Agricultural Sustainability Key Issue Discussion: Verification

ONE OF FOUR KEY ISSUE DISCUSSION PAPERS

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Verification Discussion Paper

Introduction

Greenhouse gas accounting resembles finance systems in that discrepancies or false claims can lead to serious consequences. Third-party verification functions similarly to financial audits; they confirm that the greenhouse gas (GHG) program's emission reduction or removal claim occurred and that it has been quantified and reported according to the criteria of the applicable GHG program.

In North America, most GHG programs have adopted the requirements described in the international standard, ISO 14064, which is a standard for quantifying and reporting GHG reduction claims. This standard applies a principles-based approach to systematically identify areas of program risk to focus the verification.

The ISO 14064 standard also stresses the importance of independence to the verification process. Verifiers must maintain independence from the GHG program to ensure an objective verification conclusion. To further ensure credibility of verifiers, GHG programs may establish competency requirements for individual verifiers, or they may require that verification firms are accredited by an independent accrediting body.

This paper provides background into the fundamentals of the ISO 14064 standard and the verification process described in Part 3 of this standard. Additionally, a discussion on verifier independence, verifier accreditation and other important considerations for verification within a GHG program are covered. Finally, a recommended approach to developing a verification framework within an insetting program is described.

Verification Standard

The ISO 14064 standard is an internationally recognized and widely-implemented guide to GHG programs in North America. It gives GHG programs the flexibility to adapt the standard to fit the scope and local requirements of their specific program while maintaining a credible foundation.

The standard is principle-based and comprised of three parts: Part 1 details the requirements for developing, quantifying and reporting an organization- or company-level GHG inventory; Part 2 focuses on the quantification and reporting of reductions or removals of GHG emissions through the implementation of GHG programs; and Part 3 establishes the requirements for validating or verifying GHG programs and GHG inventories.

Parts 1 and 2 establishes six fundamental principles to ensure true and verifiable accounting and reporting of GHG information[1]:

[1] ISO 14064-2: Specification with guidance at the program level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements.

Relevance: Select the GHG sources, GHG sinks, GHG reservoirs, data and methodologies appropriate to the needs of the intended user.

Completeness: Include all relevant GHG emissions and removals.

Consistency: Enable meaningful comparisons of GHG-related information.

Accuracy: Reduce bias and uncertainties as far as is practical.

Transparency: Disclose sufficient and appropriate GHG-related information to allow intended users to make decisions with reasonable confidence.

Conservativeness: Use estimation and quantification methodologies that tend toward a smaller emission reduction.

These principles are tested during the verification of GHG reduction claims and program-based emission reductions. The ISO 14064-3 standard is directly applicable to verification of insetting programs as it describes the process for GHG-related verification and specifies planning and assessment procedures for independent review.

Verification Parameters

The primary objective of a GHG program verification is to establish that an emission reduction or removal occurred and that it has been quantified and reported according to the criteria of the applicable GHG program. Typically, these criteria are defined in regulations (for state or federal programs) or in program guidance documents (which may be included in regulatory or voluntary programs).

Level of Assurance

GHG program criteria also establish a verification's level of stringency before the verification begins. Two "levels of assurance" are generally applied in GHG verification, namely, limited level assurance and reasonable level assurance. *Limited assurance* requires less effort by the verifier to reach a verification conclusion; however, there is a greater risk that a discrepancy may not be detected, should one exist. Verifications that are designed and completed to reach a *reasonable level of assurance* require verifiers to conduct verification activities that require greater effort but are more likely to detect a discrepancy. The difference between the two levels of assurance is demonstrated in the following example:

Let's say that a verifier needs to confirm that the land location coordinates for the fields in a reduced tillage program have been accurately recorded.

At a limited level of assurance, the verification activity may involve a verbal confirmation from the producer that the list provided is accurate.

At a reasonable level of assurance, the verifier may cross-check each land location against legal titles.

The reasonable level activity would take significantly more time and effort, but it would be more likely to detect any discrepancies that may exist.

Materiality

It would be impractical and very costly to design and conduct verification of GHG programs with absolute certainty that discrepancies do not exist in a program reduction claim. Therefore, an agreed level of acceptable discrepancy must be established, which is referred to as the "materiality threshold". Most North American GHG programs have established a quantitative materiality threshold of 5% of the total program reduction claim. Qualitative discrepancies are typically also evaluated by the verifier. In such qualitative cases, the materiality of the discrepancy is subject to the verifier's professional opinion.

