Environment and Climate Change Canada
Environnement et Changement climatique Canada

Clean Fuel Regulations:

Methods for Verification and Certification

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Canada

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Aussi disponible en français

Foreword

This version of the *Methods for Verification and Certification* for the *Clean Fuel Regulations* was last reviewed and updated in December 2023. This document is incorporated by reference in the *Clean Fuel Regulations* and provides information to verification and certification bodies, certification schemes owners and other interested parties to ensure uniformity in the implementation of the verification or certification requirements of the *Clean Fuel Regulations*.

This version is based on the final *Clean Fuel Regulations* published in Canada Gazette, Part II; and will be updated with guidance information as needs are identified upon the implementation of the Quality Assurance Program of the *Clean Fuel Regulations*. Comments on this document, particularly with respect to its application and usefulness will be taken into consideration in the preparation of subsequent versions. Comments should be addressed to Environment and Climate Change Canada at the following email address: cfsncp@ec.gc.ca

Disclaimer

This document does not in any way supersede or modify the *Canadian Environmental Protection Act*, 1999 or the C*lean Fuel Regulations*, or offer any legal interpretation of those Regulations. Where there are any inconsistencies between this document and the Act or the Regulations, the Act and the Regulations take precedence.

The full text of the Regulations and associated documents are available on ECCC's website: https://www.canada.ca/clean-fuel-standard

Should you have questions about the *Clean Fuel Regulations*, please send them to: cfsncp@ec.gc.ca

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Definitions[1]

Accreditation (Accréditation): A third-party attestation related to a verification body or certification body conveying formal demonstration of its competence and infrastructure (e.g., systems, processes) to carry out specific verification or certification tasks.

Affiliate (Parties affiliées): Two parties are affiliates if either party has the power to control the other, or a third-party controls or has the power to control the both. Affiliation also exists:

- in interlocking directorates or ownership,
- in identity of interests among members of a family and,
- where employees, equipment, and/or facilities, are shared.

Approved certification scheme (Régime de certification approuvé): Set of rules and procedures pertaining to a certification scheme that describes the objects of conformity assessment, identifies the specified requirements for the object of conformity assessment and provides the methodology for performing conformity assessment, approved by Environment and Climate Chance Canada for the purpose of certifying eligible feedstock in accordance with the applicable Land Use and Biodiversity criteria of the *Clean Fuel Regulations*.

Assurance system (Système d'assurance): A system of accreditation, certification, auditing-processes and procedures maintained by a certification scheme approved under the *Clean Fuel Regulations*.

Auditor (Auditeur): Person who conducts an audit (ISO 19011:2011).

Audits (Audit): Systematic, independent and documented processes for obtaining objective evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled (ISO 19011:2011).

Carbon intensity (Intensité en carbone): carbon intensity, in relation to a fuel, energy source, or material input that is renewable natural gas, biogas, renewable propane or hydrogen, means the quantity in grams of CO2e per megajoule of energy contained in that fuel, energy source or material input that is released over the life cycle of that fuel, energy source or material input, including during the activities carried out during the stages of the life cycle, such as

(a) the extraction or production of the feedstock used to produce the fuel, energy source or material input;

(b) the processing, refining or upgrading of the feedstock to produce the fuel, energy source or material input;

(c) the transportation or distribution of the feedstock, of intermediary products or of the fuel, energy source or material input; and

[1] These definitions do not modify or supersede any of the definitions in subsection 1(1) or elsewhere in the Clean Fuel Regulations.

(d) the combustion of the fuel.

Carbon-Intensity Contributor (Contributeur à l'intensité en carbone): person who applies for the approval of a carbon intensity under sub-section 80(1) of the *Clean Fuel Regulations*, for a set of activities carried out over the life cycle of a fuel in the liquid class or a low-carbon-intensity fuel with the intention to transfer the approved carbon intensity to a registered creator or foreign supplier or to another carbon-intensity contributor.

Certification bodies (Organisme de certification): Third-party conformity assessment bodies (ISO 17065:2012) making certification decisions and issuing certificates.

Certification scheme owner (Propriétaire du régime de certification): Legal entity that develops and maintains a certification scheme.

Certification program related to the Land Use and Biodiviersity criteria of the *Clean Fuel Regulations* (Programme de certification relatif à l'utilisation des terres et de la biodiversité du *Règlement sur les combustibles propres)*: Set of rules and procedures pertaining to an approved certification scheme put in place for the purpose of certifying eligible feedstock in accordance with the applicable Land Use and Biodiversity criteria of the *Clean Fuel Regulations*.

Clean Fuel Regulations - Land Use and Biodiversity conformity assessment system (Système d'évaluation de la conformité à l'égard de l'utilisation des terres et de la biodiversité dans le cadre du Règlement sur les combustibles propres): Set of common rules and procedures required by the *Clean Fuel Regulations* for the approval and management of certification schemes for the purpose of certifying feedstock sourced from agriculture and forest biomass against the applicable Land Use and Biodiversity criteria of the *Clean Fuel Regulations.*

Client (Client): Organization or person requesting verification or certification.

Controls (Contrôles): Responsible party's policies and procedures that help to ensure that the statement is free from material misstatement and conforms to the criteria.

Criteria (Critères): Policy, procedure, or requirement used as a reference against which the statement is compared.

Data trail (Trace des données): A complete record by which information can be traced to its source.

Designated accreditation body by Environment Climate Change Canada (Organisme ou organisation d'accréditation désigné par Environment et Changement climatique Canada): Authoritative body that:

- performs accreditation;
- is a member of the International Accreditation Forum and meets the requirements set out in ISO/IEC Standard 17011 for the purpose of the verification requirements of the *Clean Fuel Regulations;* or
- Is a member of the International Accreditation Forum or an equivalent body, and meets the requirements set out in ISO/IEC Standard 17011 for the purpose of the certification requirements of the *Clean Fuel Regulation*s.

The accreditation organization reviews the procedures, processes, and qualifications of the verification or certification body, and declares whether the body is competent, its infrastructure (e.g., systems, processes) is compliant with the requirements and the body is conducting verification or certification activities in accordance with requirements. The accreditation organization also monitors accredited bodies to ensure that they maintain competent personnel and operate with transparency and impartiality.

Emissions (Émissions): A release of greenhouse gases to the atmosphere but in this document it is also used as an abbreviation for emissions, removals, and storage for brevity.

Feedstock harvester (Producteur de matières premières): A person who cultivates and/or harvests feedstock used to produce low carbon-intensity fuel.

Greenhouse gas (Gaz à effet de serre): Gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds.

Independent reviewer (Examinateur indépendant): Competent person, not a member of the verification team, who reviews the verification as required under the *Clean Fuel Regulations*. The independent reviewer cannot be a sub-contractor to the verification body.

Impartial verification or certification (Vérification ou certification impartiale): The verification or certification process is performed by an objective (impartial) third-party.

Intended user (Utilisateur prévu): is Environment and Climate Change Canada, who relies on the reported information to administer the *Clean Fuel Regulations*.

Level of assurance (Niveau d'assurance): A degree of confidence[2] in a statement. There are two levels: limited and reasonable. The *Clean Fuel Regulations* requires a reasonable level of assurance for verifications.

Local language (Langue locale): The language spoken in the country or location where the responsible party is located (facility/operations) and where the verification or certification activities take place.

Material changes (Modifications d'importance significative): Changes that are capable of modifying the decisions of the intended users, including changes of boundaries or scope in reporting under the *Clean Fuel Regulations* requirements.

Material facility expansion (Agrandissement d'importance significative de l'installation): Changes in production or emissions from the prior year of 10% or more that are due to changes at the site, and not changes in the feedstock or input quantity or quality.

Material emission (Émission d'importance significative): An emission misstatement that could change the final reported number to a degree that would affect the intended user's decisions.

[2] This is different than the level of confidence found in statistics.

Material site (Site d'importance significative): Is where any misstatement at the site could change the final reported number at a material level (quantitative materiality thresholds apply).

Materiality (Importance relative): Concept that individual misstatements or the aggregation of misstatements could influence the intended users' decisions.

Minister (Ministre): Minister of the Environment

Misstatement (Déclaration erronée): A difference between the amount reported, classification, presentation, or disclosure of an item and the amount reported, classification, presentation, or disclosure that is required for the item to be in accordance with the criteria. Misstatements arise from errors or fraud. Misstatements can also be classified as errors, omissions, and misreportings, where misreportings include differences in classification, presentation and disclosure.

Organization (Organisme): Person or group of people that has its own functions with responsibilities, authorities, and relationships to achieve its objectives.

Overall quantitative materiality (Importance relative globale): Concept that individual misstatements or the aggregation of misstatements could influence the intended user's decisions at the reporting level of the report or application.

Performance materiality (Importance relative liée au rendement): A value set lower than what might be quantitatively material to the intended user to identify misstatements that, when aggregated, might be material.

Prime verification body (Organisme de vérification principal): When using outsourcing, the verification body that is responsible for the overall design and reporting of the verification.

Responsible party (Partie responsible): Person or persons responsible for the provision of the applications or reports made under the *Clean Fuel Regulations*. These responsible parties are: a fossil fuel primary supplier, foreign supplier, carbon-intensity contributor or a credit creator.

Stakeholder (Intervenant): Individual or group that has an interest in any decision or activity of an organization (adapted from ISO 26000).

Third-party (Tierce partie): An impartial entity that is not one of the primary parties (e.g., the responsible party or the intended user) in the transaction.

Uncertainty (Incertitude): A parameter associated with quantification, which characterizes the dispersion of the values that could be reasonably attributed to the quantified amount.

Verification (Vérification): Process for evaluating a statement of historical data and information to determine if the statement is materially correct and conforms to criteria.

Verification body (Organisme de verification): An accredited, impartial organization with responsibility for performing and reporting on the verification process.

Verifier (Vérificateur): Competent and impartial person, member of an accredited verification body, with responsibility for performing and reporting on the verification process.

Acronyms

Acronym or abbreviation	*Meaning*
ANAB	ANSI National Accreditation Board
ANSI	American National Standards Institute
CAATT	Computer Assisted Audit Tools and Techniques
CCS	Carbon Capture and Storage
CFR	*Clean Fuel Regulations*
CFR-LUB	Clean Fuel Regulations – Land Use and Biodiversity criteria
CFR-LUB CAS	Clean Fuel Regulations – Land Use and Biodiversity Conformity Assessment System
CI	Carbon Intensity
CO_2e	Carbon dioxide equivalents
CS	Certification Scheme
ECCC	Environment and Climate Change Canada
EOR	Enhanced Oil Recovery
EV	Electric Vehicles
GHG	Greenhouse Gases
GWP	Global Warming Potential
HHV	Higher Heating Value
IAF	International Accreditation Forum
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
LHV	Lower Heating Value
SCC	Standards Council of Canada

Introduction

Purpose and structure

This document has been written for verification bodies and their verifiers as well as certification bodies and their auditors working with the *Clean Fuel Regulations (CFR)*; and lays out the regulatory requirements and guidance in their implementation.

1 and 2 of this document outline requirements and guidance for verification bodies and their processes. The framework and requirements concerning the *Clean Fuel Regulations* – Land Use and Biodiversity Conformity Assessment System are outlined in 3 of this document. This part lays out requirements for the approval of certification schemes that can be used for the purposes of the Land Use and Biodiversity Criteria of the CFR, as well as the relevant requirements for certification bodies conducting certification activities under a CFR-approved certification scheme.

Schedule for verification

Under the CFR, reporting entities are required to submit each regulatory application or report with the corresponding verification report as listed in Table 1. The content of a verification report is outlined in Appendix A**.** The reporting requirements are established in accordance to the specified schedule set out in the *Regulations*. Appendix B summarizes the reporting timelines for the submission of the verification reports per type of application or report in a standard year. Appendix C presents the reporting timelines for the first submission of the verification report per type of application or report based on the coming into force of each component of the CFR.

Table 1: Applications or reports requiring verification and submission deadlines

Report	***Verification report submission deadline***
Application for approval of carbon-intensity for low-carbon-intensity fuels, compressed and liquefied gases, hydrogen, or electricity (sub-section 80(1))	On the day the application is submitted (section 130) A verification report will be submitted with Fuel LCA Model CI Applications beginning June 30th, 2024.
Application for a temporary approval of carbon-intensity for low carbon-intensity fuels, compressed and liquefied gases, hydrogen, or electricity (sub-section 91(1))	On the day the application is submitted (section 130) A verification report will be submitted with Fuel LCA Model CI Applications beginning June 30th, 2024.

Report	***Verification report submission deadline***
Annual credit creation report for the supply of fuel(s) or energy sources to vehicles (section 120)	On the day the report is submitted (sub-section 131(3)), no later than April 30th following the compliance period. *Exceptions: the report is not required to be verified if no compliance credits were created during the compliance period to which the report relates (paragraph 131(2)(a)). For the Annual credit creation report due 2023 for the early credit creation period, the report with verification is due on June 30th, 2023 (if credits were created).*
Annual credit creation reports for CO2e emission reduction projects (section 120)	On the day the report is submitted (sub-section 131(3)), no later than April 30th following the compliance period. *Exceptions: the report is not required to be verified if no compliance credits were created during the compliance period to which the report relates (paragraph 131(2)(a)). For the Annual credit creation report due 2023 for the early credit creation period, the report with verification is due on June 30th, 2023 (if credits were created).*
Quarterly credit creation report for the production or import of eligible low-carbon-intensity fuel(s) or for the supply of fuel(s) or energy sources to vehicles that relates to a low-carbon-intensity fuel (section 121)	Quarterly credit creation reports are not subject to verification with the exception of the one-time combined quarterly credit creation reports (category 2 & category 3 for low CI fuel) for the compliance period that ends on December 31, 2022 and must be submitted no later than June 30th, 2023 (sub-section 121(3)). *Exception: the report is not required to be verified if no compliance credits were created during the compliance period to which the report relates (paragraph 131(2)(a)).*
Credit adjustment report for the production or import of eligible low-carbon-intensity fuel(s) or for the supply of fuel(s) or energy sources to vehicles that relates to a low-carbon-intensity fuel (section 122)	On the day the report is submitted (sub-section 131(3)), no later than June 30th following the compliance period. *Exception: the report is not required to be verified if no compliance credits were created during the compliance period to which the report relates (paragraph 131(2)(a)).*

Report	***Verification report submission deadline***
Carbon Intensity Pathway Report (section 123)	On the day the report is submitted (sub-section 131(3)), no later than April 30th following the compliance year.
Material Balance Report (section 124)	On the day the report is submitted (sub-section 131(3)), no later than April 30th following the compliance year.
Compliance credit revenue report (section 125)	On the day the report is submitted (sub-section 131(3)), no later than July 31st following the compliance year. *Exception: the report is not required to be verified if no revenue was created from the transfer of compliance credits during the compliance period to which the report relates or during the two preceding compliance periods (paragraph 131(2)(b)).*
Compliance report (section 127)	On the day the report is submitted (sub-section 131(3)), no later than July 31st following the compliance year.
Complementary compliance report (section 128)	On the day the report is submitted (sub-section 131(3)), no later than December 15th following the compliance year.

Schedule for land use and biodiversity conformity assessment system

The application process for the approval of certification schemes for the purpose of certifying feedstock used to produce low-carbon-intensity fuels will be made available prior to the coming into force of the Land Use and Biodiversity criteria of the CFR on January 1st, 2024. A certification scheme's owner will then have the possibility to fill out an application and submit all the documentation demonstrating compliance with the regulatory requirements. Environment and Climate Change Canada (ECCC) will then assess whether the certification scheme applying for approval demonstrates full compliance with the applicable regulatory requirements and provide a response to the applicant.

1 Requirements for verification bodies[3]

1.1 Accreditation requirements

An organization is eligible to be a verification body if the organization:

i) is a legal entity that has legal capacity to enter into agreements or contracts, assume obligations, incur and pay debts, sue and be sued, and to be held responsible for its actions

ii) is accredited by the Standard Council of Canada (SCC) or the *ANSI National Accreditation Board* (ANAB) (sub-section 138(1)) or is accredited by a designated accreditation body that is a member of the *International Accreditation Forum* and meets the requirements set out in ISO/IEC Standard 17011 (sub-section 138(2)), to the most recent version of the following standards:

a. ISO/IEC 17029 *Conformity assessment — General principles and requirements for validation and verification bodies*, with the specific scope of ISO 14065 *General principles and requirements for bodies validating and verifying environmental information* (paragraph 138(1)(a))

b. ISO 14066 Greenhouse gases – Competence requirements for greenhouse gas validation teams and verification teams (paragraph 138(1)(b))

iii) has a qualified independent reviewer (section 139)

iv) has a qualified team (see 1.2) in order to be accredited to the technical sector(s) in Table 2 applicable to the scope of the services that will be provided (section 140)

A verification body cannot perform verification activities if the verification body's accreditation is suspended or revoked by an accreditation organization (section 137).

[3] This part of the document lays out regulatory requirements set in sections 137 to 147 of the *Clean Fuel Regulations*.

Table 2: Technical Scopes of Accreditation

	Sector	***Description***
Sector 1	Fossil Fuels (paragraph 140(1)(a))	Production, import, distribution, and delivery (including at fueling stations) of fossil fuels to end users and distribution companies
Sector 2	Renewable/Bio/Low-carbon-intensity (CI) Fuels (paragraph 140(1)(b))	Production, import, distribution, and delivery (including at fueling stations) of non-fossil, low-carbon-intensity (CI), renewable, and biofuels
Sector 3	Electricity (paragraph 140(1)(c))	Production, distribution of electricity, and transactions related to electricity (including at charging stations for EVs)
Sector 4	Green Hydrogen (from non-fossil fuels) (paragraph 140(1)(d))	Production, import, distribution, and delivery of green hydrogen from renewable sources.

To demonstrate sector competence, the team collectively demonstrates two years of work experience in that sector, which includes a basic knowledge of the general processes, GHG emissions, removal and storage across the lifecycle of the products in that sector, and may include relevant GHG verifications.

In the case of a verification of applications or reports that involve both fossil and renewable/bio/low-carbon-intensity fuels, such as could be in the co-processing of fuels, the verification body is accredited to both Sector 1 and Sector 2.

1.2 Team

1.2.1 Team composition

In accordance with ISO 14066, the verification team, excluding specialists, collectively demonstrates that they have the necessary skills and competencies to undertake a verification.

Verification teams demonstrate that they:

- Understand the requirements of the CFR, including:
    - Fuels regulated (fossil), low carbon intensity fuels and creating compliance credits;
    - The baselines chosen;
    - The reduction requirements, if applicable;
    - Scopes of the lifecycle;
    - The regulatory criteria;
    - Assurance level required; and
    - Mandatory reporting requirements.

- Understand greenhouse gas science, including:
    - The processes that emit, remove or store GHG including technical issues associated with their quantification (e.g., emission factors, emission inventories, production, etc.), monitoring, and reporting;
    - The applicability and limits of the prescribed quantification methodologies;
    - The types of GHG sources and sinks associated with fuel lifecycle; and
    - The Specifications for Fuel LCA Model CI Calculations.
- Understand the verification process as described in ISO 14064-3:2019 including the aspects listed in Table 3.
- Understand life cycle assessments, including
    - The concept of functional units;
    - The fuel system boundaries;
    - Any allocation procedures; and
    - The assumptions, limitations, data quality and uncertainty used in the lifecycle.
- Have understanding of the applicable sector(s) to which they are accredited described in Table 2, including an understanding of:
    - The GHG sources, sinks, and reservoirs, common to the fuel lifecycle;
    - The operational processes and production; and
    - The uncertainty in the measurements and how this affects the assertions.
- Have understanding in Computer Assisted Audit Tools and Techniques (CAATTs), for the verification of automated data management systems, when applicable, including:
    - Have knowledge of the principles and rules guiding computer-assisted audits:
        - An understanding of the Information Technology (IT) environment, and the core applications and relevant database structure;
    - Have understanding and experience of examining highly automated data management systems using CAATTs.
- Have a team member who speaks the applicable local language(s) fluently.
- Have the following formal training:
    - ISO 14064-3:2019 training;
    - CFR[4] verifier's basics course; and
    - CFR verification recurrence course (every two years).

The experience and the training completion of each member of the verification team is documented.

[4] CFR courses will be offered by ECCC and could take different forms, such as, but not limited to, lectures or self-study.

Table 3: Competency Requirements Related to Verification Processes

Verification
• The process and linkages between objectives, risk identification, evidence gathering procedures design, evidence evaluation, and conclusion forming; • Roles and responsibilities; • Different levels of assurance and the types and extent of evidence gathering techniques used in each verification; • Verification criteria and the assessment of acceptable criteria; • The various forms of materiality and where they are applied in the verification process; • Different types of evidence gathering activities and the strength and types of evidence they collect; • The requirements for site-visits; • Assessment of data management systems and controls, including methods to identify failures and their impact on assertions; • Methodologies for establishing data trails for material items; • Different types of conclusions and when they can be applied; • Development of a conclusion based on the evidence; and • Assessment of qualitative components, including the need for disclosure and the principle of conservativeness.

1.2.2 Team leader

For each verification assignment, the verification team must include a team leader who is an employee of the verification body (sub-section 141(1)).

The team leader has sufficient verification knowledge as described in ISO 14065 and 14066, which includes[5]:

- Understanding of the verification process including the design, typical evidence gathering activities, significant decision points, materiality interpretations;
- Understanding of CAATTs for the verification of automated data management systems;
- Understanding of the requirements of the CFR;
- Understanding of the verification body procedures;
- Technical competence in the applicable sector(s) described in
- Table 2;
- Understanding of the documentation requirements of their role, including the documentation of misstatements and data gaps in conclusion and their resolution; and
- Sufficient knowledge to manage the verification team, including each member's competencies, in order to complete a verification assignment.

The team leader has the following formal training:

- ISO 14064-3:2019 training;

[5] See description of each item in 1.2.1

- CFR[6] verifier's basic course; and
- CFR verification recurrence course (every two years).

The team leader demonstrates experience in performing verifications, such as two years of experience in GHG verification, and participated in a minimum of five GHG verifications in the past ten years. The training completion and the experience and of the team leader is documented.

The team leader has the authority to approve verification plans and evidence gathering plans.

1.2.3 Specialists

Certain verification subjects will require a specialist on the team (sub-section 141(2)). For any specialists, the following requirements are applicable:

- Any applicable professional credentials must be current and recognized as per CFR requirements;
- Any specialist must have at least four years of relevant work experience within the last 10 years in the applicable field of specialisation or technical expertise (sub-section 141(3));
- Demonstration of the knowledge and proficiency is done by providing a curriculum vitae and references as a proof; and
- Specialists may not subcontract nor delegate their work (paragraph 142(1)(a)).

The specialist's requirements are as follows:

- For the verification of applications[7] or reports that relate to **the use of feedstock derived from agricultural or forest biomass** in accordance with the Land Use and Biodiversity (LUB) criteria of the CFR, the team must include an individual who is a specialist in agriculture, forestry or a specialist in biodiversity, as appropriate[8] (paragraph 141(2)(a)).
    - **i.** The specialist must have professional credentials recognized by the relevant Canadian professional association or provincial authority (i.e., Agriculture engineer, Agrologist, Professional forester, or Forest engineer) or must hold a diploma equivalent to a Canadian bachelor's degree in biology, natural sciences or environmental sciences;
    - **ii.** In the case of non-Canadian professionals, specialists' professional credentials or bachelor's degree in biology, natural sciences, or

[6] CFR courses will be offered by ECCC and could take different forms, such as, but not limited to, lectures or self-study.

[7] See section 2.10.3 of the MVC for the role of the specialist.

[8] The type of specialist is dependent on the specifics of the report or application being verified. If the application or report relates to a forest-based feedstock management plan, the specialist must be a professional forester or a forest engineer. If the application or report relates to agricultural feedstock, the specialist must be an agricultural engineer, an agrologist, or a specialist in biodiversity holding an appropriate bachelor's degree.

environmental sciences must be officially recognized by the national authority of the country where the services are provided.

- For the verification of applications or reports that involve **carbon sequestration in geological formations, including enhanced oil recovery**, the team must include an individual that is specialist in geological carbon storage (paragraph 141(2)(b)).

    i. The specialist must have professional credentials recognized by the relevant Canadian professional order or provincial authority (i.e., geologist). In the case of non-Canadian professionals, their credentials must be recognized by the national authority of the country where the services are provided;

    ii. The purpose of the specialist in geological carbon storage is to establish the suitability of a geological formation for use as a reservoir, including the potential for leakage.

- For the verification of reports that involve the **generation or use of revenue, expenses, funds or tax treatments**, the team must include an individual that is a specialist in financial accounting (paragraph 141(2)(d)).

    i. The specialist must be a recognized Canadian Chartered Professional Accountant (CPA);

    ii. The CPA has the knowledge of, and proficiency in the accounting basis for the entity that they are auditing (e.g., International Financial Reporting Standards (IFRS), Canadian General Accepted Accounting Standards (Canadian GAAP), Accounting Standards for Private Enterprises (ASPE), or Non-GAAP reporting (for tax purposes));

    iii. The purpose of the specialist in financial accounting is to review the generation or use of revenue, expenses, funds or tax treatments in accordance with the accounting basis of the entity.

- For the verification of applications or reports that use the **Fuel LCA Model and/or the Specifications for Fuel LCA Model CI Calculations**, the team must include an individual who is a qualified lifecycle assessment critical reviewer (paragraph 141(2)(c).

    i. The specialist must understand and be able to apply the requirements of lifecycle assessment according to the most recent version of:

        - Standard ISO 14040 Environmental management — Life cycle assessment — Principles and framework;
        - Standard ISO 14044 Environmental management — Life cycle assessment — Requirements and guidelines; and
        - Technical Specification – ISO/ TS 14071 Environmental management — Life cycle assessment — Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006.

ii. The LCA critical reviewer must have knowledge of the following:

- The Specifications for Fuel LCA Model CI Calculations and current LCA practice;
- LCA dataset generation and LCA dataset review;
- Critical reviews of LCA;
- All scientific disciplines relevant to LCA; and
- Environmental, technical and other relevant performance aspects of the product system(s) assessed.

iii. The LCA critical reviewer must have the following experience[9]:

- Actively participated to at least two LCAs as a LCA practitioner that addressed GHG emissions inventory or the global warming impact category and were compliant with ISO 14040/14044 standards; and
- Carried out or participated in at least one LCA critical review as an internal expert or two LCA critical reviews as an external expert within the last ten years.

iv. The specialist must conduct the LCA critical review in accordance with subsection 6.2 of ISO Standard 14044.

1.3 Independent reviewers

Each verification is reviewed by a qualified independent reviewer. The independent reviewer must be an employee of the verification body and must have as a minimum the same competencies as specified in ISO 14065 for the team leader (section 139). According to ISO/IEC 17029 and ISO 14065, independent reviewers may provide feedback to the verification teams but cannot participate in planning or execution of verification activities. Independent reviewers are selected such that they are competent and different from the team. The skills and experience an independent reviewer include:

- Experience and a theoretical understanding of the verification process, as applicable, including the design, typical evidence gathering activities, significant decision points, materiality interpretations;
- An understanding of CAATTs for the verification of automated data management systems, as applicable;
- An understanding of the requirements of the CFR;
- An understanding of the requirements of an independent reviewer;
- An understanding of the verification body procedures;
- The technical competence in the applicable sector(s) described in
- Table 2; and
- The documentation of training completion and experience.

[9] Experience in LCA through EPD or ISO 14067 is acceptable as long as the studies adhered to ISO 14040/44

The independent review may be conducted concurrently with the verification process to allow significant issues identified by the independent reviewer to be resolved before the opinion is issued, provided that the impartiality of the independent reviewer is maintained, and the activities planned and undertaken by the independent reviewer(s), including the results, are documented**.**

1.4 Subcontracting

The verification body may subcontract certain services as part of the verification. In subcontracting services, the verification body ensures that there is, in accordance with section 142 and ISO/IEC 17029:

- an assessment as to whether the subcontractor has the necessary skills and competencies for their role identified in the verification;
- adequate documentation of the subcontractor's qualifications;
- a written contract between the verification body and the subcontractor (paragraph 142(1)(a));
- an assessment as to the impartiality of the subcontractor;
- a signed written confidentiality agreement for all personnel who have access to confidential information (paragraph 142(1)(b)); and
- a process for evaluating the conclusions and quality of the subcontractor's work.

In subcontracting, the verification body is responsible for the management, quality, and integration of the conclusions of the subcontractor into the verification report and into the opinion ((paragraph 142(1)(c)).

The verification body is responsible for ensuring that any subcontractors meet competency requirements (sub-section 141(2) and (3)) and impartiality requirements (sections 145 to 147).

The roles of team leader and independent reviewer cannot be subcontracted (sub-section 142(1)).

1.5 Outsourcing

Verification bodies may outsource to other verification bodies a portion of the verification activities under the following conditions (section 143):

- The prime verification body can only outsource a maximum of 30% of the scope of the verification[10] (paragraph 143(1)(a)). The outsourced activities and documentation of the

[10] Calculated based on the level of effort (e.g., number of hours) in the engagement.

activities and level of effort of the outsourced body are documented according to ISO/IEC17029;

- The prime verification body must take responsibility for assurance on the final report (paragraph 143(1)(d)). This is the verification body that provides oversight for the verification;
- The entire lifecycle must be addressed by the verification report, where applicable (paragraph 143(1)(e));
- All verification bodies meet the requirements set out in CFR (i.e. accreditation, impartiality, competence) (paragraph 143(1)(c) and sub-section 143(2));
- The prime verification body informs their client of their use of outsourced verification bodies in accordance with ISO/IEC 17029;
- The prime verification body must have a documented agreement with the outsourced verification body (paragraph 143(1)(b));
- The prime verification body is responsible for the direction, supervision and performance of the outsourced verification bodies including ensuring that they are in compliance with the requirements of the CFR (i.e. accreditation, impartiality, competence) (paragraph 143(1)(c) and sub-section 143(2)):
    - The prime verification body is responsible for ensuring the verification is conducted in accordance with the requirements of the CFR (e.g., ISO 14064-3; 2019, level of assurance, materiality thresholds);
    - The prime verification body establishes the verification strategy, risk assessment, materiality and performance materiality for the statement as a whole:
        - Verification risk is a function of the risk of material misstatement in the report or application and the risk the verifier may not detect these misstatements. The verification risks include the risk that the outsourced verification body may not detect misstatements;
        - The prime verification body establishes materiality for the application or report. Materiality for the outsourced verification scope is set lower than the materiality of the application or report to reduce the probability that aggregated uncorrected and undetected misstatements will exceed the application or report materiality.
    - The prime verification body determines the scope of the verification performed by the outsourced verification body, their role in the verification, the performance materiality associated with their scope, and reporting requirements;
    - The prime verification body determines the type of work performed by its verification team and the outsourced verification team. The prime verification body determines the nature, timing, and extent of its involvement in the work of the outsourced verification body;
    - If the scope of work of the outsourced verification body involves material line items in the final application or report, the prime verifier involves the outsourced verification body in the risk assessment to ensure that the risk is adequately addressed. Examples:
        - A BC prime verification body has outsourced part of the verification to a Northwest Territory verification body because of travel costs and local experience. The scope of work contains a material line item related to biodiversity. The prime and outsourced verification bodies need to discuss the risk assessment for the material line item because the

outsourced verification body will have knowledge about the local ecosystem which will aid in assessing the potential and magnitude of the risk.
        - A prime verification body has outsourced the IT component of the verification to another (outsourced) verification body because of specialized software and experience. The scope of the outsourced work contains many material line items. The prime and outsourced verification bodies should discuss the risk assessment for the material line items because the outsourced verification body will have a more in-depth knowledge of the potential and magnitude of the risks. In this situation, further discussions should occur about the evidence gathering activities as the outsourced verification body may have knowledge about alternative and/or more efficient methods for gathering evidence.
    - The prime verification body is responsible for evaluating the sufficiency and appropriateness of the evidence obtained, which includes evaluating the adequacy of the outsourced verification body's work:
        - If the outsourced verification work is insufficient or inappropriate, additional evidence gathering activities are designed and performed by the prime verification body.
    - The prime verification body evaluates the effect of any uncorrected misstatement in the outsourced verification work on the application or report as a whole;
    - The prime verification body is responsible for issuing the verification statement.

