Whirlpool HFO Amana 656 & 657

May 2022

Whirlpool Corporation

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A.
PROJECT OVERVIEW

A1. PROJECT TITLE

Whirlpool HFO Amana 656

Reporting period: 01/01/2019-12/31/2019

Whirlpool HFO Amana 657

Reporting Period: 01/01/2020-12/31/2020

A2. PROJECT TYPE

Industrial Process Emissions: Transition to Advanced Formulation Blowing Agents in Foam

A3. PROOF OF PROJECT ELIGIBILITY

Table 1: Applicability Requirements from ACR Methodology Section 1.2

Criterion	Requirement	Proof of Project Eligibility
Project Location	Project must be located in North America	Project location is 2880 220th Trail, Amana, IA 52204 USA
Eligible Foam Application	Eligible projects are XPS Boardstock, two-component rigid PU spray foam, rigid PU injected foam, or rigid PUF residential refrigerators and freezers	Project application is: Rigid PUF residential refrigerators and freezers
Project Start Date	Non-AFOLU Projects must be validated within 2 years of the project Start Date. AFOLU Projects must be validated within 3 years of the project Start Date.	Start date is more than 2 years prior to listing but aligned with ACR Published Errata and Clarification. (The Amana facility was visited during a successful validation and verification for another project of this same type and registered on ACR by Whirlpool.)
Prior 2 year usage of BA	Project proponent must show usage of a BA with GWP > 30 for 2 years prior to project start date	245fa purchase data will be provided as evidence of use prior to project start date
Minimum Project Term	The duration of the Minimum Project Term for specific project types is defined in the relevant ACR sector requirements and/or methodology.	Project types with no risk of reversal after crediting have no required Minimum Project Term. There is no risk of reversal, because the products are already produced with the HFO.

Crediting Period	The crediting period shall be equal to the Leakage Lifetimes for individual foam end-use categories.	The Leakage Lifetime for Rigid PUF residential refrigerators and freezers is 14 years.
Real	GHG reductions and/or removals shall result from an emission mitigation activity that has been conducted in accordance with an approved ACR Methodology and is verifiable. ACR will not credit a projected stream of offsets on an ex-ante basis.	Whirlpool switched to HFO resulting in real emissions reductions. This project is aligned with the Transition to Advanced Formulation Blowing Agents in Foam methodology.
Emission or Removal Origin	The Project Proponent shall document that no other entity may claim GHG emission reductions or removals from the Project Activity (i.e., that no other entity may make an ownership claim to the emission reductions or removals for which credits are sought).	Whirlpool Corporation maintains ownership for the carbon offsets claimed in all of the projects listed in the ACR registry for issuance of Emission Reduction Tons (ERTs). According to the Methodology, "A transition to the use of an Eligible BA for the production of foam is considered a 'Project Activity'". The switch to an eligible blowing agent was a decision made by Whirlpool Corporation. The blowing agent is used at Whirlpool Corporation facilities in the production of foam for refrigeration products. Whirlpool Corporation's choice to switch blowing agents for this process resulted in the relevant emissions reductions. Therefore, the supplier of the blowing agent and the end users of the refrigeration products are not the owners of the project activity.
Offset Title	The Project Proponent shall provide documentation and attestation of undisputed title to all offsets prior to registration. Title to offsets shall be clear, unique, and uncontested. ACR will issue offsets into the account of a Project Proponent only if there is clear, unencumbered, and uncontested offset title.	Whirlpool Corporation maintains ownership for the carbon offsets claimed in all of the projects listed in the ACR registry for issuance of Emission Reduction Tons (ERTs). According to the Methodology, "A transition to the use of an Eligible BA for the production of foam is considered a 'Project Activity'". The switch

		to an eligible blowing agent was a decision made by Whirlpool Corporation. The blowing agent is used at Whirlpool Corporation facilities in the production of foam for refrigeration products. Whirlpool Corporation's choice to switch blowing agents for this process resulted in the relevant emissions reductions. Therefore, the supplier of the blowing agent and the end users of the refrigeration products are not the owners of the project activity.
Additional	GHG emission reductions and removal enhancements are additional if they exceed those that would have occurred in the absence of the Project Activity and under a business-as-usual scenario.	Whirlpool Corporation has confirmed that the transition to HFO blowing agent was voluntary and not based on regulatory requirements. The Methodology has already completed a market adoption analysis, and confirmed that the relevant blowing agents meet the Practice-Based Performance Standard.
Regulatory Compliance	Adherence to all laws, regulations, and other legally binding mandates directly related to Project Activities.	There were no relevant regulatory violations or notifications related to the scope of the foam process that we are aware of during the time periods. The Amana facility has had only Clean Water Act violations, which are not related to the scope of the blowing agent project.
Permanent	For projects with a risk of reversal of GHG removal enhancements or avoided conversion projects, Project Proponents shall assess and mitigate risk, and monitor, report, and compensate for reversals.	There is no risk of reversal, because the products are already produced with the HFO.
Net of Leakage	ACR requires Project Proponents to address, account for, and mitigate certain types of leakage, according to the relevant sector requirements and methodology conditions.	There is no leakage in these projects because the same equipment was used with the new and old blowing agent.

