ACR Project Plan
True Manufacturing
Foam Blowing Agent Project 002

Revised January 2021

and Updated May 2022 pursuant to Version 3.0

Dentons US LLP

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A.
PROJECT OVERVIEW

A1. PROJECT TITLE

First filed as 'Foam Blowing Agent Project 002', renamed 'True Manufacturing FBA Project 002". In this document, this Project will be referred to as "True FBA 002". Pursuant to the terms of Version 3.0, of the Methodology for the quantification, monitoring, reporting and verification of Greenhouse Gas Emissions Reductions and Removals from the Transition to Advanced Formulation Blowing Agents in Foam Manufacturing and Use (March 2022), this UPDATED GHG PROJECT PLAN is submitted. This updated project plan includes emissions following "end of life" (EOL) of the products in which the blowing agent is used.

A2. PROJECT TYPE

Industrial Process Emissions

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 the Transition to Advanced Formulation Blowing Agents in Foam Manufacturing and Use", Version 2.0 as revised by Version 3.0. Certain project eligibility requirements are specified within the Methodology and others are specified within the ACR Standard, Version 6.0.

This Project is for the manufacture of small retail food refrigeration units and reporting for vintage year 2019.

Table 1 – Project Eligibility Criteria

Criterion	ACR Standard or Methodology Specific Requirement	Proof of Project Eligibility
Geographic location	The Project must be located in North America	The Project includes foam BA transition activities at four retail refrigeration manufacturing facilities ("Facilities") located in Missouri. See Table 2.

Criterion	ACR Standard or Methodology Specific Requirement	Proof of Project Eligibility
Eligible Foam Application	The Project must be in one of the following foam applications: 1. XPS boardstock 2. Two-component rigid PU spray foam 3. Rigid PU injected foam a. Marine flotation or buoyancy b. HVAC and air handling systems c. Refrigerated transport d. Small retail food refrigeration e. Large retail food refrigeration f. Industrial refrigeration systems g. Garage and entry doors 4. Rigid PUF residential refrigerators and freezers	The Projects are included under the following applications and sub-applications. Rigid PUF injected foam: Small Retail Food Refrigeration

Criterion	ACR Standard or Methodology Specific Requirement	Proof of Project Eligibility
Start Date	Date for all projects other than AFOLU as the date on which the project began to reduce GHG emissions against its baseline. Non-AFOLU Projects must be validated within 2 years of the project Start Date. One exception applies to these timeframes: - Projects using a newly approved methodology or a newly approved modification that expands the eligibility of a previously published methodology may submit it for listing with ACR within 10 years of the project Start Date. - However, the date of listing submittal must be within 6 months of the methodology publication date, and the project must then be validated within 2 years of the listing. - The Start Date and the start of the Minimum Project Term shall be the same. - The Start Date and the start of the first Crediting Period are generally the same, unless otherwise allowable in the relevant methodology.	The Start Date for this Project is January 1, 2019. This Project is being developed under version 2.0 of the FBA Methodology which was published in June 2018 and updated pursuant to version 3.0, published in March 2022. This project is being validated within the time period as allowed by the ACR.

Criterion	ACR Standard or Methodology Specific Requirement	Proof of Project Eligibility
Minimum Baseline BA Usage	Other than for projects which use a Default BA, records of the Baseline BA used in the Project must show a minimum of 2 years of usage of a BA with a GWP >30 prior to the Project Activity.	N/a. Default BA being used as noted below.
Default BA	For foam applications required to transition to a different BA as the result of a regulation, the Default BA will be the BA that the project developer would have used instead of the Eligible BA. In these scenarios, the Default BA becomes the Baseline BA. The GWP of a Default BA may be used if it can be demonstrated that the Default BA is the alternative most likely to be used upon transition. Project proponents shall provide documentation, which shall include financial, market and/or technical analyses, to justify the use of the Default BA.	Default BA was used in this Project. The Facilities converted from use of an HCFC blowing agent to a low-GWP blowing agent [ecomate]
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 subsequent to crediting have no required Minimum Project Term.	There is no risk of reversal for this project type.

Criterion	ACR Standard or Methodology Specific Requirement	Proof of Project Eligibility
Crediting Period	As per version 3.0 of the methodology, section 1.4, the Crediting Period shall be equal to the Leakage Lifetimes of individual foam end-use categories.	For this project, as per Table 5, the Leakage Lifetime is 8 – 20 years. Therefore, the Crediting Period is 20 years (1/1/19-12/31/38).
Real	GHG reductions and removals shall exist prior to ERT issuance. ACR will not forward issue nor forward register a projected stream of future offsets.	GHG reductions occur from the replacement of Baseline High -GWP BA with low-GWP BA in the manufacturing process during the Reporting Period.
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.	True Manufacturing is the manufacturer which uses Ecomate, an eligible low-GWP BA, in its manufacturing process. Polyurethane foam is an insulating material which is produced by True and used in its products.