Examples of outsourcing:

- A verification body based in Ontario may outsource to a verification body based in Manitoba the evidence gathering activities that occur in Manitoba.
- A verification body may outsource the computer-assisted audit evidence gathering activities to another verification body that has developed or has access to specialized software tools.
- A verification body may outsource interview evidence gathering activities to another verification body that has established relations with the interviewees.
- A verification body may outsource the verification of a carbon-intensity contributor's CI value.

1.6 Reliance on verifications performed by other verification bodies

A verification body (prime verifier) may rely on the verification statement of another independent verification body (relied-upon verifier) under the following conditions (section 144):

- The prime verification body must take responsibility for assurance over the entire verification statement (paragraph 144(b));
- The entire lifecycle must be addressed by the verification statement, where applicable (paragraphs 144(b) and (c));

- The prime verification body can only rely on another independent verification statement if it represents, at a maximum, 15%[11] of the scope of the prime verification assignment (paragraph 144(a));
- Both verification bodies meet the requirements set out in CFR (i.e. accreditation, impartiality, competence) (paragraph 144(d));
- Both verifications are conducted in accordance with the requirements set out in the CFR (e.g., ISO 14064-3; 2019, quantification criteria) (paragraph 144(d));
- The engagement type, level of assurance, scope, objectives, criteria, and materiality are appropriately aligned. The engagement type (i.e., verification), level of assurance (i.e., reasonable), and criteria (i.e., the requirements of the CFR) should be consistent between the verifications. The relied-upon verification scope connects logically with the entire verification scope with no gaps;
- The prime verification body communicates to the relied-upon verifier that their report will be relied upon;
- The prime verification body discloses the amount of reliance on the other independent verifier's report in their verification statement;
- The prime verification body includes the relied-upon verification statement and the associated application or report in their documentation.

Examples

- For the verification of the amount of a low-carbon-intensity fuel that has imported feedstock, one verification body may verify the amount of feedstock from harvest to export point and another verification body may verify the amount of feedstock from export point to final use including the production of the low-carbon intensity fuel.
- A verification body based in Brazil has provided a verification statement for the amount of sugarcane to a port of exit in Brazil. A Canadian verification body, acting as prime verifier, could provide verification on the Materials Balance Report by:
    - Verifying the information from the Brazilian port of exit to delivery of a final product in Canada; and
    - Relying on the Brazilian body's verification (assuming all parties meet the requirements in the CFR in relation to competence, conflict of interest, any applicable criteria).
- In the case of a carbon-intensity contributor that produces renewable natural gas for consumption, one verifier could provide verification on the CI value for the renewable natural gas, and another verifier could rely on that verification when providing a verification on the producer's fuel.

1.7 Management of impartiality

1.7.1 Impartiality requirements

In addition to the impartiality requirements in ISO 14064-3:2019 and ISO/IEC 17029 with the scope of ISO 14065, the verification team, including subcontractors, and the independent

[11] Calculated based on the level of effort (e.g., the number of hours) the verifier would have made to achieve reasonable assurance on the scope of the relied upon information.

reviewer must be free from any conflict of interest (threat to impartiality). Any members of the verification team, including subcontractors or members of the outsourced verification body's team, and independent reviewers must be independent of (section 145):

- The employees of the federal public administration who administer or implement the CFR or carry out any related activities[12].
- The person who is making the application or submitting the report[13].

1.7.2 Threats to impartiality

The independence or impartiality requirements of the CFR, ISO/IEC 17029 with the scope of ISO 14065, and ISO 14066 apply to any of the circumstances described under this section. Threats to impartiality may exist at the present time, may be reasonably foreseen to exist in the future, or may be perceived as such by a reasonably well-informed observer, who could make the assumption that a threat to impartiality exists, whether or not it is the case. Threats to impartiality include:

- Self-Interest
- Self-Review
- Advocacy
- Familiarity
- Intimidation or Economic Implications

A self-interest threat occurs when the verification body or a member of the verification team can directly benefit, financially or otherwise, based on the conclusion of the verification. For example:

- Owning shares of the company being verified;
- Having a close business relationship with the client;
- Contingent fees relating to the results of the verification;
- Seeking potential employment with the client;
- Acting as a broker-dealer (registered or unregistered), promoter, or underwriter on behalf of the client;
- Using, managing, or deploying the reinvestment revenue for expanding electric vehicle charging infrastructure and/or reducing the cost of electric vehicle ownership;
- Taking an equity position in a project listed in the CFR system; or
- Taking equity or payment in the form of future revenues from a project.

A self-review threat occurs when the verification body or a member of the verification team could be in a position of reviewing their own work.

For example:

- Developed the modelling software used in the report or application being verified;
- Providing consulting services that directly impinge on the report or application being verified, such as designing or implementing the data management systems;
- Compiling or reporting the information for the application or report being verified; or

[12] Unless five years has passed after the end of their role and the start of the verification

[13] Unless five years has passed after the end of their role and the start of the verification

- Verifying a report that relates to the same carbon intensity addressed in an application or report that they previously verified.

1.7.2.1 Specific self-review limitations

The CFR does not permit individual verifiers, including subcontractors and outsourced verifiers, or independent reviewers to verify a subject matter for which there is a self-review risk. Any member of the verification team and the independent reviewer cannot perform the verification or independent review of the carbon intensity pathway report, the credit creation report or the credit adjustment report if they previously participated in the verification or independent review of the application for approval or temporary approval of the same carbon intensity for the same client unless five years have lapsed between the end of the prior engagement and beginning of the verification (sub-section 147(5)). Additionally, any member of the verification team and the independent reviewer cannot perform the verification or independent review of the credit creation report or the credit adjustment report if they previously participated in the verification or independent review of the carbon intensity pathway report during the same compliance period about the same carbon intensity for the same client (sub-section 147(6)).

Examples of specific self-review circumstances under the CFR that are not permitted include:

- A LCA critical reviewer for the verification of the application for approval of carbon intensity becomes the LCA critical reviewer for the corresponding verification of the carbon intensity pathway report;
- Verifying the creation of a CI value (e.g. the application for approval of carbon intensity) while verifying a report that uses that CI value (e.g., carbon intensity pathway report, credit creation reports);
- A verifier for the application for approval of carbon intensity is the verifier for the carbon intensity pathway report or credit creation report that uses the approved CI value;
- The team leader involved in the verification of the application for a temporary approval of a carbon intensity of a low-carbon fuels is a team member for the credit creation report for that same low-carbon fuel;
- Verifying when they were involved in the certification of the same subject matter. (e.g., feedstock or IT system that is used to generate compliance credits).

An advocacy threat occurs when the verification body or a member of the verification team may be perceived to promote a responsible party's position or opinion to the point that objectivity may, or may be perceived to be, compromised. For example:

- Dealing in, being a promoter, or providing matchmaking services for compliance credits in the CFR system;
- Participating in the development of quantification methodologies for the CFR system;
- Advocating on behalf of the responsible party to advance a position or point of view on an issue that directly affects the report or application being verified; or
- Acting as an advocate on behalf of the responsible party in litigation or in resolving disputes with other third parties.

A familiarity threat occurs when the verification body or a member of the verification team, by virtue of a close relationship with a responsible party, its directors, officers, or employees, becomes overly sympathetic to the responsible party's interests.

For example:

- A person on the verification team has a close personal relationship with a person who is in a critical compilation role at the responsible party;
- Acceptance of significant[14] gifts or hospitality from the responsible party;
- A member of the verification team has verified the same subject matter for a prolonged period of time and has developed relationships with the verified entity as a consequence of that exposure.

1.7.2.2 Specific familiarity threat limitations

The CFR does not permit individual verifiers, including subcontractors and outsourced verifiers, or independent reviewers to verify a subject matter for which there is a familiarity risk. Any member of a verification team and the independent reviewer may participate in the verification of the same application or report for a maximum of five consecutive years for the same reporting entity (sub-section 147(1)). The five-year period begins on the execution date for verification services (usually the contract date[15]) under these Regulations and ends on the date the final verification opinion is submitted to the Minister[16]. The five-year limit does not reset upon a change in ownership or operational control of the responsible party required to submit its applications or reports under the CFR to be verified.

After reaching the five-year limit, a three-year lapse must occur before a member of the verification team or the independent reviewer may resume verification activities for the same subject matter and for the same reporting entity (sub-section 147(2)).

Any member of a verification team and the independent reviewer is not permitted to perform a verification or independent review for the same reporting entity of which they were an employee, unless five years have lapsed between the end of their employment and the beginning of the verification engagement (sub-section 147(3)). Additionally**,** any member of the verification team and the independent reviewer should not perform verification activities in they were involved in any enterprise related to the scope of the verification to be performed within the last five years. Examples include:

- the low-carbon-intensity fuel provider;
- a fuel supplier that purchases or acquires low-carbon-intensity fuel from the low-carbon fuel provider;
- a person who sells or transfers low-carbon-intensity fuel to the low-carbon-intensity fuel provider;

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[14] Significant would be gifts that are over 0.1% of the verification fees.

[15] If the contract is for multiple years, the start date is for the first verification the verifier participated in.

[16] A resubmitted report and the accompanying verification report are considered an extension of the original yearly engagement. In this situation, when completing a fifth consecutive engagement, the date of the final verification report is the end date for the five-year period to enable the continuity of verifiers for any resubmission.

- a person who manufactures low-carbon-intensity fuel that is sold to the low-carbon-intensity fuel provider; or
- an affiliate of the low-carbon-intensity fuel provider or of a fuel supplier.

Any member of a verification team and the independent reviewer is not permitted to perform a verification or independent review required under the CFR if they were an employee of the federal public administration who administers or implements these Regulations or carries out any related activity, unless five years have lapsed between the end of their employment and the beginning of the verification engagement (sub-section 147(4)).

An intimidation or economic implications threat occurs when the verification body or a member of the verification team is deterred from acting objectively and exercising professional skepticism because of threats, actual or perceived, from the directors, officers or employees of the responsible party, and their impartiality is potentially threatened. For example:

- The threat of being replaced as third-party assurance provider due to a disagreement with the verification process;
- Fees from the responsible party represent a large percentage of the overall revenues of the verifier;
- The application of pressure to inappropriately reduce the extent of work performed in order to reduce or limit fees; or
- Threats arising from litigation with a responsible party.

1.7.3 Requirements for managing circumstances of conflict of interest

In preparation for a verification engagement, the verification body evaluates whether all members of the verification team, including subcontractors and outsourced verifiers, and the independent reviewer meet the applicable impartiality requirements. The person who submits an application or report is then responsible to inform the Minister whether a conflict of interest exists between them and the members of the verification team and/or the independent reviewer prior to starting verification activities (sub-section 145(2)).

In the event that there is a conflict of interest, the member of the verification team and/or the independent reviewer whose impartiality is threatened cannot perform any verification activities (sub-section 146(1)). If the conflict of interest in question can be managed, written evidence describing the actions that will be taken to mitigate the threat to impartiality must be provided to the Minister by the responsible party (sub-section 145(4)). The Minister will provide a response within 20 days of being informed of the threat to impartiality (sub-section 146(2)). Upon written notification by the Minister that they are satisfied that the conflict of interest can be effectively managed, the verification team and independent reviewer may proceed.

If a threat to impartiality develops during verification activities, the verifier determines and documents the actions required to mitigate the identified threat to impartiality and must notify the Minister within 5 days of the threat being discovered (sub-section 145(3)). That notice indicates the nature of the threat and the actions taken to mitigate it. The individual verifiers and the independent reviewer who are involved in the conflict of interest must stop any verification

activities until the Minister's decision (section 146). Table 4 includes a non-exhaustive list of examples of threats to impartiality and the corresponding mitigation measures.

Table 4: Examples of Threats to impartiality and Mitigations Measures

Threat	***Situation***	***Mitigation Measures***
Self-Interest	A verification team member's spouse sits on the Board of Directors of the client.	The member of the board abstains from voting on any decisions involving the verification.
Self-Review	A person works at a firm and consults for a registered creator on a credit-creation report but later leaves to work for a verification body (and is onboarded on the verification team) that is hired to verify the same report that they consulted on originally.	The verification body would ensure that this person is not onboarded on any verification assignment (neither as a verifier nor as an independent reviewer) that implies the verification of any report from this regulatee until five (5) years has passed after the end of their previous role and the start of a verification.
Familiarity	The client invites the verification team to a sports game (i.e., soccer, hockey) in the corporate box.	The verification team provides compensation for the tickets.

The verification body monitors their impartiality during the verification in accordance with ISO/IEC 17029, ISO 14065 and ISO 14066.

1.8 Values and ethics

Every member of a prime or outsourced verification body's verification team, including subcontractors, as well as the independent reviewers are expected to act with integrity and ethics in accordance with ISO 14066:2011 when conducting any verification activity under the CFR. It is the responsibility of verification bodies to ensure that measures are in place if any derogation from this moral obligation should be detected or suspected (in accordance with the ISO 17029:2019 requirement on responsiveness to complaints). ECCC reserves the right to bring to the attention of the verification body any demonstrated or suspected breach of this obligation and expects appropriate measures to be taken.

1.9 Records relevant to the verification body

Verification bodies must document and store the books and records related to verification activities that they performed for a minimum of ten years (sub-section 166(2)). In accordance with the requirements in ISO/IEC 17029 and section 134 of the CFR, these records include all the details listed in section 2.16 of this document.

1.10 Complaints mechanism

In accordance with the requirements of ISO/IEC 17029 related to the management of appeals and complaints, the verification body has a documented complaints mechanism to address cases of complaint, dispute, challenge, appeals and/or conflict filed about any element of its verifications.

As part of the complaints mechanism and in accordance with the ISO/IEC 17029 requirements, the verification body ensures that:

- The individuals who conducted any of the verification activities are not involved in the complaints-handling process;
- The confidentiality of the individual or organization filing a complaint and the subject of the complaint, when applicable;
- Transparent and timely communication with all the parties involved throughout the complaints management process;
- A formal notice of the outcome is issued to the complainant and ECCC.

1.11 Public information

In accordance with the requirements of ISO/IEC 17029 and ISO 14065, the verification body makes publicly available the fact that they are accredited to provide verification services under the CFR. Additionally, the verification body makes the following information available to stakeholders upon request, including:

- Verification activities in accordance with the CFR requirements;
- Compliance with the CFR requirements;
- Procedure for granting, maintaining, refusing and withdrawing verification services under the CFR;
- Process for the management of complaints;
- Personnel and committee members responsible for overall performance of its activities; policy matters; verification decisions; and resolution of complaints;
- Any active, unresolved, and resolved complaints related to the CFR verification.

2 Requirements relevant to the verification processes[17]

2.1 Verification processes − applicable standards requirements

Verifications are conducted in accordance with the standard ISO 14064-3: 2019 - *Specification with guidance for the verification and validation of greenhouse gas statements,* which sets out the verification process at a reasonable level of assurance (paragraph 148(1)(a)).

For the verification of financial information (e.g., Compliance Credit Revenue Report, Compliance Report, or Complementary Compliance Report), the financial information must be audited at a reasonable level of assurance in accordance with the Canadian Audit Standards, the primary source of which is, in Canada, the *CPA Canada Handbook —Assurance (sub-section 148(2)).*

For the verification in relation to the Specifications for Fuel LCA Model CI Calculations (e.g., an application for the approval or temporary approval of a carbon intensity, and a carbon intensity pathway report), the critical review of the life cycle assessment must be conducted in accordance with the most recent versions of the standard ISO 14044 - *Environmental management — Life cycle assessment — Requirements and guidelines* (sub-clauses 6.1 and 6.2) including the additional requirements and guidelines specified in the Technical Specification ISO/ TS 14071 Environmental management — *Life cycle assessment — Critical review processes and reviewer competencies.*

2.2 Frequency of verification

The frequency of verification for any annual regulatory report is annual. The frequency of verification of applications is on an as-submitted basis. Quarterly Credit Creation Reports are not subject to verification with the exception of the one-time combined Quarterly Credit Creation Reports (categories 2 & 3 for low CI fuels) for the compliance period that ends on December 31, 2022.

2.3 Level of assurance

The level of assurance required for all verifications, is reasonable (sub-section 148(1)). When an audit of financial information is part of the verification, the financial audit must be conducted at a reasonable level of assurance (sub-section 148(2)).

In verification, a reasonable level of assurance requires the verifier to design the verification to provide a high but not absolute level of assurance on historical data and information (ISO

[17] This part of the document lays out requirements concerning the verification process set in sections 148 to 154 of the *Clean Fuel Regulations*.

14064-3:2019 3.6.6). Reasonable level of assurance differs from limited level of assurance verifications in the nature and extent of verification activities. Under reasonable levels of assurance, it is required that:

- risks be identified at the level of occurrence, completeness, accuracy, cut-off, and classification for emissions and removals; and existence, rights, obligations, completeness, accuracy and allocation for storage (ISO 14064-3:2019 6.1.2.2);
- evidence-gathering activities be designed for every material emission or removal (ISO 14064-3:2019 6.1.3.1);
- a data trail be established for every material emission, removal, and/or storage (ISO 14064-3:2019 6.1.3.2);
- in using detailed analytical testing, expectations are identified to determine if results are material and investigation of those material misstatements is undertaken by obtaining additional evidence (ISO 14064-3:2019 6.1.3.6.1);
- when relying on controls, evidence-gathering activities are designed to test the operating effectiveness of those controls (ISO 14064-3:2019 6.1.3.2);
- when using estimate testing, evidence-gathering activities are designed to test the operational effectiveness of the controls governing the development of the estimate and their own estimate or range is developed to evaluate the original estimate (ISO 14064-3:2019 6.1.3.6.3);
- when using detailed-level analytics, the analytics can detect material misstatements (ISO 14064-3:2019 6.1.3.6.1).

2.4 Criteria

The criteria for verifications are the applicable regulatory requirements set out into the *Clean Fuel Regulations* (paragraph 149(c)).

For the auditing of financial information (e.g., Compliance Credit Revenue Reports, Compliance Reports or Complementary Compliance Reports), the criteria to be used for the audit of financial information are International Financial Reporting Standard published by the International Accounting Standards Board, or the Accounting Standards for Private Enterprises published by Accounting Standards Board (“AcSB”) for private enterprises. These standards can be found in CPA Canada Handbook (“the Handbook”) in Part I and Part II respectively (paragraph 149(a)). When auditing financial information, particular attention should be paid to the accounts payable calculation and source documentation.

For the critical review of LCA information (e.g., Carbon Intensity Pathway Report or Application for the Approval of Carbon Intensity), the critical review must assess the general requirements set out in Section 6.1 of ISO 14044 (paragraph 149(b)).

2.5 Materiality thresholds

Materiality is the concept that individual misstatements or the aggregation of misstatements could influence ECCC’s decisions. Materiality provides a minimum threshold that ECCC expects; the verifier uses professional judgement in determining materiality and may use values lower than specified in this document. Materiality has two components: quantitative and qualitative. Quantitative materiality thresholds are set out in sections 150 to 151 of the *CFR*.

Table 5: Use of Materiality

Verification
Materiality is used at two critical steps: • During the design of evidence-gathering activities; and • During the assessment of evidence.

2.5.1 Quantitative materiality thresholds

Quantitative materiality refers to misstatements in value in the GHG statement. Examples are presented in Appendix D and include calculation errors, incomplete inventories (e.g., omissions of material sources), and misclassified GHG emissions.

The regulations require that quantitative misstatements be aggregated to determine the total effect on the reported information during the assessment of evidence (sub-section 153(1)). Summing the misstatements provides ECCC with the effect on the final values.

The calculations for relative error and percent relative error to be used to evaluate quantitative materiality are the following (sub-section 153(3)):

$$\textbf{\textit{Relative Error}} = \sum \textbf{\textit{errors, omissions, and misreporting}}$$

$$\textbf{\textit{Percent Relative Error}} = \frac{\sum \textbf{\textit{errors, omissions, and misreporting}}}{\textbf{\textit{Absolute Corrected Value}}} \times \mathbf{100}$$

Description of equations: Relative error is the sum of errors, omissions, and misreporting. Percent relative error is the relative error divided by absolute corrected value multiplied by 100.

Relative Error: is the difference between the reported value and the corrected value. The difference is caused by errors, omissions, and misreporting.

Errors: are quantitative inaccuracies in the data.

Omissions: are incompleteness in the data that affect the value and can be corrected (e.g., missing sources in the inventory).

Misreporting: are misclassifications in the data. Misreporting can be quantitative and qualitative. In the error analysis, only the quantitative values of misreporting are used.

Percent Relative Error: is an expression of the error relative to the corrected value in percentage.

Corrected Value: is the value that has been adjusted by the errors, omissions, and misreporting found in the evidence.

Absolute Corrected Value: is the absolute value of the corrected value.

The overall quantitative materiality threshold that applies during the verification of regulatory reports and applications is 5% except for CI Values (paragraph 150(b)) because it experiences problems at small and large CI values.

For CI values:

At small absolute values, measurement systems have difficulty producing the degree of accuracy to measure the reported values (e.g., 5% of 0 g CO2e/MJ is 0 g CO2e/MJ which requires extreme measurement capabilities). Thus, for small CI values where measurement issues exist, a set value of 1 g CO2e/MJ is used (paragraph 150(a)(i)).

At large absolute values, a materiality issue can exist. For example, a low CI fuel can have values as low as -400 gCO2e/MJ. A 5% materiality threshold on 400 gCO2e/MJ (absolute) is 20 g CO2e/MJ which is a similar magnitude to many anticipated low-CI fuels. Thus, for large CI values where materiality issues exist, a set value of 5 g CO2e/MJ is used (paragraph 150(a)(iii)). The materiality thresholds that the CFR will accept for CI values are presented in Table 6.

Table 6: CI-Value Materiality Thresholds (paragraph 150(a))

CI Value (g CO_2e/MJ)	**Materiality Threshold**
CI=>100	5 gCO_2e/MJ
100>CI>=20	5%
20>CI>-20	1 gCO_2e/MJ
-20=>CI>-100	5%
CI=<-100	5 gCO_2e/MJ

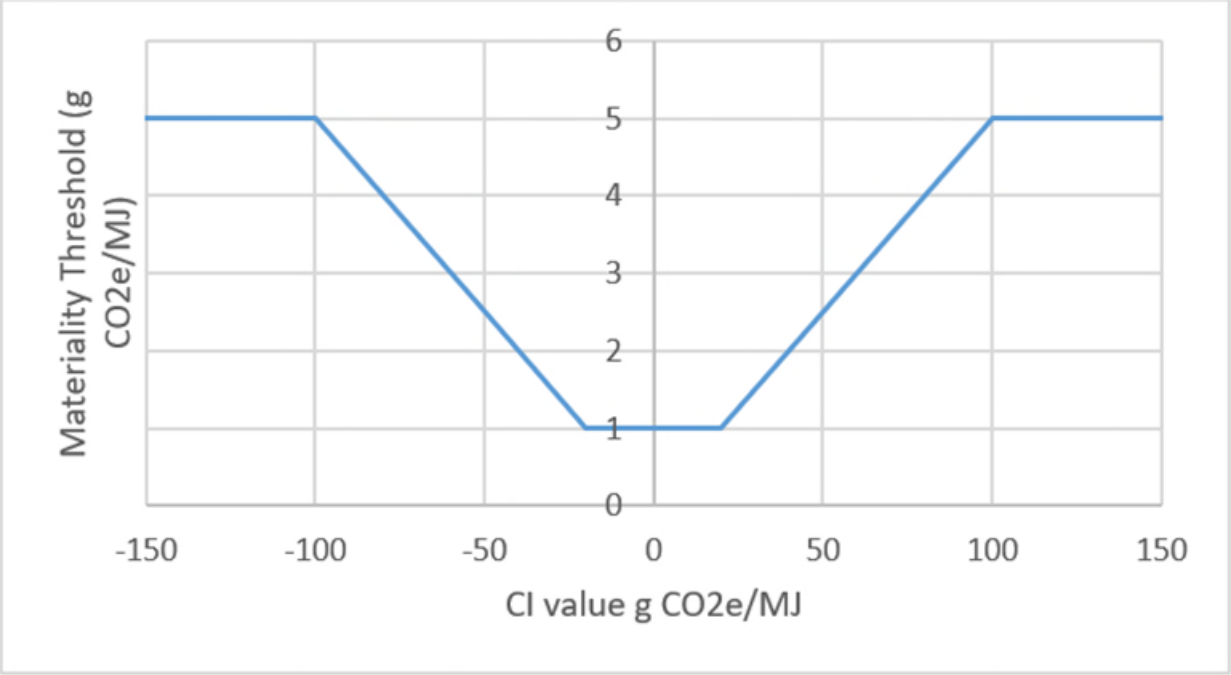

Figure 1: CI-Value Materiality Thresholds

Text description of Figure 1: Plot with Materiality thresholds that the CFR will accept for different CI values. Illustration of Table 6.

Negligibility Thresholds and Materiality

The negligibility threshold is the level below which the contributions (e.g., sources or sinks) are clearly trivial to the reported value (e.g., carbon intensity value). The negligibility threshold is set low enough such that the aggregation of the clearly trivial contributions is lower than materiality. For the CFR, the negligibility threshold is set at 5% of the overall quantitative materiality (sub-section 153(2)). Thus, if the materiality threshold is 5 g CO2e/MJ, the negligibility threshold is 0.25 g CO2e/MJ. If the materiality threshold is 5% (e.g., for material balances and compliance credits), the negligibility threshold is 0.25%.

Rounding Protocols and Materiality

Rounding procedures must adhere to requirements set out in International Standard ASTM E29-22, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications (sub-section163(1)). Rounding is used to clarify reporting and imply accuracy but should not obscure materiality. Under this standard, there are two acceptable rounding protocols (absolute and rounding methods), and the choice must be specified (ASTM E29-2, 4.1). Verifiers should be familiar with both rounding methods.

The absolute method considers all digits in an observed or calculated value to be significant.

The rounding method limits the number of digits in an observed or calculated value. The rounding methodology as specified by the standard is:

When the digit next beyond the last place to be retained is:

- <5, retain the last place digit;

- >5, increase the last place digit by 1;
- =5, if the last place digit is odd, increase the last place digit by 1;
- =5, if the last place digit is even, retain the last place digit.

For example:

- 59.4, to be rounded to the nearest 1, is 59
- 59.5, to be rounded to the nearest 1, is 60
- 59.6, to be rounded to the nearest 1, is 60
- 58.5, to be rounded to the nearest 1, is 58

The rounding interval selected is different depending on whether the value is a measure or test result. For direct measures, such as meter readings, dials, or scales, all digits known exactly plus one digit for estimation should be recorded. For test values, the rounding interval should be between 5% to 50% of the standard deviation.

Exceptions to the above standard are:

- Primary supplier's reduction requirement – rounded to the nearest whole tonne of CO2e (sub-section 163(2));
- Approved carbon intensity – rounded to the nearest whole number (sub-section 163(3)); and
- Compliance credits – rounded to the nearest whole number (sub-section 163(3)).

In these cases, if the digit beyond the whole value is 5, increase the whole value by 1.

For example:

- 59.4, to be rounded to the nearest 1, is 59
- 59.5, to be rounded to the nearest 1, is 60
- 59.6, to be rounded to the nearest 1, is 60
- 58.5, to be rounded to the nearest 1, is 59

Rules for carrying significant digits:

- Addition and Subtraction – the result contains no significant digits beyond the place of the last significant digit of any datum;
  Examples:
  11.24 + 9.3 +6.32 = 26.9
  926 – 923.4 = 3
  140,000 + 91,460 = 231,000 when the first value was recorded to the nearest 1,000
- Multiplying and Dividing – the result contains no more significant digits than the value with the smaller number of significant digits;
  Examples:
  11.38 x 4.3 = 49
  (926 – 923.4)/4.3 = 0.6
  Exact Counts (e.g. compliance credits) are treated as having an infinite number of significant digits.

Significance Threshold and Materiality

A significance threshold is used to determine when to restate values for events that happened after the fact, quantification methodologies that change, CI values that improve, facilities that change (expand), etc. The significance threshold is a reflection of materiality and the level of administrative burden the program is prepared to tolerate. The following significance thresholds in Table 7 below apply (section 156).

Table 7: Significance Thresholds

Value	**Significance Threshold**
CI Value	Twice Materiality Thresholds
Material Balances	10%
Production Values	10%
Credits	2000 t
Monetary Values	10%

2.5.2 Qualitative materiality thresholds

Qualitative materiality refers to intangible issues that affect the GHG statement. Examples include:

- report does not conform with criteria (e.g., land use or biodiversity criteria);
- validated criteria are no longer appropriate due to changing operational conditions;
- control issues that erode the verifier's confidence in the reported data;
- unacceptable uncertainty in the reported data;
- poorly managed documented information;
- difficulty in locating requested information;
- inappropriate disclosure;
- non-compliance with the regulations indirectly related to GHG emissions, removals or storage.

Qualitative materiality is difficult to define and changes with time (e.g., new requirements, protected areas, etc.) and as such, the following section provides principles and examples of what ECCC would consider material but cannot be completely comprehensive. This guidance does not remove the responsibility from the verifier to exercise professional judgement on qualitative matters that may be material. Verifiers are required to assess any qualitative misstatements to determine if they are material (section 151) (ISO 14064-3:2019 s.6.3.1.3). If the verifier is uncertain, ECCC requires disclosure as a minimum course of action (Schedule 20(2)).

2.5.2.1 General principles

Verifiers are required to assess qualitative aspects of the application or report (section 151). The qualitative matter is material if the application or report does not:

- meet eligibility requirements;
- adhere to the criteria; and/or
- meet records requirements.

The following illustrates qualitative matters that are material according to the aspects listed above.