Independently Validated	ACR requires third-party validation of the GHG Project Plan by an accredited, ACR-approved VVB once during each Crediting Period and prior to issuance of ERTs.	Whirlpool is seeking validation from First Environment.
Independently Verified	Verification must be conducted by an accredited, ACR-approved VVB prior to any issuance of ERTs and at minimum specified intervals.	Whirlpool is seeking verification from First Environment.
Environmental and Community Assessments	Project Proponents must identify in the GHG Project Plan community and environmental impacts of their project(s). Projects must describe the safeguard measures in place to avoid, mitigate, or compensate for potential negative impacts, and how such measures will be monitored, managed, and enforced.	The net positive impacts from the project include a reduction of GHG emissions from high GWP foam use in the production of appliances. No negative impacts to the environment are expected.

A4. LOCATION

Whirlpool Corporation Amana Manufacturing Facility

2880 220th Trail, Amana, IA 52204

(41.801280, -91.892660)

A5. BRIEF SUMMARY OF PROJECT

Provide a brief description of the project including:

- *Description of project activity*
  - This project quantifies the GHG emission reductions from Whirlpool Corporation's (WHR) transition from the high GWP blowing agent 245fa to the low GWP blowing agent Solstice LBA (HFO-1233zd(e)) at the Amana, IA manufacturing facility using the ACR methodology: The Transition to Advanced Formulation Blowing Agents in Foam Manufacturing and Use.
- *Background information*
  - Starting in 2013, Whirlpool Corporation's Amana, IA facility began transitioning from 245fa to Solstice LBA (HFO-1233zd(e)) as the Blowing Agent in their appliance manufacturing with a full Solstice LBA (HFO-1233zd(e)) transition in March 2014 for their refrigerators. This project is a Rigid PUF residential refrigerators & freezers, which is an Eligible Foam Application listed in Table 1 of the Methodology. This project quantifies the emission reductions from transitioning to low GWP BA for just over 1 million refrigerators produced at the

Amana, IA facility during the period 01/01/2019-12/31/2019 and 01/01/2020-12/31/2020.

- *Project purpose(s) and objective(s)*
  - The purpose of this project is to quantify and credit the environmental good stewardship taken by Whirlpool to mitigate GHG emissions by voluntarily transitioning to Solstice LBA (HFO-1233zd(e)).

A6. PROJECT ACTION

Describe the project action(s), including:

- *Description of prior physical conditions*
  - Prior to the transition to Solstice LBA (HFO-1233zd(e)), WHR used 245fa BA at the Amana facility for the foam in their appliances. The WHR Amana facility produces over one million residential appliances a year. The manufacturing practices at the Whirlpool Amana facility are categorized as a Rigid PUF residential refrigerators & freezers foam application, which is a manufacturing process for producing component parts of appliances by injecting two or more liquid streams into a mold or part.
- *Description of how the project will achieve GHG reductions and/or removal enhancements*
  - The GHG reductions occur because Solstice LBA (HFO-1233zd(e)) used in WHR residential refrigerators has a lower GWP than the baseline 245fa BA. The difference between the baseline emissions (245fa) and the project emissions (Solstice LBA (HFO-1233zd(e))) result in the project emission reductions. GHG emissions from the BA occur at 3 phases of the product's lifecycle (manufacturing,use, and disposal including post-disposal).
- *Description of project technologies, products, services and expected level of activity*
  - Whirlpool made the transition from 245fa to Solstice LBA (HFO-1233zd(e)) without changing the manufacturing technology at the Amana, IA facility. The HFO is part of the foam insulation component in refrigeration products. HFO blowing agent is more efficient than the previous 245fa, and allows for the blowing agent to compose a lower % of the foam in terms of weight. The WHR Amana facility produces over one million refrigeration appliances a year.

A7. *EX ANTE* OFFSET PROJECTION

List estimated GHG emission reductions and removal enhancements by year, stated in metric tons of CO_2e.