Criterion	ACR Standard or Methodology Specific Requirement	Proof of Project Eligibility
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.	True acquired title to claim any environmental attributes. Prior to an agreement reached with Foam Supplies in 2018, Foam Supplies submitted and received validation and verification for use of ecomate by True in these facilities.
Additional	The Methodology requires Projects to pass the Regulatory Surplus Test and meet the ACR Practice-Based Performance Standard. <u>Practice-Based Performance Standard:</u> The Methodology has already completed a market adoption analysis. Therefore, project proponents must only show that their project falls into one of the Eligible Foam Applications found in Table 6 of the Methodology to pass the Practice-Based Performance Standard. <u>Regulatory Surplus Test:</u> The project proponent must demonstrate that Project maintains compliance with all laws, regulations, and other legally-binding mandates directly related to project activities. To meet this requirement, project proponents will submit a written and signed attestation to the verifier acknowledging the compliance status of the project during each verification interval.	Each Project passes the ACR-approved Practice-Based Performance Standard and the Regulatory Surplus Test. <u>Practice-Based Performance Standard:</u> The Project falls into the Eligible Foam Applications in Table 6 of the Methodology. <u>Regulatory Surplus Test:</u> The Project passes the Regulatory Surplus test as there are no federal, state, or facility specific regulations requiring the emission reductions associated with the Project's transition from the Baseline BA to the Project BA.

Criterion	ACR Standard or Methodology Specific Requirement	Proof of Project Eligibility
Regulatory Compliance	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.	The Facilities within each Project maintain material regulatory compliance for the entire reporting period with respect to the Project.
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 project type.
Net of Leakage	The Methodology has determined there is no market-shifting leakage and, hence is to be disregarded. Activity shifting leakage - If the Project Activity results in the equipment used in the baseline being transferred to another location or activity in which a BA with a GWP greater than 30 is used, leakage effects are to be considered. If the baseline equipment is also used in the project or is decommissioned, then leakage is to be disregarded.	Leakage is not considered for these Projects. The only modifications to the equipment required for the BA transition are the replacement of the nozzles for the BA spray guns or the guns themselves. The remainder of the Baseline foam manufacturing equipment is used in the Project.

Criterion	ACR Standard or Methodology Specific Requirement	Proof of Project Eligibility
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.	According to ACR rules, the Project benefits will be validated and verified by an independent auditor.
Community & Environmental Impacts	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.	The Projects have only positive effects on the environment, including reduced localized GHG emissions for combating climate change, as well as doing so without the use of hydrocarbons, which contribute to localized and tropospheric ozone formation. Potential negative impacts were considered for these Projects and there were not found to be any.

A4. LOCATION

The Project is located at the Project Proponent's manufacturing facilities located in Missouri and shipped for operation to locations within the U.S. (including California), Canada and elsewhere.

Table 2 – Project Locations

Project	Location	GPS Coordinates
True FBA 002	**O'Fallon MO,** 2001 East Terra Lane O'Fallon, MO 63366	Latitude: 38.805994; Longitude -90.666034
	Bowling Green MO, 16755 Industrial Park Drive, Bowling Green, MO 63334	Latitude: 39.350073; Longitude -91.235312
	Pacific MO, 900 Integram Drive Pacific, MO 63069	Latitude: 38.482326; Longitude -90.783712
	Mexico MO, 2525 Lakeview Road Mexico, MO 65265	Latitude: 39.158084; Longitude -91.916925

A5. BRIEF SUMMARY OF PROJECTS

Description of Project Activity

The Project Activity is the transition from non-Eligible BAs (Baseline BAs) to Ecomate®, an Eligible BA (Project BA) at foam manufacturing Facilities in Missouri. True Manufacturing, as the Project Proponent, is aggregating those Facilities into this single ACR Project.

True Manufacturing receives a Foam System that involves two tanks of chemicals (A-side and B-side) that are then mixed at the manufacturing Facilities to produce the foam. The BA is contained within the Foam System formulations supplied by Foam Supplies, Inc. (FSI) to the Facilities.

The Foam Systems are prepared by FSI, weighed to record product volume, shipped to the True Manufacturing Facilities in pressurized tanks with unique serial numbers for each tank, and unloaded by the foam manufacturer according to FSI's Monitoring and Quality Control Specifications. At the True facility, the A-side and B-side of the Foam System are fed into a mix-head, mixed, and forced into the foam mold cavity where the A-side and B-side systems react, foam, cool, and harden to the configuration of the cavity, producing the requisite product. At all times the isocyanate and the polyol are under a nitrogen blanket and cannot escape from the tanks. When the tanks are empty (a small volume of residual chemicals remain in the tanks) they are returned to the FSI [Supplier] facility where they are again weighed. This mass-balance measurement process is the basis for determining the amount of Foam System material used by the foam manufacturer and the basis for the calculation of the quantity of Project BA being used by the Facilities.

