Methodology Assessment Report

for the proposed VCS methodology

"Infra-red Automatic Refrigerant Leak Detection Efficiency Project"

Report Version No. 2.3, 2010-02-12

TÜV Rheinland Japan Ltd.

I. Project description:

Project title:	VCS METHODOLOGY DOUBLE-APPROVAL ASSESSMENT REPORT
Methodology:	"INFRA-RED AUTOMATIC REFRIGERANT LEAK DETECTION EFFICIENCY PROJECT"
GHG reducing measure/technology:	Avoidance of HFC emissions by installation of Infrared (IR) real time automatic leak detection system
Contract party:	Giant Eagle, Inc.

II. Assessment:

Assessment Team:

Role	Full name	Appointed for Sectoral Scopes	Affiliation
Team Leader	Dr. M. Brinkmann	1, 3, 4, 5, 6, 10, 11, 12, 13	TÜV Rheinland Japan Ltd.

Assessment Phases:
☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

Assessment Status:
☐ Corrective Actions / Clarifications Requested
☒ Full Approval
☐ Rejected

III. Assessment Report:

Current revision No.:	Date of current revision:	Date of first issue:
2.3	**2010-02-12**	**2009-11-05**

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Assessment Statement

The organization Giant Eagle Inc. has commissioned as Second Validator the DOE - TÜV Rheinland Japan Ltd. - to perform an assessment of a proposed VCS Methodology titled "Infra-red Automatic Refrigerant Leak Detection Efficiency Project" in the framework of the "VCS Program Normative Document: Double Approval Process (v.1.0)".

The Assessment team assigned by the DOE concludes that the proposed VCS Methodology "Infra-red Automatic Refrigerant Leak Detection Efficiency Project" (vs 1E, 2010-02-10) meets all relevant requirements of the VCS. The Corrective Action Requests listed in Appendix A / Table 1 could be closed satisfactorily with minor modifications to the methodology, which is considered robust and suitable to develop GHG projects meeting the VCSA requirements.

The DOE therefore recommends to approve the methodology after closure of findings as listed in Appendix A / Table 1. Further improvements are suggested in Appendix A / Table 2 and partially implemented, however, these are informative and do not impede the recommendation mentioned above.

Final approval:	Released on:	Designated Operational Entity (DOE):
☒	**2010-02-12**	**TÜV Rheinland Japan Ltd.** Shin Yokohama Daini Center Bldg., 3-19-5, Shin Yokohama Kohoku-ku, Yokohama, JAPAN 222-0033 Tel.: +81 45 470 1850, Fax: +81 45 470-2361 E-mail: cdm@tuv.com

1 INTRODUCTION

The organization Giant Eagle Inc. has commissioned the DOE - TÜV Rheinland Japan Ltd. - to perform an assessment of a proposed VCS Methodology titled "Infra-red Automatic Refrigerant Leak Detection Efficiency Project" in the framework of the "VCS Program Normative Document: Double Approval Process (v.1.0)". This report summarises the findings of the assessment, performed on the basis of the "VCS Program Normative Document: Double Approval Process (v.1.0)", published on June 18, 2009 and Section 5 (Project level requirements) and Section 6 (Methodologies) of the VCS 2007.1., published on November 18, 2008.

2 OBJECTIVE AND SCOPE

The purpose of a Double Approval Process is to have an independent third party assess the proposed methodology with respect to various generic principles. These include in particular:

1. Eligibility criteria:
   Assessment of whether the methodology's eligibility criteria are appropriate and adequate.
2. Baseline approach:
   Assessment of whether the approach for determining the project baseline is appropriate and adequate.
3. Additionality:
   Assessment of whether the approach/tools for determining whether the project is additional are appropriate and adequate.
4. Project boundary:
   Assessment of whether an appropriate and adequate approach is provided for the definition of the project's physical boundary and sources and types of gases included.
5. Emissions:
   Assessment of whether an appropriate and adequate approach is provided for calculating baseline emissions, project emissions and emission reductions.
6. Leakage:
   Assessment of whether the approach for calculating leakage is appropriate and adequate.
7. Monitoring:
   Assessment of whether the monitoring approach is appropriate and adequate.
8. Data and parameters:
   Assessment of whether monitored and not monitored data and parameters used in emissions calculations are appropriate and adequate.
9. Adherence to the project-level principles of the VCS Program:
   Assessment of whether the methodology adheres to the project-level principles of the VCS Program.

3 METHODOLOGY

The methodology assessment consists of the following phases:

I a desk review of the proposed methodology and related documents

II Issue of a list of observations and findings, resulting in a draft assessment report

III the resolution of outstanding issues and the issuance of the final assessment report and opinion.

The following sections outline each step in more detail.

The draft methodology is reviewed against the relevant criteria (see above) and VCS policy documents. The assessment is not meant to provide any consulting towards the developer of the methodology. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the methodology.