Reporting periods: 01/01/2019-12/31/2019, 01/01/2020-12/31/2020

Year	Baseline Emissions	Project Emissions	Total Emission Reductions under V3.0	First Issuance Emission Reductions	Second Issuance Emission Reductions
2019	2,156,014 mt	6,960 mt	2,149,053 mt CO2e	134,315 mt CO2e	2,014,738 mt CO2e
2020	1,704,636 mt	6,384 mt	1,698,251 mt CO2e	106,140 mt CO2e	1,592,111 mt CO2e

A8. PARTIES

Whirlpool Corporation (Whirlpool)

Whirlpool is the Project Proponent and owner to offsets created by this project. Whirlpool operates the Amana, IA manufacturing facility where the eligible BA is used to make residential refrigerators. Whirlpool owns the ACR account where this offset project is listed. The project has not been listed on another GHG Registry.

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B.
METHODOLOGY

B1. APPROVED METHODOLOGY

The Transition to Advanced Formulation Blowing Agents in Foam Manufacturing and Use V 2.1 August 2021 with quantification based on V3.0 (the Methodology).

B2. METHODOLOGY JUSTIFICATION

Whirlpool's foam application manufacturing process falls under the "rigid PUF residential refrigerators and freezers" eligible foam application category outlined in the Methodology. The project credits the transition from 245fa to Solstice LBA (HFO-1233zd(e)). 245fa is a baseline BA identified in the Methodology, and Solstice LBA (HFO-1233zd(e)) is an eligible BA identified in the Methodology. The project took place in North America, and the validation period start date is 01/01/2019 which is aligned with the Errata and Clarification published on the ACR website.

B3. PROJECT BOUNDARIES

The physical boundary is the Whirlpool Amana Manufacturing facility located at 2880 220th Trail, Amana, IA 52204.

The temporal boundary of the first project reporting period is 01/01/2019 to 12/31/2019 and the project crediting period of 01/01/2019-12/31/2032. The temporal boundary of the second project reporting period is 01/01/2020 to 12/31/2020 and the project crediting period of 01/01/2020-12/31/2033.

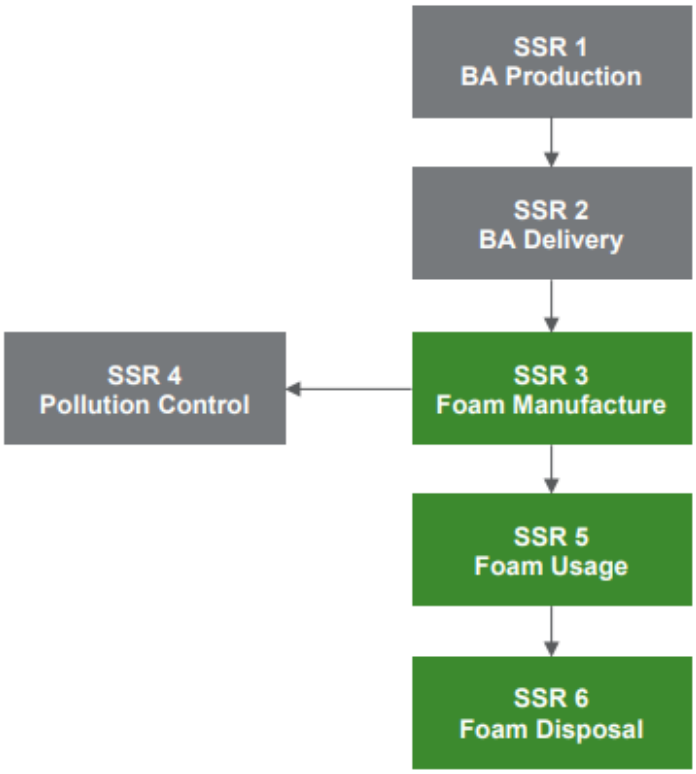
B4. IDENTIFICATION OF GHG SOURCES AND SINKS

The GHG sources and sinks are defined in Section 2.0 and Table 2 of V3.0 of the Methodology and outlined below (Screenshots updated). The sources, sinks, and reservoirs included when quantifying the baseline and project emissions are from foam manufacture, foam usage, and Foam Disposal.

2 PROJECT BOUNDARIES

The project boundary delineates the sources, sinks, and reservoirs (SSRs) that must be included or excluded when quantifying the net changes in emissions associated with the transition to an Eligible BA. Figure 1 illustrates the GHG assessment boundary for a project.

Figure 1: Illustration of the Project Boundary



All SSRs in green are included and must be accounted for under this Methodology. SSRs in gray are not included under this Methodology.