2.5.2.1.1 Eligibility requirements

Cases could be:

- Ineligible feedstock (sub-section 146(1), sections 48-55, 57, 58):
    - Feedstock for a low-CI fuel that came from wildlife habitat;
    - Feedstock that was cultivated in a manner that spreads or establishes damaging agents, such as pests, invasive species or disease);
    - Feedstock that causes indirect changes to land use that adversely affect the environment;
    - Feedstock that originated on excluded lands, such as forests, wetlands, grasslands or riparian zones;
    - Forest-based feedstock for which the management plan does not promote timely regeneration of the land to pre-harvest conditions;
    - Forest-based feedstock that has a management plan that does not ensure adverse effects on naturally generated stands, soil, surface or ground water, biodiversity, and connectivity of water courses.
- A fuel that does not have a sufficiently low enough CI value as defined by the CFR program (CFR Definitions – Low-carbon-intensity fuel);
- Projects that create compliance credits beyond 10 years of operating and producing compliance credits (paragraph 32(2)(d)).

Examples of eligibility issues that require careful consideration and likely disclosure by either the applicant/reporter or verifier:

- a portion of the feedstock that is not included in the quantification of the low-CI but came from a protected area (e.g. feedstock from a protected area is being harvested in conjunction with the eligible feedstock);
- a low-CI fuel feedstock is harvested in an area where a near-threatened species, but not yet vulnerable or threatened species, lives;
- the impacts of harvesting feedstock for a low-CI fuel that could impact water courses and riparian zones downstream from the harvest area;
- feedstock cultivated and harvested in a region with marginal environmental protection regulations that meets applicable legislation but would not meet similar Canadian requirements;
- feedstock cultivated and harvested in a region with no environmental protection regulations and a marginal management system that would not meet similar Canadian standards;
- feedstock that could have been used for food but allowed to become inedible in a region where starvation or food shortages are prevalent;
- there is a local movement to protect the area where the feedstock is harvested and could potentially change the eligibility of the harvest area in the future;
- continued harvesting of the feedstock in the same area will erode soil quality in the future.

2.5.2.1.2 Criteria Adherence

Cases could be:

- Failure to demonstrate that a project started its operation on or after July 1, 2017 (paragraph 35(1)(c));
- Projects that reduce the production of fuel by an operational or physical change (e.g., reducing facility throughput, shutting in wells, etc.) (paragraph 33(a));
- Misclassification of material amounts of:
    - fuel
    - feedstock
    - electricity used instead of fuel (e.g., EV vehicles)
    - credits
- Inability to demonstrate that a renewable fuel was used as a fuel in a vehicle in Canada (paragraph 19(1)(d));
- Use of a quantification methodology for a project that was not approved by the Minister (sub-section 37(3));
- Use of a CI value that was not approved by the Minister (sub-section 123(1));
- Not adhering to the applicable quantification methodology (sub-section 36(1));
- Actual carbon intensities that are materially different from the approved carbon intensity (paragraph 86(1)(b));
- Use of a quantification methodology whose assumptions, limitations, and/or models no longer apply to the project or are otherwise inappropriate (sub-section 86(1));
- Failure to reinvest the revenue from the sale of compliance credits from electric vehicle charging within two years of the end of the compliance period;
- Reinvestment of revenue for EV charging did not occur in the allowable reinvestment categories (sub-section 103(1));
- Reinvestment of revenue for EV charging that did not occur within 2 years (sub-section 103(3)).

2.5.2.1.2.1 Misclassification

If the misclassification materially affects the reported values, it is quantitatively material.

Any of the following misclassifications is qualitatively material:

- compliance credit type;
- point of origin for feedstock; or
- province of origin for the electricity consumed by EV vehicles.

2.5.2.1.3 Records Requirements

Cases could be:

- Lack of a unique identifier for the feedstock (paragraph 58(1)(m)), or low-CI fuel (sub-section 8(b);
- Lack of a unique alphanumeric identifier issued by the Minister for a project (sub-section 36(2)), new CI-Pathway (sub-section 81(4)), or CI value (sub-section 85(2));
- Lack of a monitoring plan for verified applications or reports (sub-section 136(1));

- Lack of a management plan for forest-based feedstock (section 52);
- Lack of declarations for a biomass feedstock (sub-section 57(2));
- Lack of evidence of contributions to a funding program (sub-section 118(2));
- Insufficient retention of required records by the low-CI fuel producer or importer (paragraph 57(1)(a) & (b)), sub-section 53(1)).

Examples of records issues that require careful consideration and possible disclosure by either the applicant/reporter or validator/verifier:

- One invoice out of twelve that is illegible;
- Sales records for imported low-CI fuels in which the date is ambiguous;
- Multiple versions of calculations with no method of determining the current version;
- Certificates that were non-compliant with another scheme;
- Errors in the date revenue was received from compliance credits of more than 5 working days.

2.5.2.2 Data Trail and Controls

The verifier examines material data trails as part of the verification (ISO 14064-3: 2019 s.6.1.3.2). Where control reliance is placed, the verifier tests those controls (ISO 14064-3: 2019 s.6.1.3.6.2). In order to gain a sense of data control, ECCC requires the verifier to calculate the absolute error and absolute percentage error (section 150) because the sum of the misstatements, without regard to their sign, provides an indication of the effectiveness of the data controls at managing the risks of material misstatement.

The calculations for absolute error and percent absolute error are the following (sub-section 153(3)):

$$\textbf{\textit{Absolute Error}} = \sum |\textbf{\textit{errors, omissions, and misreporting}}|$$

$$\textbf{\textit{Percent Absolute Error}} = \frac{\sum |\textbf{\textit{errors, omissions, and misreporting}}|}{\textbf{\textit{Absolute Corrected Value}}} \times \mathbf{100}$$

Description of equations: absolute error is the sum of the absolute values of errors, omissions, and misreporting. Percent absolute error is the absolute error divided by absolute corrected value multiplied by 100.

Absolute Error: is the unsigned difference between the reported value and the corrected value. The difference is caused by errors, omissions, and misreporting.

Errors: are quantitative inaccuracies in the data.

Omissions: are incompleteness in the data that affect the value and can be corrected (e.g., missing sources in the inventory).

Misreporting: are misclassifications in the data. Misreporting can be quantitative and qualitative. In the error analysis, only the quantitative values of misreporting are used.

Percent Absolute Error: is the expression of the potentially largest misstatement relative to the corrected value in percentage.

Corrected Value: is value that the verifier determines by the evidence.

Absolute Corrected Value: means the absolute value of the corrected value.

The verifier discloses percent absolute errors that equals or exceeds 5% of the corrected reported values and the cause of the error(s) and/or omission(s), and the impact of future reporting, if any, in their report (Schedule 20).

Percent absolute errors that exceed 25% of the corrected reported values are considered material and the verifier shall issue an appropriate opinion (paragraph 154(c)).

2.5.2.3 Uncertainty

Errors and omissions, and uncertainty are different. Errors and omissions usually can be corrected whereas uncertainty always exists and is inherent. Verifiers assess the impact of uncertainty on the reported values to ascertain whether there are qualitative materiality concerns. A numerical analysis is preferred and a ranking (e.g., high, medium, low) should only be conducted if there is insufficient data. Uncertainty exists in measurements, calculations, and science (refer to Appendix E for a more complete description). The following **do not** have any uncertainty associated with them:

- Carbon intensity fuel limit (sub-section 5(1) and Schedule 1);
- Baseline carbon intensity (sub-section 5(3));
- Volumetric requirements (sub-section 6(1) and sub-section 7(1));
- Energy density (Schedule 2);
- Energy efficiency ratios for electric vehicles;
- Default carbon intensity factors (Schedule 6);
- Minister approved values;
- Fuel LCA Model or Specifications for Fuel LCA Model CI Calculations emission factors and global warming potentials;
- ECCC project quantification methodologies' emission factors;
- Conversion factors (e.g., lb to kg).

In conducting the uncertainty analysis, verifiers are referred to the UN's Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, Chapter 6. The simplified methodology is an acceptable technique for uncertainty propagation although a Monte Carlo analysis will also be accepted.

The level of acceptable uncertainty is dependent on the subject matter reported and the standard uncertainty for that subject. For example, there is usually a minimal uncertainty accepted on the transaction of compliance credits because they trade in integer values which have no uncertainty. However, for a methane emission reduction project, the acceptable uncertainty may be higher because the measurement technology has a minimum accuracy or for a carbon sequestration project, there may be higher uncertainty because of the potential for reversal.

Uncertainty is usually an issue of disclosure and ECCC recommends that more disclosure rather than less is preferred. Some clear rules for when uncertainty is material are:

- The uncertainty associated with the CI value of a low-CI fuel that is more than five times the materiality threshold;
- The uncertainty of the project emission reductions that is greater than what is allowed by the associated quantification methodology;
- The uncertainty of the emission reductions from compliance credits that were created by displacing fossil fuel use in a vehicle in Canada (paragraph 19(1)(d)) is greater than 25%.

2.6 Verification risk analysis

Verifiers conducts a risk analysis as part of the verification (ISO 14064-3:2019 s.6.1.2). Verification risk is the risk that the statement is materially incorrect, even though the verification conclusion is that the statement is free of material errors (e.g., Type II or Beta risk). Verification risk is rarely zero and comprises of the risk of material misstatement and the detection risk. The risk of material misstatement is a function of the participant's data and data management system. The detection risk is a function of what verification evidence gathering activities can be and are applied. This relationship is usually expressed by the following equation:

$$VR = MR \times DR$$

- VR is the verification risk
- MR is the material misstatement risk
- DR is the detection risk

$$MR = IR \times CR$$

- IR is the inherent risk
- CR is the control risk

$$VR = IR \times CR \times DR$$

There is no obligation for the verifier to assign numerical values to risk and a ranking of high, medium, low risk is commonly performed. The verifier controls the verification risk through the nature, timing, and extend of the evidence-gathering activities.

For low-CI fuels, the inherent risk of misreporting the feedstock's compliance with the CFR's LUB or sustainability criteria is normally ranked as high unless there is appropriate certification or approval by the Minister.

2.6.1 Assertion attributes

The concept of assertion attributes is important in conducting the risk analysis and designing appropriate evidence-gathering activities. The assertion made by the participant in the CFR program is a report (e.g. material balance report, credit creation report, production report) or an application (e.g., application for CI-value). Within these documents, there is the participant's

assertion (e.g., we created 100 credits). Within the assertion, the participants are making a claim about certain attributes of that assertion. Those attributes are:

- Rights and Obligations - that they were responsible for or had rights to the assertion;
- Occurrence or Existence - the assertion occurred;
- Accuracy – the assertion has been quantified appropriately;
- Completeness – the assertion is complete;
- Cut-off – the assertion was within the correct timeframe;
- Classification - has been classified correctly, and
- Presentation and Disclosure – the assertion has been classified, described, and all pertinent information has been disclosed.

This framework is helpful because specific evidence gathering activities can only examine certain attributes. For example, a visual inspection of the site can examine the existence of GHG sources, but it cannot test whether the emissions reported were within the correct timeframe. Analytical testing that looks at efficiency (e.g., input/output), tests for accuracy but does not examine for rights and obligations or classification. Verification risk analysis and evidence gathering activities are designed at the attribute level of the assertion for reasonable levels of assurance (ISO 14064-2:2019 s.1.2.2).

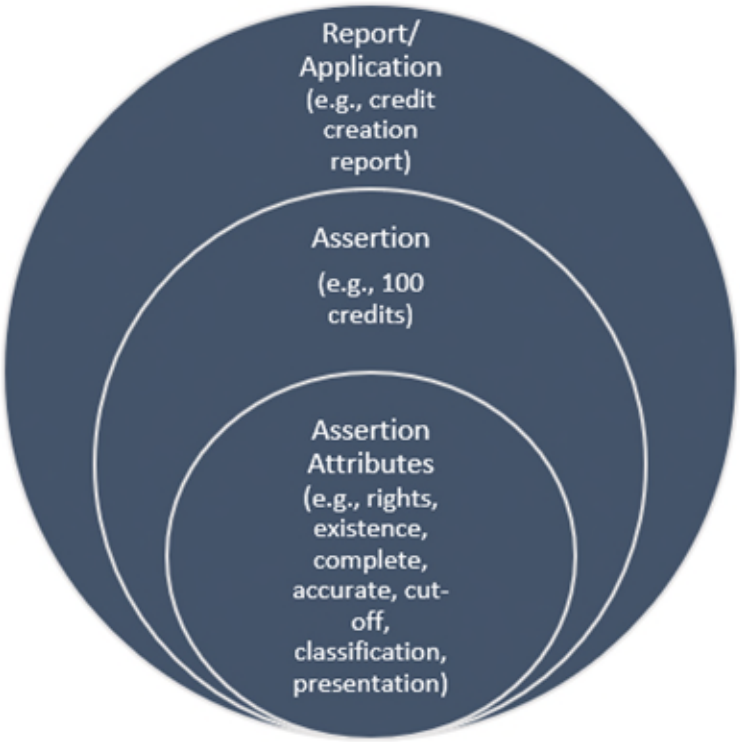

Figure 2: Relationship between Report, Assertion, and Assertion Attributes

Text description of Figure 2: Relationship between report, assertion, and assertion attributes. For example, in a credit-creation report (report), a claim of 100 credits is made (assertion), and within the assertion, a claim can be made about certain attributes of that assertion.

Verifiers cannot examine every transaction or activity that occurs in creating in an application or report. For example, verifiers will not physically observe the weighing of biomass feedstock into a truck for shipment over the course of a year nor will they check every measurement from a meter that measures at one second intervals (~500,000,000 records/yr). Instead, verification is designed based on the risk of misreporting (risk assessment). The risk analysis includes the risk of misreporting.

2.6.1.1 Rights and Obligations

Verifiers establish whether the reporting entity has the obligation (e.g., compliance, material balance, compliance credit balance, fossil fuel production reports) or rights (e.g., credit creation, carbon intensity pathway report, compliance credit revenue reports) to the assertion in the report or application (ISO 14064-3:2019 s.6.1.2.2(b)). For compliance credit creation, the rights to the credits usually lies in the party that regulation specifies as conducts that activity that creates the credit. The following list clarifies the original ownership of the compliance credits based on credit type, unless there is a formal mechanism, such as a contract, that transfers that right.

- **Credit type:** CO2e Emission Reduction or Removal Project
  Credit creator: Project proponent or producer (paragraph 19(1)(a))
- **Credit type**: Displacement of Fossil Fuel Usage with low CI Fuel
  Credit creator: Importer (paragraph 19(b)) and/or producer (paragraph 19(c))
- **Credit type**: Gaseous fuel for vehicles (e.g., propane, compressed natural gas, liquefied natural gas, renewable propane, co-processed low-CI propane, renewable compressed natural gas, renewable natural gas, hydrogen)
  Credit creator: Owner or operator of the fueling station (paragraph 100(1)(a))
- **Credit type**: Compliance credits for EVs
  Credit creator: Charging network operator (sub-section 102(1)) or Charging site host (sub-section 101(1))

Verifiers ensure that proper transfer of ownership or responsibility occurred when the reporter is not the default owner or responsible party under the regulations (e.g., when aggregators are used).

2.6.1.2 Accuracy

Verifiers establish whether the reported information is materially accurate (section 154). In addition, for projects, verifiers assess whether the underlying assumptions, limitations, and methods stated in the quantification methodology remain applicable to the project. This assessment does not include reassessing the quantification methodology calculations, including baseline scenario establishment, but assesses whether the quantification methodology is appropriate and remains appropriate given the project's operations. For example, if an EOR recovery project assumes a particular sequestration rate based on a particular operating configuration but receives an upgrade in equipment, the verifier determines whether the quantification methodology remains appropriate.

2.6.2 Misreporting risk

The risk of misreporting is a function of two factors: the control risk (e.g., the design and effectiveness of data management and other controls) and the inherent risk (e.g., the complexity of the measurement, phenomena being measured, or data management system).

2.6.2.1 Line items

Verification usually examines the risk of misreporting the assertion at the line-item level and for the entire report. Line items are an accounting practice that segments each category of reporting into separate areas (or lines) in the report. Line items is a loose term that is usually defined by the reporting requirements. For example, a GHG inventory may include emission line items of stationary combustion, mobile combustion, flaring, venting, fugitives, and others, and removal line items of biological and geological nature.

Verifiers normally conduct their risk analysis at the line-item level; however, it is important to ensure the segregation of line items contain collections of information that have similar inherent and control risks.

For example, in the above GHG inventory under “stationary combustion”, the inventory may contain a large natural gas co-generation plant and a diesel back-up generator. It would not be good practice to conduct the risk analysis at the line-item level of “stationary combustion” because the co-generation plant and the diesel back-up generator will likely have different control risks if their measurement and reporting systems are different. The verifier should use the line-item level of co-generation plant and diesel back-up generator to conduct their risk assessment if this is the case.

For example, in the credit creation report, Canadian biofuel producers are required to report quantity of feedstock. The verifier may choose to do their risk analysis by feedstock type depending on the source and data management system in place.

Other example, in the credit creation report, EV compliance credit generators are required to report the quantity of electricity supplied by charging station. The verifier may choose to conduct their risk analysis by station type (e.g., L2 or L3) since the measurement systems or the inherent risks are different.

2.6.2.2 Inherent risk

The inherent risk is a combination of the probability and magnitude assessed with materiality. A verifier examines (ISO 14064-3:2019 s.6.1.2.3):

- the probability of the line-item being misreported;
- the magnitude of the misreporting if it did occur; and
- whether the misreporting could be material.

Thus, the assessment of inherent risk involves knowledge about the line-item (e.g., the measurement technology, the calculation methodology, line-items natural variability), its relative contribution to the application or report (e.g., 10% of total production), and materiality (e.g. 5%). A contribution analysis, where the relative magnitude of misstatement is assessed, is performed in verification (ISO 14064-3:2019 s.6.1.2.3(b)). A materiality analysis, which includes the documentation of the CFR materiality, the performance materiality, and identification of qualitative materiality issues, is performed in verification.

2.6.2.2.1 Performance materiality

Performance materiality is the materiality level verifiers use in conducting the verification to ensure that the aggregate of errors, omissions, and misreporting is lower than the required materiality. Performance materiality is always lower than the CFR materiality; how much lower is a function of the application or report. For example, a report that contains a few, large line-items will likely have a higher performance threshold than a similar report with multiple small, equally weighted line-items. Performance materiality can also vary within a verification. For example, a large line-item could have a different performance materiality than a very small line-items.

2.6.2.2.2 High-level analytics

Analytics is the study of relationships between independent variables. It can be conducted at a high level, for example, the production output versus feedstock input for a facility. It can be conducted at a detailed level, for example, daily fuel consumption versus power output for a generator at a facility. High-level analytics are useful in planning to identify areas for further investigation. High-level analytics do not constitute evidence of an error, omission or misreporting in the evidence, but can provide further direction for investigation. Detailed analytics can provide evidence of a misstatement.

High-level analytics are designed for the subject matter, and in some rare cases, strong analytics cannot be found. Common analytics include:

- Input vs. output comparisons;
- Output vs. benchmark comparisons;
- Seasonal or yearly comparisons; and
- Month-to-month comparisons of steady state processes.

High-level analytics are not mandatory verification activity but highly suggested when strong relationships between parameters exist.

Example of High-level Analytics.

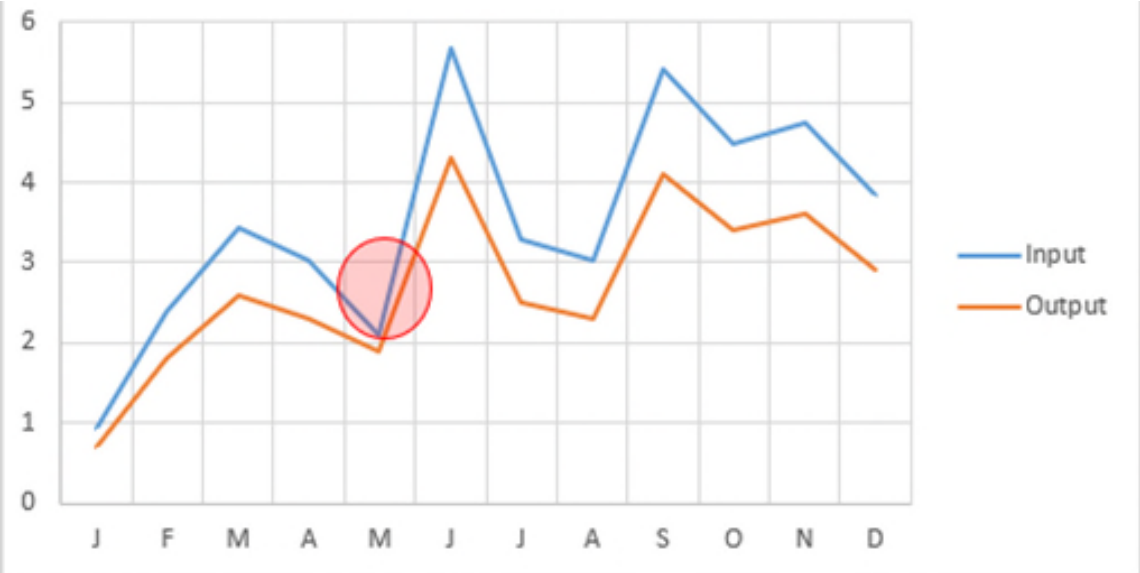

Figure 3: High Level Analytics

Text description of Figure 3: Example of high-level analytics: System inputs are plotted against system outputs for each month of the year. System outputs tend to change in relation to system inputs. High-level analytics are useful in identifying areas for further investigation. For example, if there is a discrepancy between the expected system outputs and inputs over a certain period, this period should be examined with higher scrutiny and the reason for this discrepancy should be determined.

2.6.2.2.2.1 Historical Analysis

Verifiers conduct a historical analysis using the operational data that is available for the relevant compliance period and the four preceding compliance periods where data is available because the historical analysis can establish typical values and operational patterns. Historical analysis is used to prepare for high-level analytical testing and cannot be used to identify risks of misreporting unless it can be established that the historical patterns are expected to continue in the future (e.g. seasonal or steady-state patterns).

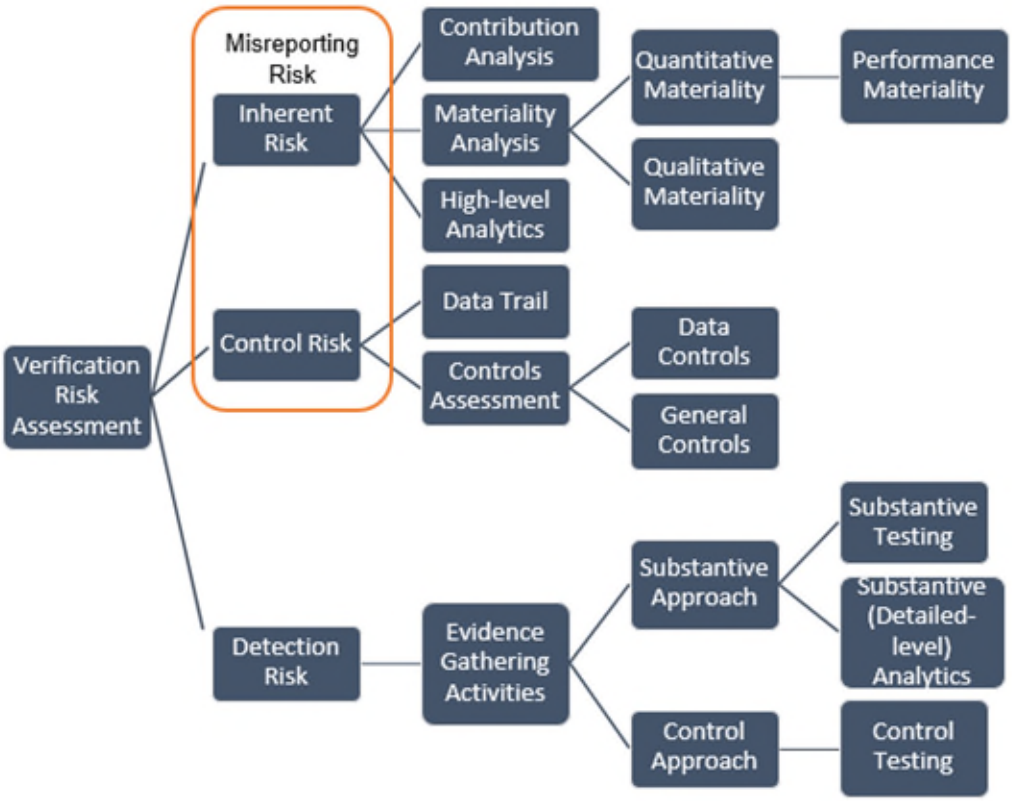

Figure 4: Verification Risk Assessment Relationships

Text description of Figure 4: A flowchart providing an overview of the types of risks considered in a verification risk assessment. The three risk types for a verification are inherent and control, which fall under misreporting risk, as well as detection risk. Inherent risk can be assessed by performing a contribution analysis, high-level analytics, and a materiality analysis. A materiality analysis can consider quantitative and qualitative materiality. In the case of a quantitative materiality analysis, performance materiality should be considered. Control risk can be assessed by the data trail and controls assessment which can be further broken into data controls and general controls. Detection risk can be assessed by evidence gathering activities,

which can be subdivided into a control approach (control testing) and substantive approach (substantive testing and detailed-level analytics).

2.6.2.2.3 Contribution Analysis

Contribution analysis is used to determine how much misreporting of a line-item can influence the report or application (or the magnitude portion of the risk equation). The value of the line item is compared to a reference value to determine the percentage of contribution.

For example, for the fuel production report, the contribution analysis may look like to the following:

Table 8: Contribution Analysis – Fuel Production Report

Fuel	Amount (MJ/yr)	% Contribution
Gasoline	12,006	4.44%
Diesel	252,098	93.20%
Kerosene	5,089	1.88%
LFO	430	0.16%
HFO	601	0.22%
Jet fuel	254	0.09%
Aviation Gasoline	0	0.00%
Butane	0	0.00%
Lubricating Oil	0	0.00%
Petroleum Coke	0	0.00%
Propane Mixes	0	0.00%
Synthetic Crude Oil	0	0.00%
Total	270,478	99.99%

The diesel line-item is a material line item because a misreporting of that information is likely to cause a material error. Performance materiality would likely be set just below the CFR materiality limits.

For example, for the material balance report, the contribution analysis may look like to the following:

Table 9: Contribution Analysis – Material Balance Report

Feedstock (Canadian Wheat)	Amount (t/yr)	% Contribution
Eastern Red Spring	500,326	26.20%
Eastern Hard Red Winter	743,009	38.91%
Eastern Soft Red Winter	630,853	33.03%
Eastern Amber Durum	35,572	1.86%
Eastern White Winter	0	0.00%
Eastern Feed	0	0.00%
Northern Hard Red	0	0.00%
Prairie Spring Red	0	0.00%
Prairie Spring White	0	0.00%
Western Amber Durum	0	0.00%
Western Hard Red Spring	0	0.00%
Western Red Winter	0	0.00%
Western Soft White Spring	0	0.00%
Total	1,909,760	100.00%

Material line items would be Eastern Red Spring, Hard Red Winter, and Soft Red Winter wheats. As there is almost an equal distribution of contribution between these line items, performance materiality would be set lower than in the fuel production report example because of the even distribution between line items.

For example, for the credit creation report of a project, the contribution analysis may look like to the following:

Table 10: Contribution Analysis - Credit Creation Report - Project

Credit Creation	Baseline (kt CO2e)	Project (kt CO2e)	Emission Reduction (kt CO2e)	% Contribution
Stationary Combustion	1,200	1,200	0	0.00%
Mobile Combustion	300	300	0	0.00%
Process	0	0	0	0.00%
Flaring and Venting	859	10	849	100.00%
Fugitives	35	35	0	0.00%
Other	0	0	0	0.00%
Subtotal	**2,394**	**1,545**	**849**	

The material line item is Flaring and Venting. Verifiers may choose to further discretize this line-item to obtain more direction on where to focus their evidence gathering activities.

For example, for the credit creation report for EV Vehicles, the contribution analysis may look as follows:

Table 11: Contribution Analysis – Credit Creation Report – EV Vehicles

EV Station Location	Residential/Public	Charging Type	Amount (kWh)	% Contribution
British Columbia	Residential	L1	1,294,047	16.97%
British Columbia	Residential	L2	35,058	0.46%
British Columbia	Residential	L3	0	0.00%
British Columbia	Public	L1	24,068	0.32%
British Columbia	Public	L2	3,987,306	52.29%
British Columbia	Public	L3	250,302	3.28%
Alberta	Residential	L1	243,510	3.19%
Alberta	Residential	L2	14,0645	1.84%
Alberta	Residential	L3	0	0.00%
Alberta	Public	L1	22,473	0.29%
Alberta	Public	L2	1,503,523	19.72%
Alberta	Public	L3	124,250	1.63%
Total	-	-	7,625,182	100.00%

Three material line items to focus on: BC – Residential – L1, BC - Public – L2, and AB – Public – L2.

Note that the identification of material line-items in the above examples does not imply that verifiers will **not** design evidence gathering activities for the other line-items. The verifier

establishes data trails for each material line-item (ISO 14064-3:2019 s.6.1.3.2). A contribution analysis may be assessed very differently than the above examples.

2.6.2.3 Control Risk

The control risk examines the design and effectiveness of the controls surrounding the data generating the application or report. Refer to section 2.7.1.9.1 for common IT controls. At the data management level, it establishes the data (audit) trail and evaluates the design of controls along the data trail. Evaluating the design of the controls involves assessing their placement, function, and frequency of operation. Verifiers document the data trail and associated data controls with their placement, function, and operation frequency for material line-items.

Common methods for documenting data trails and controls include narrative text and data flow diagrams with swim lanes.

2.6.2.3.1 Data Trail

Establishing a data trail can be documented in a variety of methods; however, a diagram that illustrates the data flow is easiest to comprehend (other techniques include a narrative description). Key features of a data flow diagram are:

- Identification of the personnel managing the data;
- Identification of the inputs, processing, and outputs; and
- Identification of the control locations with methods to link to the control description.