3.1 Desk Review of the proposed New Methodology

The following table outlines the documentation reviewed during the assessment:

/1/ Draft Baseline and Monitoring Methodology
"Infra-red Automatic Refrigerant Leak Detection Efficiency Project"
June 2009

/2/ GreenChill Advanced Refrigeration Partnership
EPA & the Supermarket Industry: Partners in Environmental Protection
(Presentation by U.S. EPA)

/3/ Assessment report of methodology element under VCS
DNV Certification A/S, Assessment Report No. 2009-9189, Rev. 01, 2009-07-16

/4/ Giant Eagle - HFC Refrigerant Carbon Credit Project: Methodology Outline
Climate Neutral Business Network, April 2009

/5/ Baseline and Monitoring Methodology
"Infra-red Automatic Refrigerant Leak Detection Efficiency Project",
(vs 1E, 2010-02-10)

/6/ "Tool for the demonstration and assessment of additionality"
UNFCCC, Current Version 05.2
http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf

The results of the desk review have been summarized in a list of observations serving as draft assessment report and communicated to the developer of the New Methodology.

3.2 Resolution of Outstanding Issues

The objective of this phase is to resolve the observations listed in the draft assessment report. The responses and their implementation in the revised methodology are assessed with respect to meeting the VCS requirements, and closed as appropriate.

Findings are distinguished between Corrective action requests (CAR) and recommendations for improvement. The latter are intended to inform the developer and

VCSA about potential for enhancing clarity or other issues deemed valuable for the further development of the methodology. It is not required to address those issues.

3.3 Assessment Team

Role	Full Name	Appointed for Sectoral Scopes	Affiliation
Team Leader	Dr. Manfred Brinkmann	1, 3, 4, 5, 6, 10, 11, 12, 13	TÜV Rheinland Japan Ltd.

4 ASSESSMENT FINDINGS

The findings of the methodology assessment are stated in the following sections, sorted according to the relevant criteria (requirements). Reference to findings related to the respective criteria is provided as applicable.

4.1 Eligibility criteria

Eligibility criteria are clearly stated and closely related to the availability of baseline information in the respective economical environment. The geographical scope of the proposed methodology is currently limited to the United States, for which availability of relevant baseline information has been confirmed. If the methodology is to be applied in other countries, the double-approval process shall be applied beforehand in order to determine the availability of relevant baseline information.

See observation 7 for further refinement.

4.2 Baseline approach

The assumed baseline scenario is the continuation of current practice as a non-investment scenario. The baseline itself is determined as the lower HFC leak rate of either

- HFC + HCFC emissions as the determined from historical data within the project boundary, or
- An alternative baseline cap determined from the US Green Chill program.

The introduction of the alternative baseline cap is conservative as it prevents excessive historical leak rates to serve as baseline.

4.3 Additionality

Additionality is determined on the basis of the “Tool for the demonstration and assessment of additionality” /6/, thereby ensuring consideration of regulatory surplus (i.e., absence of regulations directly or indirectly mandating installation of the HFC detection equipment), economical considerations (i.e., whether investment in the infrared detection system is considered profitable with respect to the savings from reduced HFC losses), and other potential barriers. Determination of appropriate benchmarks is crucial for the investment analysis, and validation of such benchmarks should be performed carefully.

4.4 Project boundary

The project boundary and sources of greenhouse gases are clearly defined in the methodology. The former is important to determine the potential occurrence of leakage.

4.5 Emissions

Calculation of emissions reductions is performed on the basis of directly monitored leak rates (i.e., the amounts of HFC to be refilled) and a conservatively determined baseline. The initially presented version of the methodology contained an error as described in observation 4, but has been corrected with the final version.

4.6 Leakage

It is not expected that implementation of HFC leak detection devices will cause GHG emissions outside the project boundary, unless previously functional equipment is transferred from outside the project boundary where HFC emissions may increase as a result of such transfer. Amendment of the applicability criteria has introduced a safeguard to prevent such situation (see observation 3).

4.7 Monitoring

All parameters required to monitor the data needed to determine the baseline and to monitor the emission reductions are listed in the methodology, together with appropriate instructions for measurement and QA/QC procedures.

4.8 Data and parameters

All ex-ante parameters required to monitor the data needed to determine the baseline and to monitor the emission reductions are listed in the methodology.