Table 2: List of Identified SSRs

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_2O	E	N/A
	Emissions from the production of the BA.	HFC or Low GWP BA	E	N/A
2 BA Delivery	Emissions from the delivery of the BA to the project site.	HFC or Low GWP BA	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_2O	E	N/A
3 Foam Manufacture	Emissions from the manufacture of the foam using a BA in the baseline and project.	HFC or Low GWP BA	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_2O	E	N/A
5 Foam Usage	Emissions from the use of the foam in the baseline and project.	HFC or Low GWP BA	I	Equations 1, 2 & 3

SSR	SOURCE DESCRIPTION	GAS	INCLUDED (I) OR EXCLUDED (E)	QUANTIFI-CATION METHOD
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_2O	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_2O	E	N/A
	Emissions from the foam at EOL (e.g. landfill, shredding, incinera-tion, etc.) including post disposal	HFC or Low GWP BA	I	Equations 1, 2 & 3

B5. BASELINE

The baseline determination and additionality is defined in Section 3 of the Methodology. Whirlpool used 245fa Blowing Agent prior to Solstice LBA (HFO-1233zd(e)) use for greater than 2 years prior to switching to HFO.

The baseline emissions represent the emissions that would have been caused by 245fa BA usage for appliances manufactured between 01/01/2019-12/31/2019 at the Whirlpool Amana, IA facility. The baseline emissions are calculated using the GWP of 245fa (1030). 245fa was chosen as the baseline because it is what was actually used at the site prior to the transition. The quantity of eligible BA used in the project, and the emission factor associated with rigid PUF residential refrigerators and freezers are also used in the baseline calculation.

The baseline for appliances manufactured between 01/01/2020 and 12/31/2020 at the Whirlpool Amana, IA facility and shipped to California, Washington, or New Jersey were calculated using the GWP for HFC-152a (124). HFC-152a was chosen as the baseline for appliances shipped to these states to align with the Methodology.

B6. PROJECT SCENARIO

Describe the project scenario, including the project actions that will take place and any additional information required by the ACR Standard, the chosen methodology, and the relevant ACR sector standard if applicable.

The project scenario is the transition of BA from high GWP 245fa to low GWP Solstice LBA (HFO-1233zd(e)) in rigid PUF residential refrigerators and freezers at the Whirlpool Amana, IA facility. Whirlpool used 245fa as the BA prior to the transition to Solstice LBA (HFO-1233zd(e)) in March 2014. The emission reductions are quantified using the ACR Methodology: The Transition to Advanced Formulation Blowing Agents in Foam Manufacturing and Use V3.0 (the Methodology). Data and monitoring parameters outlined in the Methodology are documented to substantiate the quantity of eligible blowing agent used in the project. The project also adheres to the requirements outlined in the ACR Standard 7.0. No additional information is required beyond the Methodology and the ACR Standard 7.0.

B7. REDUCTIONS AND ENHANCED REMOVALS

Describe how the project reduces GHG emissions or enhances the removal of GHGs from the atmosphere beyond what would have taken place in the baseline scenario.

The project meets the Methodology applicability conditions (Section 1.2) and meets the eligibility requirements found in the ACR Standard 7.0. The project also passes the additionality tests (Section 3.2) for regulatory surplus and the practice-based performance standard. The transition from 245fa to Solstice LBA (HFO-1233zd(e)) was not mandated when Whirlpool transitioned, so Whirlpool's transition meets the regulatory additionality test. Therefore, the removal of GHGs from the atmosphere is beyond what would have taken place in the baseline scenario.

The eligible BA is Solstice LBA (HFO-1233zd(e)), which has a GWP of 3.7. The baseline BA 245fa has a GWP of 1030. The baseline BA HFC-152a has a GWP of 124. The transition from 245fa to Solstice LBA (HFO-1233zd(e)) creates quantifiable emission reductions using the equations outlined in Section 4.0 of the V3.0 Methodology.

B8. PERMANENCE

Demonstrate whether the project offsets face any risk of reversal by identifying any risks that may substantially affect the project's GHG emission reductions or removal enhancements. If the offsets do face a risk of reversal, describe what method of permanence assurance will be used.

There is no risk of reversal for the project offsets.

C.
ADDITIONALITY

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

C1. REGULATORY SURPLUS TEST

Demonstrate how the project passes the regulatory surplus additionality test described in the ACR Standard v7.0. Include a summary and references to any relevant local laws and regulations related to the project and provide a demonstration of compliance with them.

