



# Collaborative GHG Verification Guideline: Introduction to the Discussion Paper

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# Overall Project Objectives

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- Develop program-neutral verification guidelines, for entity-wide GHG inventories and reduction projects
- Identify and describe discrete levels of verification rigor appropriate for specific end uses
- Simplify process of developing and verifying inventories and baselines
- Make significant technical contribution to corporate users, service providers, policy makers, and stakeholders



## Project Deliverables

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- User-friendly technical guidance document with detailed, practical information on verification methodologies and specifications
- Descriptions of 3<sup>rd</sup> party and self-verification activities, industry- and project-specific case examples
- Templates, audit tools, and checklists
- Discussion Paper for Climate Leaders Partners Workshop to solicit feedback and identify improvements



# Verification Levels of Rigor

Feature	Low Tier I	Medium Tier II	High Tier III
Verification End Use:	Internal planning; Public relations	Stakeholder reporting; Baseline protection	Emissions trading; Reduction projects
Auditing Body:	Self	3 <sup>rd</sup> Party	3 <sup>rd</sup> Party
Audit Location(s):	Desktop	Desktop	Central office (data system) + Field facility(s)



# Corporate GHG Verification Guidelines: Primary Seed Documents

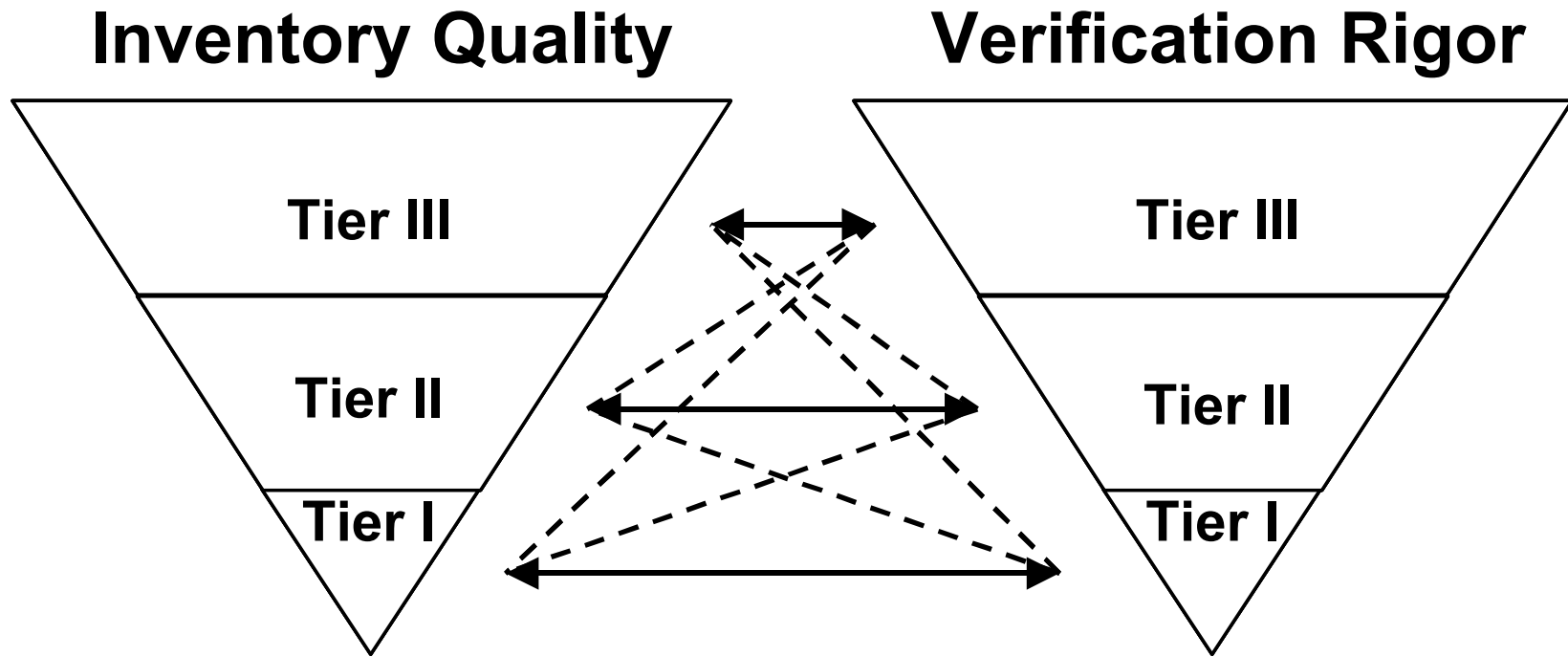
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- WRI/WBCSD: GHG Inventory Reporting Protocol
- ISO WG5: Principles and Guidelines for GHG Validation, Registration, Verification, and Certification
- UKAS: Guidance for Verifiers
- DEFRA: Guidelines for Measurement and Reporting of Emissions in UK Emissions Trading Scheme
- PCF: Preliminary Validation Manual
- CEC: California Climate Action Registry Certification Protocol Guidance
- DOE: International Performance Measurement & Verification Protocol
- LBNL: Guidelines for the Monitoring, Evaluation Reporting, Verification and Certification of Energy-Efficiency Projects for Climate Change Mitigation
- Pew Center: Overview of GHG Verification Issues

