

Verifier's Perspectives - Lessons Learned from California Mandatory Greenhouse Gas Emissions Reporting Program

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INTRODUCTION

California Air Resources Board's (ARB) Regulation for the Mandatory Reporting of Greenhouse Gas (GHG) Emissions Regulation (Title 17, California Code of Regulations, §95100-95133) has implemented a third party independent verification provision, which was mandatory in 2010 calendar year for 2009 emissions. As an ARB accredited verification body, Trinity Consultants, Inc. has performed GHG emissions verifications for approximately 40 facilities in 2010 calendar year in various industry sectors, including electricity generating facilities, electricity retail providers and power marketers, hydrogen plants, cogeneration facilities, and general stationary combustion (GSC) sources.

This presentation discusses the challenges and issues encountered during 2010 verification activities related to various elements of ARB GHG verification provision. It was found that a majority of reporters had varying degrees of deficiencies in record keeping, documentation, and emissions estimations, causing either, or both materiality and conformance issues in their original GHG reports. Although most of correctable issues had been resolved during the verification process in 2010, it is essential for reporting industries to learn from the last year's reporting and verification experiences to improve efficiency and cost effectiveness related to complying with the current California GHG reporting program. In the light of newly proposed amendments to GHG mandatory reporting requirements by ARB, lessons learned from previous verification activities are expected to be helpful to better prepare for the upcoming mandatory reporting requirements. It is worthy to note that this presentation is limited to the verification activity and experiences related to the Mandatory Reporting of Greenhouse Gas Emissions Regulation (the GHG Regulation) by ARB.

VERIFIER'S PERSPECTIVES

Regulations and Technical Guidance

In 2010, in effort to provide more detailed guidance to reporting and verification entities, ARB has published various guidance documents¹⁻⁵ in addition to the GHG regulation text⁶. Although they are intended to help the reporting and verification entities, having various detail guidance on different elements of the GHG program was somewhat challenging for verifiers as well as reporters to comprehend. These challenges were amplified by the fact that the regulation text is ambiguous and various technical guidance documents do not exhibit consistency on certain specific topics (e.g., "net power generated"). Also, it was our experience that the

interpretation of regulation text and/or requirements by ARB has changed over the verification period (April 2010 through December 2010) in 2010 on certain specific topics (e.g., fuel type-natural gas and associated GHG calculation methodologies). Such deficiency in establishing consistency in the technical guidance and interpretations by agency has caused confusion among the reporters and verifiers and has ended up taking additional time and effort to resolve related matters and reach a consensus.

Corporate or Facility Protocol Documents

The purpose of a GHG inventory protocol document is to provide guidance to GHG data organizer, coordinators, and owners of GHG performance metrics, such that the development and management of the GHG inventory across all applicable assets is credible and verifiable. Although the California GHG Regulation did not require development of such protocol, a GHG protocol document is the foundation upon which a corporate entity or facility can develop a reliable and credible GHG inventory. In 2010, only about 30% of the reporting facilities that Trinity verified had corporate or facility GHG protocol documents, which incorporated both California and federal GHG regulation elements. As a verifier, such GHG inventory protocol guidance (similar to GHG Monitoring Plan under EPA GHG regulation) was very helpful in understanding the GHG inventory, organization structure, estimation methodology, data handling and management system in an efficient manner. Those without such GHG protocol documents caused the verifier to spend additional time and effort (up to additional eight hours) to review the overall internal GHG inventory program. For efficiency and cost effectiveness of verification activities, it is strongly recommended that reporting entities develop an internal GHG protocol document.

Third-Party Independent Verification Program

Verification is the confirmation, through documentation and demonstration of objective evidence, that a reported GHG inventory accurately reflects the actual GHG emissions of the reporting entity. The primary objective of GHG inventory verification is to provide an independent view over the accuracy and reliability of reported GHG data. The overall verification program implemented to achieve such goal under the ARB regulation consists of the following elements:

1. Pre-verification Activities:
 - a. Selection of verification body and contracting verification service by reporting entity
 - b. Self evaluation for conflict of interest and notification of verification services (COI/NOVS) by verification body
 - c. COI/NOVS evaluation approval process by ARB
2. Core Verification Activities:
 - a. Planning-initial review of systems and process
 - b. Development of verification plan and sampling plan
 - c. Planning and conduct of Site-visit
 - d. Detailed data checks and evaluation
 - e. Development and submittal of detailed verification report to reporting entity
 - f. Issuance of verification opinion to ARB

In general, the effort and amount of time needed to complete the pre-verification activities varied from project to project, depending on the complexity of contracting requirements insisted upon by the reporting entity and/or verification body. Trinity's 2010 experiences ranged from one

week to two months, accounting for the time consumed from issuance of request for proposal (RFP) to receipt of proposal approval and/or purchase order (PO). Self-evaluation of COI took considerable time for those with prior business relationship corporate-wide since the ARB requires a thorough evaluation of any prior business/project experiences covering all the way up to parent companies. Trinity's typical experience ranged from a half day to three days for COI self-evaluation. The subsequent COI/NOVS approval process by ARB allowed under the GHG regulation is 45 days. However, ARB took around 14 days on average, ranging from three days to 26 days, depending ARB staff's availability, and COI risk and complexity level. As described, the overall process of pre-verification steps may take up to approximately three months before verifiers can start the actual data checks and verification activities. Therefore, it is essential for reporters to initiate the selection and contracting of verification body well in advance of the respective verification deadlines.