Phaseouts of HFCs were not required by law at the time of the (HFO-1233zd(e)). There are no Federal requirements in the United States that require the transition to ultra-low GWP foam blowing agents. However, starting in 2020, several U.S. states have introduced legislation that prohibit use of specific blowing agents including HFC-245fa. Canada has also introduced legislation that will only be in effect for 2021. HFC-152a is still an applicable baseline for these states. This project passes regulatory surplus according to the Methodology.

C2. COMMON PRACTICE TEST

Demonstrate how the project passes the common practice additionality test described in the ACR Standard v7.0. (If the project is using the regulatory surplus + performance standard approach to additionality, skip this step.)

N/A

C3. IMPLEMENTATION BARRIERS TEST

Demonstrate how the project passes at least one of the following implementation barriers tests described in the ACR Standard v7.0 and allowed by the chosen methodology. (If the project is using the regulatory surplus + performance standard approach to additionality, skip this step.)

- *Financial*
- *Technological*
- *Institutional*

N/A

C4. PERFORMANCE STANDARD TEST

Demonstrate how the project activity exceeds an approved performance standard by showing that the GHG emissions generated per unit output by the project are below the level (or GHG removals are above the level) defined as business-as-usual for the product, service, sector or industry in which the project takes place. (If the project is using the three-prong approach to additionality, skip this step.)

For a project to qualify for offsets under this Methodology it must be demonstrated that the Eligible Foam Application has a low market adoption rate for Eligible BAs. This Methodology has already completed a market adoption analysis, and hence an additionality demonstration for the foam applications stated in Table 1 of the Methodology. This project is a Rigid PUF residential refrigerators & freezers application, so it passes the Practice-Based Performance Standard test.

D.
MONITORING PLAN

D1. MONITORED DATA AND PARAMETERS

List all relevant data and parameters that will be monitored using the table below.

Data or Parameter Monitored	BAR (Blowing Agent Ratio)
Unit of Measurement	%
Description	Blowing Agent Ratio - The quantity of Eligible BA, as compared to the Baseline BA, that is required to replace the Baseline BA to produce foam with equivalent thermal performance.
Data Source	Whirlpool engineering calculations, supporting product design specifications, internal testing
Measurement Methodology	Section 4.1 of the V3.0 Methodology: 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 (%). Whirlpool Corporation calculates the BAR by dividing the % of the baseline blowing agent in the baseline foam formulation by the % HFO in the current foam formulation. Additionally, because the methodology states that the BAR should compare foam with equivalent thermal performance, Whirlpool Corporation adjusts the % HFO. We use the % improvement in the K factor to adjust the % HFO down. For example, if the K factor was improved by 3% we subtract 3% of the % HFO.
Data Uncertainty	Low
Monitoring Frequency	Once per reporting period
Reporting Procedure	Whirlpool calculations and documents.
QA/QC Procedure	Internal testing ensures the BA percentage mix in the total foam composition is within the acceptable range per the manufacturer specifications. BA percentage of the foam formulation is captured in the engineering Windchill system. Whirlpool keeps records documenting the amount of eligible BA consumed in the project. Foam usage tracking spreadsheet provided.
Notes	Whirlpool Corporation adjusts the % HFO in the foam to demonstrate that we would need to use more 245fa in the foam to achieve the same thermal performance as the current HFO formulation. The K factor is used to determine how good of an insulator the material is, in this case, the foam. The lower the K factor, the better insulator the material is. The K factor of the HFO is lower (better) than that of the 245fa.

Data or Parameter Monitored	Q_{EBA}
Unit of Measurement	Pounds
Description	Quantity of Eligible BA used in project
Data Source	Whirlpool material ordering and usage records (weight records).
Measurement Methodology	Section 4.1 of the V3.0 Methodology: The quantity of Eligible BA (in pounds) which is used to

	manufacture the foam for the project. Whirlpool Corporation uses Tableau to get the quantity of eligible blowing agent purchased for each plant from the spend data in SAP HANA.
Data Uncertainty	Low
Monitoring Frequency	Once per reporting period
Reporting Procedure	Whirlpool Data systems SAP and Tableau.
QA/QC Procedure	Internal testing ensures the BA percentage mix in the total foam composition is within the acceptable range per the manufacturer specifications. Whirlpool keeps records (purchase data) documenting the amount of eligible BA consumed in the project. Foam usage tracking spreadsheet provided. The amount of eligible blowing agent is adjusted using the inventory at the beginning and end of the year to understand how much was used. Eligible and Baseline foam applications were confirmed through material purchase information, supplier contracts, and materials data. Invoices confirm that the baseline BA was used for 2 years prior to the switch.
Notes	For projects in 2020, the Methodology requires projects to reference HFC-152a blowing agent as the baseline for California, Washington, and New Jersey, because these states would no longer have 245fa in products in 2020 due to regulation. To split the eligible blowing agent for these states from the rest, we calculated a % of the products shipped going to CA, WA, and NJ out of the total products shipped from the Amana plant and applied that % to the quantity of eligible blowing agent.