Verification Scope

In addition to setting the verification objective, level of assurance and other criteria at the outset of the verification, certain elements must be defined to establish the scope of the verification, including:

- organizational boundaries
- infrastructure, activities and processes
- GHG sources, sinks and reservoirs
- types of GHGs (e.g. carbon dioxide, methane, nitrous oxide, etc.)
- time period

The verification parameters described in this section should be agreed to by all stakeholders before the verification begins and should be documented in the verification report.

Verification Process

The ISO 14064-3 standard describes a verification process divided into four primary stages: (1) agreement, (2) approach, (3) assessment and (4) evaluation. This process could be easily adapted for independent verification within an insetting program.

(1) Agreement

As described in the previous section, the verification parameters are established during the agreement stage. Most verification parameters should be established at the GHG program level. Only certain verification scope elements, such as the time period being verified, will be unique to each verification.

Upon agreement of the verification parameters between stakeholders and the verifier, the parameters should be documented in the contract with the verifier and later in the process, in the verification report.

(2) Approach

The verifier should spend sufficient time planning the verification to enable an efficient and thorough verification process. ISO 14064-3 defines a risk-based approach to conducting the verification of GHG programs.

During the approach stage, the verifier completes an initial review of the program and identifies the inherent risks of a discrepancy occurring and the risk that the organization's business and process controls will not successfully prevent or detect these discrepancies. These risks are referred to as "inherent risks" and "control risks," respectively.

The stringency of verification activities that are subsequently designed and completed by the verifier specifically addresses the inherent and control risks. Inherent and control risks with a greater overall probability of occurring and impact on the program reduction claim require verification activities that have a high probability of detecting discrepancies.

Verification of a Sample

When verification activities involve large datasets or similar activities at multiple locations, the verifier may choose to select a representative sample of the population for verification. Sampling is used to establish a mean error rate within a population of data without testing all the data.

Sampling is intended to reduce the overall time and cost required to complete a verification. It may be used only if the verifier can establish that the sample is representative of the population, such that any discrepancies that may exist would be normally distributed.

A population of data or locations, such as all the farms in an aggregated reduced tillage program, can be divided into subpopulations, which can facilitate grouping of farms with similar discrepancy profiles. This type of stratification can also be used for convenience; farms proximal to a common location require less travel time. The proportion of the population selected for a statistically valid sample depends on the verification level of assurance and the inherent risks associated with the verification activity to which the sample applies.

> For example, a reduced tillage program with 500 farms would require a sample of 82 to achieve a 95% confidence interval, 9 times out of 10.

The inputs for the calculation of a sample size include:

- *population size:* number of data points in the full dataset (such as total number of farms)
- *margin of error (confidence interval):* determines how much higher or lower than the population mean error rate you are willing to let your sample mean fall. For example, you might select a margin of error of +/- 5%, which means the error rate of your sample should be within 5% of the error rate of the full population.
- *confidence level:* determines how confident you want to be that the population mean error rate falls within the margin of error. For example, you might want to state that the results are valid 9 times out of 10 or 19 times out of 20.

Verification of Controls

Some verification activities involve the testing of the business and process controls established by the program developer. Controls that are found to be effective at preventing or detecting discrepancies obviate the need to test the GHG information affected by the control. Therefore, control testing typically requires less time and cost than substantive testing of data. Control testing should, however, be used with caution. The verifier must ensure they have a strong understanding of the control and its risks of failing to prevent or detect a discrepancy.

The use of sampling for verifying large populations of data or locations and the verification of controls are both simplifications that may reduce the cost and time required to conduct a verification. The program proponent may further simplify the verification process by selecting data sources that are easier to verify. For example, the use of remote sensing to establish the crop type and tillage activity would be simpler to verify than using individual documents for each field, such as crop insurance records.

(3) Assessment

The assessment of GHG information follows the verification and sampling plans designed during the approach stage. The results of verification activities establish evidence that will be evaluated in the following stage, leading to a verification conclusion.

The verification and sampling plans may be amended during this phase as new information becomes available to the verifier.

Any discrepancies detected during the assessment stage are analyzed. The program developer may have an opportunity to address these discrepancies before a final, revised GHG program reduction claim is completed (depending on the specific GHG program rules).

(4) Evaluation

When all verification activities have been completed, the verifier determines if there is sufficient and appropriate evidence to reach a verification conclusion. Any quantitative discrepancies that may have been detected are evaluated against the materiality threshold. Qualitative discrepancies are evaluated subjectively by the verifier based on the verifier's opinion whether the discrepancy will materially affect the intended use of the GHG program reduction claim.

Most GHG programs also require an internal peer review of the verification. This internal review confirms that the verification plan appropriately addresses the inherent and control risks identified during the approach stage, and it affirms that all verification activities have been completed. The peer reviewer also reviews the appropriateness and sufficiency of the verification evidence that was used by the verifier to reach the verification conclusion.

