QA/QC procedures for data that meet the requirements of the Methodology. Specifically, data sets documenting sales of advanced refrigeration units can be compared to bills of lading to confirm equipment shipments. Further, the data management system used to record equipment sales and ARS equipment production serves as the basis for customer billing by True and is subject to both internal accounting controls and external audits, thereby providing an additional layer of quality assurance.

Due to the strong QA/QC procedures surrounding production and sales records, minimal data uncertainty is foreseen.

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

The Projects meet the eligibility requirements set forth in the ACR Standard as described in Table 3 below.

TABLE 3: ACR Eligibility Criteria

Eligibility Requirement	Conformance Details	Validation Conclusion
Start Date	The start date for each project is January 1, 2019	Consistent with requirement.
Minimum Project Term	N/A – project type does not contain risk of emission reduction reversal	N/A
Crediting Periods	Ten years – January 1, 2019 – December 31, 2028	Consistent with requirement.
Real	Refrigerant transition is 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 through end users' utilization of advanced refrigeration systems.	Consistent with requirement. True retains ownership of emission reductions through terms and conditions with purchasers of ARS equipment.
Offset Title	True retains rights to GHG emission reductions associated with the refrigerant transition through equipment warranty terms and conditions with end users.	Consistent with requirement. True retains ownership of emission reductions through terms and conditions with customers.

Eligibility Requirement	Conformance Details	Validation Conclusion
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.
Permanent	N/A – project type does not contain risk of emission reduction reversal.	N/A
Net of Leakage	N/A – the Methodology does not require leakage accounting.	N/A
Independently Validated and Verified	True contracted First Environment, Inc. to provide independent, trustworthy, and objective third-party validation services to the Projects.	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 emissions.	Consistent with requirement. Projects occur in refrigeration unit manufacturing processes at private industrial facilities. No negative external environmental or community impacts are created from the refrigerant transition.

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

TABLE 4: Methodology Criteria

Eligibility Requirement	Conformance Details	Validation Conclusion
Location	All True manufacturing plants and shipping destinations are located in North America.	Consistent with requirement.
Refrigerant Sector and Segment	Stand-Alone Commercial Refrigeration	Consistent with requirement. Manufacturing plants produce stand-alone commercial refrigeration units.
Start Date	See Table 3 above	
Alternative Refrigerant	R-290 (Propane)	Consistent with requirement.

None of the Projects participate in any other GHG emission trading or compliance programme nor have they been rejected by another GHG programme.

6.7 **Additionality**

The Projects satisfy 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.

All Projects consist of the use of an eligible refrigerant in the manufacture of Stand-Alone Commercial refrigeration units, which is an Eligible Refrigerant Sector and Segment listed in the Methodology; therefore, all satisfy the performance standard specified by the Methodology.

No existing laws mandate the use of a low-GWP refrigerant in refrigeration unit manufacturing. True provided a technical memo as well as an attestation confirming that the transition to propane at the manufacturing facilities was voluntary.

6.8 **Approved Variance or Deviations**

Project ARS 004B (ACR599) obtained a deviation approval to allow for an alternate baseline scenario for new medium temperature stand-alone refrigerators with a compressor capacity of 2,200 Btu/hour or less and without a flooded evaporator. The deviation was necessary because California regulations in force as of January 1, 2019 prohibit the use of HFC-134a in this class of equipment; therefore, this component of the baseline scenario described in Table 4 of the Methodology is no longer valid. True obtained a deviation to allow the substitution of R-513A as the baseline refrigerant for this equipment category with an associated GWP of 1410.

First Environment confirmed that the baseline scenario and alternative GWP—as described in the approved deviation—were applied correctly in the GHG Project Plan.

7. **Audit Findings**

To complete the validation process, First Environment issued corrective action and clarification requests. Through communications with the Audit Team, True resolved all requests made by First Environment during the validation processes. The findings issued, as well as True's responses, are summarized in Appendix A of this report.