Data or Parameter Monitored	Q_{LBA}
Unit of Measurement	Pounds
Description	Quantity of BA Leakage in project
Data Source	This metric is not relevant for this project
Measurement Methodology	Section 4.3.2 of the V3.0 Methodology: The quantity of BA (in pounds) that is used at the new location. Whirlpool confirmed that there was no leakage for this project with facilities and materials teams at the sites.
Data Uncertainty	Low
Monitoring Frequency	This metric is not relevant for this project.
Reporting Procedure	This metric is not relevant for this project.

QA/QC Procedure	Facilities and Materials teams at each of the plants have equipment records. The equipment used in the baseline scenario is still in use with the new formulation. No equipment was moved to a new location or replaced, so there is no leakage.
Notes	N/A

- The location and recordkeeping/retention for all stored data.
    - The data is stored in SAP ECC and SAP BW. Tables are created in SAP HANA to put the data into a database/accessible format. Tableau is used to view the data.
    - Invoices/POs are stored in the GS3 system.
- The methods used to generate data.
    - The purchase data for foam materials is recorded in SAP ECC as part of the MPV (material price variance) process, which is a monthly process to record actuals and forecast the purchases for the rest of the year. The numbers in the system are the actual goods receipt values from the purchase orders (POs).
    - The data is aggregated to monthly quantities before entering into SAP HANA. In SAP HANA, the data is adjusted to include NAR major appliances. No other significant changes to the data are made.
- Transfer points and methods of non-automated transfer of data.
    - All data is transferred automatically except for the initial entry of data from the MPV process to SAP ECC. For the initial load, finance supporting procurement updates the forecasts with actuals and adjusts the future forecasts. Then accenture locks the system to avoid erroneous edits.
- If applicable, describe any calibration procedures and the frequency with which calibration and other maintenance requirements are performed.
    - The MPV process is the monthly process when actuals are recorded and updated forecasts are made. This monthly process is the check that the actual data is entered into ECC.
- Describe the internal audit and other quality assurance/quality control procedures.
    - Accenture locks the tool after finance adjusts the data to control who can edit. The commodity teams and finance teams check that the data is correct.
- Sampling methods utilized and performed during the reporting period, if applicable.
    - Tableau is used as a tool for viewing the data. Tableau connects directly to SAP HANA which is an SAP system for combining/working with data from SAP BW. The data is filtered to the sites and materials of interest. A table is created in Tableau to see the material usage by plant and by month

E.
QUANTIFICATION

E1. BASELINE

Detail the GHG quantification methodology for the baseline scenario including all relevant emissions or removals. Provide sample calculations wherever possible.

The baseline emissions are quantified according to Section 4.1 of the V3.0 Methodology Equations 1 and 2. For ACR 656 the baseline blowing agent is 245fa. For ACR 657 the baseline blowing agent is HFC-152a for products shipped to California, Washington, and New Jersey. The baseline blowing agent for all other products is 245fa. (screenshots added)

Equation 1

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

WHERE

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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 3.0

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[13]

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 (%)

01/01/2019-12/31/2019 V3.0 Calculation:
QBBA (4,614,749)= QEBA from internal SAP system (4,147,318) * BAR calculated using SAP data (1.11)
LLBBA is provided in the ACR Protocol (100)
GWPBBA is provided in the ACR Protocol (1030 for 245fa)
Baseline Emissions= 2,156,014

01/01/2020-12/31/2020 (CA/NJ/WA) V3.0 Calculation:
QBBA (664,615)= QEBA from internal SAP system (597,296) * BAR calculated using SAP data (1.11)
LLBBA is provided in the ACR Protocol (100)
GWPBBA is provided in the ACR Protocol (124 for 152a)
Baseline Emissions= 37,381

01/01/2020-12/31/2020 (Other) V3.0 Calculation:
QBBA(3,568,605)= QEBA from internal SAP system (3,207,138) * BAR calculated using SAP data (1.11)
LLBBA is provided in the ACR Protocol (100)
GWPBBA is provided in the ACR Protocol (1030 for 245fa)
Baseline Emissions= 1,667,254

E2. PROJECT SCENARIO

Detail the GHG quantification methodology for the project scenario including all relevant emissions or removals. Provide sample calculations wherever possible.