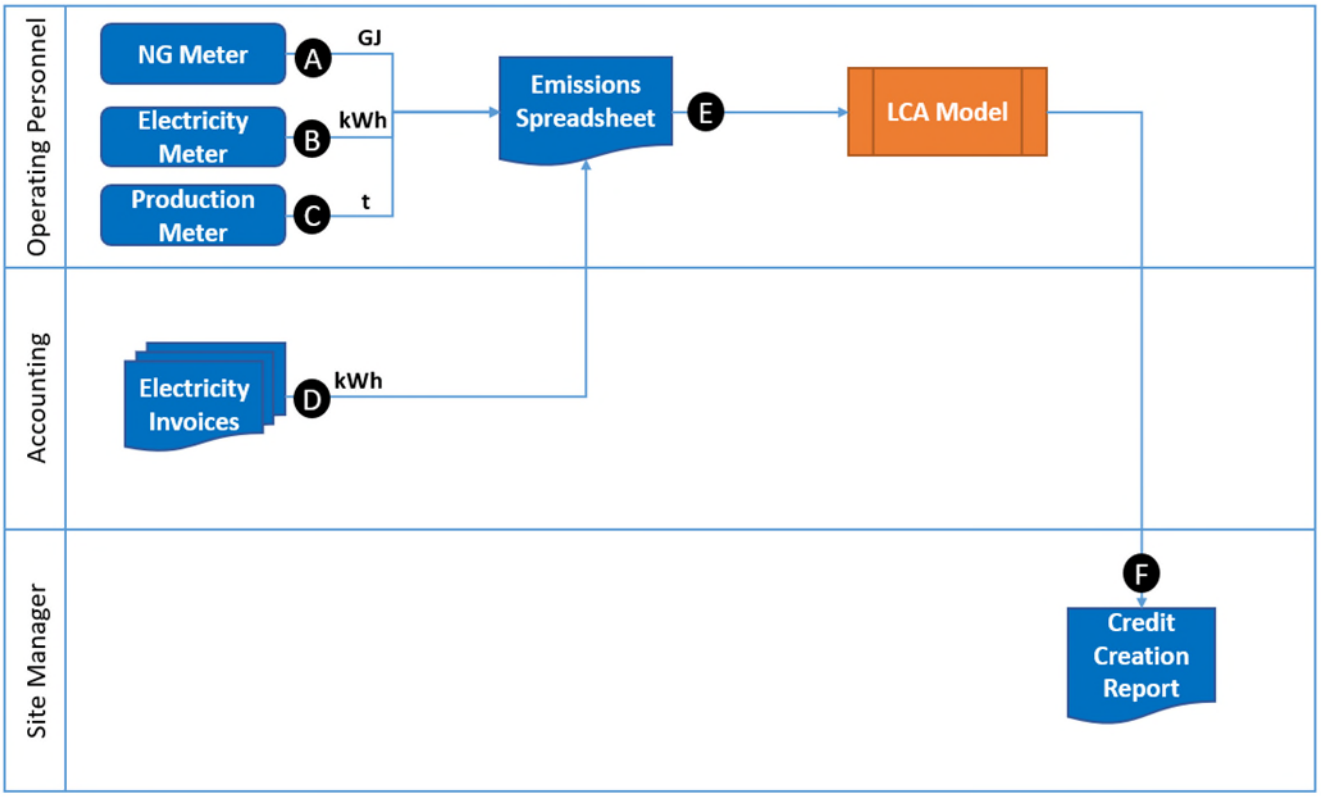

Figure 5: Example of a Simplified Data Flow Diagram

Text description of Figure 5: Example of a simplified data flow diagram with the key features to create a credit-creation report. Data from a natural gas meter, electricity meter and production meter is collected by operating personnel and transferred into an emissions spreadsheet. Operating personnel also collect electricity invoices from the company's accounting department. Data from the emissions spreadsheet is inputted into the LCA model and transferred to the site manager for the development of the credit creation report.

2.6.2.3.2 Control Function

Control function can be classified in a variety of ways. The first common classification is whether the control is detective, preventative, or corrective in **intent**. Detective controls attempt to identify undesirable acts. Examples include review, variance analysis, reconciliations, physical inventories, and internal audits. Preventative controls attempt to deter undesirable acts. Examples include separation of duties, written policies and procedures, proper authorization, adequate documentation, and calibration. Corrective (or compensating) controls attempt to rectify the harm undesirable acts cause. Examples include close supervision, management review, data backups, and data validity testing.

Controls can also be classified by control **objective** which are authorization, completeness, accuracy, validity, physical safeguards and security, error handling and segregation of duties. Note that control objectives align very closes to the attributes of assertion and this alignment can be used to design evidence gathering activities.

Table 12: Control Objectives

Authorization: Helps to ensure that all transactions (e.g., emissions, production, compliance credits) are approved by responsible personnel before the transaction is recorded.
Completeness: Helps to ensure that no valid transactions have been omitted.
Accuracy: Helps to ensure that all transactions are accurate, consistent, and timely.
Validity: Helps to ensure that transactions fairly represent what occurred, are lawful, and are executed in accordance with management's general authorization.
Physical Safeguards and Security: Helps to ensure that access to physical assets and information systems are controlled and properly restricted to authorize personnel.
Error handling: Helps to ensure that errors are detected at any stage of processing, receive prompt corrective action, and are reported appropriately.
Seggregation of duties: Helps to ensure that duties are assigned to individuals in a manner that ensures that no one individual can control both the recording and processing functions.

Controls can meet several of these objectives, but rarely will they meet all these objectives. A well-designed data management system should meet most, if not all these control objectives. In assessing the controls surrounding material line items, there should be, as a minimum, robust controls for completeness, accuracy, and validity on the data trail for every material line-item in

the report or application. Other controls are highly recommended as they aid ensure continued appropriate reporting.

Controls are usually documented as to who operates the control, whether they are automated or manual in nature and their frequency of operations. Additionally, key controls in the data trail are identified to aid in focusing the verification evidence gathering activities.

Not all controls are data controls. For example, employee data entry training or computer access that is behind locked doors are not a data controls but contribute to ensuring that there is no misreporting. Verifiers generally describe these other controls in their working papers.

First verifications can be riskier because documentation on data management control systems is usually incomplete and time is spent documenting the data management system and executing additional verification evidence gathering activities to compensate for a lack of

knowledge of the controls.

Table 13: Example of Control Documentation

Location	**A**	**B**
Control Description	Input warnings on data entry cells set at 80% and 120% of expected range	Two-factor login requirements for the data management system
Who	System	System
Prevent / Detect / Correct	Prevent	Prevent
Control Objective: Authorize	-	X
Control Objective: Complete	-	-
Control Objective: Accurate	X	X
Control Objective: Valid	-	X
Control Objective: Secure	-	X
Control Objective: Errors	-	-
Auto / Manual	Auto	Auto
Frequency	Every entry	As Needed

2.6.2.3.3 Controls Reliance

Controls reliance is a verification strategy whereby the verifier relies on the controls, rather than the underlying data, to provide evidence. There are some situations where control reliance is unavoidable (e.g., population sizes of over a million – in this case, examining the underlying data would be insufficient in detecting material misstatements). Reliance on controls is a highly efficient method of collecting evidence as the technique leverages the controls over the data. Given that it takes advantage of controls over data, it should be done with caution. As a result, placing complete reliance on controls as a verification strategy is not allowed (ISO 14064-3:2019 s.6.1.3.4). When relying on controls, the controls must be tested (ISO 14064-3:2019 s.6.1.3.6.2).

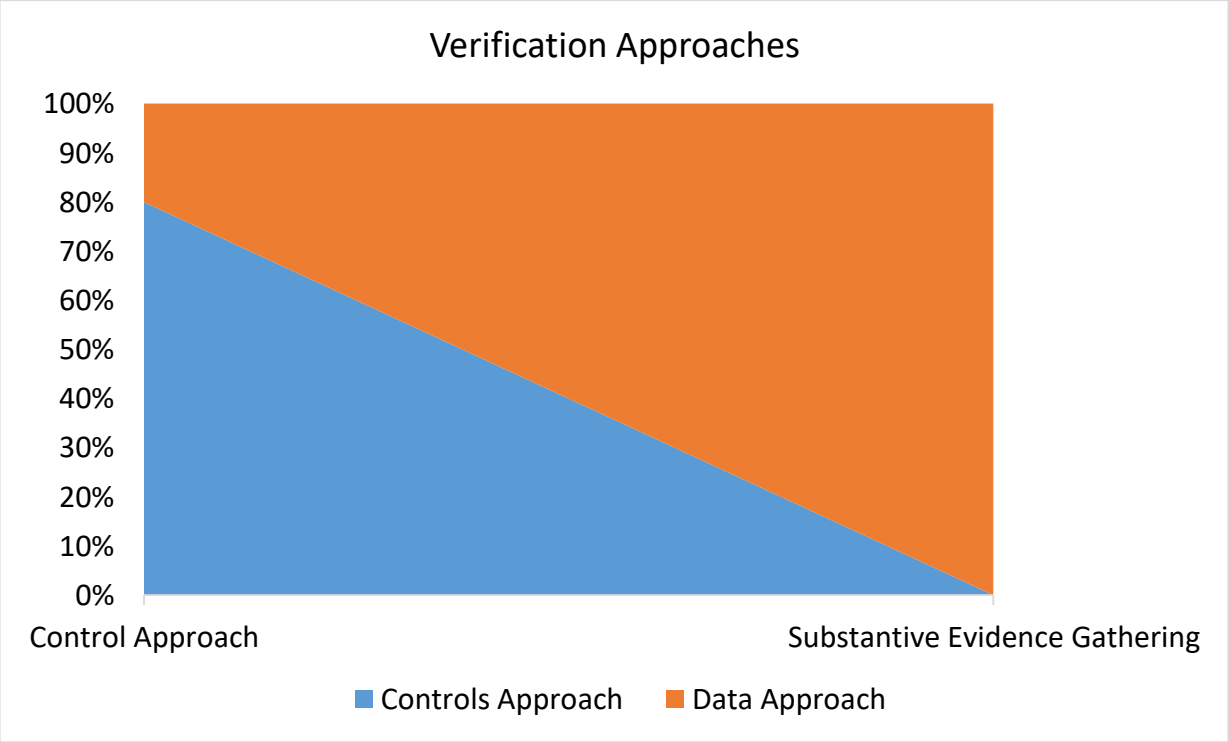

Figure 6: Verification Approaches

Text description of Figure 6: Figure shows the relationship between a controls verification approach and data approach. In a controls approach, the verifier tests the controls whereas in a data approach, the verifiers must collect substantive evidence. The approach of completely relying on controls is not permitted. The two approaches must always make up 100%. For example, 80% controls approach and 20% data approach, or 10% control approach and 90% data approach.

2.6.2.3.4 Records Required for Understanding Data Trails and Controls

The following records should be available to the verifier to establish a data trail and gain a proper understanding of the data controls:

- Responsible party's policies and procedures used to ensure data quality including:
    - Data collection and measurement procedures;
    - Policies on the interpretations of application of quantification methods;

- Reporting policies and procedures;
- Maintenance policies and procedures including any procedures for deferment of maintenance or inspections; repair of continuous monitoring systems, flow meters, and other instrumentation relevant to the reported information;
- Contingency procedures in the event of a device or system component failure;
- Record keeping procedures including records kept for measurement device repair, maintenance, calibration, and replacement;
- Training policies for key personnel involved in the data management.

- Data management system including:
  - Roles and responsibilities as they pertain to the data management system;
  - A description of the design of the data management system including the IT infrastructure or applications used to manage the data;
  - The data management controls including the control description, location, purpose, frequency, and type;
  - Missing data procedures[18]*;*
  - Sub-contractors or web-services used to manage the data;
  - Physical security use to ensure data integrity; and
  - Data back-up procedures.

2.6.2.4 Detection Risk

The detection risk (e.g., the ability of verification evidence gathering activities to detect material misstatements) allows the verifier to control the risk of misreporting to an acceptable verification risk. Thus, the inherent and control risks are evaluated to determine the misreporting risk and the detection risk is used to balance the verification risk.

[18] Missing data procedures are required for the following situations:

- Measurement device not functioning or is outside of calibration standards and the missing data:
  - Causes a material error in the reported information,
  - Does not cause a material error in the reported information.
- Force Majeure Events.

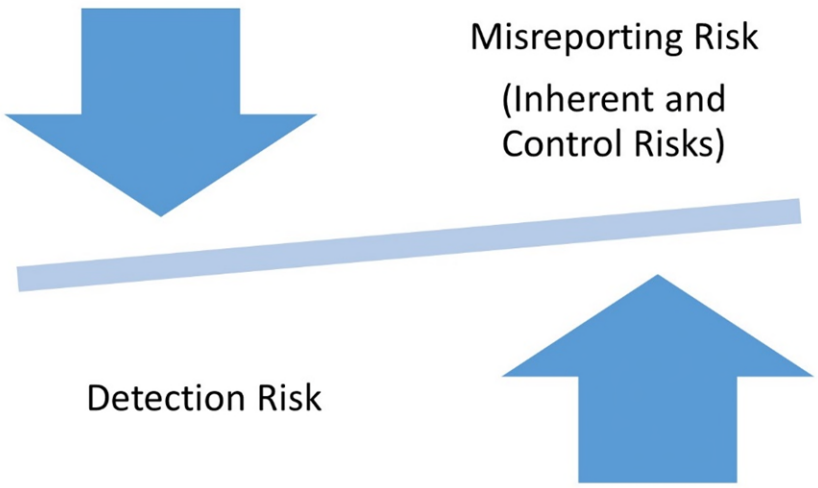

Figure 7: Relationship between Misreporting and Detection Risk

Text description of Figure 7: Relationship between detection risk and misreporting (inherent and control) risk. A balance is needed between the verification risks.

Detection risk is evaluated when the evidence gathering procedures are designed.

2.7 Designing evidence gathering activities

Verifiers provide assurance on an assertion, usually an application or report, made by a reporting entity to the CFR program.

When verifiers design evidence gathering activities, they have standard types of evidence gathering activities to select from:

1. **Visual observation:** Personal inspection of an item such as an inventory or process;
2. **Examination/inspection of records/documents:** Records can be considered as historical artifacts relating past events. Documents are living written descriptions of processes and other subjects to inform on future events;
3. **Inquiry/interviews:** A structured discussion that has a specific objective;
4. **Analytical testing:** Analysis of plausible relationships amongst the data;
5. **Confirmation:** Relying on an independent party to provide evidence (e.g. certificates);
6. **Recalculation:** Recalculation of computations;
7. **Re-performance:** The verifier performing the accounting procedures (e.g., controls) to confirm their effectiveness.

These evidence gathering activities can be used in an evidence gathering process or technique. Common processes/techniques are:

1. **Retracing/vouching:** A technique that follows the evidence from reporting to measurement. Retracing tests for occurrence;
2. **Tracing:** A technique that follows the evidence from measurement to reporting. Tracing tests for completeness;

3. **Control testing:** A technique that uses re-performance, observation or inspection to determine the effectiveness of a control at preventing, detecting, or correcting mistakes;
4. **Sampling:** A technique that allows a portion of the population to be tested such that the characteristics of the portion can be inferred to the population. Observation, examination, recalculation, and re-performance are common evidence gathering activities used in sampling;
5. **Estimate testing**: A process for determining whether an estimate is materially correct;
6. **Cross-checking/reconciliation:** The comparison of independence sources about the same subject to determine if they agree.

Site visits: A visit is used as a mechanism to efficiently execute certain evidence gathering activities.

Verifiers design evidence gathering activities that respond appropriately to the risks identified in the risk analysis (ISO 14064-3:2019 s.6.1.3.1). Some critical points about designing evidence gathering procedures to consider are the following:

- Evidence gathering activities are designed in response to the risks identified (ISO 14064-3:2019 s.6.1.3.1). Since risks change with time, so must the evidence gathering activities. Check list auditing is strongly discouraged;
- A clear connection between the misreporting risk and evidence gathering activity must be established;
- The higher the misreporting risk, the more persuasive the evidence must be (ISO 14064-3:2019 s.6.1.3.1);
- If the verifier chooses to rely on data controls, the verification plan must test those controls (ISO 14064-3:2019 s.6.1.3.6.2);
- The verifier must do some substantive testing (ISO 14064-3:2019 s.6.1.3.1);
- Irrespective of the risks identified, the verifier must design and perform evidence gathering activities and tests for each material line-item (ISO 14064-3:2019 s.6.1.3.1);
- Evidence-gathering activities must be designed to determine whether the GHG statement conforms to the criteria (ISO 14064-3:2019 s.6.1.2.1);
- Evidence-gathering activities change year-to-year while still responding to the risks identified.

Evaluating the quality of evidence

The objective of the verifier is to plan and perform the verification to obtain appropriate verification evidence that is sufficient to support the verification opinion. Sufficient is a measure of the quantity of evidence. The quantity of evidence needed is a function of the risk of material misstatement and the quality of the evidence obtained. As the risk of material misstatement increases, the amount of evidence that the verifier should obtain also increases.

The appropriateness of the verification evidence is a function of relevance and reliability. The relevance of the evidence refers to its relationship to the content of the report or application. The relevance depends on the design and timing of the evidence gathering activities. For example, interviews of a facility's general manager about meter calibration procedures will be less relevant than interviews with the maintenance technician that performed the calibration. Reliability depends on the nature and source of evidence and the circumstances under which it

is obtained. For example, evidence obtained from a bank regarding cash deposits for a client are more reliable than the client's records, or direct observations by the verifier about on-site emission sources are more reliable than reviewing the facility's site diagram.

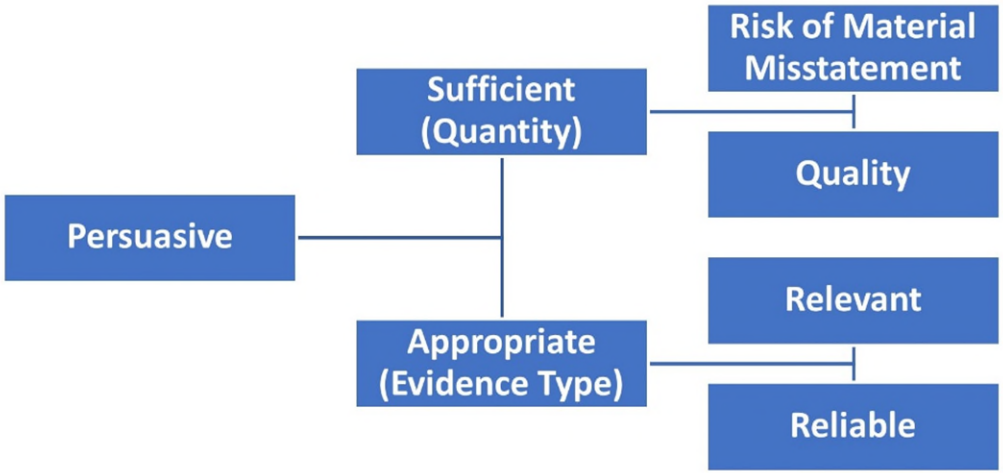

Figure 8: Persuasiveness of Evidence

Text description of Figure 8: The level of persuasiveness of evidence required is dependent on the risk of misreporting. The higher the misreporting risk, the more persuasive the evidence must be. Persuasiveness of evidence refers to its appropriateness (evidence type) and sufficiency (quantity). The risk of material misstatement and quality of the evidence are linked to sufficiency. The appropriateness is linked to the relevance and reliability of the evidence.

2.7.1 Hierarchy of evidence

Verifiers design evidence gathering activities that are responsive to the risks and the higher the risk, the more persuasive the evidence must be (ISO 14064-3:2019 s.6.1.3.1). The persuasiveness of the evidence is context dependent; however, as a general rule, the following table provides a hierarchy of evidence that is helpful in determining which type of evidence to collect.

Table 14: Hierarchy of Evidence

Reliability	Evidence	Example	Reasoning
High	Visual Observation	Observation of site sources and sinks	Direct collection of substantive evidence
Medium	Detailed-Level Analytical Testing	Analytics on equipment-specific energy efficiency	Difficult to modify the sources of evidence simultaneously
Medium	Re-performance	Executing the quality procedures for reporting	Direct collection of evidence of controls
Medium	Recalculation	Re-computation of the emissions	Independent calculation but can be subject to error
Medium	Examination/Inspection of Records/Documents (external)	Inspection of electricity or natural gas invoices	Provided by third-parties
Medium	Confirmation	Contacting the Fund to confirm the amount transferred (via documentation) Certifications	Dependent on others controls
Medium	Examination/Inspection of Records/Documents (internal)	Examinations of procedures for calibration	Developed internally and could be changed
Medium	Inquiry/Interviews	Interviews with maintenance personnel	Subject to recall bias
Low	High-Level Analytical Testing	Analytics on facility energy efficiency	Not sufficiently detailed to provide confirmatory evidence

Evidence gathering activities can be grouped into two categories: substantive and tests of control. Substantive tests can further be categorized as test of detail and detailed-level analytical tests.

Figure 9: Evidence Gathering Activity Classification

Text description of Figure 9: Evidence-gathering activities are classified into two categories: substantive tests and tests of control. Substantive tests can further be categorized as tests of detail and detailed-level analytical tests.

Substantive tests are those activities performed by the verifier to detect material misstatement or fraud at the assertion level.

Tests of detail are all other activities other than analytical tests performed by the verifier to detect material misstatement or fraud at the assertion level.

Substantive (detailed-level) analytical tests are activities performed by the verifier to detect material misstatement or fraud at the assertion level by using plausible relationships among data.

Tests of control are those activities performed by the verifier to determine whether controls are sufficient to detect or prevent risks of material misstatements.

2.7.1.1 Permits and Accepted Reports by Other Regulatory Agencies

The CFR allows operating permits from other regulatory agencies to be used as evidence for the suitability of geological formations for use as storage sites. The verifier collects the permit and evaluates the sufficiency and appropriateness of the permit, which may include evaluating whether the regulatory body is accountable for the long-term liability of the project, how recent the permit was issued, what application the permit was issued for, etc. Verifiers may choose not to place reliance on the permit as evidence and perform additional verification procedures to confirm the suitability of the geological formation for use as a storage site. These additional procedures, where appropriate, should be conducted by a Carbon Capture and Storage (CCS)/Enhanced Oil Recovery (EOR) specialist on the verification team.

The CFR also allows other CCS/EOR reports submitted to and accepted by other regulatory agencies as evidence for the monitoring plan or Quantification Method for CO_2 Capture and Permanent Storage reporting requirements. The verifier collects the reports and compares that information to the CCS/EOR components of the monitoring plan or Quantification Method reporting requirements. Data and information gaps and discrepancies, depending on the verification risk analysis, may require additional verification procedures. These additional procedures, where appropriate, should be conducted by a CCS/EOR specialist on the verification team.

2.7.1.2 Certification

The CFR allows certificates to be used as a form of evidence (confirmations). Certificates have two applications within the CFR: feedstock and data management systems. Certificates for feedstock provide the verifier with some evidence that the qualitative characteristics of the feedstock have been confirmed. Certificates for data management systems provide the verifier with some evidence that the data controls of the system have been designed appropriately and are effective. However, since certification scope and quality varies, the verifier evaluates the sufficiency and appropriateness of the certificate. The verifier, in addition to the assessing the basis of the certificate, also conducts high-level analytical testing and/or reviews publicly available, remote evidence on certification. Verifiers report how certificates are used in the verification. Verifiers also determine whether the certificate is current, that the certification scheme has no unresolved complaints relative to the certificate, and that the certification body's accreditation is current and valid.

Appendix F illustrates two possible scenarios for the verification process in the event that eligible feedstock is used to produce a low-carbon-intensity fuel for the purpose of creating compliance credits.

2.7.1.2.1 Feedstock Certification

Feedstock may be certified, which is a third-party confirmation of the feedstock characteristics (e.g., land use and biodiversity criteria). Each certification scheme is unique, the verifier assesses the certification scope to determine if there are any gaps between it and the requirements of the CFR for the feedstock(s) in question are met, and designs appropriate evidence-gathering activities to address these gaps and risks of misreporting. Additionally, verifiers should perform remote high-level analytical tests (e.g., satellite imagery) to obtain an indication that the information on the certificate is correct, where possible. For certificates that refer to a group of producers, the verifier assesses whether the group harvests the same feedstock type in the same geographic region and climate. The verifier must design appropriate evidence gathering activities, including a site visit, in response to the any concerns that arise from the certificate assessment and the risk of misreporting.

If there is no certification, the verifier evaluates the risk of misstatement for land use and biodiversity criteria in the risk assessment. With no certificate, the inherent risk of misstatement for land use and biodiversity is usually ranked as high.

2.7.1.2.2 Data Management Certification

Data management systems may be certified, which is a third-party confirmation of the control design and effectiveness (e.g. AICPA Trust Services Criteria, FedRAMP, Sarbanes-Oxley, FISMA, GDPR, PIPEDA, CCPA, SSAE-16, SAS-70, SOC2 Type x). Each certification scheme is unique and the verifier assesses the certification scope to determine what controls have been

assessed in the data management and designs appropriate evidence-gathering activities to address any gaps and risks of misreporting. Additionally, verifiers must not place 100% reliance on controls (ISO 14064-3:2019 s.6.1.3.5). The verifier designs appropriate evidence gathering activities in response to the any concerns that arise from the certificate assessment and the risk of misreporting. Additional evidence gathering activities may be appropriate.

2.7.1.3 Data Sampling

Data sampling is a means of selecting a subset of units from a target population for the purpose of collecting information, which is used to draw inferences about the population as a whole. The subset of units that are selected is called a sample. Data sampling can occur at a strategic level, such as determining which sites to visit, or a detailed level, such as determining which data records to examine. The data sampling design is context dependent, and the following is a description of sampling at the detailed level.

Verification data sampling is substantially different from other forms of sampling such as what is found in opinion surveys, market analysis, and scientific and medical research due to:

- rather than attempting to estimate the unknown, verification is attempting to corroborate the accuracy of the data, evaluate the controls over the data, or determine the conformance to criteria;
- the distribution in verification populations generally differs from other populations (e.g., instead of being normally distributed, the populations tend to have a few very large amounts, several moderately large amounts, and a large number of small amounts); and
- the evidence that verifier obtains is just one element of the total evidence.

2.7.1.3.1 Data Sampling Design

The data sample design encompasses all aspects of how to group units in the population, determine the data sample size, allocate the data sample to the various groups, and finally, select the sample. Choices in data sample design are influenced by many factors, including the desired level of precision and detail of the information to be produced, the availability of appropriate sampling methods, the availability of information for grouping (stratification) and data sample selection, the estimation methods that will be used and the available time and resources.

Data sampling can be used for compliance tests and substantive tests. Compliance tests are intended to provide reasonable assurance that the controls are functioning appropriately or whether a characteristic has been met (qualitative). Substantive tests are designed to determine whether the values (quantitative) are accurate using tests of detail or detailed-level analytical procedures.

Understanding whether the data sampling is for compliance (qualitative) or substantive (quantitative) tests is important as it affects the data sample size and the information needed to determine data sample size. Data sample size varies between compliance and substantive tests because compliance is binary (e.g., it has or does not have the characteristic) and substantive tests have a range of values (e.g., it is between 98 and 102).

2.7.1.3.2 Selection Method

In general, there are two selection methods for data sampling: non-probability and probability sampling.

Non-probability data sampling uses a subjective method of selecting units from a population, and is generally fast, easy, and inexpensive. Probability data sampling is based on three basic principles. First, it is based on randomization, i.e., the units in the sample are selected at random. Second, everything has the equal probability of being sampled, and third, the data sample probability can be used to infer the population characteristics and quantify the sample error.

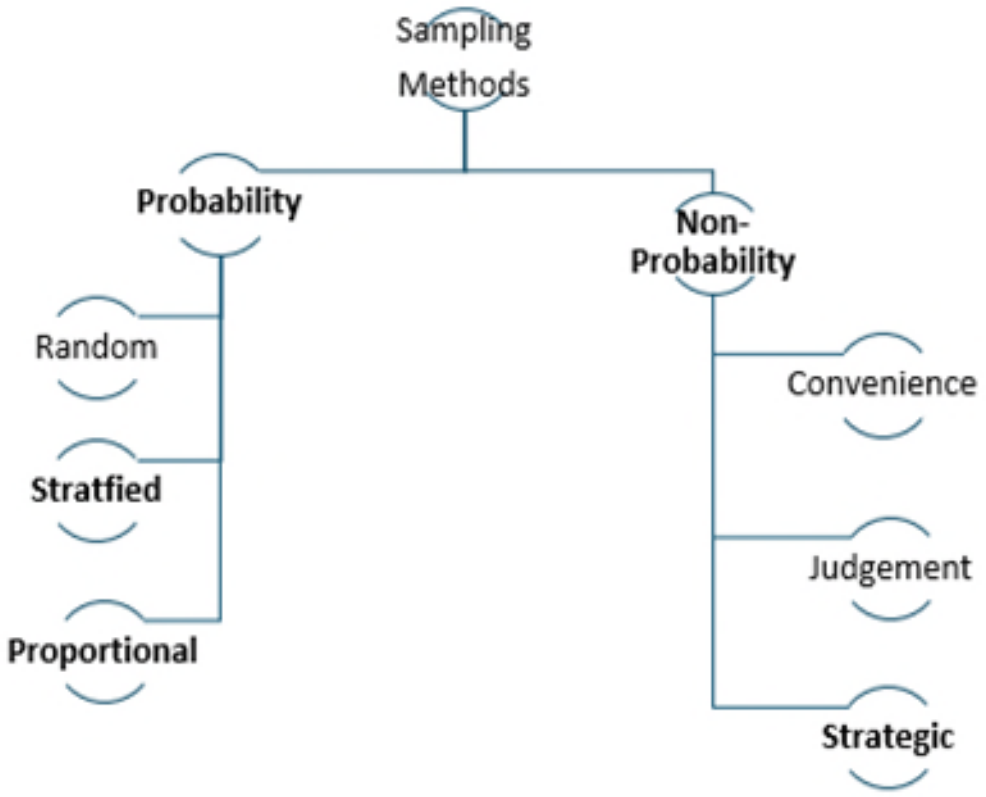

Figure 10: Sampling Methods

Text description of Figure 10: Sampling methods can be grouped into two categories: probability and non-probability. Probability methods can be randomized, stratified, or proportional sampling. Non-probability methods can be convenience, judgement, and strategic sampling.

2.7.1.4 Non-Probability Data Sampling

Non-probability data sampling is a method of selecting units from a population using a subjective (i.e., non-random) method. The problem with non-probability data sampling is that it is unclear whether or not it is possible to generalize the results from the data sample to the population.

For example, a common design is for the verifier to select fuel delivery invoices from the first few entries (e.g., convenience). Since the verifier has selected the most accessible invoices, a portion of the population has no chance of ever being selected, and this portion of the

population is likely to differ in a systematic manner from those selected sites (e.g., time of year). Not only can this bias the results, it can falsely reduce the apparent variability of the population due to a tendency to select 'typical' units and eliminate extreme values.

Non-probability data samples cannot reliably infer the population characteristics or estimate error. There are many types of non-probability data sampling but three types will be reviewed in this section and in Appendix G; convenience, judgement, and strategic sampling. Of the three types of non-probability data sampling, strategic sampling is preferred. Verifications that use primarily convenience sampling for evidence gathering activities are weak forms of evidence and likely do not meet a reasonable level of assurance. Data sampling strategy is documented as part of the verifier's working papers.

2.7.1.5 Probability Data Sampling

Probability data sampling is a method of data sampling that allows inferences to be made about the population based on observations from a sample (e.g., we sampled ten feedstock invoices to determine their accuracy). Probability sampling avoids this bias by randomly selecting units from the population (e.g., using a computer or a table of random numbers). Random does not mean arbitrary but unbiased – it is based on chance. With probability data sampling, it is never left up to the discretion of the verifier to subjectively decide who should be sampled.

There are many different types of probability data sample designs. The most basic is simple random sampling but this document also addresses proportional sampling, and stratified sampling, which are common techniques in verification.

The main advantage of probability data sampling is that inferences can be made about the population. The main disadvantages of probability data sampling are that it is more complex, takes longer and is usually more expensive than non-probability data sampling. Probability data samples tend to be more spread out geographically across the population than non-probability data samples, sample sizes are generally much larger and data collection is often more costly and difficult to manage.