Background Information

Blowing agents (BAs) are a key ingredient in the production of foam. These BAs contain chemicals that release GHGs during manufacture, use, and end-of-life (destruction). The Montreal Protocol has taken action to limit the use of high GWP BAs and over the years and the US EPA implemented the Significant New Alternatives Program (SNAP) to work with and guide industry in these transitions. As a result, the majority of BAs currently in the market today are HFCs. HFCs, while safer for the ozone compared to CFCs and HCFCs, are still powerful GHGs when released into the atmosphere.

An opportunity to reduce emissions beyond regulatory compliance is by replacing HFC BAs with next generation BAs that have near zero GWP and near zero ODP.

Project Purpose(s) and Objective(s)

The purpose of the Project is to offset the GHG emissions that would have been produced by the manufacturing, use and EOL of foams with HFC BAs by transitioning to Ecomate, a near zero GWP and ODP BA.

A6. PROJECT ACTION

Description of prior physical conditions

The Facilities have been manufacturing foam for many years and have historically used CFCs, HCFCs, and/or HFCs as BAs. These are high GWP BAs that are being phased out by the Montreal Protocol. All the Facilities in each Project have taken early action to go above and beyond regulatory requirements to transition to an Eligible BA, as defined by the Methodology. FSI is a system supply house that provides the chemicals, storage, and delivery systems to produce the foam used by the Facilities.

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

Each of the Facilities in the Project opted to transition from a high-GWP BA to Ecomate for its low GWP value. The voluntary transition of each Facility to an Eligible BA in their foam production results in a reduced amount of GHG in the manufacturing, use and EOL of the foam produced by the Facilities.

The Projects measure the amount of Eligible BA used by each Facility against the amount of Baseline BA that would have been used to produce the same quality of foam product. Because Ecomate has a different molecular weight and chemical structure than the Baseline BAs, less Ecomate is needed to produce the same quality of foam. This results in a BA ratio (BAR) that is multiplied by the actual annual Project BA usage to obtain the amount of Baseline BA that would have been used in absence of the project activity measures the amount of Baseline BA whose use has been avoided by the use of the Project BA.

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

The Facilities manufacture the foam in batch processes on a daily basis. Therefore, the project activity is ongoing throughout the year within each Facility as they produce the foam and at FSI where they continually deliver the BA to the Facilities.

- ***Ecomate***: A low-GWP BA manufactured and sold by FSI
- ***True Manufacturing:*** The Project proponent which uses, and has used, Ecomate for many years. An objective for the use of Ecomate is to minimize the environmental impact of the products produce by True, which have contained high-GWP refrigerants in the past.
- ***FSI***: Supplies the Eligible BA to the Facilities and is responsible for maintaining the sales records and volumes associated with the BA usage.

- ***A-side and B-side tanks***: These are the tanks that are filled with BA and other foam chemicals at the FSI facility in Earth City, MO. They are shipped to each Facility for use in their foam products and then returned to FSI when empty.

- ***Foam manufacturing equipment***: Equipment located at each Facility that produces the foam product. The equipment consists of an electronic control panel, foam spray guns that blend the A-side and B-side tank chemicals, and a foam molding machine.

A7.A UPDATED EX ANTE OFFSET PROJECTION

As specified in Version 3.0 of the Methodology, EOL emissions are now included in the calculation, and have been included in this Updated Project Plan. [see section B4, SSR 6] . Version 3.0 specifies that the ERTs are to be calculated and then the prior quantity of ERTs issued (under version 2.0) is to be subtracted to yield the outstanding ERTs to be awarded as second issuance.

Project	Vintage	Total ERTs
Total ERTs v. 3.0	2019	291,297 mtCO2e
Already Issued ERTs v 2.0	2019	49,520 mtCO2e
Outstanding ERTs (Second Issuance)	2019	241,777 mtCO2e

A8. PARTIES

True Manufacturing, Inc. – Project Proponent

True Manufacturing ("True") is a manufacturer of small retail refrigeration equipment. It has been recognized as a leader in minimizing its environmental impact and has received scores of Energy Star awards for its various products. True has been in business for over 70 years and is privately held. True has 4 manufacturing facilities in the U.S., and ships products internationally.

True has been a long-standing customer for Ecomate Systems and supported the revision of the ACR Methodology being used for this Project.

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Dentons – Project Management

Dentons is a multinational law firm founded in March 2013 by the merger of SNR Denton, Fraser Milner Casgrain and Salans. It has more than 136 offices across 50-plus countries, with over 10,000 lawyers and professionals.

Dentons' Climate Change Team consists of lawyers and senior advisors that are architects of emissions trading and strategists behind greenhouse gas regulation, emission reduction solutions and monetization.

Jeffrey Fort (Partner) and Susan Wood (Senior Director and Manager) are the project managers for each Project. Dentons and Susan Wood Consulting are two of the authors of the ACR Methodology being used for this Project.