The project emissions are quantified according to Section 4.2 of the V3.0 Methodology Equation 3. The eligible BA for this project is Solstice LBA (HFO-1233zd(e)).

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 CO_2e)
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

01/01/2019-12/31/2019 V3.0 Calculation:
QEBA (4,147,318) comes from internal SAP system
LLEBA is provided in the ACR Protocol (100)
GWPEBA is provided in the ACR protocol (3.7 for HFO)
Project Emissions= 6,960

01/01/2020-12/31/2020 (CA/NJ/WA) V3.0 Calculation:
QEBA (597,296) comes from internal SAP system
LLEBA is provided in the ACR Protocol (100)
GWPEBA is provided in the ACR protocol (3.7 for HFO)
Project Emissions= 1,002

01/01/2020-12/31/2020 (Other) V3.0 Calculation:
QEBA (3,207,138) comes from internal SAP system
LLEBA is provided in the ACR Protocol (100)
GWPEBA is provided in the ACR protocol (3.7 for HFO)
Project Emissions= 5,382

E3. LEAKAGE

Describe how leakage is accounted for and quantified. Provide sample calculations wherever possible.

The transition to Eligible BA does not cause the displaced BA equipment to be used elsewhere, so there is no market-shifting leakage.

In this project, there was no equipment used in the baseline during the project that was transferred to another location or activity in which a BA with a GWP greater than 30 is used. The foam injection

equipment did not change from 245fa to Solstice LBA (HFO-1233zd(e)), so there is no activity-shifting leakage to be considered in this project.

Equation 4

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

WHERE

LE_{LBA}	Activity shifting leakage emissions (MT CO_2e)
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

E4. UNCERTAINTY

Describe how ex post *uncertainty is accounted for and quantified. Provide sample calculations wherever possible.*

There is no ex post uncertainty to account for in the project. Baseline and project emissions are calculated using material receipt quantities and usage patterns.

E5. REDUCTIONS AND REMOVAL ENHANCEMENTS

Show how net reductions and removals enhancements are quantified, taking into account leakage and uncertainty. Provide sample calculations wherever possible.

Final Emission Reductions are quantified using Section 4.4 of the V3.0 Methodology Equations 1, 2, 3, 4 and 5.

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[14]

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

WHERE

ER	Emission reductions (MT CO_2e)
BE_{BBA}	Equation 1 - Baseline emissions (MT CO_2e)
PE_{EBA}	Equation 3 - Project emissions (MT CO_2e)
LE_{LBA}	Equation 4 - Leakage emissions (MT CO_2e)
DF	0.03 – Discount Factor (if applicable)[15]

01/01/2019-12/31/2019 V3.0 Calculation:
BEBBA= 2,156,014 (see above)
PEEBA= 6,960 (see above)
LELBA (not applicable)
DF= provided by ACR (0.03) but our projects do not require this discount factor.
Total Emissions Reductions= 2,149,053
Already Issued ERs (First Issuance) = 134,315
Outstanding ERs (Second Issuance) = 2,014,738

01/01/2020-12/31/2020 (CA/NJ/WA V3.0 Calculation):
BEBBA= 37,381 (see above)
PEEBA= 1,002 (see above)
LELBA (not applicable)
DF= provided by ACR (0.03) but our projects do not require this discount factor.
Total Emissions Reductions= 36,379
Already Issued ERs (First Issuance) = 2,273
Outstanding ERs (Second Issuance) = 34,106

01/01/2020-12/31/2020 (Other) V3.0 Calculation:
BEBBA= 1,667,254 (see above)
PEEBA= 5,382 (see above)
LELBA (not applicable)
DF= provided by ACR (0.03) but our projects do not require this discount factor.
Total Emissions Reductions= 1,661,872
Already Issued ERs (First Issuance) = 103,867
Outstanding ERs (Second Issuance) = 1,558,005

2020 CA/WA/NJ + Other Total Emissions Reductions = 1,698,251
2020 Already Issued = 106,140
2020 Outstanding ERs = 1,592,111

E6. EX-ANTE ESTIMATION METHODS

Describe the methods that are to be used to create the ex ante *projection of net GHG emission reductions and removals.*

The emissions reductions achieved as a result of the transition to an Eligible BA are calculated for project periods that have already occurred. Calculations are based on ex-post data.

F.
COMMUNITY & ENVIRONMENTAL IMPACTS

F1. NET POSITIVE IMPACTS

Provide an assessment of net positive community and environmental impacts, and a mitigation plan for any foreseen negative community or environmental impacts.

The net positive impacts from the project include a reduction of GHG emissions from high GWP foam use in the production of appliances. No negative impacts to the environment are expected.