Please refer to Appendix G for a description of sampling methods.

2.7.1.6 Data Sample Size

One of the questions most frequently asked is, "How big should the sample be?" because it directly impacts verification costs. There is no magical solution and no perfect recipe for determining data sample size. It is rather a process whereby the risks, configuration and resources drive the design.

The verifier always considers precision when designing a data sampling plan. Factors affecting precision include: the variability of the population, the size of the population, and the sample design.

2.7.1.6.1 Random Sampling with Populations greater than 30

The central limit theorem states that if you take sufficiently large random samples with replacement, the distribution of the sample will be normal. The central limit theorem greatly enhances the statistical tools that can be used. With smaller samples ($n \leq 30$) the central limit theorem does not apply and other distributions must be used. In random sampling, the following assumptions and formula may be used in determining the sample size.

Where:

- N is the size of the population;
- n is the size of the sample;
- e is the margin of error or confidence interval (usually set at performance materiality);
- z is the z-score (standard score);
- P is the standard deviation (0.5, if unknown).

$$n = \frac{\frac{z^2 \times P(1-P)}{e^2}}{1 + \left(\frac{z^2 \times P(1-P)}{e^2 N}\right)}$$

Text description of formula: The equation is n = (z^2 * P(1 - P)) / e^2) / (1 + (z^2 * P(1 - P)) / N*e^2)). For further clarity, the numerator is (z^2 * P(1 - P)) / e2, and the denominator is 1 + (z^2 * P(1 - P)) /N*e^2.

2.7.1.6.2 Small Samples

Small populations (e.g., ≤ 30) have a relatively fixed sample size (~population) if examining from a statistical perspective. If the population is twelve or less (e.g., twelve fuel invoices in a year), the entire population is examined. For populations between twelve and up to and including thirty, it is up to the verifiers' judgement to determine the sample size, but it is no lower than twelve.

2.7.1.7 Analytical Tests

Analytical tests are evaluations of information through analysis of plausible relationships that include inconsistencies with other relevant information or expected values. At high-levels, analytical tests are used to identify areas of investigation. At detailed levels, substantive analytical tests are used as evidence. In verifications, the relationships generally used are based on scientific principles, such as the conservation of mass or energy when examining the relationship between inputs and outputs of a process. As such, substantive analytical tests can offer reliable evidence. When designing analytical tests, the verifier evaluates (ISO 14064-3:2019 s.6.1.3.6.1):

- the ability of the analytical test to reduce or mitigate the risk identified – the verifier should assess the attributes that are tested, other details evidence gathering procedures planned and the risks of misstatement. For example, if the risk of misstating accuracy is high, an analytical test that can detect inaccurate statements supported by additional detailed tests should be appropriate. For example, if the risk of misstating completeness is high, an analytical test for accuracy supported by no detailed tests on completeness is inappropriate;
- the reliability of the data to be analyzed – the reliability of the data is dependent on the nature and source of information, how it was obtained, the comparability, and the controls. For example, information:
    - obtained outside the applicant may be more reliable than internal information;

    - used for revenue purpose may be more reliable than for non-revenue purposes;
    - obtained about the historical performance may be more reliable than industry benchmarks;
    - obtained from third-party organizations with strong controls (e.g., banks) may be more reliable than organizations with weaker controls (e.g., NGOs).
- the likelihood that the analytical testing will identify material misstatements – the verifier uses detailed level analytics that are capable of identifying material misstatements. For example, mass balance-based analytics that are measured on an hourly basis should be able to identify material misstatements in an annual report.

If analytical testing identifies fluctuations or relationships that are inconsistent with other relevant information or that differ significantly from expectations, the verifier investigates such differences by obtaining additional evidence[19].

2.7.1.8 Estimates

Verifiers will come across estimated data during a verification (e.g., transport fuel consumption estimated by distances traveled and vehicle fuel efficiency). In some cases, the estimate methodology may be prescribed (e.g., within a quantification methodology). Evaluation of an estimate is determined by the risk assessment. When evaluating the estimate, the verifier evaluates (ISO14064-3:2019 s.6.1.3.6.3):

- the appropriateness of the estimate methodology – the nature of the phenomena should be considered. For example, feedstock intake may vary seasonally, methane captured may vary with temperate, production may be related to work periods or holidays or feedstock prices;
- the applicability of the assumptions in the estimate – the assumption may assume constant operating efficiencies or load requirements;
- the quality of the data used in the estimate – the estimate may be based on surrogate measures (e.g., kilometers driven) or other estimates (e.g., typical transportation distance for that feedstock).

The verifier develops evidence-gathering activities that test the operating effectiveness of the controls governing the development of the estimate. Controls verifiers should pay particular attention to controls for completeness and accuracy of the estimate, those that review and approve the estimate and estimate methodology, and segregation of duties between those that make the estimate and those that report the estimate.

The verifier develops their own estimate or range to evaluate the estimate. The verifier may develop their own estimate or range by a number of methods:

- Models;
- Use of a specialist;
- Comparing to similar circumstances elsewhere;
- Further developing the existing estimate methodology (e.g., using different assumptions, input parameters, etc.).

[19] Inquiry evidence alone would be insufficient evidence in this situation.

The verifier evaluates whether the estimate introduces material uncertainty in the reported values. The degree of uncertainty will depend on the:

- Degree of judgement used in the estimate;
- Sensitivity of the estimate to changes in assumptions;
- Existence of recognized estimation methodologies;
- Reliability of data.

Verifiers should be aware of estimates that seem to have an immaterial misstatement but potentially could result in a material misstatement due to their uncertainty.

2.7.1.9 Control Testing

Control testing is only performed on those controls that the verifier has determined are suitably designed to prevent, or detect and correct, a material misstatement in an assertion. In designing and performing control testing, the verifier performs other evidence gathering procedures[20] to obtain evidence about the operating effectiveness of the controls, including:

- How the controls were applied at relevant times during the period under verification;
- The consistency with which they were applied; and
- By whom or by what means they were applied.

The verifier tests controls for during the period for which the verifier intends to rely on those controls (ISO 14064-3:2019 s.6.1.3.6.2). Point in time evidence may be sufficient, for example, to establish an inventory of sources and sinks. If, on the other hand, the verifier intends to rely on a control over a period, such as annual production, control tests that provide evidence of operational effectiveness during that period are appropriate.

Testing the operating effectiveness of controls is different from obtaining an understanding of and evaluating the design and implementation of controls although similar evidence gathering activities may be used.

The nature of the control influences the type of evidence gathering activity required to obtain verification evidence about whether the control was operating effectively. For example, if operating effectiveness is evidenced by documentation, the verifier may decide to inspect it to obtain evidence about operating effectiveness. For other controls, however, documentation may not be available or be relevant. For example, operation documentation may not exist, such as assignment of authority and responsibility, or for some types of control activities, such as control activities performed by a computer. In such circumstances, evidence about operating effectiveness may be obtained through inquiry in combination with other evidence gathering activities such as observation or the use of CAATs.

When evaluating the operating effectiveness of relevant controls, the verifier evaluates whether misstatements detected by other evidence gathering activities indicate that controls are not operating effectively.

[20] Inquiry alone is insufficient evidence gathering activities to supplement control testing.

If deviations are detected, the verifier assesses whether the deviations affect the ability to rely on those controls, whether additional test of controls are necessary and whether other types of evidence gathering activities are necessary.

The verifier's decision on whether to rely on evidence obtained in prior verifications for controls that have not changed since they were last tested, and are not controls that mitigate a significant risk, is a matter of professional judgment.

In addition, the length of time between retesting such controls is also a matter of professional judgment, but is to be done at least once in every third year.

2.7.1.9.1 Computer/IT Processing

An automated control can be expected to function consistently unless the program (including the tables, files, or other permanent data used by the program) is changed. Once the verifier determines that an automated control is functioning as intended (which could be done at the time the control is initially implemented or at some other date), the verifier may consider performing tests to determine that the control continues to function effectively. Such tests might include determining that:

- changes to the program are not made without being subject to the appropriate change controls;
- the authorized version of the program is used; and
- other relevant general controls are effective.

Such tests also might include determining that changes to the programs have not been made, as may be the case when the entity uses packaged software applications without modifying or maintaining them. For example, the verifier may inspect the record of the administration of IT security to obtain audit evidence that unauthorized access has not occurred during the period.

2.8 Site visits

Site visits are used to facilitate evidence collecting activities. Many times, the site visit results in high quality evidence that can be collected efficiently. Verifier observations (e.g., of operational practices or growing conditions) and inspections (e.g., of sources and sinks) are forms of high-quality evidence gathering activities. A site is the location where an organization carries out work or service. The CFR defines the site based on the subject matter.

Table 15: Site Definition (sub-section 152(2))

Fuel producer: Fuel production facility

Low-CI fuel producer:
Fuel production facility or carbon intensity contributor's facility **and**
The harvest point for the feedstock

- Farm
- Forest
- Any other location

Importer: Point of import

Project: As defined in the Quantification Methodology or where the project described is carried out

Compliance credits were created as per sub-section 19(1)d: Charging or fueling station

In addition, for all the above cases: If a centralized data management system is used, the location* where the data is manipulated, aggregated, and stored.

*This location may be virtual in nature

2.8.1 Single/few site(s) verification

The following section applies to single or a few sites (five or less).

To ensure that the evidence used to base verification opinion upon remains high quality, site visits occur:

- at the site of material emission and/or emission reduction activities to confirm, among other things, the occurrence of the activities and existence of sources and sinks; and
- where **appropriate**[21] supporting certificates **do not** exist or the certificate review identifies issues, concerns, or risks associated with the certificate, at the site where material amounts of feedstock are harvested or collected to confirm, among other aspects, that land-use and biodiversity requirements are met.

These site visits occur for the first verification of the verification body and each material site is visited at least every five years after the initial verification (paragraph 152(1)(a)).

Site visits are also recommended when there is a high risk of misreporting for which verifiers collect higher-quality evidence and the designed evidence gathering activities are most efficiently conducted onsite. Although these typical situations are addressed in ISO 14064-3:2019, situations that are of particular concern to ECCC are:

- Initial verifications;
- Significant changes at the site;
- Unexplained material changes seen in high-level analytical testing;
- Inconsistencies between declarations and the supporting evidence.

Significant changes (expansion or retraction) at the site are changes in production or emissions from the prior year of 10% or more that are due to changes at the site and not changes in the feedstock input quantity or quality. Examples include but are not limited to:

- an ethanol facility that increases the volume of production from prior year due to optimization systems installed;
- retro-fitting a boiler from a low to high-efficiency device.

If the verifier identifies inconsistencies between land declarations or certifications and the supporting evidence, the verifier assesses whether a site visit is necessary to confirm the conformance to the land use and biodiversity criteria.

If the verifier chooses not to conduct a required site visit[22], the reasoning behind the decision for not conducting site visits must be documented in the verification report and in their working papers (ISO 14064-3:2016 s.6.1.4.2).

[21] The existence of the certificate does not make it necessarily appropriate; the verifier must evaluate its appropriateness.

[22] Required site visits are the initial and once every five years thereafter verifications (paragraph 152(1)(a)).

2.8.2 Multi-location verifications

Multi-location verifications are reporters that have more than five sites (including virtual sites) included in the scope of the verification (paragraph 152(1)(b)). Multi-location verification are more risky than their singe site counterparts. Multiple locations can be encountered by low-CI fuel producers where feedstock originates from several locations or by fuel switching aggregators where there are many charging sites or fuel stations. Multi-location verifications have unique risks factors which are:

- the degree of centralization;
- effectiveness of data controls;
- diversity of locations;
- number of locations;
- contribution of the locations.

The degree of centralization refers to the information and managerial decision-making systems. The more these systems are decentralized, the higher the risk. For example, farmers that maintain individual records would be at a higher risk of material misstatement than EV charging stations that use a centralized data collection system.

Effectiveness of data controls refers to the control risk and with multi-location verifications, these controls can vary between locations creating challenges in understanding the degree of control. Therefore, verifiers need to visit more sites to confirm control operation, and potentially, diversity in the controls.

The diversity of locations increases the costs and necessary expertise of the verifier. The greater the diversity of locations, the higher the risk. For example, a biofuel facility that can use multiple types of feedstock (e.g., grasses, woods, waste oil) would require different skills sets to evaluate the feedstock.

The number of locations may vary from a few locations to thousands of locations. If the number of locations is small, then each location is likely to be material to the aggregated values. Conversely, when the number of locations is large, it is less likely that a single location would have a material impact on the aggregated values. The number of locations is inversely related to the verification risk.

The contribution of the locations refers to the amount each location contributes to the aggregated amounts reported. In some situations, a few locations may contain a large percentage of the aggregated amount, in which case, the verifier will likely stratify the sites and focus on the few locations that contribute the most. In the situation where contributions are evenly distributed, more locations must be assessed to obtain the same level of assurance.

Table 16: Risk Factors for Multi-Location Verifications

Risk Type	Risk Factor	Increases Risk	Decreases Risk
Control Risk	Degree of centralization	Decentralization	Centralization
Control Risk	Effectiveness of data controls	Inconsistent control	Consistent, strong controls
Inherent Risk	Diversity of locations	High diversity	Low diversity
Inherent Risk	Number of locations	Few Locations	Many locations
Inherent Risk	Contribution of the locations	Even distribution	Uneven distribution

Of these risk factors, the risks associated with control risk (e.g., degree of centralization and effectiveness of data controls) tend to be the most significant risk factors.

Verifiers visit material sites that are of high risk of misreporting when the likely cause of misreporting exists at the site and remote evidence gathering activities cannot sufficiently reduce the detection risk to a reasonable level.

For multi-location verifications the use of a sampling strategy determines site visits. The site sampling strategy evaluates:

- all material sites;
- sites that have high inherent and/or control risk;
- sites that have unexplained anomalies in the high-level analytical testing; and
- sites that do not have a valid certificate (if applicable).

With multi-location verifications, a stratification approach to the sampling strategy is recommended, whereby the stratums are defined by the risks of misreporting. Possible stratums are, but not limited to:

- Inherent risk;
    - Quantitative materiality
    - Qualitative materiality
    - Relative contribution
    - High-level analytics
- Control risk:
    - Data trail
    - Data controls

To use high-level analytics, data trails and controls as risk areas in the stratum design, there are pre-requisites:

- High-level analytics must exist that identify potential risks to the assertion attributes of rights/obligations, occurrence/existence, accuracy, completeness, classification, and/or cut-off;
- High-level analytics must be sufficiently sensitive to identify material anomalies;

- The verifier must have a complete understanding of the data trail complete with the data controls identified; and
- The verifier must have an understanding of the effectiveness of the data controls.

The layering of risk areas to achieve manageable stratums is recommended to design an efficient site sampling strategy. For example, a stratum for EV charging may be defined by: 1) the data controls; 2) the relative contribution; and 3) high-level analytics. The stratum would consist of EV chargers that have the same data controls, contribute material emission reductions, and have had areas of concern identified in their high-level analytics. This stratum is used to address the risk of misreporting quantity (accuracy).

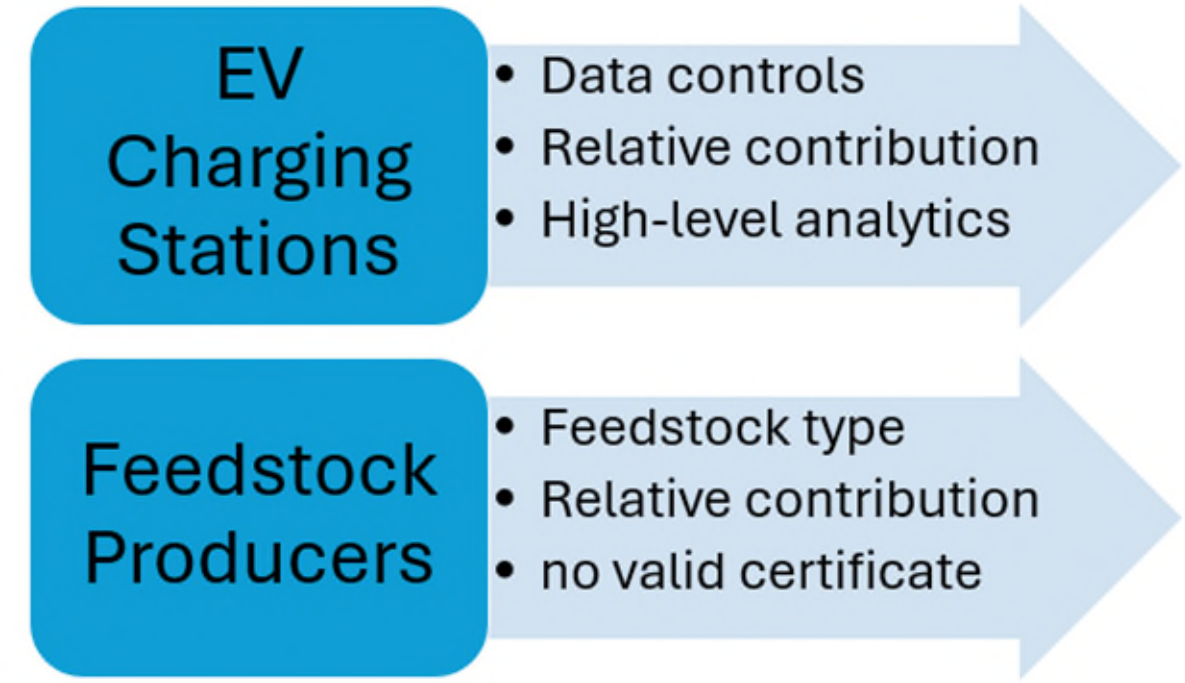

Figure 11: Stratum Design

Text description of Figure 11: Example stratum designs. A stratum for EV charging may be defined by: 1) the data controls; 2) the relative contribution; and 3) high-level analytics. A stratum for feedstock suppliers may be defined by: 1) the feedstock; 2) the relative contribution; and 3) no valid certification.

For example, a stratum for feedstock suppliers may be defined by: 1) the feedstock; 2) the relative contribution; and 3) no valid certification. The stratum would consist of sites that harvest sugar cane feedstock that materially contributed to the input to the low-CI fuel production facility and that did not have a valid certificate. This stratum is used to address the risk of presentation and disclosure (i.e., the risk that the feedstock does not comply with the land use and biodiversity criteria).

If the report or application has the same verifier as the prior reporting cycle, the composition of sites selected is different each year unless there are risk reasons to select the same sites.

Verifiers must report their verification sample plan with stratum designs in the verification report (Schedule 20(2)). The stratum designs are linked to the risks of misreporting.

2.8.3 Verification of virtual sites

Virtual sites usually consist of data warehouses and centres that house information to be reported electronically. There is no physical site to visit; however, for centralized data management systems, these systems are assessed. Computer assisted audit tools techniques (CAATTs) are normally employed to assess virtual sites (although they may be used elsewhere).

2.8.3.1 Application controls[23]

Application controls are those controls (manual and computerized) that relate to the data pertaining to a computer-based data management system. They are specific to a given application and their objectives are to ensure the completeness and accuracy of the records and the validity of entries made in those records. An effective computer-based system will ensure that there are adequate controls existing at the point of input, processing and output stages of the computer processing cycle and over standing data contained in master files. Application controls need to be ascertained, recorded, and evaluated by the verifier as part of the process of determining the risk of material misstatement in the report or application (i.e., it is part of the assessment of control risk).

2.8.3.1.1 Input controls

Control activities designed to ensure that input is authorized, complete, accurate and timely are referred to as input controls. Dependent on the complexity of the application program in question, such controls will vary in terms of quantity and sophistication. Factors to be considered in determining these variables include cost considerations, and confidentiality requirements regarding the data input. Input controls common to most effective application programs include on-screen prompt facilities (for example, a request for an authorized user to 'log-in') and a facility to produce an audit trail allowing a user to trace a transaction from its origin to disposition in the system.

Specific input checks may include:

- Format checks: ensure that information is input in the correct form. For example, the requirement that the date of a fuel purchase be input in numeric format only – not numeric and alphanumeric;
- Range checks: ensure that information input is reasonable in line with expectations. For example, where an entity has a fairly consistent fuel or crop production, ranges between ± 10% average production levels may be appropriate;
- Compatibility checks: ensure that data input from two or more fields is compatible. For example, a purchase invoice amount should be compatible with the amount of sales tax charged on the invoice;

[23] Modified from Auditing in a computer-based environment | F8 Audit and Assurance | ACCA Qualification | Students | ACCA Global

- Validity checks: ensure that the data input is **valid**. For example, where a serial number is issued for a compliance credit, the serial number should have the correct value for that year of issue;
- Exception checks: ensure that an exception report is produced highlighting unusual situations that have arisen following the input of a specific item. For example, a negative value for fuel/electricity consumption;
- Sequence checks: facilitate **completeness** of processing by ensuring that documents processed out of sequence are rejected. For example, where a block of compliance credits are issued, the serial numbers should be in sequence;
- Control totals: facilitate **completeness** of processing by ensuring that manually prepared totals are compared to the calculated totals. For example, the number of sources identified at a site equals the number of sources identified in the inventory;
- Check digit verification: uses algorithms to ensure that data input is **accurate**. For example, compliance credit serial numbers are formatted in such a way that serial numbers that do not match the pattern will be automatically rejected.

2.8.3.1.2 Processing controls

Processing controls exist to ensure that all data input is processed correctly and that data files are appropriately updated in a timely manner. The processing controls for a specified application program should be designed and then tested prior to 'live' running with real data. These may typically include the use of run-to-run controls, which ensure that the integrity of cumulative totals contained in the emissions records are maintained from one data processing run to the next. An example is the balance carried forward on the compliance credit account. Other processing controls should include the subsequent processing of data rejected at the point of input, for example:

- A computer produced print-out of rejected items;
- Formal written instructions notifying personnel of the procedures to follow with regard to rejected items;
- Appropriate investigation/follow up with regard to rejected items;
- Evidence that rejected errors have been corrected and re-input.

2.8.3.1.3 Output controls

Output controls exist to ensure that all data is processed and that output is distributed only to prescribed authorized users. While the degree of output controls will vary from one organization to another (dependent on the confidentiality of the information and size of the organization), common output controls comprise of:

- Appropriate review and follow up of exception report information to ensure that there are no permanently outstanding exception items;
- Careful scheduling of the aggregating of data to help facilitate the reporting on a timely basis;
- Formal written instructions notifying personnel of prescribed applications and reports (internal and external);
- Ongoing monitoring by a responsible official, of reporting, to ensure it is conducted in a manner that meets compliance requirements.

2.8.3.1.4 Master file controls

The purpose of master file controls is to ensure the ongoing integrity of the standing data contained in the master files. It is vitally important that stringent 'security' controls be exercised over all master files. These include:

- Appropriate use of passwords, to restrict access to master file data;
- The establishment of adequate procedures over the amendment of data, comprising appropriate segregation of duties, and authority to amend being restricted to appropriate responsible individuals;
- Regular checking of master file data to authorized data, by an independent responsible official;
- Processing controls over the updating of master files, including the use of record counts and control totals.

2.8.3.2 Computer Assisted Audit Tools and Techniques (CAATTs)

The nature of computer-based accounting systems is such that verifiers may use the participants company's computer, or their own, as a verification tool, to assist them in their evidence gathering activities.

There are three classifications of CAATTs – namely:

- Audit software
- Test data
- Other techniques

Audit software is a generic term used to describe computer programs designed to carry out tests of control and/or substantive procedures. Such programs may be classified as:

- Packaged programs consist of pre-prepared generalized programs used by verifiers and are not 'client specific'. They may be used to carry out numerous verification activities, for example, selecting a sample, either statistically or judgmentally; doing arithmetic calculations; and checking for gaps in the processing of sequences;
- Purpose written programs are usually 'client specific' and may be used to carry out tests of control or substantive procedures. Verification software may be bought or developed, but in any event the verification plan should ensure that provision is made to ensure that specified programs are appropriate for a participant's system and the needs of the verification. Typically, they may be used to re-perform computerized control procedures (for example, compliance credit revenue calculations from EV chargers) or determination of credit balances;
- Enquiry programs are integral to the participant's data management system; however they may be adapted for verification purposes. For example, where a system provides the routine reporting on a 'monthly' basis of feedstock received, this feature may be used by the verifier when verifying the mass of feedstock into a bio-facility.

Test data is used to test the existence and effectiveness of controls built into an application program used by a participant. As such, dummy transactions are processed through the participant's computerized system. The results of processing are then compared to the verifier's expected results to determine whether controls are operating efficiently and systems' objectiveness are being achieved. For example, two dummy sources of emissions (one inside and one outside typical values) may be processed with the expectation that only the source with

reasonable emissions is ‘accepted’ by the system. If dummy transactions processed do not produce the expected results in output, the verifier will need to consider the necessity for increased substantive evidence gathering activities.

Other techniques include incorporating the verifier’s own program code into the participant’s application software.

Key points for verification of virtual sites are:

- As a minimum, robust controls should exist for completeness, accuracy and validity on the data trail for every material line-item in the report or application;
- The verifier must not place 100% reliance on the controls; some underlying data must be tested (ISO 14064-3:2019 s.6.1.3.4);
- If the verifier is going to rely on controls, the controls are tested (ISO 14064-3:2019 s.6.1.3.6.2);
- Depending on the scope and veracity of data management certificates, certificates may be used by the verifier as evidence of control design and effectiveness.

2.9 Monitoring and measurement requirements

2.9.1 Monitoring plan

The monitoring plan is a requirement for any verified application or report and provides operational, process, and measurement details of the verification subject matter. The verifier assesses the monitoring plan during the verification to its completeness, appropriateness, design and **functioning**, and compliance to the CFR. Key aspects to assess are whether data identified are complete (e.g., all the sources identified have associated measurements), are the measurements of sufficient accuracy and frequency, is the start of a data trail correctly established, are the correct controls established at key places at the measurement side of the data management system, and are these controls functioning appropriately.

The verifier includes in their assessment the effect of any deficiencies in the monitor plan that impact the ability to provide complete and accurate future reports and to future verifications. When a concern over a monitoring plan affects the ability to report in the future, the matter should be disclosed in the verifier’s report (Schedule 20(2)). When a concern over a monitoring plan creates an uncertainty in the reported value greater than what is recommended in section 2.5.2.3, the matter is material, and the verifier shall issue the appropriate opinion.

Verifiers use professional judgement in evaluating the monitoring plan, disclosing information, and rendering opinions.

2.9.2 Calibration

All measurement devices that provide data for the reported information should comply with the manufacturer-recommended calibration frequency and precision requirements. If manufacturer-

recommendations are not provided, the measurement devices are to be calibrated every six years.

Exemptions or delays in calibration are documented and reported by the verifier.

2.9.3 Data availability

In order to adequately perform the verification, the following documentation, pertaining to the Monitoring Plan must be available to the verification body by the reporting entity requiring verification (sub-section 136(1)). If there is insufficient or inappropriate information provided to the verifier, the verifier assesses whether the lack of information impairs the verification strategy and plan, and the ability to form a conclusion.

2.9.3.1 Operations

A documented description of the operations including (Schedule 21(2 & 3))

- Boundaries;
- Facilities;
- physical infrastructure;
- activities;
- technologies; and
- processes.

A simplified block diagram of the operations is required and should include as a minimum:

- Materials:
    - Raw material inputs;
    - Energy (e.g., fuel or electricity) sources;
    - Intermediate products;
    - Final products.
- Mechanical Equipment:
    - combustion units such as boilers, furnaces, and engines;
    - electricity-driven equipment such as fans, motors, and pumps;
    - sources of fugitive emissions such as flares, vents, and compressors;
    - storage locations such as tanks, underground caverns, and geological reservoirs.
- Process control instrumentation and designation including sensors and measurement devices (e.g., meters).

A piping and instrumentation diagram (P&ID) prepared in accordance with standard ISO 14617-6 is an acceptable format for the block diagram.

2.9.3.2 Data management system

A documented description of the data management system (Schedule 21(5)), including the identification of:

- the basis of the data management system (e.g., manual, automated) and if automated, documentation of the software used and any certifications;
- the personnel managing the data;
- the inputs, processing, and outputs:
    - Description of data source;
    - Accuracy of data source, if available;
    - Sampling characteristics, if applicable;
    - Data collection frequency, if applicable.
    - Measurement devices and technologies (Schedule 21(4)), if applicable, including:
        - description of measurement device;
        - make, model, and serial number of measurement device;
        - approximate install date, locations, and installation methods;
        - measurement characteristics including units of measure, accuracy, and lower detection limits;
        - maintenance including calibration method, calibration frequency;
        - any postponements in calibration with appropriate documentation;
        - measurement frequency.
    - Calculations used to transform the data collected into reported information which may include:
        - equation(s) used to calculate flows in mass, volume, or energy units of measurement;
        - equations used to convert units;
        - equations used to estimate non-measured parameters;
        - equations used to aggregate data;
        - equations used to estimate, interpolate, or extrapolate data;
        - applications or programs used to transform the data.
- the controls and control locations which may include:
    - description of the control;
    - who operates the control;
    - whether they are automated or manual; and
    - their frequency of operations**.**

A simplified data flow diagram may aid in describing the data management system.

2.10 Verification emphasis

The verification process is the same for every application and report under the CFR; however, this section outlines areas of emphasis based on subject matter.

2.10.1 Geological carbon storage verifications (e.g. carbon capture and ctorage (CCS), enhanced oil recovery (EOR))

2.10.1.1 Recognition

Storage sites that have a high risk of physical leakage or seepage are considered to be qualitative material concerns.

2.10.1.2 Specialist's role

The verification of a report or application with geological storage requires a specialist in geological carbon storage on the verification team to establish the suitability of a geological formation for use as a storage site. The specialist evaluates the evidence in the following areas of emphasis:

- geology and geophysics;
- hydrogeology;
- geochemistry (e.g. calculation and modelling of the CO_2 dissolution rates and mineralization rates);
- geomechanics (e.g. permeability, and fracture pressure);
- seismicity;
- potential pathways for physical leakage or seepage (e.g., injection, observation of abandoned wells, mineshafts and boreholes);
- storage capacity.

Operating permits issued by other regulatory agencies may be sufficient and appropriate evidence to support the suitability of a geological formation for use as a storage site (confirmation procedures). The verification team must collect the permit to evaluate whether the permit is sufficient and appropriate evidence to establish the geological formation's suitability. In examining the permit, the verification team may assess the regulatory body's accountability for the long-term liability, recency of the permit, applicability of the permit, etc.

A lack of a permit or a permit that is insufficient and/or inappropriate would require additional verification procedures to establish the geological formation's suitability. The resulting evidence about the geological formation's characteristics (e.g., the above areas of emphasis) is evaluated by the specialist on the verification team.