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B.
METHODOLOGY

B1. APPROVED METHODOLOGY

This Project is submitted under the approved ACR methodology entitled "Methodology for the Quantification, Monitoring, Reporting, and Verification of Greenhouse Gas Emissions Reductions and Removals from the Transition to Advanced Formulation Blowing Agents in Foam Manufacturing and Use", Version 2.0. This Updated Project Plan (and the accompanying Monitoring Report) are submitted under Version 3.0, adopted after the original project award.

B2. METHODOLOGY JUSTIFICATION

The Project involves the transition of foam manufacturing lines from high-GWP BAs (Baseline BAs) to BAs having low-GWP and low-ODP (Eligible or Project BAs). The chosen methodology provides the quantification framework for the creation of carbon credits from the GHG reductions resulting from these activities. Version 3.0 allows for creditable emission reductions from End of Life to be included in the calculations.

B3. PROJECT BOUNDARIES

The physical boundaries for the Projects are the locations of each Facility where the foam is manufactured. Location information for each Facility is included in Table 2. Once the foam product leaves the foam manufacturing Facility, for purposes of calculating the saved emission reductions, it is considered "in-use", which includes emissions from EOL. However, the location of where the foam product is in-use is not identified. The temporal boundary for each Project is January 1st – December 31st for each vintage year.

B4. IDENTIFICATION OF GHG SOURCES AND SINKS

Table 5 – GHG Sources and Sinks

SSR		Source Description	Gas	Included (I) or Excluded (E)	Quantification Method
1	BA Production	Fossil fuel emissions from the production of the BA.	CO_2	E	N/A
			CH_4	E	N/A
			N_20	E	N/A
		Emissions from the production of the BA.	GHG	E	N/A
2	BA Delivery	Emissions from the delivery of the BA to the project site.	GHG	E	N/A
		Fossil fuel emissions from the delivery of the BA to the project site.	CO_2	E	N/A
			CH_4	E	N/A
			N_20	E	N/A
3	Foam Manufacture	Emissions from the manufacture of the foam using a BA in the baseline and project.	GHG	I	Equations 1, 2 & 3
4	Pollution Control	Fossil fuel emissions from air pollution control equipment used in the baseline and project.	CO_2	E	N/A
			CH_4	E	N/A
			N_20	E	N/A
5	Foam Usage	Emissions from the use of the foam in the baseline and project.	GHG	I	Equations 1, 2 & 3
6	Foam Disposal	Fossil fuel emissions from the transport of the foam to EOL.	CO_2	E	N/A
			CH_4	E	N/A
			N_20	E	N/A
		Emissions from the equipment used to destroy the foam at EOL	CO_2	E	N/A
			CH_4	E	N/A
			N_20	E	N/A
		Emissions from the foam at EOL (e.g. landfill, shredding, incineration, etc.)	GHG	I	Equations 1, 2 and 3 of v 3.0

B5. BASELINE

The baseline scenario is the use of a non-eligible BAs as the Baseline BA in the manufacturing and use of foam products, including EOL The Baseline BA for these facilities is a default BA for the BA that was used prior to the transition to the Project BA.

B6. PROJECT SCENARIO

The Project Scenario is the actual amount of Project BA used by the Facility to manufacture foam with the same thermal quality and in the same Foam Application as in the Baseline Scenario.

B7. REDUCTIONS AND ENHANCED REMOVALS

The Project is based on a simple premise of product replacement and mass-balance. The Baseline BA has a high GWP that produces a significant amount of GHG during the manufacturing and use of the foam product. The Project BA has a low GWP and produces significantly less GHG during the manufacturing, use and EOL of the foam product. Baseline BA GHG emissions minus Project BA GHG emissions equals the Project emission reductions and enhanced removals.

B8. PERMANENCE

There is no risk of reversal. Once the polyurethane product is produced with the Eligible BA, the product is made and the associated GHG reductions are fixed.

C.
ADDITIONALITY

Assessment of the Additionality of a Project under this Methodology is defined in the Methodology itself. It is made based on passing the following two tests:

1. Regulatory Surplus Test
2. Performance Standard Test

C1. REGULATORY SURPLUS TEST

In order to pass the regulatory surplus test a project must not be mandated by existing laws, regulations, statutes, legal rulings, or other regulatory frameworks in effect as of the start date that directly or indirectly affect the credited offsets.

The Project is subject to a wide variety of environmental laws and regulations but none require the use of the low-GWP a blowing agent used here.

The Project and the use of a low GWP blowing agent is not 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.

EPA, Canadian authorities, and the State of California have taken action to require reductions in the GWP content of certain classes of foam blowing agents used in retail refrigeration units.

None of those actions require the use of a low GWP blowing agent as defined by the Methodology, such as ecomate used in this Project.

C2. COMMON PRACTICE TEST

Not applicable.

C3. IMPLEMENTATION BARRIERS TEST

Not applicable.

C4. PERFORMANCE STANDARD TEST

The Methodology has already completed a market adoption analysis. Therefore, project proponents must only show that their project falls into one of the Eligible Foam Applications found in Table 6 of the Methodology to pass the Practice-Based Performance Standard.