These projects are aligned with our broader ESG approach and commitment to sustainability. Whirlpool is committed to the UN Global Compact and we have mapped our project to the Sustainable Development Goals (SDGs). This greenhouse gas emissions reductions initiative is aligned with the targets associated with SDGs 9, 12 and 13:

SDG 9 – Industry, Innovation, and Infrastructure: We are adapting our industrial processes to increase resource-use efficiency and greater adoption of clean and environmentally sound technologies, such as the advanced formulation blowing agents in our foam manufacturing and use.

SDG 12 – Responsible Consumption and Production: We consider the impacts of chemicals throughout their life cycle in order to minimize their adverse impacts on human health and the environment.

SDG 13 – Climate Action: We are working to improve our capacity on climate change mitigation and impact reduction.

F2. STAKEHOLDER COMMENTS

Describe relevant outcomes from stakeholder consultations and mechanisms for ongoing communication, as applicable.

Not applicable for this project.

G.
OWNERSHIP AND TITLE

G1. PROOF OF TITLE

Describe how title to the reductions or enhanced removals created by the project is established and attach Proof of Title documents containing one or more of the following:

- *A legislative right*
- *A right under common law*
- *Ownership of the plant, land, equipment and/or process generating the reductions/removals*
- *A contractual arrangement with the owner of the plant, land, equipment or process that grants all reductions/removals to the Project Proponent*

Whirlpool does not own the plant/land, but Whirlpool owns the process equipment and has the right to modify the building with the landlord's approval. Whirlpool Corporation maintains ownership for the carbon offsets claimed in all of the projects listed in the ACR registry for issuance of Emission Reduction Tons (ERTs). Whirlpool provided the contract with the supplier which does not claim that the supplier maintaints environmental attributes. Whirlpool also provided a signed attestation letter confirming that the supplier of the blowing agent and the end users of the refrigeration products are not the owners of the project activity. According to the Methodology, "A transition to the use of an Eligible BA for the production of foam is considered a 'Project Activity'". The switch to an eligible blowing agent was a decision made by Whirlpool Corporation. The blowing agent is used at Whirlpool Corporation facilities in the production of foam for refrigeration products. Whirlpool Corporation's choice to switch blowing agents for this process resulted in the relevant emissions reductions.

G2. CHAIN OF CUSTODY

If the offsets have been bought or sold previously, or if the project has a forward option contract, the Project Proponent must include documentation establishing chain of custody. Documentation may include:

- *Delivery of Confirmation Notice*
- *Emission Reduction Purchase Agreement*
- *Signed Attestation of Ownership*
- *Forward Option Purchase Agreement*

Chain of custody is not needed in this project because the offsets have not been bought or sold previously, and the project does not have a forward option contract.

G3. PRIOR APPLICATION

Describe whether or not the project proponent has applied for GHG emission reduction or removal credits for this project through any other GHG emissions trading system or program and the success of any of these applications. If the project has previously been rejected by another GHG emissions trading system or program, provide the reasons why.

The project proponent has not applied for GHG emission reduction or removal credits for the project through any other GHG emissions trading system or program. Previous credits were issued for this project before V3.0 of the Methodology was released. This Second Issuance project is to account for the difference between what would have been issued under V3.0 and what has already been issued.

H.
PROJECT TIMELINE

H1. START DATE

Provide the project start date, and describe how it was determined and why it is appropriate and consistent with the requirements of the ACR Standard v7.0, any relevant ACR sector standard, and the chosen methodology.

The start date for ACR 656 is 01/01/2019. This starts where the last ACR project for the Amana facility left off. This is within 3 years and at a facility that has already successfully completed a verification. This is in accordance with the Errata and Clarification.

The start date for ACR 657 is 01/01/2020. This starts where the last ACR project for the Amana facility left off. This is within 2 years in accordance with the Methodology.

H2. PROJECT TIMELINE

Provide a timeline for project activities including:

- *Initiation of project activities*
- *Project term*
- *Crediting period*
- *Frequency of monitoring, reporting and verification*
- *Relevant project activities in each step of the GHG project cycle*

Project listed on 08/31/2021

Project term: 01/01/2019-12/31/2019 and 01/01/2020-12/31/2020

Crediting period: 01/01/2019-12/31/2032 and 01/01/2020-12/31/2033

Frequency of monitoring, reporting and verification: Once per reporting period. Additional assessment for leakage lifetime according to V3.0 of the Methodology.

Relevant project activities in each step of the GHG project cycle: Quantification, monitoring report, and verification completed at the end of the project reporting period.