The verifier typically produces a verification statement and verification report, detailing the verification plan and verification outcomes. ISO 14064-3 provides suggested contents for these documents, which are typically customized by GHG programs for their particular needs.

Independence

The value of verification to a GHG program is based largely on the independence of the verifier's opinion. As a result, maintaining the independence of the verification process is critical.

The impartiality of the verifier may be assessed by analyzing real or perceived threats to the verifier's independence. Threats to independence commonly described in assurance systems include:

Self-review: instances where a member of the audit team or the verification company itself has previously provided consulting services to the program participant being verified. The likelihood that the verifier is reviewing their own work may pose an unacceptable threat to independence, which results in a real or perceived conflict of interest.

Advocacy: advocacy occurs when an organization promotes, or is perceived to promote, the program participant's position to another organization, within an industry or the public.

Incentives or Intimidation: gifts or incentives provided to members of the verification team from the program participant. An adverse incentive, such as the program participant's refusal to pay verification fees or other types of intimidation, may also result in a threat to independence.

Financial Interest: any member of the verification team having a substantial financial interest in the program participant. If the audit fees paid by the program participant represent a significant proportion of the verification firm's annual revenue, then the financial interest in the review could also pose a threat to independence.

Familiarity or Relationship: a member of the verification team has a close personal or professional relationship with the program participant. A threat to independence may also exist if the audit firm has conducted numerous successive audits for the program participant.

Mitigation of Threats to Independence

The verifier may mitigate real or perceived threats to independence by implementing control measures. If mitigation is not possible, or the risk is deemed to be too great, even with control measures in place, then the verification must not proceed.

Any threats to independence, including those mitigated with control measures, should be disclosed to all stakeholders. Failure to disclose may significantly reduce the credibility of the assurance if stakeholders learn of the threat. Disclosure of any real or perceived conflict of interest is an ethical requirement in most professional organizations.

Verifier Accreditation

GHG programs establish requirements for independent verifiers specific to the organization or individual. These program requirements range from membership in professional organizations to accreditation of the verification body. Accreditation formally recognizes that the verification body has implemented the processes and procedures required to conduct a verification.

Verification bodies achieve accreditation according to an established standard such as ISO 14065—Requirements for Greenhouse Gas Validation and Verification Bodies for Use in Accreditation and Others Forms of Recognition. Accreditation standards often outline not only how verification bodies must execute a verification, but also how they administer themselves as entities. North American offset systems typically use the ISO 14065 standard, though some, such as California, design their own.

An authorized, independent organization confirms standard requirements have been met, thereby granting accredited status to the verification body. In North America, the Standards Council of Canada (SCC) and the American National Standards Institute (ANSI) are independent organizations that are authorized to grant ISO 14065 accreditation. In California, the California Environmental Protection Agency's Air Resources Board (ARB) provides accreditation of verification bodies.

Once granted, accredited status must also be maintained. Verification bodies must successfully pass an annual audit by the accreditation body. During the annual audit, the accrediting body often observes a verification conducted by the verification body.

Other Considerations

Frequency of Verification

GHG programs establish the frequency upon which program participants must submit a verified GHG report. This frequency is determined based on the needs of the program, balanced with practical considerations such as cost and administrative burden. A typical reporting period/verification frequency for GHG programs is one year.

Program Non-Conformance

Discrepancies discovered through the verification process may identify program participants that are not conforming to program requirements. An insetting program should consider establishing a policy for these non-conforming program participants.

If sampling is used in the verification process, different program participants should be included in the sample through each verification cycle to ensure all program participants are eventually directly subject to verification.

Balancing Verification Cost and Quality

A well-designed verification framework establishes in a rigorous verification process while balancing a cost that is not prohibitive to the needs of the insetting program or participation of individual program participants.

It would be inappropriate for an insetting program to mandate the specific verification activities for a verifier because this would jeopardize the verifier's independence. However, a well-designed insetting program should be designed to facilitate verification activities that achieve a balance between cost and quality. The characteristics of such an insetting program include:

- *consistency between program participants:* consistent controls used to collect program participant's data facilitates controls-based verification activities and verification sampling;
- *well documented program controls:* verification of program controls requires significantly less effort than verification of all program data;
- *use of remote data:* an insetting program that uses data that can be collected and verified remotely reduces or even eliminates verification site visits, which are costly and time consuming. For example, remote sensing data that can substantiate crop types and tillage events to a high level of confidence may significantly reduce the number of farm visits a verifier would conduct.