Trinity's 2010 verification services and activities covered various industry sectors as classified by the GHG regulation and were distributed as follows:

Table 1. Distributions of Industry Sectors Verified By Trinity Consultants, Inc. in 2010

Applicable Reg.	Primary Industry Sectors	Percent Overall (%)
§95111	Electricity Generation Facilities	71
§95111	Retail Providers and Marketers	10
§95112	Cogeneration Facilities	5
§95114	Hydrogen Plants	2
§95115	General Combustion Facilities*	12

* Three of five general combustion facilities were also categorized as cogeneration facility under secondary industry sectors.

The deficiencies and deviations identified during the initial facility site-visits and first round of detailed data checks across the all industry sectors in 2010 is summarized by types of error as follows:

Table 2. Distributions of Deficiency Identified By Trinity Consultants, Inc. in 2010

Type and Category of Deficiency*	Percent (Out of Total Number of Findings) (%)
Facility and Unit background information and description errors	10 - 20
Calculation methodology errors	15 - 25
Calculation factors errors	10 - 20
Lack of data audit trails	1 - 3
Online Reporting errors	35 - 45
Lack of internal GHG program protocol	5 - 7
Data input errors	15 - 25

* For this presentation purpose, term of deficiency is generally used to represent any deviations from ARB's regulation and technical guidance, including but not limited to, errors causing materiality mis-statement and non-conformance.

Based on the verification audit findings, the total number of reporting entities with substantial deviations (i.e., misstatements and non-conformance issues) in the reporter’s data during the initial facility site-visits and first round of detailed data checks were estimated to be on the order of 95-98% of the total number of verified reporting entities. After additional round(s) of correction, re-certification, and re-verification, as necessary, the number of reporting entities with substantial deviations (i.e., final adverse opinion) reduced to about five percent of total verified entities at the end of verification process. This result clearly shows the benefit of third-party verification process as a part of ARB’s mandatory GHG reporting program. The amount of verification effort expressed in percent of reporting entities requiring additional rounds of the verification process is summarized as follows:

Table 3. Distributions of Reporting Entities with Additional Rounds of Verifications in 2010

Number of Round(s) Needed to Complete Verification Process*	Percent of Total Verified Entities (%)
Facility completed after 1 st round of verification	0
Facility completed after 2 nd round of verification	55 - 65
Facility completed in 3 rd round of verification	25 - 35
Facility completed in 4 th round of verification	5 - 15
Facility received final “positive opinion”	95
Facility received final “adverse or negative opinion”	5

* For this presentation purpose, each round of verification process is generally used to represent each cycle of verification process consistent with ARB’s regulation and technical guidance requirements, including but not limited to, data collection, data checks, and identification of errors.

In general, some examples of the substantial issues identified and lessons learned in the first year of verification activities included the following:

- Internal GHG inventory protocol or monitoring plan were missing or not sufficiently detailed to enable consistent reporting across facility (i.e., various departments) or corporate.
- Lack of internal quality assurance procedures for GHG program
- Inadequate or insufficient understanding of GHG regulation and technical guidance by regulatory agency
- Weakness in management systems and controls over GHG data
- Difficulty and complexity with data entry using the online reporting tool, causing errors
- Improper calculation methodology (e.g., use of default factors), inconsistent with specified methodology by the ARB regulation
- Insufficient documentation to support and demonstrate data quality and accuracy
- Lack of data available from and site access to facilities operated by others (e.g. utility company).
- Lack of record keeping or training records demonstrating expertise or competency for those directly involved in GHG inventory and/or reporting
- Deficiency in documentation organization, central filing system, and data access

SUMMARY

Industry's accurate GHG emissions inventory reporting is an essential part of ARB's strategy to address the impacts of climate change. To establish credible GHG emission inventory, ARB has implemented a third-party independent verification process as a mandatory requirement starting calendar year 2010 for reporting year of 2009 emissions. This presentation addresses the need for more consistent interpretation and clear guidance by ARB on certain topics and definitions such as net power generation and fuel type (e.g., natural gas) to minimize the challenges and confusions encountered by reporting entities and verification bodies. It was discovered that all reporters had varying degrees of deficiencies and deviations in their record keeping, documentation, and emissions estimations, causing either or both materiality and conformance issues in their original GHG reports in 2010. Although most correctable issues had been resolved during the verification process in 2010, it is essential for reporting industries to implement a credible and demonstrable GHG inventory program with an updated written GHG inventory protocol or monitoring plan, supported by auditable trails of documentations. The overall pre-verification process may take up to three-months before the actual verification activity can take place based on 2010 verification experience. Thus, an early initiation of verification body selection and contracting procedure is highly recommended for a best business practice. In the light of newly proposed amendments to GHG mandatory reporting requirements by ARB, the lessons learned from previous verification activities are essential to better prepare for the upcoming mandatory reporting requirements.

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