The Project falls into the Eligible Foam Applications listed in Table 6 of the Methodology.

D.
MONITORING PLAN

MONITORED DATA AND PARAMETERS

Data or Parameter Monitored	**Q_{EBA}**
Unit of Measurement	Pounds
Description	Quantity of Eligible BA used in the Project
Data Source	True maintains records of Project BA received and used in the Project for each Facility.
Measurement Methodology	Quantity of low GWP BA delivered at each manufacturing facility less quantity (credits) for returned Eligible BA
Data Uncertainty	High level of certainty
Monitoring Frequency	Annually. Quantity of low GWP delivered less the credits for quantity returned at each Facility
Reporting Procedure	Monitored weight for low-GWP BA used is recorded in the purchasing records.
QA/QC Procedure	Quantities delivered and credits and based on seller's scales which must be calibrated so as to be legal for commercial trade. Supplier's specifications. Quantities used are also compared to expected use for products produced.

Data or Parameter Monitored	**BAR**
Unit of Measurement	%
Description	BA Ratio – The quantity of Eligible BA, as compared to the Baseline BA, that is required to replace the Baseline BA to produce a foam with equivalent thermal performance.
Data Source	Product Information Sheets (PIS) from FSI and others
Measurement Methodology	The "mix ratio" and "BA %" from the foam system PIS is used to calculate the "BA / foam ratio" for both the Baseline BA and the Project BA. The Baseline BA "BA / foam ratio" is then divided by the Project BA "BA / foam ratio". The result is the BAR for the Facility.

Data Uncertainty	High level of certainty.
Monitoring Frequency	Once, at the beginning of each project.
Reporting Procedure	NA
QA/QC Procedure	True tests each shipment of low-GWP BA upon receipt and before being released to being used.

Data or Parameter Monitored	**QLBA**
Unit of Measurement	Pounds
Description	Quantity of BA that is shifted to the new location that results in activity shifting leakage.
Data Source	Maintenance records identify any equipment modified, replaced, or decommissioned as a result of the Project Activity and any equipment moved for use outside of the project boundaries.
Measurement Methodology	Leakage will be calculated for any equipment identified by maintenance records as being moved for use outside the project. Boundaries to a new foam production process created as a direct result of the availability of said equipment.
Data Uncertainty	High level of certainty.
Monitoring Frequency	Throughout the project, whenever any maintenance or service changes or removes a piece of equipment.
Reporting Procedure	Any maintenance or service records are maintained by True in the Facility files.
QA/QC Procedure	NA

GHG management system employed

True Manufacturing has developed a significant system to manage its GHG emissions. One of its early steps was to test and then adopt ecomate as a low GWP bowing agent for use in producing its small refrigeration units. That effort began in 2005 and continues today.

Now, blowing agent usage is monitored at three locations: first when pressured A and B side tanks are delivered to a Facility; second when they are placed at or near the manufacturing facility in a temperature-controlled room, after a 24-hour stabilization period are pressurized with nitrogen, and third when the tanks are used to provide insulation into the cabinet for the refrigeration unit.

All stored data is kept in True's computer systems for retrieval and quality control purposes, at its St. Charles MO corporate headquarters and in connected data systems. True maintains records of all poundage and expected ratios for each product produced with a baseline shot ratio and shot size, in order to meet the requisite flow rate and mix ratio of 100 to 73 parts A to B chemical.

Methods used to generate data

For purposes of this Project, the quantity of eligible BA [**Qeba]** used is recorded by the billing information for the quantities (in pounds) delivered to the Facilities, reduced by the credits for quantities of returned product in the tanks (also in pounds) To support these billing records, the Ecomate seller (Foam Supplies Inc.) validated its billings with calibrated weight scale information as required by Missouri law**.**

Transfer points and non-automated transfer of data

All blowing agent usage data is collected automatically. Daily readings of the usage on the manufacturing floor is non-automated. Various checks on the use of low-GWP BA occur through the course of manufacturing, including whether the quantity being used matches the BOM[1] for that product.

Calibration procedure and frequency

Each shipment of ecomate and ecomate systems are delivered after the tanks are weighed at the Foam Supplies, Inc., the seller of the BA. At each facility, flow meters at each work station are calibrated at the start of each shift and compared against the required formulae for the BA. Other maintenance is performed as necessary and as required by True's quality control manufacturing procedures.

Internal audit and quality control procedures

[1] "BOM" (or Bill of Materials) is a compilation of all materials used to manufacture a unit.

The quantity of BA used as measured by the flow meter volumes are compiled and compared to the required formulae, True's records of BA consumed, BA purchase orders and product sales on an annual basis.

Records documenting the foam application used in the baseline and the project

Further quality assurance measures can be done by using the full year sales of all products is collected, by serial number (including exact model details, date of build and "sold to" information for the US and Canada)

Records documenting the amount of the eligible BA consumed in the Project Activity

The full year of invoices and credits showing pounds of foam purchased and pounds of foam credited.