2.10.1.2.1 Monitoring plan

The verifier assesses whether the monitoring plan:

- is in place;
- conforms to the requirements in the applicable quantification method;
- material sources of increased emissions outside the project boundary attributable to the project activity are included;
- all site-specific issues identified during site selection and the risk and safety assessment that relate to emissions are included;
- proper monitoring of seepage/physical leakage from the storage site is conducted;
- proper monitoring of the fate of the CO_2 plume is conducted;
- has plans for monitoring ten years beyond the crediting period;
- responsibility for monitoring in the post crediting, post closure period, is clearly defined.

The specialist on the verification team evaluates the evidence about the monitoring of the seepage/physical leakage and fate of the CO_2 plume in the monitoring plan.

Reports accepted by other regulatory agencies may contain sufficient and appropriate evidence to support the geological carbon storage components of the monitoring plan or quantification method reporting requirements (e.g., monitoring of seepage/physical leakage and plume migration).

If other regulatory agency's reporting provides insufficient and/or inappropriate evidence to support the monitoring plan, additional verification procedures are required. Any resulting evidence about the monitoring of seepage/physical leakage and plume migration is evaluated by specialist on the verification team.

2.10.2 Computerized, centralized data management systems

If a computerized, centralized data management system is used, the verifier assesses the data management system and one of the "sites" that is visited in the verification is the virtual location of the data management system.

2.10.2.1 Risk of misstatement

The risk of misstatement in a computerized, centralized data management system tends to be distributed differently than in a decentralized manual data management system. In the decentralized model, the risk of material misstatement is usually distributed somewhat evenly across the data trail. In centralized data management systems, the risk of misstatement is usually located at the input and output stages (if the processing controls have been shown to be sufficient and appropriate). Centralized systems have some unique characteristics:

- the site is virtual;
- data processed is large; and
- controls reliance as a verification strategy is common.

2.10.2.2 Specialist's role

The verification of a report or application that involves a computerized, centralized data management systems should have a specialist that has an understanding of computer assisted audit tools and techniques (CAATTs). The specialist assesses the computerized, centralized data management system's design (e.g., file management), controls (e.g., information integrity), conformance to the CFR (e.g., calculations), security and backup. The specialist may use CAATTs to assess the data management systems and may use tests that can identify in the data**:**

- exceptions;
- errors;
- omissions;
- existence;
- duplication;
- completeness;
- obsolescence;
- consistency;
- missing sequence.

The specialist may also use CAATTs to conduct data control testing.

2.10.2.3 Reliance on controls and analytics

Given the amount of data managed by computerized, centralized data management systems, verifiers tend to use reliance on controls and analytics to conduct the verification. Although the general requirements for controls reliance and use of analytics applies in all verifications, in

computerized, centralized data management systems, these requirements are strictly adhered to because the majority of the risk identification and evidence lies on these techniques.

2.10.3 Agriculture, forestry, Land Use and Biodiversity verifications

2.10.3.1 Recognition

For forestry applications, if the monitoring plan cannot be verified, the application or report cannot receive an unqualified or qualified opinion.

2.10.3.1.1 Specialist's role

The verification of a report or application that relates to low-carbon-intensity fuel that is produced using an eligible feedstock referred to in paragraph 46(1)(c) requires a specialist in forestry or agriculture (paragraph 141(2)(a)(i)) or a specialist in biodiversity (paragraph 141(2)(a)(ii)) on the verification team. The specialists are familiar with the available data on the use of land to cultivate crops, including satellite data, aerial photography, census data, or agricultural survey data. The specialists assess the cultivation, harvesting, and transportation practices for the crop(s) to determine whether:

- the land is located in an area that provides habitat for any rare, vulnerable, or threatened species (sub-section 48(1));
- the crop, crop-by-product, or crop residue is produced in a manner that does not create a high risk of indirect change[24] to land use that adversely affects the environment (sub-section 50(1));
- the crop has been harvested and transported in accordance with measures that monitor, prevent, and control the introduction, spread, and establishment of damaging agents[25] (section 49);
- the crop was not harvested from a forest, wetland, grassland, or riparian zone[26] as specified in the CFR (section 51).

For the verification of a CI application that requires verification, the role of such specialists could, as an example, include verifying that the application's stated feedstocks are correctly categorized and used within the Model. Any other assigned responsibilities will depend on the complexity of the modeling and the parameters to consider when accounting for the supply of agricultural or forest-based feedstock in the calculation of the CI value and are determined by the verification body, following the verification body's strategic analysis that is to be performed before the acceptance of any given assignment (as per ISO Standard 14064-3:2019). The role of the specialist in this case is not to assess compliance with the Land Use and Biodiversity (LUB) criteria from the CFR. This is done when verifying the activities relating to the creation of compliance credits from the production or importation of low-CI fuels.

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[24] Indirect land-use change occurs when the cultivation of crops for biofuels, bioliquids, and biomass fuels displaces traditional production of crops for food and feed purposes.

[25] Damaging agents include pests, invasive species, and disease.

[26] Riparian zone is land that is located 30m, measured on a slope distance following the topography of the land, of the high-water maker of a watercourse that is 3m wide, or the shores of a lake or permanent wetland that has an area greater than 5 ha. (CFR s.51(2)).

CFR legislative recognition (for subsection 48(1) and section 49 of the Regulations) for the LUB criteria or any deemed compliance (for the excluded lands provision from paragraph 51(1)(a)) does not negate the requirement to include such specialists as mandatory team members on the verification team assigned to the verification of a CI application after July 1st, 2024, or to the verification of any report that relates to low-carbon-intensity fuel that is produced using an eligible feedstock referred to in paragraph 46(1)(c). The assignment of their responsibilities would however take such legislative recognition or deemed compliance into account.

2.10.3.1.2 Forest-based feedstocks

The specialist (Professional Forester or P. Forest Engineer) evaluates the forest management plan to determine whether the plan is in place and has been designed to (section 52):

- promote timely forest regeneration of that land to its pre-harvesting conditions using species of trees that are ecologically suited to the site and drawn, if possible, from native species or local genotypes;
- prevent the adverse effects on naturally generated stands containing multi-layered canopies with trees near their maximum longevity as well as standing and fallen dead trees and forest debris at varying stages of decomposition (e.g., old-growth stands or forests);
- prevent, or mitigate adverse effects to the quantity and quality of the soil;
- prevent, or mitigate adverse effects to the quantity and quality of surface and ground water resources;
- prevent, or mitigate adverse effects to biodiversity;
- maintain the connectivity of watercourses, ecologically important sites, rare, vulnerable or threatened ecosystems and the habitats of rare, vulnerable or threatened species.

2.11 Assessment of evidence

The verifier evaluates any changes in risks that may have occurred over the course of the verification and whether any high-level analytical procedures applied remain representative and appropriate (ISO 14064-3:2019 s.6.3.1.1). The verifier determines whether the verification strategy or verification plan is changed based on these evaluations.

The verifier must determine whether the evidence collected is sufficient and appropriate to reach a conclusion. If the verifier determines that is insufficiency or inappropriate evidence, the verifier must develop additional evidence-gathering activities (ISO 14064-3:2019 s.6.3.1.2). In this manner, the extent of verification evidence gathering activities adjusts to the evidence collected as the verifier continues to collect evidence until they can reach an unqualified, qualified, or adverse conclusion or the verifier expresses a denial of opinion because they were unable to collect sufficient and appropriate evidence. The existence of this evidence collection spiral is one of the key differentiators between reasonable (with the spiral) and limited (without the spiral) levels of assurance in verification. The verifier demonstrates the existence of this spiral through an evaluation of the sufficiency and appropriateness of evidence and subsequent additional evidence gathering activities, if appropriate. Commonly, the lead verifier will sign-off on the sufficiency and appropriateness of evidence in the working paper files.

2.11.1 Misstatement assessment

Prior to the evaluation of misstatements, the verifier must reassess materiality to confirm that it remains appropriate in the context of the application or report (ISO 14064:2019 s.6.3.1.3).

The verifier aggregates any misstatements during the verification other than those that are clearly negligible (sub-section 153(2)). A table (e.g., a SUD or summary of unadjusted differences table) can be used to track misstatements.

The verifier determines whether the verification strategy or verification plan is to be changed:

- if the nature of the identified misstatements and the circumstances of their occurrence leads the verifier to believe that there are other misstatements and their[27] aggregation could be material; or
- if the aggregation of the identified misstatements approaches materiality.

A material misstatement detected by the verifier's evidence gathering activities is a strong indicator of the existence of a significant deficiency in control. If the verifier identifies misstatements that have been corrected during the course of the verification, the verifier conducts additional evidence gathering activities to determine whether any misstatement remains.

The verifier determines whether the misstatements, whether individually or in aggregate, are material.

The verifier evaluates whether the misstatements are indicative of fraud.

2.11.1.1 Conservativeness

Conservativeness is the principle that when assessing comparable alternatives, use a selection that is cautiously moderate. Conservativeness is a principle that is used to choose between options that are similar in completeness and accuracy. Consequently, the principles of completeness and accuracy always apply, and the principle of conservativeness may apply. Additionally, the principles of completeness and accuracy apply before applying the principle of conservativeness.

Conservativeness is interpreted differently depending on the circumstances. For an organization that is establishing a low-CI value, an overstatement of the inventory would be conservative. For a project that is claiming emission reductions for monetary value, the understatement of the baseline and overstatement of the project emissions would be conservative.

The following are examples of where the principle of conservativeness might apply:

- boundary selection for projects;
- estimation methods;
- baseline selection for projects;
- measurement technologies.

[27] Identified and potential misstatements

2.11.2 Conformance assessment

The verifier must evaluate any nonconformity with the criteria (ISO 14064-3:2019 s.6.3.1.4), which must include qualitative aspects of the application or report such as:

- Disclosure of accounting policies and practices;
- Consistency with prior periods;
- Methods for estimation;
- Levels of uncertainty;
- Format and clarity of disclosure.

In the assessment of conformance, verifiers assess whether there are appropriate sufficient controls to ensure continued conformance. Examples of controls could be:

- robust data management systems with adequate controls over material line-items is a demonstration of a safe-guard that ensures continued conformance;
- forestry monitoring plans that ensure the sustainability of the feedstock harvested;
- remote surveillance programs that low-CI producers use to ensure harvesters are in compliance with LUB criteria.

If verifiers determine that there is a high risk of future non-conformance to the CFR, they are required to disclose these conditions in the verification report (Schedule 20(2)).

2.11.3 Uncertainty calculation

The verifier conducts a quantitative uncertainty analysis to determine whether additional disclosure or an adverse opinion is warranted. The Fuel LCA Model will provide uncertainties based on Monte Carlo techniques for the verifier to assess. To calculate uncertainties that reside outside the LCA Fuel Modelling Tool, simplified techniques are used to aggregate uncertainties to the uncertainty associated with final value (e.g., CI value). Please refer to Appendix E for additional guidance. Uncertainties are qualitative materiality concerns and the qualitative materiality thresholds apply (section 2.5.2).

2.11.4 Data gaps

Data gaps are different from omissions in the data in that they cannot be corrected because the information does not exist (e.g., meter failure, calibration error (mis-calibration), or force majeure event). If there are data gaps in the evidence, the verifier assesses whether the data gap is material to the reported information. If the data gap represents more than what is considered material, it is reported in both the application or report and the verification report, and it is reflected in the opinion.

If the data gaps are immaterial, estimates may be used to fill in these data gaps. The verifier assesses the appropriateness of the methodology used for the estimates (ISO 14064-3:2019 s.6.1.3.6.3). Possible interpolation methods include linear, seasonal, or surrogate parameters. Linear interpolation methods use the data prior and after the data gap to create a straight-line estimate across the data gap and is best used for constant processes. Seasonal interpolation methods use data from a prior similar season. For example, feedstock harvest patterns will be seasonal. Surrogate parameter uses another related operation parameter to derive data for the gap. For example, production of glycerin may assist in determine a data gap in the production of biodiesel.

2.12 Fraud

Misstatements in the application or report arise from errors or fraud. The difference between error and fraud is intent: errors are unintentional; fraud is intentional. Although a verifier may suspect fraud, they do not make the legal determination that fraud has occurred because, amongst other reasons, it is difficult to determine intent. The primary responsibility for the prevention and detection of fraud lies with those charged with governance and management of the reporting entity. The verifier is responsible for conducting a verification that can detect material misstatement, whether it be from error or fraud; however, there are inherent limitations that may prevent the verifier from detecting material misstatements due to fraud.

The verifier designs the verification to:

- identify and assess the risk of misstatement due to fraud;
- obtain sufficient appropriate evidence in response to those risks by designing and implementing sufficient appropriate evidence gathering activities; and
- respond appropriately to identified or suspect fraud encountered in the verification (ISO 14064-3:2019 s.5.4.3).

Potential areas of high fraud risk in the CFR, include, but are not limited to:

- Fraudulent manipulation of measurements to claim more compliance credits from a project than were actually obtained;
- Fraudulent representation of the land use and/or biodiversity characteristics of feedstock;
- Sale of compliance credits that either do not exist or belong to someone else;
- Exploitation of weak regulations in other countries to commit crimes, such as inappropriate pesticide use, harvesting, or waste disposal practices, use of child labor, money laundering, securities fraud or tax fraud; and
- Computer hacking/phishing to steal or misrepresent compliance credits.

If any of the above risks are present in a verification, whether quantitatively material or not, the verifier designs and implements reasonable-level evidence gathering activities that attempt to detect the occurrence of fraud.

In designing evidence gathering activities to take into consideration the risk of fraud, the nature and timing of the evidence gathering activities may change. For example, physical observation or inspection of feedstock may become more important or the use of CAATTs may be applied to gather more evidence. The verifier may design additional evidence gathering activities to corroborative information. For example, if a verifier identifies that management is under pressure to meet compliance targets from compliance credits, there may be a related risk that management is meeting compliance requirements by accounting for compliance credits before they occur. The verifier may design and implement additional evidence gathering activities such as inspecting dates on compliance credits and reviewing terms of credit contracts. Incorporating the element of unpredictability into the verification is important in detecting fraud, which may be done by performing evidence gathering activities on non-material items, changing sampling methodologies (e.g., random vs. proportional), or changing the timing or location (e.g., surprise site visits) of evidence gathering activities.

Verifiers:

- review estimates for bias and evaluate if the circumstances that produce the bias represent a material risk of misstatement.
- For significant values that are out the normal course of operations or appear unusual given the verifier's understanding, reviews the rationale for the values for fraud.

Management is in a unique position to perpetrate fraud because of management's ability to manipulate records and override controls. If a verifier finds a misstatement that is indicative of fraud and that there may be senior management involvement, the verifier re-evaluates the assessment of the risk of misstatements due to fraud and the resulting impact on the verification strategy and plan.

If a verifier identifies fraud or has information that fraud exists, the verifier communicates these matters, unless prohibited by local law or regulation, to those responsible for the prevention and detection of fraud within the reporting entity, unless they are complicit in the fraudulent activities.

If a verifier identifies fraud or has information that fraud exists, the verifier communicates these matters to the ECCC.

2.13 Types of opinion

The opinion issued by the verification body reports the conclusion reached by the verifier on whether the information was presented fairly in all material respects and that the information adheres to the requirements in the regulations.

Verification bodies can arrive at three types of conclusions: unqualified, qualified[28], and adverse (section 154).

An unqualified opinion can be issued when there are no material misstatements and the report has been prepared in accordance with the regulations (sub-section 154(a)). An unqualified opinion is the most common conclusion and implies that the verifier is unconcerned about the current application/report and the ability of the reporting entity to report in the near[29] future.

A qualified opinion has misstatements, but they are not material or the verifier could not find sufficient and appropriate evidence but concludes that the effect of misstatements on the report is not material (sub-section 154(b)). A qualified opinion is a strong signal to ECCC that application/report needs to be improved upon. A qualified opinion is not the same as an unqualified opinion. A qualified opinion implies that the verifier is concerned about the current application/report and the ability to report in the near[30] future by the reporting entity.

In qualifying an opinion, the verification body should consider (ISO 14064:2019 s.6.3.2.3):

- The extent of the departure or limitation (e.g., whether it is confined to one or a small portion of the application or report);

[28] ECCC deems modified opinions to be those that are modified from the unqualified state and are qualified or adverse opinions, or a disclaimed verification.
[29] Near is defined as the next two reporting cycles.
[30] Near is defined as the next two reporting cycles.

- The magnitude of the departure or limitation (e.g., the misstatement combined with the other misstatements are under the materiality requirements);
- Whether the departure or limitation affects ECCC's ability to understand the report.

In issuing a qualified opinion, the verification body reports a description of the departure and limitation and if any, adjustments that could be made to the report prior to the opinion (Schedule 20(1)(c)(ii)).

Examples[31] of circumstances that may cause qualified opinions are:

Circumstances beyond the control of the reporter:

- Records have been destroyed by natural disaster (e.g., fire, flood, etc.);
- Records that have seized indefinitely by government authorities or by theft.

Circumstances relating to the nature or timing of the verifications:

- The timing of the verifiers work is such that the verifier is unable to observe certain phenomena (e.g., site visits at the inappropriate time of year to determine species at risk, invasive species, etc.; material sources or activities that influence material sources in the lifecycle cannot be observed);
- The verifier determines that performing substantive procedures alone is not sufficient, and the controls are not effective (e.g., high volume transactions with no control for completeness).

In circumstances relating to the nature or timing of the verification, the verifier discloses how these circumstances will be addressed by the next verification.

Circumstance where the verifier is unable to obtain sufficient and appropriate verification evidence arising from a limitation imposed by management or other entity:

- The verifier is unable to physically examine the site for sources and sinks (e.g., no permission to access the site);
- The verifier is not granted permission to contact third parties to confirm information (e.g., verifiers are not allowed to interview farmers).

In circumstances relating to limitations on the evidence, the verifier discloses what the limitation is and whether the limitation is likely to continue in consecutive verifications.

Examples of how a verifier might disclose opinions is illustrated in Appendix H.

An adverse opinion is issued when there are material misstatements in the report and/or the report has not been prepared in accordance with the regulations (sub-section 154(c)). The verifier assesses whether the aggregate of uncorrected misstatements that have been identified during the verification is material. An adverse opinion is provided if:

- The relative error exceeds the CFR materiality thresholds; or
- There is a qualitative finding(s) that is deemed to be material.

[31] Examples assume that the misstatement is material but not pervasive.

Table 17: Misstatement and Opinion Types

Type of Misstatement	Type of Opinion
None	Unqualified
Not Material	Qualified
Material and/or Non-compliance	Adverse

2.13.1 Disclaim

In verification, a verification body may disclaim a verification in the event there is insufficient information to arrive at a conclusion (paragraph 154(d)). If there are unknown material misstatements, the verifier cannot arrive at a conclusion.

2.14 Outcome

It is the reporting entity's responsibility to obtain third-party verification services from a verification body that meets the requirements specified in sections 129 to 154 of the CFR. The application or the report is submitted with an opinion or disclaimer to ECCC by the responsible entity, by the prescribed regulatory deadline, in order to maintain a valid unique alphanumeric identifier for a valid carbon-intensity or for a valid CO2e emission reduction project, for use in reporting and for compliance credit creation. Qualified opinions are accepted as an indication of compliance and are reviewed as to the reason for the qualification.

An adverse opinion or a disclaimed verification report could be indicative of a potential non-compliance that would warrant further investigation and action by the Minister.

2.15 Subsequent events

Applications and reports can be affected by events that occur after their report date. Subsequent events are events that occur between the application/report date and the verification report date and facts that become known to the verifier after the verification report date. The verifier has different responsibilities depending on where, relative to the report dates and reporting date, the event occurs.

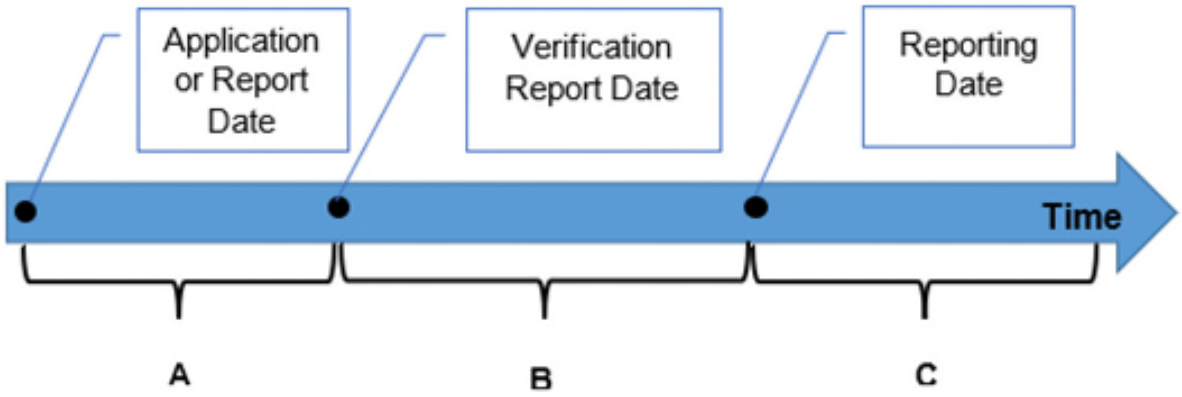


Figure 12: Timing of Subsequent Events

Text description of Figure 12: Timeline showing the order of application/report date, verification report date, and reporting date. Subsequent events can occur in the time in between these dates which are labelled as A, B, and C respectively.

For clarity:

- Application or Report Date is the date of the last period that the application or the last compliance period the report addresses;
- Verification Report Date is the date of the opinion;
- Reporting Date is the report/application's submission date.

A - For events that occur between the application/report date and the verification report date (during verification).

The verifier obtains sufficient appropriate evidence and identify relevant information up to the date of the verification opinion.

B – For events that occur between the verification and the reporting date.

If the event had been known during the verification and the application/report would have materially changed, the verifier discusses with the reporter what information in the application/report will be amended and how the amendment will be implemented. The verifier conducts the necessary evidence gathering activities to address the amendment. The verifier provides a new verification report that addresses the amended application/report.

If the reporter does not amend the application/report and the verifier believes they should, the verifier notifies ECCC not to rely on the existing verification report.

C – For events that occur after the reporting date.

If the event had been known during the verification and the application/report would have materially changed, the verifier discusses with the reporter if the information in the application/report will be amended and how the amendment will be implemented. If amended, the verifier:

- conducts the necessary evidence gathering activities to address the amendment;
- confirms that the reporter has contacted ECCC about the amendment;
- provides a new verification report that addresses the amended application/report.

Situations that verifiers should be aware of:

- retroactive suspensions or withdrawal of certificates;
- stakeholder complaints against prior growing, harvesting, and/or operating practices;
- natural disasters that change the ecosystem dynamics.

If the reporter does not amend the application/report and the verifier believes they should, the verifier notifies ECCC not to rely on the existing verification report.

2.16 Records relevant to the verification services provided

During the verification, evidence needs to be collected to substantiate the application or report being verified. The intent of the records stored is to be able to recreate the reported information

for the verified time period, establish that the reported information was in conformance with the requirements set out in the CFR, and establish that the Verification Body's management system and processes were effectively functioning during the verification period and were complied with.

Verification records for each engagement are documented and stored for a minimum of ten years (sub-section 166(2)) and includes all the elements in Table 18:

Table 18: Verification Records

Verification

Evidence:

- Initial and Final application and/or report and any declarations
- Scope of verification activities
- Strategic assessment including;
    - in the case of a site visit to a production facility, the date of the previous site visit to that facility;
    - a description of the data management system and quantification procedures
- Risk analysis including;
    - high-level analytical testing, if any
    - contribution analysis
    - inherent risks associated with line-items
    - control risks associated with line-items
    - data trail including identification of material line-items, their data inputs and controls
    - the assessment of certificates, if any
- Materiality assessment including performance materiality
- Verification Plan;
    - Site selection strategy and design, including
        - stratum design, if any
        - justifications for not visiting sites, if any
- Evidence gathering activities (description, who and when performed, and the result) including;
    - activities associated with the risk of fraud
    - sites visited and when
- Misstatement assessment including;
    - summary of misstatements (adjusted and unadjusted)
    - error analysis (relative and absolute)
    - an assessment of the verifier's qualitative observations
- Conformance assessment including an assessment of verifier findings
- Uncertainty analysis
- Conclusions formed
- Disclosures
- Independent reviewer's review results
- Opinion issued

- Subsequent event documentation, if any

Impartiality:

- Impartiality assessment at the start and end of the verification
- Actions taken to mitigate threats to impartiality, if any

Personnel:

- Personnel assigned to the verification team, including identification of the lead verifier and specialists
- The independent reviewer
- Training and experience of the personnel on the team and of the independent reviewer
- Assessment of the team composition in meeting the CFR requirements

Subcontractor:

- Personnel assigned to the verification team
- Subcontractor management including;
  - name,
  - role and activities performed
  - contracts,
  - impartiality assessments,
  - confidentiality agreements
  - training and experience

Outsourcing:

- Documentation on outsourcing, including;
  - The percentage outsourced and basis for the calculation
  - The verification body outsourced
  - Outsourcing contracts
  - Outsourcing impartiality assessments
  - Outsourcing confidentiality agreements
  - Outsourcing instructions including the nature, timing, and extent of its involvement in the work
  - Outsourced personnel, their role, activities, training, and experience
  - Any disagreements with the outsourced verifier and the resolution attained

Reliance:

- Documentation on reliance, including;
    - The percentage reliance and the basis for the calculation
    - The verification standards used
    - The alignment of engagement type, level of assurance, scope, objectives, criteria, and materiality
    - The relied upon verification statement and report

3 Approval framework for certification schemes

3.1 Introduction

Confirmation of compliance against the applicable Land Use and Biodiversity criteria in sections 48 to 52 of the CFR could be achieved through the use of a certification issued by a certification body operating under a certification scheme (CS) approved by ECCC for the purpose of the Land Use and Biodiversity criteria of CFR (section 61).

A certificate issued under an approved CS represents one option for a fuel producer to assert that the feedstock used to produce the low-carbon-intensity fuel is identified as eligible feedstock for the creation of compliance credits as defined in paragraph 46(1)(c) and is compliant with the applicable Land Use and Biodiversity criteria set out in sections 48 to 52 of the CFR.

The *Clean Fuel Regulations – Land Use and Biodiversity Conformity Assessment System (CFR-LUB CAS)* corresponds to the approval framework for CS that sets the minimum requirements that a CS must meet to be approved by ECCC for the purpose of the Land Use and Biodiversity criteria of the CFR. These requirements include the technical scope (i.e. the applicable LUB criteria), the rules and procedures for the operations and management of the scheme, accreditation and competency requirements for certification bodies authorized to operate under an approved CS, as well as the audit requirements. Those requirements and related guidance are described in this chapter.

3.2 Eligibility requirements[32]

To be approved by ECCC for the purpose of the Land Use and Biodiversity criteria of the CFR, a CS submits an application demonstrating that they meet all the requirements specified below (section 62).

The requirements in section 3.2.1 represent general requirements for the management and operations of the CS. In addition, the CS incorporates into its structure the requirements for certification bodies operating under the scheme as described in section 3.2.2, as well as the requirements for the audit process as listed in section 3.2.3.

3.2.1 General requirements for certification schemes

3.2.1.1 Scheme owner

The scheme owner is a legal entity responsible for developing and maintaining an approved CS that (paragraph 62(1)(b)):

[32] Requirements laid down in this section of the document correspond to sections 61 to 74 of the *Clean Fuel Regulations*.

- Takes on full responsibility for the objectives, the content and the integrity of the scheme;
- Maintains the scheme and provides guidance when required;
- Sets up a structure for the operation and management of the scheme;
- Documents the content of the CS (see 3.2.1.2);
- Has systems and procedures to ensure that the certification process and requirements are consistent with the requirements of the CFR;
- Develops requirements for third-party auditors that comply with the CFR requirements in relation to the specific competencies required as well as the way in which those competencies are demonstrated (See 3.2.2);
- Ensures that the CS is developed by persons competent in both technical and conformity assessment aspects;
- Makes arrangements to protect the confidentiality of information provided by the parties involved in the scheme;
- Evaluates and manages the risks/liabilities arising from its activities. Evaluating risks does not imply risk assessments in accordance with ISO 31000;
- Has adequate arrangements (e.g. insurance or reserves) to cover liabilities arising from its activities. Arrangements should be appropriate for the range of activities and schemes undertaken and in the geographic regions in which the scheme operates;
- Has the financial stability and resources required for it to fulfil its role in the operation of the CS;
- Has rules and procedures to manage complaints;
- Documents and stores the books and records related to the operations and management of the scheme as well as certification activities for 10 years.

3.2.1.2 Documentation management

An approved CS possess, controls, and maintains a documentation and information management system (paragraph 62(1)(b)(v)), which includes the following elements:

- General management system for the CFR-LUB certification program:
    - Rules and operating procedures of the scheme
    - Governance and reporting requirements
    - Transparency program
    - Integrity program, including:
        - Monitoring of auditor's performance
        - Procedures to address auditors' deficiencies
    - Monitoring, maintenance, system review and improvement
- Documented contracts (e.g., between scheme owner and certification body, scheme owner and clients, certification body and clients):
    - The rights, responsibilities and liabilities of the various parties should be defined in contracts
- Control of documents and records
- Review of management system
- Storage of books and records for a minimum of 10 years, if available.

3.2.1.3 Auditors' competencies

The documentation of an approved CS describes in sufficient detail the specific competencies required for auditors and how it ensures that the CFR requirements related to auditors' competencies are met (paragraph 62(1)(b)(vii))(see 3.2.2.1 and 3.2.2.2).

3.2.1.4 CS group certification requirements (where applicable)

In the event that the CS permits group certification, the approved CS establishes, at a minimum, the following (paragraph 62(1)(i)):

- Group certification is only possible for homogenous groups (see 3.2.3.3);
- Process and conditions to join a group are clearly established.

3.2.1.5 Non-conformities with certification requirements

An approved CS has documented procedures for addressing when a feedstock producer is found non-compliant with the certification requirements (paragraph 62(1)(j)) (refer to 3.2.3.4). This includes:

- Procedures for withdrawing or suspending certificates and the circumstances under which this occurs;
- Procedures to ensure that any non-conformities that do not lead to immediate withdrawal or suspension of the certificate are corrected.

An approved CS makes these procedures available to feedstock producers.

3.2.1.6 Monitoring and system review

An approved CS has procedures and timelines in place for the review of its CFR-LUB certification program, including compliance of feedstock producers, certification bodies and accreditation bodies with the provisions of the program, to ensure its continuing integrity, adequacy, and effectiveness (paragraph 62(1)(d)).

The review of the approved CS occurs at planned intervals and after significant changes to the CFR-LUB requirements as specified by ECCC, as well as in response to complaints received, where necessary (paragraph 62(1)(e)).

An approved CS has a process in place to take stakeholders feedback into account when reviewing the operation of the scheme (paragraph 62(1)(f)).

The outcomes of the review are used to improve its assurance system, where indicated, and maintains records of any corrective actions taken.

An approved CS has a process for managing the implementation of other changes to the rules, procedures and management of the scheme.