4.9 Adherence to the project-level principles of the VCS Program

The generic project-level scenarios are adequately addressed in the methodology, in particular with respect to transparency and conservativeness of ER calculations. Current limitation of the geographical scope ensures that sufficient data for a conservative baseline determination is available, therefore application of the methodology will result in emission reductions that are real

Appendix A

ASSESSMENT PROTOCOL

“Infra-red Automatic Refrigerant Leak Detection Efficiency Project”

Table 1: List of Requests for Corrective Action (CAR)				
No.	**Observation (CAR)**	**Reference Article**	**Summary of response**	**Conclusion**
1.	The methodology is only applicable if the baseline scenario is continuation of present practice (Art.11). However, Art. 14 / Step 2 refers to investment comparison as a possible way to prove additionality. This appears inappropriate since the baseline scenario (continuation of present practice) does not induce any investment and therefore benchmark analysis would be applicable. Reference: UNFCCC "Guidance on Investment Analysis (Article 15)	11 / 14	We have deleted the investment comparison from Art 14 so that the methodology focuses only upon a benchmark analysis. Additionality is determined on the basis of the CDM additionality tool, specifying application of Option III (Benchmark Analysis).	Closed: Amendment has been confirmed, ensuring consideration of regulatory surplus and application of Benchmark Analysis.
2.	In case that the Total Charge Cx of refrigerants changes within a given year (e.g., due to removal or additional installation of equiment), it should be clarified how that parameter should be determined. The maximum total charge within a year would result in the lowest Baseline Leak Rate (BLR) and therefore be the most conservative assumption, however, other appropriate approaches may be considered as well.	19	The measurement of Cx is undertaken for ODS compliance purposes in order to report individual leak incidents to EPA if they exceed 35%. Since there are already specific conservative guidelines for the measurement of Cx issued by EPA which it has already deemed conservative and it would be confusing if a second different Cx measurement approach were undertaken for carbon credit purposes, we propose to measure Cx consistent with ODS compliance practices. The methodology has been amended to this end. Furthermore, since the measurement of Cx enables a *relative* comparison between two leak rates to be made (baseline and current year) in order to estimate pounds of refrigerant leaks avoided each year, the principle of consistency (as Cx is measured over time) is more important here than the particular estimation method for Cx.	Closed: Amendment has been confirmed

3.	In the current version, the methodology is not robust with respect to potential leakage caused by transfer of HFC leak detection equipment from outside the project boundary. The methodology should include provisions to prevent such increase of HFC emissions. Rationale: If HFC detection equipment is transferred from another site (outside the project boundary) that remains operational, HFC emissions at that site may increase due to deteriorating control and maintenance of DX equipment.	23	This concern has been addressed by refinements to the methodology which limit the source of IR equipment to either a) new equipment or b) equipment already installed within the project boundary. The latter is needed in order to be able to transfer existing IR equipment from one piece of DX equipment within the project boundary to another (eg as equipment is decommissioned within the project) without incurring perverse incentives to delay IR installations on older DX equipment.	Closed The eligibility criteria are considered effective to preclude potential leakage effects.
4.	The formula LRR = PLR-Final BLR appears incorrect, it would result in a negative figure for LRR since PLR<Final_BLR.	24	Terms have been reversed: LRR = Final BLR - PLR	Closed Correction confirmed.
5.	The Note suggests that verifiers may be eligible to establish and evaluate data systems, however, this is deemed tantamount to self-assessment and may result in potential for conflict of interest.	28	Conflict of interest is critical to avoid. Many certification systems (e.g. CCAR) have overarching systems in place through which certifiers are required to ensure that they do not serve clients in a certification role if they have served in a conflicting capacity. Although neither Parasense or Verisae which are contractors for IR real time systems management are accredited certifiers for VCS it is important to confirm, in ways that support certification systems overarching expectations, that the VCS accredited certifier may not serve the project in this conflicting ODS real time contractor role. The methodology has been amended accordingly.	Closed The amendment is considered effective to preclude potential conflict of interest.

Table 2: Further Suggestions for improvement (no immediate action required)				
No.	**Observation (CAR/CL)**	**Reference Article**	**Summary of response**	**Conclusion[1]**
6.	For the final version, consider to apply scientific formulas in order to facilitate reading (especially summation formulas are not well readable)	General	This can be incorporated	Closed (Editorial)
7.	Whereas in the interest of the project owner, it is suggested that the eligibility criteria should refer to and mandate installation of leak detection equipment according to manufacturer information, in order to ensure effectiveness of the actual measures taken.	3ff.	There are already incentives in the US to ensure that equipment is well installed, including the refrigerant savings that result. The real time tracking of leaks is also precisely a tool to maximize these outcomes. This advice while helpful should not form part of a verification requirement in the US since it does not impact the quality of credits issued. However, should this methodology be extended to countries where installation issues are far more prevalent, this advice might be reviewed again.	Closed Explanation is suitable for the current scope of the methodology.
8.	Quantities indicated in the unit (lb) are considered practicable as long the scope is limited to the US. In case that the scope of the methodology should be extended to apply also in other regions, SI-units would be preferable.	19	Footnoted in the methodology as advice for those seeking to refine the methodology for application beyond the US.	Closed Amendment confirmed
9.	In order to prevent oversight and misunderstandings, it should be more explicitly stated that the provisions for additionality with respect to regulatory surplus and common practice are to be re-assessed at the time of renewal of crediting periods.	10	There was already a provision in Art 25 requiring regulatory surplus to be reconsidered at the renewal of crediting periods. This has been repeated in Art 10.	Closed Amendment confirmed

[1] Closure of these observations is not essential for approval of the methodology