Sampling methods

Sampling is not required under the Methodology.

Equipment log for all equipment used in the project

- All foam dispensing equipment has a unique serial number.
- True keeps a log of daily Q.C. relative to each individual piece of equipment.
- Any equipment delivered, removed, or replaced at the Facility, for purposes of tracking any leakage issues, is tracked through a database.
- After any service is completed on the equipment, a full verification of correct operation and accuracy of dispensing equipment.

Identification and log of any equipment modified or replaced or decommissioned as a result of the Project Activity and any equipment moved for use outside of the Project Activity.

- There were no such equipment modified, replaced, decommissioned or moved. Equipment was maintained as necessary to continue operations during the Project Activity.

Figure 1 – Process Flow Diagram

Foam application used in the baseline and the project, including 2 years of previous BA used with GWP > 30

- N/a; a default BA is used.
- True used R-141b and R-22 for its foam blowing agent until converting to ecomate. That conversion process began in 2005 and was completed in 2007. As such, the default BA applies, which has been established as HFC-134a. [See Project memo on Default BA for HCFC-141b and R-22 and information beginning at page 28 below]
- The foam application used in the Baseline and the Project were the same for each of the Facilities. Service records before and after the transition to the Eligible BA show that the equipment used to produce the foam and the foam produced by the Facility was the same throughout the course of the Project.
- True maintains electronic copies of Invoices and Credits**,** sales receipts, service reports and other documentation for each Facility to demonstrate the reason for using a Default BA.

Records used in support of the BA ratio for the project.

The documentation used in support of the BA ratio is the same as used during earlier projects, conducted by Foam Supplies, Inc., during which these Facilities were validated. Those records include the ratio between the B-side and A-side formulae. That BA ratio was used in this Project.

As was demonstrated during prior validations and verifications, the following formulae were used:

A:B ratio from Product Information Sheet

True maintains these BA percentages in its Database (proprietary). From these data, the pounds of Project BA required to produce one pound of Project foam is determined. And the pounds of Baseline BA required to produce one pound of Project foam is determined.

The pounds of Baseline BA required to replace one pound of Project BA used in the Project Activity is also determined pursuant to the Methodology.

Justification for use of Default BA

HFC 134a Default BA Justification

This project has been assigned a "Default BA" because at the time of its transition to Ecomate it was using a phased out HCFC BA. HCFCs were phased out in 2003 and 2007 and gave rise to the use of HFCs. The assigned Default BA is the most likely BA that the company would have transitioned to if they had not transitioned to Ecomate. True used HFC-134a at another facility before deciding to convert the Facilities here to use of Ecomate. Most companies in the retail food refrigeration sector (Polyurethane Foam) transitioned to HFC-134a when HCFCs were no longer allowed.

When HCFCs were phased out, the HFCs available to the foam blowing industry at the time were[2]:

- HFC-134a
- HFC-245fa
- HFC-365mfc (blended)

HFC-134a had been commercially available almost 10 years earlier than the other two BA's which means it was a much more tested and proven BA technology. HFC-365mfc was not sold in the US so it was not an option. There was more supply of HFC-134a on the market at a much lower cost.

- **HFC-134a**
  - HFC-134a has been commercially available since at least 1993[3].
  - HFC-134a is referenced by the EPA as the leading choice for BA's[4]
  - True also used HFC-134a when the HCFC it had been using was phase out. At the same time, it compared ecomate as a blowing agent.

- **HFC-245fa**
  - EPA approved HFC-245fa in 1999 but it was not commercially available until 2002. *"Extensive development efforts have centered on new rigid-foam systems for refrigeration. The leading candidates appear to be HFC-245fa,*

[2] *See Dropbox files in "Project 001 B-K Data Room" in "Justification for 134a as Default BA" folder: "Huntsman HFC BA Options (fig 2)"; "Dow Presentation (pg 7)"; "Dow Paper (tbl 1)"*
[3] *See Dropbox file: "1993 Renosol Patent 134a"*
[4] *See Dropbox file: "134a usage report TEAP 2018"*

HFC-134a--a commercially available product that is already being used here and in Europe--and cyclopentane."[5].

- 245fa is a Honeywell patent-protected BA that has significant limitations on 3rd party resale[6].
- Total volumes produced globally in 2007 were @ 1mm pounds in a global industry that in 2008 used @ 50,000 tonnes of HFC BAs[7].

- **HFC-365mfc**
    - HFC-356mfc was introduced by Solvay in 1999 but not available for commercial use until 2002 and couldn't be sold in the US due to patent issues[2].
    - 365mfc is a Honeywell patent-protected BA that has significant limitations on 3rd party resale[4].
    - Volumes of 365mfc globally were low. For example, 365mfa use was permitted for use in Europe and 245fa was not permitted. At one point the supply of 365mfc got so low that Europe decided to allow the use of 245f.