***Most public domain seed documents either are focused more toward Level III-type of verification programs, or are of a more general nature.***



# Matching Verification Effort to Inventory Effort





# Targeted Elements for Verification

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- Organizational boundaries
- Operational boundaries
- Quantification methods
- Activity data
- Normalization data (performance indicators)
- Emission factors
- Data management system
- QA/QC data/plan
- Baseline issues for entity wide inventory
- Data management



# Organizational Boundaries: Introduction to the Tables

Table B.1-1 Verification Scope and Activities		
Tier I	Tier II	Tier III
Complete interviews with inventory manager to determine:	Tier I activities plus the following:	Tier II activities plus the following:
<ul style="list-style-type: none"><li>• how inv. boundaries are defined and emissions apportioned</li></ul>	<ul style="list-style-type: none"><li>• review documents for a set of representative components...</li></ul>	<ul style="list-style-type: none"><li>• <b>review apportionment of emissions for a set of facilities that contribute 25-50% of total emissions</b></li></ul>
<ul style="list-style-type: none"><li>• that the... accounting method was applied uniformly</li></ul>	<ul style="list-style-type: none"><li>• review collection of facilities that contribute 10-25% of emissions</li></ul>	<ul style="list-style-type: none"><li>• as above for 10% of facilities partially owned</li></ul>





# Organizational Boundaries:

## Document review and interview material

Table B.1-2		
Accounting Position	Tier I	Tier II and III
Equity share: (Generally report emissions proportional to ownership share)	Confirm through interviews how equity share was determined	Identify whether documentation is consistent with financial reporting (examples)
Operational Control: (Generally report 100% of emissions from controlled facilities)	Confirm through interviews how control was determined	Identify if practices and documentation at component units indicate operational control (examples)



# Organizational Boundaries:

## Areas of potential error

Table B.1-3

Area of Potential Error	Error Source Examples
Identification of component units	<ul style="list-style-type: none"><li>• new acquisitions omitted</li><li>• units included but no longer owned/operated</li></ul>
Identifying emissions proportional to equity share	<ul style="list-style-type: none"><li>• emissions not multiplied by percent equity share</li></ul>



# Quantification Methods:

## Introduction to the tables

Table B.3-2 Verification Scope and Activities		
Tier I	Tier II	Tier III
Quantification method review at entity/BU level	Audit trail examined below the BU level	Tier II activities plus the following:
<ul style="list-style-type: none"><li>• data in summary report/spreadsheets reviewed with error checking procedures</li></ul>	<ul style="list-style-type: none"><li>• several key facilities targeted for desktop auditing procedures</li></ul>	<ul style="list-style-type: none"><li>• <b>sample of 10-50% of material facilities; field audits selected based on representativeness...</b></li></ul>
<ul style="list-style-type: none"><li>• general assessment of activity data completeness and consistency</li></ul>	<ul style="list-style-type: none"><li>• preliminary evaluation of how activity data are collected &amp; aggregated</li></ul>	<ul style="list-style-type: none"><li>• crosscheck monitoring data with site-specific EFs, fuel use data, and material balance...</li></ul>



# Quantification Method: Documentation to be reviewed

Table B.3-3		
Tier I	Tier II	Tier III
minimal documentation required for review	“intermediate” level of written documents	requires review of detailed emission inventory protocol plus
<ul style="list-style-type: none"><li>• equations embedded in spreadsheets</li></ul>	<ul style="list-style-type: none"><li>• focus on assumptions made in estimating entity emissions</li></ul>	<ul style="list-style-type: none"><li>• <b>supporting evidence, reference citations, justifications of key assumptions</b></li></ul>
<ul style="list-style-type: none"><li>• may include formal documentation</li></ul>	<ul style="list-style-type: none"><li>• track methods used over time; assess recalculations of previous years</li></ul>	<ul style="list-style-type: none"><li>• calibration records, SOPs, fuel invoices, maintenance logs, analytical results</li></ul>



# Quantification Method: Error and uncertainty issues

Table B.3-4		
Tier I	Tier II	Tier III
qualitative assessment of uncertainty	assessment of accuracy and uncertainty dependent on end use	statistical evaluation of inventory accuracy
qualitative assessment of accuracy	Reliance on expert judgment and ordinal ranking of uncertainties	<ul style="list-style-type: none"><li>•investigate internal audit results</li><li>•assess physical measurements (fuel composition, flow rates)</li><li>•Identify methods employed to reduce uncertainty</li></ul>



# CGVG Next Steps

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- Complete guidance for all verification program elements
- Include checklists for Level III audits
- Develop industry- and project-specific templates
- Circulate draft text for technical expert peer review, and broader public comment