3.2.1.7 Transparency

An approved CS ensures that the following information is made publicly available and maintained up-to-date (on a website) (paragraph 62(1)(g)):

- The CS documentation is available in the applicable languages of the countries and regions where it operates;
- The latest version of the CFR-LUB certification program requirements;

- The list of feedstock producers that are certified under its CFR-LUB certification program, including the start and expiry dates of each certificate, and those who no longer participate;
- The list of certification bodies that are permitted to conduct audits for the purpose of the CFR- LUB certification program, as well as any certification bodies that are no longer permitted to conduct audits within the program and those that are temporarily suspended;
- Publication of contact details for the CFR-LUB certification program (i.e., contact person, telephone number, email address and correspondence address);
- Contact information for the scheme owner (i.e., contact person, telephone number, email address and correspondence address).

Additionally, upon a written request from the Minister, an approved CS discloses the list of feedstock producers that have failed certification requirements and the reasons why (paragraph 62(1)(h)).

3.2.1.8 Reporting

An approved CS submits annually, by the anniversary of its approval, a report to ECCC that includes relevant information concerning the operation of the scheme (paragraphs 62(2)(c) and (d)). The content of the CS operations report is outlined in Appendix I and includes the following:

- General performance statistics;
- Operational statistics;
- Management system design and operations including:
    - an analysis of the scheme's requirements, against actual and industry best practice
    - an assessment of the availability of scheme's operations, requirements and procedures
    - Any improvements made to the scheme
- Suggestions for improvements to ECCC.

An approved CS informs ECCC within 60 days about any changes in its scope and/or procedures that are components or the basis of the decision for its approval by ECCC (paragraphs 62(2)(a) and (b)).

3.2.1.9 Risk management plan

An approved CS has a documented plan for identifying and addressing the risks to the integrity of its assurance system.

3.2.1.10 Complaints management

An approved CS has and maintains a documented complaints management system to respond to complaints received from clients, the public, and other stakeholders about its CFR-LUB certification program, which may include fraud or potential fraud (paragraph 62(1)(b)(iii)).

The complaints management system includes measures for:

- Investigating and responding to relevant complaints, including reporting relevant information to the accreditation body or certification body, as appropriate and in a timely manner;
- Reviewing the assurance system and taking corrective actions where necessary;

- Documenting all complaints received and actions taken for consideration in the system review;
- Responding to requests for information from ECCC.

The complaints management system includes measures that:

- Ensure that the persons who conducted any of the certification activities are not involved in the complaints-handling process;
- Ensure the confidentiality of the individual or organization filing a complaint and the subject of the complaint, when applicable;
- Ensure transparent and timely communication with all the parties involved throughout the complaints management process;
- Issue a formal notice of the outcome to the complainant.

3.2.1.11 Validity period of CS approval and re-approval requirements

The approval of a CS by ECCC for the purpose of the applicable Land Use and Biodiversity criteria of the CFR can be valid for a period of five years (paragraph 62(2)(e)). Every five years, the CS may re-apply for approval by ECCC.

An approved CS must notify ECCC within 60 days of changes in its scope and/or procedures that are components or the basis of the decision for its approval (paragraphs 62(2)(a) and (b)). ECCC will then assess those changes to establish whether the approved CS still meets the requirements of the CFR-LUB CAS and inform the approved CS about the outcome of that assessment.

3.2.1.12 Certificate and conditions of use

The validity period of certificates issued under an approved CS does not exceed five years.

An approved CS oversees the ownership, use, and control of certificates (paragraph 62(1)(l)). Additionally, the approved CS specifies the conditions under which the client may use the certificate (paragraph 62(1)(k)). This includes:

- Establishing publicity guidelines for certified feedstock producers; and
- Defining policies and procedures related to marketing, including the extent to which certification bodies and feedstock producers can refer to the scheme.

3.2.1.13 Transfer from CS to another

Feedstock producers may decide at any time to participate in a different CS. However, to prevent a feedstock producer that has failed an audit under one scheme from immediately applying for certification under another scheme, an approved CS has rules requiring the applicant to communicate their certification history.

An approved CS receiving an application from a feedstock producer requires the applicant to provide information about their participation in another CS and whether they failed an audit in the previous 5 years and the reasons why (section 74). The information contained in an application for certifications from feedstock producers includes:

- whether they or their legal predecessor are currently participating or have participated in another CS in the last five years;

- all relevant information in relation to a certification under another scheme, including the auditing reports and, where applicable, any decisions to suspend or revoke their certificates in the last five years;
- whether they withdrew from a CS before a surveillance audit.

The CS should exclude the applicant from its CFR-LUB certification program in the following cases:

- If they do not disclose the information specified above;
- If they failed an audit under another CS or withdrew their participation to another scheme, unless:
    - A period of time specified by the approved CS between the failed audit or withdrawal from the other CS has lapsed; or
    - The other CS ceased its certification activities, which prevented the feedstock producer for re-applying.

Where an approved CS accepts the justification of the feedstock producer and decides to assess their application, the scope of the initial audit should be adjusted to cover all relevant issues.

3.2.2 Requirements for certification bodies

3.2.2.1 Accreditation requirements

As part of the requirements of the approved CS, a certification body is a legal entity that has legal capacity to enter into agreements or contracts, assume obligations, incur and pay debts, sue and be sued, and to be held responsible for its actions. Certification bodies demonstrate that they are competent to perform certification in accordance with the approved CS requirements and must be accredited by an ECCC designated accreditation body to the following standards (sub-section 63(1)):

- ISO/IEC 17065; or
- ISO/IEC 17021-1 in the case of a certification body that assesses a forest management plan as required in section 52 of the CFR.

An ECCC designated accreditation body is an accreditation body that is a member of the International Accreditation Forum, or an equivalent body and that is compliant with ISO/IEC 17011 (sub-section 63(2)). The accreditation bodies inform the CS immediately after any accreditation of a relevant certification body is suspended, withdrawn, or terminated by the accreditation body.

A certification body can only perform certifications under a CFR-LUB certification program if its accreditation is valid (subsection 63(3)).

3.2.2.2 Certification team

Certification bodies appoint certification team members meeting the requirements set out in the standard ISO 19011 (sub-section 66(1)). A certification team includes:

- A team leader who is competent in the technical field relevant to the feedstock being certified (paragraph 66(1)(a));
- A specialist in forestry, agriculture and/or biodiversity, as appropriate, for the evaluation of the collected evidence and site visits conducted during the certification process (paragraphs 66(1)(b) and (c)):

    - A specialist in agriculture has professional credentials as an agricultural engineer or agrologist recognized by the relevant Canadian Professional Order or provincial authority in the case of certification body based in Canada, or by the national authority of the country where the services are provided in the case of a certification body based outside Canada;
    - A specialist in forestry has professional credentials as a professional forester or forestry engineer recognized by the relevant Canadian Professional Order or provincial authority in the case of certification body based in Canada, or by the national authority of the country where the services are provided in the case of a certification body based outside Canada;
    - A specialist in biodiversity holds a bachelor's degree in biology, natural sciences or environmental science granted by a Canadian university or an equivalent degree granted by a university outside Canada;
    - If the certification involves the assessment of a forestry management plan required in section 52 of the CFR, the plan must be assessed by the specialist in forestry;
    - The role of specialist is to assess the effects of feedstock cultivation, harvesting, and transportation on land use and biodiversity;
    - The specialist should demonstrate at least four years of relevant work experience within the last ten years;
    - Specialists cannot subcontract nor delegate their work.
- At least one individual who speaks the local language(s) fluently.

In accordance with ISO/IEC 17065 and ISO 19011, the certification team collectively demonstrates they have the necessary understanding and appropriate skills to conduct audits under the approved CS, including:

- Understanding of the requirements of the CS CFR-LUB certification program;
- Understanding of the most recent version of the *Methods for Verification and Certification;*
- Understanding of the Land Use and Biodiversity criteria of the CFR; and
- Understanding of standard data collection and handling procedures.

Individual(s) responsible for making certification decisions must be different from the individuals who are part of the audit team and have at least the same level of knowledge and competencies as required for the audit team leader as set out in the standard ISO 19011 (subsection 66(2)).

In addition to the impartiality requirements set out in sub-clause 5.2 of the standard ISO 17065, certification bodies must limit to a maximum of five-year cycle the assignation of the same auditors for the certification of a given client. A period of three years must elapse before resuming certification services for that same client (section 65).

3.2.2.3 Outsourcing

Certification bodies cannot outsource any of the certification activities for the purpose of certifying any feedstock that is the object of any regulatory application of report (section 64).

3.2.3 Audit process

3.2.3.1 Auditing standards

An approved CS requires certifications to be conducted by an accredited certification body in accordance with (sub-section 67(1)):

- ISO/IEC 17065; or
- ISO/IEC 17021-1 if the feedstock being certified is harvested and is the subject of a forest management plan as per section 52 of the CFR; and
- ISO 19011

In addition, certification bodies conduct certification activities in accordance with the most recent version of the *Methods for Verification and Certification.*

3.2.3.2 Audit requirements

Under the approved CS, certification bodies conduct a conformity assessment and evaluation of feedstock identified as eligible feedstock for the creation of compliance credits as per paragraph 46(1)(c) against the applicable Land Use and Biodiversity criteria set out in sections 48 to 52 of the CFR. For the purpose of ISO/IEC Standard 17065, any reference to a “product requirement” is to be interpreted as any applicable requirement set out in section 48 to 52 of the CFR (paragraph 76(2)(a)). For the purpose of ISO/IEC Standard 17021-1, any reference to “audit criteria” is to be interpreted as the requirements set out in section 52 of the CFR (paragraph 76(3)(a)).

In accordance with ISO/IEC 17065 or ISO/IEC 17021-1 if applicable, certification bodies conduct an initial audit to make a certification decision and issue a certificate. Additionally, annual surveillance audits are required to ensure that the feedstock certified continues to demonstrate fulfilment of the CS requirements and to ensure the ongoing validity of the certificate issued under the approved CS (Section 68).

In the planning of certification and audit activities, certification bodies may rely on a risk assessment which evaluates inherent and control risk as per the following table (see 2.8.2 for further details):

Table 19: Types of risks

Risk Type	Risk Factor	Increases Risk	Decreases Risk
Control Risk	Degree of centralization	Decentralization	Centralization
Control Risk	Effectiveness of data controls	Inconsistent control	Consistent, strong controls
Inherent Risk	Diversity of locations	High diversity	Low diversity
Inherent Risk	Number of locations	Few Locations	Many locations
Inherent Risk	Contribution of the locations	Even distribution	Uneven distribution

Audit activities may include site visits at the applicable location, which can be a farm, forest or any other place where the feedstock is harvested. It is the responsibility of the certification team to determine the risk of non-conformity at each site and the corresponding number of sites to visit required during the audit, in consideration of the risk assessment and a reasonable level of assurance. The site visits requirements are the following:

- Initial audits must be performed on-site (sub-section 69(1));
- For any subsequent audits following the first certification, auditors must visit sites that are of high risk of non-conformity ((sub-section 69(1)):
    - When the likely cause of non-conformity exists at the site; and
    - Remote-evidence gathering activities cannot sufficiently reduce the non-conformity detection risk to a reasonable level.
- Remote audits are allowed under the following conditions (sub-section 69(2):
    - It is a surveillance audit;
    - The remote evidence-gathering activities sufficiently reduce the non-conformity detection risk to a reasonable level; and
    - The risk of non-conformity is low.
- In the event that the risk of non-conformity is considered as medium by the certification team, the number of site visits may be determined by the following formula:
    - $v = 1.5 \sqrt{n}$
    - *v* being the number of locations requiring a site visit, and *n* being the number of sites that are part of the scope of the certification

In the context of a certification, the concept of reasonable level of assurance may apply to the extent of the certification activities in order to:

- determine, within a 95% confidence level, whether the feedstock conforms to the requirements; and
- determine whether the management system that produces the feedstock is designed, implemented and functioning appropriately to ensure continued conformance over the claimed certification period.

For further guidance, the auditor achieves these objectives by:

- understanding the management system sufficiently to identify risks of mismanagement that would result in non-conformities;
- identifying risks of non-conformities at the site and for the various aspects of the criteria (e.g., habitat, water, air, soil, flora, fauna, food, waste);
- using robust evidence gathering methods to meet a 95% confidence level that the feedstock conforms to the requirements. This implies that:
    - the use of interview evidence is limited (less than 5% reliance);
    - analytical tests are sufficiently precise enough to detect non-conformities within a 95% confidence level;
    - data sampling is conducted at a 95% confidence level; and
    - site visits are structured such that a 95% confidence level is achieved on the conformance of the feedstock to the criteria.

3.2.3.3 Group certification

Group certification of feedstock producers by accredited certification bodies operating under an approved CS is only possible for homogenous groups, and under the following conditions (paragraph 62(1)(i)):

- When the areas concerned are near each other and have similar characteristics (e.g. climatic conditions for agricultural production are similar);
- When the units have similar production systems and products;
- When the units have similar data management systems.

If the conditions for group certification are not fulfilled, feedstock producers are audited individually.

3.2.3.4 Management of non-conformities

Non-conformities identified during an audit are classified as critical, major and minor in accordance with the following:

- **Critical nonconformity:** The failure to comply with the approved CS requirements, such as fraud, irreversible non-conformity, or a violation that jeopardies the integrity of the approved CS is considered to be a critical non-conformity (section 71). Critical non-conformities include, but are not limited to, the following:
    - The applicable requirements set out in sections 48 to 52 or any other requirements of the approved CS are not met, and the situation cannot be resolved by corrective action;
    - For example, crops are harvested in excluded lands as specified in subsection 51(1) of the Regulations;
    - Deliberate misclassification of the eligibility of the feedstock as per paragraph 46(1)(c).
- **Major conformity:** The failure to comply with the approved CS requirements, where the non-conformity is potentially reversible, systematic or repetitive issues related to the conformance with the approved CS is considered to be a major non-conformity (section 72). Major non-conformities include, but are not limited to, the following:
    - The applicable requirements set out in sections 48 to 52 or any other requirements of the approved CS are not met, but the situation can be resolved by corrective action;
    - Gaps or errors in more than 5% of the evidence provided for the purpose of the certification;
    - The omission of a feedstock producer to disclose its participation in other certification schemes during the certification process;
    - Failure to provide relevant information to auditors required for the purpose of the certification.
- **Minor nonconformity:** A non-conformity that has a limited impact, constitutes an isolated or temporary lapse, is not systematic and does not result in a fundamental failure if not corrected, is considered to be a minor non-conformity (section 73).

Accredited certification bodies operating under an approved CS manage each non-conformity identified during the audit process based on the categorization described above as per the following requirements:

- **In the case of critical non-conformities:**

    - Identified during a first certification, a certificate cannot be issued to the feedstock producer applying for certification (sub-section 71(1));
    - Identified during surveillance or re-certification audits, or through a CS internal monitoring or complaints process, the feedstock producer's certificate is immediately revoked (sub-section 71(1));
    - Feedstock producers may re-apply for certification after the period specified by the approved CS (sub-section 71(2)).
- **In the case of major non-conformities:**
    - Identified during a first certification, a certificate cannot be issued to the feedstock producer applying for certification (sub-section 72(1));
    - Identified during surveillance or re-certification audits, or through a CS internal monitoring or complaints process, the feedstock producer's certificate is immediately suspended (sub-section 72(1)):
        - Feedstock producers must implement corrective action for any major non-conformities identified during the certification process within 90 days of being formally informed of the non-conformity (sub-section 72(2));
        - If the non-conformity is not resolved within the 90 days period, the feedstock producer's certificate is revoked (sub-section 72(2)).
- **In the case of minor non-conformities**, certifications schemes may define the time period for their resolution, not exceeding 12 months following a formal notification of the non-conformity, or the date of next surveillance or re-certification audit (section 73).

3.2.3.5 Certificate issuance

An accredited certification body makes certification decisions in accordance with the standard ISO 17065. The certification body must issue a certificate to a client that unambiguously identifies the feedstock to which it applies, only after a positive certification decision is reached confirming that the applicable requirements of the CFR-LUB certification program have been satisfied (sub-section 70(1)). Appendix J describes the requirements on the content of the Certificate and the corresponding Certification Report.

3.2.3.6 Documentation and record keeping

Certification bodies must document and store the books and records in relation to each certification to which they were assigned for at least ten years (sub-section 166(2)), including:

- Documenting plausible evidence for each certification activity;
- Establishing that the information used as evidence was in conformance with the requirements of the CFR;
- Establishing that the certification body's management system and processes were effectively functioning during the certification period and were complied with;
- Documenting the certification body's team who performed the activities and the scope of services provided related to each engagement; and
- Documenting the impartiality of the audit team.

Referenced ISO standards

The most recent version of the following ISO standards referred to in this document apply:

- ISO/IEC 17011 Conformity assessment — Requirements for accreditation bodies accrediting conformity assessment bodies
- ISO/IEC 17029 Conformity assessment — General principles and requirements for validation and verification bodies
- ISO 14065 General principles and requirements for bodies validating and verifying environmental information
- ISO 14066 Greenhouse gases — Competence requirements for greenhouse gas validation teams and verification teams
- ISO 14040 Environmental management — Life cycle assessment — Principles and framework
- ISO 14044 Environmental management — Life cycle assessment — Requirements and guidelines
- ISO/TS 14071 Environmental management — Life cycle assessment — Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006
- ISO 14064-3:2019 Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements
- ISO/IEC 17065 Conformity assessment — Requirements for bodies certifying products, processes and services
- ISO/IEC 17021-1 Conformity assessment— Requirements for bodies providing audit and certification of management systems — Part 1: Requirements
- ISO 19011 Guidelines for auditing management systems
- ISO 14617-6 Graphical symbols for diagrams — Part 6 Measurement and control functions
- ISO 31000, Risk management – Guidelines

When new versions of the above standards are introduced, there is a transition period identified by the accreditation body. The CFR recognizes both the new and previous version of the standard during the transition period.

APPENDICES

Appendix A: Verification report

The verification report comprises the verification statement and additional reporting. The intent of the verification statement is to present the opinion in a concise manner. Additional details can be outlined in the additional reporting section of the verification report. The following is the minimum content of the verification statement as set in Schedule 20 of the *Clean Fuel Regulations*. Note that the verification statement section of the verification report is usually one-three pages in length.

Note: If multiple verification bodies have been used to address the lifecycle of a low-carbon fuel, the entire lifecycle must be addressed by the prime verification body's report.

Verification statement

The verification statement must appear at the beginning of the verification report and contain the following:

- the title of the verification report
- an addressee:
    - the address of the office of the Department of the Environment to which the verification report is sent, as well as the name and title of the recipient
- reference to the entity, facility (if applicable) and the application or report being verified
- statement that the application or report has been verified
- specify the date of, or period covered by, the application or report
- a summary of the application or report
- the verification opinion which includes:
    - reference to the criteria (i.e., *Clean Fuel Regulations*, and/or IFRS or ASPE, and/or ISO 14044, if applicable)
    - the conclusions with respect to the Application or Report as to the presentation and compliance to the criteria
        - If the opinion is **unqualified**, the conclusions should state: "In our opinion, the accompanying application or report presents fairly, in all material respects, and are prepared in accordance with the *Clean Fuel Regulations, ISO 14044,* and/or International Financial Reporting Standards (IFRS) or Accounting Standard for Private Enterprises (ASPE)", as applicable.
        - If the opinion is **qualified**
            - a description of the departures and limitations and their possible effects on the application or report, as well as any adjustments that could be made to the report prior to the opinion:
                - In circumstances relating to the nature or timing of the verification, the verifier must disclose how these circumstances will be addressed by the next verification
                - In circumstances relating to limitations on the evidence, the verifier must disclose what the limitation is and whether the limitation is likely to continue in consecutive verifications.

- a statement that:
    - the verification was done in accordance with ISO 14064-3:2019 and/or Canadian auditing standards (CAS)
    - the verifier is responsible for the preparation of the verification report based on the evidence collected
    - the verifier is independent/impartial of the entity in accordance with the CFR
    - the verifier believes that the verification evidence the verifier has obtained is sufficient and appropriate to provide a basis for the verifier's opinion

Key verification matters

Verification personnel

- the names of the verification team members (including subcontractors and specialists), their role, and their employment type
- the name of the independent reviewer and employment type

Verification process

- material line items
- areas of high misreporting risk
- where reliance on controls is placed
- site selection strategy; stratums used in site sampling (i.e., stratum designs), if any
- where and when the site-visit(s) has occurred, if any, and
    - for production facilities, the date of the previous site visit to the facility
    - any NPRI numbers
- justification for not conducting site visits, if applicable
- whether CAATTs, convenience sampling, and/or certificates are used and a description of their application
- if an outsourced verifier is used to conduct the verification:
    - the name of the outsourced verifier, their verification scope, and the percentage outsourced and/or reliance
    - documentation of any gaps in the data trail for the lifecycle, if applicable

Verification disclosures

- any disclosures that are required under the CFR, such as:
    - any disclosures that the verifier deems is pertinent information to ECCC understanding and interpreting the application or report
    - if a five-years historical analysis could not be performed and the rationale for it
    - any delays in calibration
    - any qualitative nonmaterial misstatements that, in the verifier's judgment, are likely to become material in the near future[33]

[33] Near future can be interpreted to designate events that are likely to occur from the date of reporting to the next five years.

- any concerns over controls that will impair the ability to conform to the CFR requirements in the future
- any concerns over the monitoring plan that, in the verifier's judgement, are likely to impair reporting into the near future[30]
- uncertainties that are near material levels or, in the verifier's judgment, are likely to become material in the near future
- percent absolute errors that equals or exceeds 5% but are less than 25% of the corrected reported values along with the error(s) and/or omission(s), the cause of the error(s) and/or omission(s), and the impact of future reporting, if any (section 142)

Responsibilities for the application or report

- a statement about who was responsible for the preparation and fair presentation of the submitted application or report

Verifier responsibilities

- a statement that the objectives of the verifier are:
  - to obtain reasonable assurance about whether the application or report are free from material misstatement, whether due to fraud or error
  - to issue a verification report that includes the verifier's opinion
- a statement that:
  - reasonable assurance is a high level of assurance, but is not a guarantee that a verification will always detect a material misstatement when it exists
  - misstatements can arise from fraud or error and are considered material if they exceed 5% of reported values or in the case of low-CI values, misstatements are considered material if the misstatement exceeds 5 g CO_2e/MJ for absolute CI values over 100; 5% of the CI value for absolute CI values between 20 and 100 g CO_2e/MJ, and 1 g CO_2e/MJ for absolute CI values below 20 g CO_2e/MJ
  - as part of the verification, the verifier exercises professional judgement and maintains professional skepticism throughout the verification
- describe the verification process, including:
  - the risks of material misstatement, including their classification as to inherent or control risk, to the application or report, whether due to fraud or error
  - the verifiers understanding of controls prior to evidence collection and used for designing evidence gathering activities
  - the performance materiality that was used
  - key evidence gathering activities and which risks of material misstatement(s) they related to
  - which evidence (i.e., sufficient and appropriate) that provided the basis for the opinion,
  - how the verifier established that the presentation, structure, and content of the application or report presents fairly and is prepared in accordance with the CFR criteria, including disclosures
- if an outsourced verifier is used to conduct the verification:
  - the prime verifier's responsibility is to obtain sufficient and appropriate evidence regarding the verification, including the outsourced components
  - the prime verifier is responsible for the direction, supervision. and performance of the outsourced verifier

    - o the prime verifier remains solely responsible for the verification opinion

- the verifier's signature
- the verifier's location
- the date of the opinion

Additional reporting (optional)

Additional reporting material relates to information that is not mandatory. However, further information around the verification process facilitates the processing and acceptance of the applications or reports. Additional reporting revolves around the verification process, but it is not considered mandatory for ECCC to understand and interpret the application or report. Note that the volume of the content is not important, rather the completeness and relevance of information is preferred and that some items below may not apply:

- five-year historical analysis of operational data
- map identifying location of site(s) visited
- risk ranking scale used
- qualitative risks identified at the start of the verification
- risks identified for the whole application or report, categorization (inherent, control), characterization, risk, and associated evidence gathering activities
- risks identified for line-items in the application or report, categorization (inherent, control), characterization, risk, and associated evidence gathering activities
- risks identified along the lifecycle
- results of high-level analytical testing
- results of the contribution analysis
- description of the data management system
- description of data flow and controls, including sources of data
- description of quantification procedures, including any estimation methodologies
- evidence that supports LUB claims
- risk assessment of certificates and other assurance statements and their use in the verification
- description of the verification controls used to manage and check subcontractors and outsourced verification bodies
- description of specialists used on the verification, their role and the evidence-gathering activities they were responsible for
- the role and use of IT in the verification
- estimates of time for outsourced verification bodies
- estimates of time used for reliance on other assurance
- for multi-location verification, the risks associated with stratums, and the percent coverage
- results of the uncertainty analysis
- summary of unadjusted differences
- verifier's observations, including qualitative risks identified during the verification
- independent reviewer's observations

Appendix B: Standard[34] reporting timelines for the submission of verification reports

30 April

Verification report of:

- Annual credit creation report for compliance categories 1 & 3,
- Carbon-intensity pathway report, and
- Material balance report for the preceding compliance year

30 June

Verification report of:

- Credit adjustment report for each compliance categories 2 & 3 in relation to low-CI fuels for the preceding compliance year

31 July

Verification report of:

- Compliance credit revenue report, and
- Compliance report for the preceding compliance year

15 December

Verification report of:

- Complimentary compliance report for the preceding compliance year

1 January to 31 December

Verification report of:

- CI applications to be submitted with the corresponding CI application

[34] "Standard" means each calendar year, after December 31, 2023.

Appendix C: Reporting timelines for first submission of verification reports

30 June 2023

Verification report of:

- Annual credit creation report for compliance categories 1 & 3 for compliance year 2022
- Quarterly credit creation reports for compliance categories 2 & 3 in relation to low-CI fuels for each 2022 applicable quarter

1 January 2024

LUB criteria coming into force

30 April 2024

Verification report of:

- Annual credit creation report for compliance categories 1 & 3 for compliance year 2023

30 June 2024

Start of verification of CI Applications, including LCA review

Verification report of:

- Credit adjustment report for compliance categories 2 & 3 in relation to low-CI fuels for the compliance year 2023

31 July 2024

Verification report of:

- Compliance credit revenue report, and
- Compliance report for compliance year 2023

15 December 2024

Verification report of:

- Complementary compliance report for compliance year 2023

30 April 2025

- Optional carbon-intensity pathway report for those who have a new approved CI
- Material balance report for compliance year 2024

30 April 2026

Verification report of:

- Carbon intensity pathway report for compliance year 2025

Appendix D: Example of use of quantitative materiality thresholds

The regulations require that errors be aggregated to determine the total effect on the reported information. Summing the errors provides the effect of the errors on the final values (relative error). Summing the errors without regard to their sign provides the verifier with an indication of the effectiveness of the data controls and the risks of material misstatement (absolute errors).

Assessment of the materiality of quantitative discrepancies should be done on relative error; however, if the absolute errors yield discrepancies that exceed the materiality requirements, the errors must be identified, detailed, and quantified in the verification report.

When calculating the percent error, the numerator should be the sum of the quantitative discrepancies and reference denominator should be the **corrected** value.

For example, for the carbon intensity of a fuel:

Sources	**Reported Values**	**Evidence**	**Error with sign**	**Error without sign**
Item 1	20.0 g CO_2e/MJ	20.1 g CO_2e/MJ	+0.1 g CO_2e/MJ	0.1 g CO_2e/MJ
Item 2	10.0 g CO_2e/MJ	9.7 g CO_2e/MJ	-0.3 g CO_2e/MJ	0.3 g CO_2e/MJ
Item 3	5.0 g CO_2e/MJ	4.8 g CO_2e/MJ	-0.2 g CO_2e/MJ	0.2 g CO_2e/MJ
Item 4	5.0 g CO_2e/MJ	4.8 g CO_2e/MJ	-0.2 g CO_2e/MJ	0.2 g CO_2e/MJ
Total	**40.0 g CO_2e/MJ**	**39.4 g CO_2e/MJ**	**-0.6 g CO_2e/MJ**	**0.8 g CO_2e/MJ**
Value	**Reported Value**	**Corrected Value**	**Relative Error**	**Absolute Error**

Relative Error = $\sum errors, omissions, and\ misreporting$ = [0.1+-0.3+-0.2+-0.2] = -0.6 g CO2e/MJ

Corrected Value = Reported Value + Relative Error = 40.0 – 0.6 = 39.4 g CO_2e/MJ

Percent Relative Error = $\frac{Relative\ Error}{Absolute\ Corrected\ Value} \times 100 = \frac{[0.1+ -0.3+ -0.2+ -0.2]}{39.4} \times 100 = \frac{-0.6}{39.4} \times 100 = 0.015 \times 100 = 1.5\%$

For information purposes, the Percent Absolute Error.

Absolute Error = $\sum|errors, omissions, and\ misreporting| = |+0.1| + |-0.3| + |-0.2| + |-0.2| = 0.8$

Percent Absolute Error = $\frac{Absolute\ Error}{Absolute\ Corrected\ Value} \times 100 = \frac{[|0.1|+ |-0.3|+ |-0.2|+ |-0.2|]}{39.4} \times 100 = \frac{0.8}{39.4} \times 100 = 0.02 \times 100 = 2\%$

Text description of equations: Relative error = sum of errors, omissions, and misreporting. Corrected Value = Reported Value + Relative Error. Percent relative error = Reported Value + Relative Error / absolute corrected value * 100. Absolute error = sum of the absolute values of errors, omissions, and misreporting. Percent absolute error = absolute error / absolute corrected value * 100.

Appendix E: Uncertainty calculations

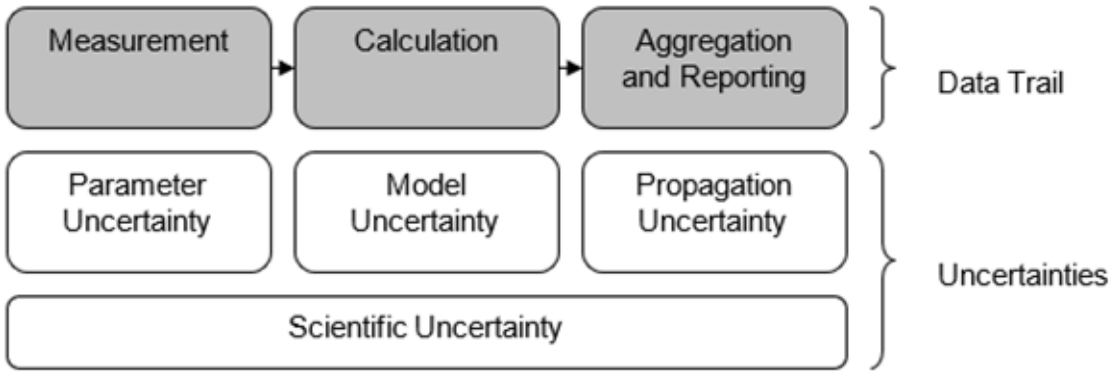
The LCA Fuel Modelling Tool will provide uncertainties based on Monte Carlo techniques for the verifier to assess.

To calculate uncertainties that reside outside the LCA Fuel Modelling Tool, the following simplified techniques should be used to aggregate uncertainties to the final value.