True used both HFC-134a and Ecomate for a period of time, though HFC-134a was not used in these Facilities. True then decided to switch to Ecomate because of its performance and superior environmental attributes.

[5] *See Dropbox file: "1999 Industry Paper on BAs"*
[6] *See Dropbox file: "Honeywell 2001 Patent for 245fa & 365mfc"*
[7] *See Dropbox files: "Honeywell 2007 HFC-245fa volumes"; "2009 Paper BA History (fig 1)"*

E.
QUANTIFICATION

4.1 BASELINE EMISSIONS

4.1.1 Baseline Emissions Associated with Foam Manufacturing, Use and Disposal

These emissions are calculated as the total quantity of Baseline BA that would have been used for the foam manufacturing in absence of the Project Activity, multiplied by the Leakage Lifetime emission rate associated with the foam application (Tables 5 and 6), multiplied by the GWP of the Baseline BA. For foam applications required to transition to a different BA as the result of a regulation, the GWP of a Default BA may be used if it can be demonstrated that the Default BA is the alternative most likely to be used upon transition. Project proponents shall provide documentation, which shall include financial, market and/or technical analyses, to justify the use of the Default BA. This documentation shall be subject to review by the ACR and assessment by the chosen verification body.

4.1.2 Calculating Baseline BA Blends

When the BA is a blend, baseline emissions are only calculated for the constituent BA that is being transitioned to the Eligible BA. In the event that each constituent of the Baseline BA is transitioned, each constituent of the Baseline BA is calculated separately.

Equation 1

$$BE_{BBA} = (Q_{BBA} \times LL_{BBA}) \div 2204.62 \times GWP_{BBA}$$

Where

BE_{BBA}	Baseline emissions (MT CO_2e)
Q_{BBA}	The quantity of Baseline BA (in pounds) which would have been used to manufacture the foam in the absence of the project activity, using Equation 2
LL_{BBA}	Leakage Lifetime emission rate associated with the foam application (See Tables 5 and 6)
2204.62	Pound to metric ton conversion
GWP_{BBA}	The GWP of the Baseline BA[8]

To calculate the quantity of Baseline BA that would have been used in the absence of the project activity, Equation 2 is applied.

[8] For projects required to transition as a result of a regulation, the GWP of the Default BA will be used.

Equation 2

$$Q_{BBA} = Q_{EBA} \times BAR$$

Where

Q_{BBA}	The quantity of Baseline BA (in pounds) which would have been used to manufacture the foam in the absence of the project activity
Q_{EBA}	The quantity of Eligible BA (in pounds) which is used to manufacture the foam for the project
BAR	Blowing Agent Ratio - The quantity of Eligible BA, as compared to the Baseline BA, that is required to replace the Baseline BA to produce a foam with equivalent thermal performance (%)

4.2 PROJECT EMISSIONS

4.2.1 Project Emissions Associated with Foam Manufacturing, Use and Disposal

These emissions are calculated as the total quantity of Eligible BA that is used in the project, multiplied by the Leakage Lifetime emission rate associated with the foam application (same as the emission rate used in Equation 1), multiplied by the GWP of the Eligible BA.

4.2.2 Calculating Project BA Blends

When the BA is a blend, project emissions are only calculated for the Eligible BA portion of the blend.

Equation 3

$$PE_{EBA} = (Q_{EBA} \times LL_{EBA}) \div 2204.62 \times GWP_{EBA}$$

Where

PE_{EBA}	Project emissions (MT CO2e)
Q_{EBA}	The quantity of Eligible BA (in pounds), which is used to manufacture the foam for the project
LL_{EBA}	The Leakage Lifetime emission rate of the foam application (set equal to emission factor used in Equation 1)
2204.62	Pound to metric ton conversion
GWP_{EBA}	The GWP of the Eligible BA

4.3 LEAKAGE

4.3.1 Market-shifting Leakage Emissions

Transition to an Eligible BA does not cause the displaced BA to be used elsewhere. There is no market-shifting leakage and hence is to be disregarded.

4.3.2 Activity-shifting Leakage Emissions

If the Project Activity results in the equipment used in the baseline being transferred to another location or activity in which a BA with a GWP greater than 30 is used, leakage effects are to be considered. If the baseline equipment is also used in the project or is decommissioned, then leakage is to be disregarded.

- **ACTIVITY SHIFTING LEAKAGE EMISSIONS ASSOCIATED WITH THE FOAM MANUFACTURING, USE AND DISPOSAL.** These emissions are calculated as the total quantity of BA with a GWP greater than 30 that is being used at the new location with the baseline equipment, multiplied by the Leakage Lifetime emission rate associated with the foam application (Tables 5 and 6), multiplied by the GWP of the BA.