8. **Validation Conclusion and Statement**

First Environment was retained to provide validation services to True for the Projects' GHG emission reductions assertions based on the following fundamentals:

- *Level of assurance:* Reasonable assurance.
- *Objectives of validation:* To assure project conformance with the validation criteria and that the requirements of the ACR Validation and Verification Standard, Chapters 1.B. Validation objectives also include an assessment of the likelihood that implementation of the Projects will result in the emission reductions stated in the GHG Project Plan.
- *Validation criteria:* American Carbon Registry Standard, Version 6.0, July 2019; Methodology for the Quantification, Monitoring, Reporting and Verification of Greenhouse Gas Emissions Reductions and Removals from Advanced Refrigeration Systems, Version 2.0.
- *Definition of materiality:* Non-conformities with validation criteria are considered material.
- *Scope, including:*

- *Boundaries of the assertion:* Emissions from the operation of the refrigeration equipment, emissions resulting from the recharging and servicing of that equipment, and end-of-life (EOL) / disposal emissions.
- *The physical infrastructure, facilities, and activities within the assertion:* Stand-Alone Commercial Refrigeration equipment
- *GHG sources, sinks, and reservoirs included within the assertion:* Emissions reductions (expressed in units of Carbon Dioxide equivalents) resulting from refrigerant replacement; Project emissions from use of eligible refrigerant R-290 (propane).
- *Projects' Credit Period:* January 1, 2019 to December 31, 2028.

Regarding the validation process, the review of the GHG Project Plan and the resolution of all corrective action requests have provided First Environment with sufficient evidence to determine the fulfillment of stated criteria to a reasonable level of assurance.

The total emission reductions in metric tonnes of CO₂e from the Projects are projected as follows over the selected crediting periods:

Project Name	ACR Project ID	Emission Reductions
ARS 004	ACR598	401,903
ARS 004B	ACR599	43,318
ARS 004C	ACR600	34,710

The emission reduction forecasts have been checked, and it is deemed likely that the stated amount will be realized given that the underlying assumptions do not change.

In summary, it is First Environment's opinion that the ARS 004, ARS004B, and ARS004C projects, as described in the GHG Project Plan, meet all relevant ACR requirements and correctly apply the Methodology.

The validation of the Projects is based on the information made available to us and the engagement conditions detailed in this report. First Environment cannot guarantee the accuracy or correctness of this information. Hence, First Environment cannot be held liable by any party for decisions made or not made based on this report or opinion.

9. Lead Verifier Signature



Michael M. Carim
Senior Associate

10. Independent Internal Reviewer Signature

A handwritten signature in black ink, appearing to read "Jay Wintergreen", with a stylized, flowing script.

James Wintergreen
Senior Associate

APPENDIX A – VALIDATION FINDINGS

ID	Corrective Action Request	Summary of Participant Response	VVB Conclusion
1	The GPS coordinates identified in Section A4 of the Project Plan for the True Bowling Green facility are incorrect.	The GPS coordinates for the Bowling Green facility were revised to be correct.	Response is acceptable.
2	The baseline scenario described for ACR599 (ARS 004B) does not provide adequate detail regarding California regulatory requirements and how they may alter the determination of the appropriate baseline scenario for the Project.	A deviation approval was obtained from ACR to allow the use of R-513A as the baseline refrigerant in place of HFC-134a, which is no longer allowed by regulation after January 1, 2019. The weighted average GWP applied in calculations for revised baseline refrigerant will be 1410.	Response is acceptable.
3	Section C1 of the Project Plan does not discuss relevant laws or regulatory requirements in California or Canada.	C1 in the Project Plan was revised to include a description of regulatory requirements in Canada and California.	Response is acceptable.
4	Section G1 of the Project Plan does not describe how the project proponent establishes Proof of Title and this information is not attached to the Project Plan.	G1 in the Project Plan was revised to clarify that True maintains offset title to the Projects' emission reductions via the warranty agreement for each piece of equipment sold.	Response is acceptable.
5	<p>Please correct the following in the Monitoring Plan:</p> <ul style="list-style-type: none"> UL files are referenced but are not relevant to Project monitoring. <i>Technical description of the monitoring task and Data to be monitored and collected</i> do not describe the process and data used to determine equipment charge size (i.e., model IDs). <i>Frequency of the monitoring</i> does not address data extraction for ACR599 (California). <i>Quality control and quality assurance procedures</i> does not describe the relevance or use of the Root Item Number in the QA/QC process. 	The Monitoring Plan was revised to resolve the identified issues and provide project-specific details regarding data collection and QA/QC processes.	Response is acceptable.

ID	Clarification Request	Summary of Participant Response	VVB Conclusion
1	Please clarify why the baseline refrigerant for ARS 004B (ACR599) is identified at R-427A in Section A7/Table 5 of the Project Plan.	<p>R-427A was removed as the baseline refrigerant for ARS 004B from Table 5 in the Project Plan.</p> <p>A deviation approval was obtained from ACR to allow the use of R-513A as the baseline refrigerant in place of HFC-134a, which is no longer allowed by regulation after January 1, 2019. The weighted average GWP applied in calculations for revised baseline refrigerant will be 1410.</p>	Response is acceptable.