There are four main categories of uncertainties:

- Parameter
- Model
- Propagation
- Scientific

These four categories of uncertainties can be linked to the data trail.



Text description of Figure: Measurement, calculation, and aggregation and reporting are parts of the data trail. Parameter uncertainty can be linked to measurement, model uncertainty can be linked to calculation, and propagation uncertainty can be linked to aggregation and reporting. Scientific uncertainty can be linked to all parts of the data trail.

3.2.3.7 Parameter uncertainty

Parameter uncertainty is the uncertainty associated with the input (activity level) data. Input data is typically measured and can include fuel consumption, number of valve joints, electricity consumed, and temperatures.

3.2.3.8 Measurements

In the situation where the input data is measured, there are a variety of mechanisms that can be used to measure the phenomena, each with its own lower detection limits, resolution, and response rates. The characteristics of the mechanism determine, in part, the uncertainty in the parameter. In many cases, this uncertainty can be quantified and is usually published in the manufacture's specifications for the measurement device. It is important to understand that these specifications pertain to random errors and assume a normal distribution. There are situations that introduce additional uncertainty into the measurement device that are more related to operations than to the mechanism. This includes aspects such as exposure to vibration or extreme temperatures, phenomena conditions outside of the

mechanism's capability (e.g., shut down conditions, pulsatile flow, reverse flow). These uncertainties are difficult to quantify but can be seen in the measurement data if the influence is significant. There are also situations where a systematic bias is introduced into the measurement. This commonly occurs through a calibration error, setup error, or an install of inappropriate mechanism given the typical operating conditions (e.g., wrong sized Venturi flowmeter).

Unless there is evidence to suggest otherwise, the verifier will use the manufacturer's uncertainty as the parameter error.

3.2.3.9 Model uncertainty

A model is a representation of a real physical system. As with any model, there are often simplifications, assumptions, estimates, and limitations associated with the model. Most frequently, the model is used to calculate the GHG emissions as emissions are rarely directly measured and surrogate parameters are measured and the emissions calculated. Thus, emission factors (and any quantification methodology or protocol) are models of physical behaviour. There are four key areas where uncertainty can arise in the model:

- Model structure: Model structure uncertainties arise when there are multiple styles of models to choose from (e.g., mass balance, energy balance, estimations from samples, etc.);
- Model detail: Model detail uncertainties arise when the model oversimplifies a complex system (e.g., biological carbon sequestration equations are typically oversimplified);
- Extrapolation: Extrapolation uncertainty arises when the model is applied outside its normal application (e.g., many emission factors assume close to ideal operating conditions – 100% loading);
- Model boundaries: Model boundary uncertainty occurs when a model is applied in a different situation (e.g., Canadian biological carbon sequestration quantification protocol in Brazil).

The combined model uncertainty varies on the physical phenomena being modeled.

3.2.3.10 Scientific uncertainty

Scientific uncertainty results from our incomplete understanding of the science surrounding the phenomena. This uncertainty is quite common in complex scientific areas such as climatology. Of primary concern is the Global Warming Potential (GWP) used to convert greenhouse gases into CO_2e (carbon dioxide equivalents). General agreement on the GWPs exists, and thus, this scientific uncertainty does not need to be accounted for in the overall estimate of uncertainty.

3.2.3.11 Propagation uncertainty

Propagation uncertainty does not introduce new uncertainty but appropriately allocates the disaggregate uncertainties into one final assertion. There are two primary ways of propagating uncertainties: simplified and Monte Carlo (stochastic). Simplified assumes that the variables are uncorrelated, and that the standard deviation is less than 30% about the mean. Simplified uses three different rules depending on the mathematical function.

Types of Uncertainties:

Sums and Differences

$$q = x + \cdots + z$$
$$\delta q = \sqrt{(\delta x)^2 + \cdots + (\delta z)^2}$$

Text description of formula: if q = x + …+ z, then uncertainty: ∂q = [(∂x)^2 + … + (∂z)^2]^(1/2)

Multiply and Divide

$$q = \frac{x \times \cdots \times z}{u \times \cdots \times w}$$
$$\frac{\delta q}{q} = \sqrt{\left(\frac{\delta x}{x}\right)^2 + \cdots + \left(\frac{\delta z}{z}\right)^2 + \cdots + \left(\frac{\delta u}{u}\right)^2 + \cdots + \left(\frac{\delta w}{w}\right)^2}$$

Text description of formula: If q = x*…*z, then uncertainty: ∂q/q = [(∂x/x)^2 + … + (∂z/z)^2 + … + (∂u/u)^2 + … + (∂w/w)^2]^(1/2)

Power

$$q = x^n$$
$$\frac{\delta q}{|q|} = |n| \frac{\delta x}{x}$$

Text description of formula: If q = x^n, then uncertainty: ∂q/│q│ = │n│∂x/x

Appendix F: Scenarios for verification – Land use and biodiversity

The following are the two possible scenarios for the verification process in the event that eligible feedstock is used to produce a low-carbon-intensity fuel for the purpose of creating compliance credits. To be determined as eligible, the feedstock must comply with the Land Use and Biodiversity (LUB) criteria set out in the *Clean Fuel Regulations* (CFR).

Scenario 1

Fuel producers use non-certified feedstock to produce low-carbon-intensity fuel for the purpose of creating compliance credits.

Feedstock Producers:

- Produce feedstock in accordance with the CFR LUB criteria;
- Provide **Declarations** to the fuel producer or feedstock purchaser, attesting compliance with the CFR LUB criteria.

Fuel Producers:

- Use non-certified feedstock to produce low-carbon-intensity fuels;
- Keep **Declarations** in their records;
- Prepare and submit the applicable regulatory reports and create compliance credits.

Accredited third-party verification body:

- Verifies the fuel producer's required regulatory reports, and uses the **Declarations** to establish the chain of reporting for the feedstock used to produce low-CI fuel and confirm whether the feedstock meets the CF LUB criteria.

Scenario 2

Fuel producers use certified feedstock to produce low-carbon-intensity fuel for the purpose of creating compliance credits.

Producers of certified feedstock:

- Produces feedstock in accordance with the CFR LUB criteria and obtains a **Certificate** by an accredited third-party certification body under a CFR approved certification scheme;
- Provides **Declarations** and the **copy of the Certificate** to the fuel producer or feedstock purchaser.

Fuel Producers:

- Uses feedstock that was certified under a CFR approved certification scheme to produce low-carbon-intensity fuels;
- Keeps in records **Declarations** and the **copy of the Certificate;**
- Prepares and submits the applicable regulatory reports and create compliance credits.

Accredited third-party verification body:

- Verifies the fuel producer's required regulatory reports and uses the **copy of the Certificates** provided with the **Declarations** as confirmation of compliance with the CFR LUB criteria.

Appendix G: Data sample design

The following is a description of various data sampling methods. These methods may be combined with one another.

C.1 Non-Probabilistic data sampling

C.1.1 Convenience sampling

Samples are selected in an aimless, arbitrary manner with little or no planning involved. Convenience (i.e. haphazard) sampling assumes that the population is homogeneous: if the population units are all alike, then any unit may be chosen for the sample. An example of convenience sampling is selecting the last three months of invoices, which were at the top of the file folder. Unfortunately, unless the population is truly homogeneous, selection is subject to the biases of the verifier and whatever information happened to be available at the time of sampling.

C.1.2 Judgement sampling

With this method, sampling is done based on previous ideas of population composition and behaviour. The verifier with knowledge of the population decides which units in the population should be sampled. In other words, the verifier purposely selects what is considered to be a representative sample. For example, the verifier chooses the months of February, May, August, and November relative to natural gas invoices for a subject that has seasonal variations.

C.1.3 Strategic sampling

The sample is specifically selected because higher risks have been identified for a specific area (e.g., high risk of control failure, etc.). This technique is typically used when high-level analytics reveal a high or medium risk at a particular period and further details are required. Strategic sampling is commonly used in verification to confirm the detailed data in high-risk areas and verification documentation must connect the risk identified to the sample.

C.2 Probabilistic data sampling

C.2.1 Random sampling

Random sampling is a selection method that ensures that every possible sample of size n has an equal chance of being selected. As a consequence, each unit in the sample has the same inclusion probability.

Sampling may be done with or without replacement. Sampling with replacement allows for a unit to be selected more than once. Sampling without replacement means that once a unit has been selected, it cannot be selected again. In verification, most sampling is done without replacement.

Random sampling has a number of advantages over other probability sampling techniques, including: it is simple, the only information that is required is a complete list of the population, and standard formulas exist to determine the sample size, population estimates and variance estimates.

Verifiers tend use random sampling when there is no apparent differentiating factors (e.g., risk or magnitude). Random sampling is rarely used in verification.

C.2.2 Proportional sampling

Proportional sampling uses additional data, such as the contribution analysis, to vary the sampling. For example, assume that EV sites have the following pattern of energy consumption:

EV Station Location	Residential/Public	Charging Type	#of sites	Amount (kWh)	% Contribution
British Columbia	Residential	L1	1,264	1,294,047	16.97%
British Columbia	Residential	L2	37	35,058	0.46%
British Columbia	Residential	L3	0	0	0.00%
British Columbia	Public	L1	3	24,068	0.32%
British Columbia	Public	L2	3,486	3,987,306	52.29%
British Columbia	Public	L3	92	250,302	3.28%
Alberta	Residential	L1	8,753	243,510	3.19%
Alberta	Residential	L2	935	14,0645	1.84%
Alberta	Residential	L3	0	0	0.00%
Alberta	Public	L1	65	22,473	0.29%
Alberta	Public	L2	2,953	1,503,523	19.72%
Alberta	Public	L3	386	124,250	1.63%
Total	-	-	17,974	7,625,182	100.00%

Instead of providing an equal opportunity for all charging information to be sampled based on site (e.g., random sampling would have each site having the same probability of 0.000056 of being selected), the site probability of selection would vary based on the contribution (e.g., BC - Residential - L1 sites would have a probability of 0.00013 vs. AB – Public – L3 which would have the probability of 0.000042).

EV Station Location	Residential/ Public	Charging Type	#of Sites	Selection Probability (Sites)	Amount (kWh)	% Contribution	Selection Probability (Contribution)
British Columbia	Residential	L1	1,264	0.07	1,294,047	16.97%	0.17
British Columbia	Residential	L2	37	0	35,058	0.46%	0
British Columbia	Residential	L3	0	0	0	0.00%	0
British Columbia	Public	L1	3	0	24,068	0.32%	0
British Columbia	Public	L2	3,486	0.19	3,987,306	52.29%	0.52
British Columbia	Public	L3	92	0	250,302	3.28%	0.03
Alberta	Residential	L1	8,753	0.48	243,510	3.19%	0.03
Alberta	Residential	L2	935	0.05	14,0645	1.84%	0.02
Alberta	Residential	L3	0	0	0	0.00%	0
Alberta	Public	L1	65	0	22,473	0.29%	0
Alberta	Public	L2	2,953	0.16	1,503,523	19.72%	0.20
Alberta	Public	L3	386	0.02	124,250	1.63%	0.02
Total	-	-	17,974	-	7,625,182	100.00%	-

C.2.3 Stratified sampling

With stratified sampling, the population is divided into homogeneous, mutually exclusive groups called strata, and then samples are selected from each stratum. There are three main reasons for stratification: 1) to make the sampling strategy more efficient; 2) to ensure adequate sample sizes for specific domains of interest (e.g., emissions, product, or fuel type); and 3) to protect against drawing a 'bad' sample. Stratified sampling can be combined with other sampling techniques but random is the most common in verification.

If each stratum is homogeneous, (e.g., the measurements or risk varies little from one unit to another), a precise estimate of any stratum mean can be obtained from a small sample in that stratum. In verification, a homogeneous strata usually constitutes a line-item that has the same risk of misreporting (i.e. inherent and control risks).

Stratification is particularly important in the case of skewed populations (i.e., when the distribution of values of a variable is not symmetric, but leans to the right or the left). For example, land areas for feedstock often have highly skewed populations, a few large establishments and many small locations. In such cases, a large establishment can exert a significant influence on estimates – if they happen to be selected in the sample, they can greatly increase the estimate, and if they are not selected, the estimate will be much lower. In other words, the large establishment can increase the sampling variability; therefore, such large establishments should be placed in a stratum by themselves to ensure that they do not represent other small locations.

Stratification is often used for operational or administrative convenience because it can enable the verifier to distribute work among its personnel or other outsourced verifiers. For example, if data collection is conducted along the LCA which crosses geographical boundaries, then stratification by location may be appropriate, in which case the outsourced verifier can be given their portion of the sample which occurs at a different location.

Stratified sampling usually connects to the risk of misreporting.

Appendix H: Examples of verification statements

G.1 Unqualified opinions

An unqualified opinion can be issued when there are not material misstatements and the report has been prepared in accordance with the regulations. An unqualified opinion is the most common conclusion and implies that the verifier is unconcerned about the current application/report and the ability of the reporting entity to report in the near[35] future.

Example of an Unqualified Verifier's Report:

Independent verifier's report

To Environment and Climate Change Canada
351 Saint Joseph Boulevard, PVM 21st floor, Gatineau, Quebec, J8Y 3Z5

Opinion
We have verified the credit creation report for ABC Company's (the Company) Blackfalds facility for the compliance period Jan 1, 202X to Dec 31, 202X. The report asserts the following:

Compliance Credits (#)	Approved CI (g CO_2e/MJ)	Reference CI (g CO_2e/MJ)	Feedstock Type	Fuel Type	Volume of Feedstock (kg)	Volume of Fuel (m^3)
1,406,500,000	12.5	90.7 (2023)	Wheat	Ethanol	2,135,300	768

In our opinion, the credit creation report present fairly, in all material respects, and are prepared in accordance with the *Clean Fuel Regulations.*

Basis of opinion
We conducted our verification in accordance with ISO 14064-3:2019. We are responsible for the preparation of the verification report based on the evidence collected. We are independent of the Company in accordance with the requirements of the *Clean Fuel Regulations*. We believe that the verification evidence obtained is sufficient and appropriate to provide a basis for our opinion.

[35] Near is defined as the next two reporting cycles.

Key verification matters

Verification personnel

Name	Role	Relation
Morgan Usman	Team leader	Employee
Chris Zafar	Specialist - agriculture, forestry, land use and biodiversity	Subcontractor
Max Quinn	Team member	Employee
Lee Xiang	Independent reviewer	Employee

Verification process

Material line-items identified in the report are:

- number of compliance credits:
- volume of ethanol produced; and
- quantity and quality of eligible feedstock.

High misreporting risk

Type	Item	Risk Type
Inaccuracy	Feedstock from non-certified regions	Control risk
Non-conformance	LUB and/or sustainability criteria	Inherent risk
Anomaly detected in month of Feb	Bioethanol production	High-level analytics

Site sampling and visits

We sampled those sites that did not have a certificate and the production facility.

Site	Date	Location
Jincheng (Production Facility)	Mar 12, 202X, which was previously visited on Mar 24, 202X)	34.624, 112.114
Dakui farm site	Mar 6, 202X	34.486, 113.746
Donghua farm site	Mar 7. 202X	34.381, 113.421
Fancum farm site	Mar 8, 202X	34.731, 113.579

Verification procedures

We used certificates as evidence of compliance with the LUB and sustainability CFR criteria for seven out of the ten farm sites, which encompasses 20 of the 440 hectares used to produce the feedstock.

Disclosures
None

Responsibilities for the application or report

The Company is responsible for the preparation and fair presentation of the credit creation report in accordance with the *Clean Fuel Regulations.*

Verifier responsibilities

Our objectives are to obtain reasonable assurance about whether the credit creation report is free from material misstatement, whether due to fraud or error and to issue a verification report that includes the verifier's opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that a verification will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if they exceed 5% of reported values.

As part of the verification, we exercise professional judgement and maintain professional skepticism throughout the verification. We also identify and assess the risks of material misstatement to the application or report, whether due to fraud or error; understand the Company's controls for the purposes of designing evidence gathering procedures but not for the purposes of expressing an opinion on the effectiveness of those controls; design and perform evidence gathering activities responsive to those risks; obtain sufficient and appropriate evidence to provide a basis for the opinion, and evaluate whether the presentation, structure, and content of the credit creation report presents fairly and is prepared in accordance with the *Clean Fuel Regulations*, including disclosures.

XYZ signature

London, ON

April 26, 202X

Additional Information

Additional Disclosures

No disclosures

G.2 Qualified opinions

Qualified opinions are given when there is not a material misstatement in the report or application but there is the potential for misstatement in the future or a lack of evidence beyond the control of the reporter. A description of the departure and limitation and if any, adjustments that could be made in the report/application should appear in the verification report.

Example of a Qualified Verifier's Report:

Independent cerifier's report

To Environment and Climate Change Canada
351 Saint Joseph Boulevard, PVM 21st floor, Gatineau, Quebec, J8Y 3Z5

Opinion
We have verified the credit creation report for ABC Company (the Company) Blackfalds facility for the compliance period Jan 1, 202X to Dec 31, 202X. The report asserts the following:

Compliance Credits (#)	Approved CI (g CO_2e/MJ)	Reference CI (g CO_2e/MJ)	Feedstock Type	Fuel Type	Volume of Feedstock (kg)	Volume of Fuel (m^3)
1,406,500,000	12.5	90.7 (2023)	Wheat	Ethanol	2,135,300	768

In our opinion, except for the effects described in the Basis of Qualified Opinion section of our report, the credit creation report present fairly, in all material respects, and are prepared in accordance with the *Clean Fuel Regulations.*

Basis of qualified opinion
Our site visits to the farms were conducted in March 202X, which due to the season and snow coverage, we were unable to confirm whether ragweed (Ambrosia spp.), common to the area, had invaded the crop. Certified feedstock is unaffected by this limitation as their site visits occurred in summer. This limitation affects 4.5% of the feedstock and is not considered material. The next verification's site visits is scheduled for September, a time in the crop cycle and season when ragweed should be detectable.

We conducted our verification in accordance with ISO 14064-3:2019. We are responsible for the preparation of the verification report based on the evidence collected. We are independent of the Company in accordance with the requirements of the *Clean Fuel Regulations*. We believe that the verification evidence obtained is sufficient and appropriate to provide a basis for our opinion.

Key verification matters

Verification personnel

Name	Role	Relation
Morgan Usman	Team leader	Employee
Chris Zafar	Specialist - agriculture, forestry, land use and biodiversity	Subcontractor
Max Quinn	Team member	Employee
Lee Xiang	Independent reviewer	Employee

Verification process

Material line-items identified in the report are

- number of compliance credits,
- volume of ethanol produced, and
- quantity and quality of eligible feedstock.

High misreporting risk

Type	Item	Risk Type
Inaccuracy	Feedstock from non-certified regions	Control risk
Non-conformance	LUB and/or sustainability criteria	Inherent risk
Anomaly detected in month of Feb	Bioethanol production	High-level analytics

Site sampling and visits

We sampled those sites that did not have a certificate and the production facility.

Site	Date	Location
Jincheng (Production Facility)	Mar 12, 202X, which was previously visited on Mar 24, 202X)	34.624, 112.114
Dakui farm site	Mar 6, 202X	34.486, 113.746
Donghua farm site	Mar 7. 202X	34.381, 113.421
Fancum farm site	Mar 8, 202X	34.731, 113.579

Verification procedures

We used certificates as evidence of compliance with the LUB and sustainability CFR criteria for seven out of the ten farm sites, which encompasses 20 of the 440 hectares used to produce the feedstock.

Disclosures

None

Responsibilities for the application or report

The Company is responsible for the preparation and fair presentation of the credit creation report in accordance with the *Clean Fuel Regulations.*

Verifier responsibilities

Our objectives are to obtain reasonable assurance about whether the credit creation report is free from material misstatement, whether due to fraud or error and to issue a verification report that includes the verifier's opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that a verification will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if they exceed 5% of reported values.

As part of the verification, we exercise professional judgement and maintain professional skepticism throughout the verification. We also identify and assess the risks of material misstatement to the application or report, whether due to fraud or error; understand the Company's controls for the purposes of designing evidence gathering procedures but not for the purposes of expressing an opinion on the effectiveness of those controls; design and perform evidence gathering activities responsive to those risks; obtain sufficient and appropriate evidence to provide a basis for the opinion, and evaluate whether the presentation, structure, and content of the credit creation report presents fairly and is prepared in accordance with the *Clean Fuel Regulations*, including disclosures.

XYZ signature

London, ON

April 26, 202X

Additional information

Disclosures

No disclosures

Other Basis for Qualified Opinion examples

The description of the departure and limitation to records that have been destroyed by fire might read:

> Company XYZ experienced a fire at their operational control center on December 5, 202X that destroyed the fuel consumption records for the back-up diesel generator for the facility. This fire has affected the reporting period for this report and we estimate that the lack of this line-item in the Company XYZ report is less than 2% of reported emissions. New data reporting processes and controls have been implemented for the next reporting period.

The description of the departure and limitation to a site visit that was not conducted at an appropriate time to observe critical habitat might read:

> Company XYZ engaged us December 5,202X to conduct a verification that included determination of whether the feedstock harvesting practices damaged any species at risk. The salamander, *Pseudoeurycea brunnata,* is a critically endangered species that was observed in the harvest area by scientists in 202X. Our verification was conducted from Jan 1 to Mar 16, 202X. Due to the time of year, we were unable to observe whether the local habitat could

support *Pseudoeurycea brunnata* and whether the harvest practices would be detrimental. Company XYZ has engaged us for the next verification and we have designed and planned additional evidence gathering procedures to examine for the existence of *Pseudoeurycea brunnata,* observe whether the habitat is suitable for *Pseudoeurycea brunnata,* and assess if the harvesting practices endanger *Pseudoeurycea brunnata* or its habitat. We have subcontracted a salamander specialist, Dr. J. Smith, P.Biol, to conduct this assessment as part of the verification team.

The description of the departure and limitation to verifier's unable to visit sites might read:

Company XYZ engaged us December 5, 202X to conduct a verification of electricity consumed by electric vehicles charged by their charging stations. Residential sites constitutes 3% of the electricity consumed in their report and rank high for inherent and control risk. Our sampling plan indicated five out eight residential sites should be visited to observe whether charging stations have be altered or have alternative uses. We were unable to visit five site (1% of the electricity consumed) due to a lack of permission by the residents.

Appendix I: Approved certification scheme operations report

An approved Certification Scheme (CS) must submit annually, by the anniversary of its approval, a report to ECCC as per Schedule 5 that includes relevant information concerning the operation of the scheme. At minimum, an approved CS reports on:

- General operational and performance statistics including, member statistics and the number of:
    - current members
    - new members
    - members suspended and the reasons for the suspension
    - members terminated and the reasons for the termination
- Operational statistics:
    - years left in approval
    - any changes in scope
    - the amount of feedstock certified, by country of origin and type of feedstock
    - number of audits by members and type of feedstock
    - number of non-conformities by member
    - non-conformities by type and severity
    - number of cases of fraud or irregularities detected
- Management system design and operation including:
    - a description of stakeholder involvement during the drafting and reviewing of the scheme and responses to their contributions, if any
    - criteria used for the recognition or accreditation of certification bodies
    - qualification requirements for auditors by role
    - independence requirements for the certification bodies and auditors
    - procedures for identifying and dealing with non-conformities
    - procedures for monitoring of the certification bodies
    - procedures for preventing fraudulent activity including the detection, treatment and follow-up procedures for suspected fraud and other irregularities where appropriate
    - complaints lodged against the approved scheme and their resolution
    - an analysis of the scheme's requirements, against actual and industry best practice
- An assessment of the availability of scheme's operations, requirements and procedures, including the availability of:
    - translations of requirements and procedures in the applicable languages of the countries and regions from which any certified feedstock originates
    - a list of certified feedstock producers and relevant certificates
    - certification reports
- Any improvements made to the scheme; and
- Suggestions for improvements to ECCC.

Appendix J: Content of a certificate and a certification report

CS certificate content

A certificate issued by an accredited certification body under an approved CS contains, at a minimum, the following information:

- The CS seal under which the feedstock is certified
- A unique certificate number
- The logo of the certification body issuing the certificate
- The legal name of the certification body issuing the certificate
- The legal address of the certification body issuing the certificate
- The legal name of the certificate holder
- The legal address of the certificate holder
- The number of group members in the case of a group certificate
- The legal names of each group member in the case of a group certificate
- The legal address of each group member in the case of a group certificate
- The scope of certification:
    - The feedstock certified
    - The area where the feedstock certified is harvested (in ha)
    - The geographical location of the physical boundaries of the area(s) where the feedstock certified is harvested (as per regulatory requirements). The location should be provided in five decimal minutes :
        - Latitude E/W ## degrees ##.##### minutes;
        - Longitude N/S ## degrees ##.##### minutes;
    - A reference to the certification criteria used for evaluation (e.g. CFR LUB)
- The date of issuance of the certificate
- The place of issuance of the certificate
- The expiry date of the certificate
- Stamp and signature of the certification body issuing the certificate

CS Certification report:

General requirements for a certification report from a certification body providing certification under an approved CS:

- An accredited certification body provides a certification report after the completion of each certification, recertification or surveillance audit;
- Certification reports should be made available upon request by the approved CS;
- Certification reports are available in the applicable language where the feedstock is certified and in one of the two official languages of Canada: French or English;
- Certification reports may include the following information:

Content of the certification report

- Title page which includes the same information contained in the certificate
- Table of contents
- Description of the object of certification, which includes the following information:
    - Identification of the feedstock harvested that is the object of certification:
        - Type of feedstock
        - Description of the production system
    - Information about the person/organization seeking certification for the feedstock:
        - Person/organization's legal name
        - Person/organization's role (e.g. land owner, harvesting company, etc.)
        - Legal address of the person/organization
        - Contact information of the person/organization
    - Information about group members in case of a group certification, which includes a full disclosure of all the members of a group certification:
        - The number of group members
        - The legal name of each group members
        - The role of each group members
        - The legal address of each group members
        - Contact information of each group members
    - Information about the feedstock production sites:
        - Types of sites (agricultural sites, forests, farms, etc.)
        - Geophysical characteristics of the sites
        - Areas of the sites (ha)
        - Geographical locations of the physical boundaries of area(s) where the feedstock being certified is harvested. The location should be provided in four decimal minutes :
            - Latitude E/W ## degrees ##.##### minutes
            - Longitude N/S ## degrees ##.##### minutes
        - In the case of a group certification, identification of the criteria used for establishing a group certification:
            - The geographic proximity of the areas
            - The similarity of geophysical conditions (e.g. climatic conditions) of the areas
            - The similarity of production systems and products
            - The similarity of data management systems
            - Identification of each site and its characteristics per group members, including the geographical locations of the physical boundaries of each site. The location should be provided in four decimal minutes:
                - Latitude E/W ## degrees ##.##### minutes;
                - Longitude N/S ## degrees ##.##### minutes;
        - Description of the ownership and the land use context where the feedstock being certified is harvested
        - A brief description of any area where the feedstock being certified is harvested, which the person/organization seeking certification has decided to exclude from the scope of the certification, including:
            - the geographical locations of the physical boundaries of the area(s) excluded from the certification scope in four decimal minutes
                - Latitude E/W ## degrees ##.##### minutes

        - Longitude N/S ## degrees ##.##### minutes
    - The reasons for excluding the area(s)
    - The controls that are in place to prevent any confusion as to which feedstock or areas are certified, and which are not
  - A description of harvesting activities:
    - Summary of the management plan in case of forest-based feedstock
    - Description of harvesting and management objectives and practices
    - Description of the management structures
    - Description of any environmental safeguards in place
    - Description of the procedures for monitoring harvesting activities and environmental conditions
- Information about the certification body:
  - The legal name
  - The legal address
  - The name and contact details of the contact person
  - Company's profile and experience
  - Accreditation details, including:
    - Name of the accreditation body that issued the accreditation
    - Validity period of the accreditation
- Selection of the certification team:
  - Identification of each member of the certification team:
    - Name of each member of the certification team
    - Each member's role in the certification team
    - Each member's field of specialization
  - Full disclosure of any conflict of interests that may have arisen prior to and/or during certification activities and any actions that may have been taken to mitigate any conflict of interests
- Presentation of the certification planning and process, which includes the following:
  - A reference to the certification criteria used to assess the conformity of the feedstock, including the CFR LUB requirements
  - Summary of certification history of the feedstock:
    - In the case of an initial certification, a statement confirming that any previous non-conformities with other certification schemes were fully disclosed during the certification process and managed as required in the CFR
    - In the case of a recertification, any pending minor nonconformities found during the previous certification audit, which includes an initial audit, surveillance audit and/or recertification audit, are resolved in a timely and adequate manner
    - In the case of a recertification, any major nonconformities that resulted in the suspension of a certificate are resolved in a timely and adequate manner
    - In the case of a recertification, any major or critical nonconformities that resulted in the withdrawal of a certificate are resolved and all the applicable regulatory requirements for this scenario have been applied
  - Certification activities planning and schedule:
    - Description of the activities that will be conducted during the certification
    - Rationale for the selection of activities performed during the certification
    - Presentation of a detailed itinerary and schedule
  - Site visits:

        - Rationale for site visits selection
        - Description of site(s) selected and the activities performed on-site
        - Specification of sampling of the units within a group audit, in the case of group certification or in the case of multi-site certification
        - % of area land addressed by site visits
    - Description of documentation submitted by the person/organization seeking certification
    - Evidence-gathering activities for the evaluation of management systems (e.g. interviews, visit to head offices)
    - Specification of additional techniques used to perform a certification (e.g. satellite imagery)
- Presentation of the certification findings, which includes the following:
    - Criterion assessment:
        - Systematic presentation of the observations and considerations during certification activities
        - Use of the applicable indicators to determine whether the feedstock has been harvested in accordance with the certification criteria (i.e. the CFR LUB criteria)
- Certification decision which includes the following:
    - Interpretation of the findings
    - Description of the minor non-conformities identified during the evaluation, and justification for their classification as minor non-conformities
    - Specification of requirements for the correction of minor non-conformities related to the certification decision, including:
        - Timeframe to resolve the minor non-conformities that were identified during certification activities
        - Description of actions taken prior to the certification decision by the person/organization seeking certification to correct any minor non-conformities that were identified during certification activities
        - Description of actions that are required to be taken by the person/organization seeking certification to correct any minor-nonconformities that were identified during certification activities
        - Schedule planned by the certification body to monitor any minor-nonconformities identified during certification activities and list of actions that will be taken in case the person/organization seeking certification did not correct a given minor non-conformity within the required timeframe.
    - Description of the major non-conformities identified during the evaluation, and justification for their classification as major non-conformities:
        - Description of the correction of major non-conformities related to the certification decision
        - Description of actions taken prior to the certification decision by the person/organization seeking certification to correct any major non-conformities that were identified during certification activities
        - Schedule and activities used by the certification body to ensure that any major non-conformities were resolved prior to issuing a positive certification decision
    - Description of the critical non-conformities identified during the evaluation, and a justification for their classification as critical non-conformities
    - Description of any issues faced during the certification that cannot be classified as a type of non-conformity (e.g. change of ownership, change of certification scope, etc.)
    - Certification decision