Equation 4

$$LE_{LBA} = (Q_{LBA} \times LL_{LBA}) \div 2204.62 \times GWP_{LBA}$$

Where

LE_{LBA}	Activity shifting leakage emissions (MT CO2e)
Q_{LBA}	The quantity of BA (in pounds) that is used at the new location
LL_{LBA}	The Leakage Lifetime emission rate associated with the foam application of the BA used at the new location (See Tables 5 and 6)
2204.62	Pound to metric ton conversion
GWP_{LBA}	The GWP of the BA used at the new location

4.4 EMISSION REDUCTIONS

The emission reductions achieved as a result of the transition to an Eligible BA are calculated as the baseline emissions minus the leakage emissions (if applicable) minus the project emissions.

Equation 5[9]

$$ER = ((BE_{BBA} - LE_{LBA}) - PE_{EBA}) \times (1 - DF)$$

Where

ER	Emission reductions (MT CO2e)
BE_{BBA}	Equation 1 - Baseline emissions (MT CO2e)
PE_{EBA}	Equation 3 - Project emissions (MT CO2e)
LE_{LBA}	Equation 4 - Leakage emissions (MT CO2e)
DF	0.03 – Discount Factor (if applicable)

[9] As stated in Sections 4.1 and 4.2, where a BA blend is used, emissions are to be quantified separately for each constituent BA. As a result, a summation of baseline, project, and leakage emissions for the project shall occur to accurately quantify total emission reductions associated with a project.

E6. EX-ANTE ESTIMATION METHODS

Emission reductions created from each Project are directly correlated to the BA used prior to the transition, the BAR, and the amount of Eligible BA used during the Reporting Period.

Table 6- Offset Volume Estimates

As specified in Version 3.0 of the Methodology, the ERTs under 3.0 are to be calculated and then the ERTs already issuance under version 2.0 are to be subtracted to yield the outstanding ERTs to be awarded as second issuance.

Project	Vintage	Total ERTs
Total ERTs v. 3.0	2019	291,297 mtCO2e
Already Issued ERTs v 2.0	2019	49,520 mtCO2e
Outstanding ERTs (Second Issuance)	2019	241,777 mtCO2e

F.
COMMUNITY & ENVIRONMENTAL IMPACTS

F1. NET POSITIVE IMPACTS

The potential impacts on the local community and the environment were considered. Positive community impacts from the Project include the reduction of GHG emissions from foam manufacturing both at the local level (near the manufacturing facility) and globally. There were no foreseeable negative impacts to the community or the environment that result from each Project.

The Project meets and fulfills the applicable sustainability goals as articulated by the UN Department of Economic and Social Affairs, in #Envision2030.

Goal #9 , [Industry, Innovation and Infrastructure] is met because the use of low-GWP blowing agents for manufacturing in industrial sectors for insulation products (where there has been very little adoption of such) and such is incentivized and rewarded by the projects, such as this one, under the FBA methodology. The technology can be used in developing countries since it is a drop in technology with only small adjustments to manufacturing techniques required. Goal #12 [Responsible Consumption and Production] is met because the Project produces virtually no waste in the foam manufacturing process and involves a closed loop manufacturing process with virtually no releases to the environment, to produce the insulated product. Goal #13 [Climate Action] is met because the ecomate blowing agent [<5GWP] being used in the project was invented to anticipate and meet climate goals and is continuing to be refined and its use expanded, including to manufacturing in developing countries.

F2. STAKEHOLDER COMMENTS

Not applicable for this project type.

G.
OWNERSHIP AND TITLE

G1. PROOF OF TITLE

True Manufacturing and Foam Supplies have entered into an agreement whereby True has the right to claim all "environmental attributes", and specifically carbon offset credits, from its use of Ecomate® as an Eligible BA, beginning in January, 2018. True claims title to any and all environmental attributes associated with this project activity. "Any and all environmental attributes, including environmental offset credits with respect to TRUE® refrigeration units manufactured after September 1, 2015 shall remain the property True Manufacturing Company and are not transferred."
www.truemfg.com/Support/Warranty-Support and navigate to Warranty Statement (pdf).

G2. CHAIN OF CUSTODY

The Project has not produced any offsets to date and, therefore, no offsets have been bought or sold previously. Nor does the Project have a forward option contract in place.

G3. PRIOR APPLICATION

These activities have not previously been the subject of an offset project.

H.
PROJECT TIMELINE

H1. START DATE

Table 7 – Project Start Date Determinations

Project	Project Start Date	How Determined
True FBA 002	January 1, 2019	Service records for manufacturing products with Ecomate as blowing agent.

H2. PROJECT TIMELINE

Table 8 – Project Timelines

Project Number	002
Initiation of Project Activities	January 1, 2019
Project Term	Not applicable
Crediting Period	1/1/19 - 12/31/38
Reporting Period	1/1/19-- 12/31/19
Frequency of Reporting	Once for 2019
Monitoring Period	1/1/19 -- 12/31/19
Frequency of Monitoring	Ongoing throughout 2019
Frequency of Validation	Once in 2020
Frequency of Verification	Once in 2021, Once in 2022 for second issuance

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