Summary of Changes

ACR METHODOLOGY: *Advanced Refrigeration Systems*

VERSION: 2.1 to 3.0

The following is a summary of the significant changes from version 2.1 of ACR's Methodology for the *Advanced Refrigeration Systems* published in August 2021 to version 3.0 posted for public comment on August 2, 2024.

TOPIC	REVISION	SECTION
UPDATE TO METHODOLOGY STRUCTURE	Updated the Methodology to align with ACR's latest structure and format for methodologies.	N/A
UPDATES TO PERFORMANCE STANDARD	• Updated the performance standard for U.S.-based projects using market penetration rates for low-GWP refrigerants published in the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022, Annex 3, Part A, Table A-113. • Updated the performance standard for Canada- and Mexico-based projects using market penetration rates for low-GWP refrigerants published in the ATMOsphere report, Natural Refrigerants: State of the Industry, 2023 Edition.	Section 3.2
UPDATES TO ELIGIBILITY CONDITIONS	Based on the latest U.S. GHG Inventory data, the use of propane as a low-GWP refrigerant in the small retail food segment of the Stand-Alone Commercial Refrigeration application demonstrates a penetration rate that is no longer sufficiently low for ACR to determine that such project activities are not common practice in the U.S. and they have been removed from the eligible Advanced Refrigeration System applications in the public comment draft. ACR will consider any evidence obtained regarding low penetration rates for particular equipment types and/or market adoption in Canada and Mexico and may reintroduce some applications of this end-use category if data suggest that the use of low-GWP refrigerants in the	Chapter 2 and Table 1

	small retail food segment remains uncommon for specific refrigeration equipment types and/or in eligible jurisdictions outside the U.S.	
CLARIFICATIONS TO ELIGIBILITY CONDITIONS	• Clarified eligibility conditions to codify the eligibility of retrofits of existing Large Commercial Refrigeration systems at existing facilities to use low-GWP refrigerants and manufacture and sale of new Stand-Alone Commercial Refrigeration equipment that is charged and sealed at the manufacturing facility with low-GWP refrigerant(s). • Clarified commercial refrigeration applications eligible under this methodology, such as including cold storage in the Large Commercial Refrigeration application because it is a subset of commercial refrigeration per U.S. EPA definition and further detailing the food processing and dispensing equipment description. • Clarified the requirements for the management of refrigerants from decomissioned or retrofitted refrigeration systems, which must be recovered and managed in accordance with applicable rules and regulations of the relevant country. Canada, Mexico, and the U.S. have national laws and regulations that govern management of recovered refrigerants. These mandates, as well as any relevant state or provincial rules and regulations, must be followed when projects replace or retrofit existing refrigeration systems.	Chapter 2 and Table 1
CLARIFICATION TO PHYSICAL BOUNDARY	Incorporated requirements from the ACR Standard v8.0 requiring Project Proponents implementing project activities that result in GHG emissions reductions being generated within the geographic boundary of more than one country to independently quantify GHG emission reductions and/or removals achieved within each country and register them as separate projects. This facilitates appropriate accounting of post-2020 emission reductions and host country authorizations for use under the Paris Agreement.	Section 4.1

CLARIFICATION TO GHG SOURCES	Clarified terms and added justification/explanation for inclusion in or exclusion from quantification of emission reductions.	Section 4.3 and Table 3
UPDATES TO BASELINE DETERMINATION	• Updated content in Tables 7 and 8 with default GWP values of baseline refrigerants to be applied in quantification of baseline emissions for new commercial refrigeration systems. These GWP values are provided for years through 2025 and remain constant for years 2022 through 2025.	Section 5.3 and Tables 7 and 8
	• Added Tables 9, 10, and 11 with default GWP values of baseline refrigerants to be applied in quantification of baseline emissions for new commercial refrigeration systems for year 2026 and beyond. U.S. EPA finalized a rule, Phasedown of Hydrofluorocarbons: Restrictions on the Use of Certain Hydrofluorocarbons under Subsection (i) of the American Innovation and Manufacturing Act of 2020, on October 5, 2023 to restrict use of certain HFC refrigerants. This rule sets GWP limits for refrigerants that can be used in new refrigeration equipment. Based on the restrictions set by this rule, Tables 9 and 10 provide GWP limits and compliance dates for eligible applications for projects based in the U.S. For years 2026 and beyond, Baseline Refrigerant GWPs for projects based in Canada and Mexico remain unchanged from 2025 and are provided separately in Table 11.	Section 5.3 and Tables 9, 10, and 11
	• Updated the annual amortized emission rates for eligible applications based on first-fill, annual, and disposal emission rates published in the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022, Annex 3, Part A, Table A-113. The annual amortized emission rates are weighted by market penetration rates for different refrigerants. The amortization period is the lifetime of equipment.	Section 5.2 and Table 6
	• Updated refrigerant charge size for Remote Condensing Units.	Section 5.1 and Table 5

CLARIFICATIONS TO QUANTIFICATION	• Clarified equations to appropriately represent the Crediting Period rather than a particular year. • Clarified equation terms for consistency.	Chapter 6 and Eq. 1-3
UPDATE TO MONITORING AND DATA COLLECTION REQUIREMENTS	Updated requirements for projects that replace or retrofit existing refrigeration systems with low-GWP refrigeration system to use the previous five years of operational records to calculate the average annual emissions rate. Previous versions of this methodology required use of data from two years prior to the operation of low-GWP refrigeration system. However, based on ACR experience with projects to date, it is not uncommon to have to rely on more than two previous years' worth of recharge data to ensure accuracy of the calculated annual refrigerant leak rate. Using five previous years' worth of data will allow use of more recharges to establish a more representative historical average leak rate.	Section 7.1
UPDATE TO VALIDATION AND VERIFICATION REQUIREMENTS	Updated requirements for Project Proponents with multiple projects at the same facility ("Site") to require an in-person site visit by a VVB be conducted, at minimum, every five project Reporting Periods or five years, whichever is earlier. For projects with a Site not previously validated, an in-person site visit by the VVB is required during project verification.	Chapter 8
UPDATES AND CLARIFICATIONS OF DEFINITIONS	• Added definitions for appliance, cold storage warehouse, end-of-life emissions, end-use or end-use category, high-temperature side of cascade system, medium-temperature unit, refrigerated food processing and dispensing equipment, remote condensing unit, retail food refrigeration, retrofit or retrofit project, supermarket system, and ton or refrigeration. • Removed definitions already found in the ACR Standard or no longer used in the Methodology. • Clarified other definitions.	Chapter 10
UPDATE TO REFERENCES	Updates references to align with sources used in this version of the Methodology.	Appendix A