California Regulation for the Mandatory Reporting of Greenhouse Gas Emissions

Tips for a Successful ARB GHG Report Verification

April 24, 2013
Presentation Slides Available:
http://www.arb.ca.gov/cc/reporting/ghg-rep/guidance/guidance-training.htm
• Verification Background for Data Reporters
• Verifier Requirements and Overview
• Planning for Verification
• Approach to Verification – Demonstrating Reasonable Assurance
• Verifier Guidance
Verification Background for Data Reporters
Who Gets Verified?

• Annual verification (§95103(f))
  – No more triennial verification
• Facilities/suppliers emitting >25,000 MT CO2e
  Also includes:
  – Opt-in entities
  – > 25,000 MT CO$_2$e in 2009-2011
  – Have not met cessation requirements
• All electric power entities (EPEs) that import or export power into/from California
  – Regardless of where the EPE is located
  – No emissions threshold
  – Zero emissions must be reported and verified until cessation requirements are met
• Not required to verify:
  – Retail providers with only non-confidential retail sales data
  – If facility operator goes out of business
  – Interstate natural gas pipelines
Less Intensive Verification in 2012
§95130(a)(1)

- Site visit **not** required after a full verification if:
  - Verifier chooses not to conduct a site visit
  - Received positive verification statement
  - Same verification body (VB)
  - No change in ownership
  - Not first year of compliance period

|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|

6-year limit for same VB
Verifiers must remain objective

Data reporters can speak freely with both their verifier and ARB staff.
ARB Staff Advice to Data Reporters and Verifiers

**Data Reporters**
- Compile detailed GHG Monitoring Plan/Inventory Program
  - Ask for questions in advance
  - Be responsive to data requests by verifier
  - Be prepared so verifier can conduct effective and efficient site visit

**Verifiers**
- Ask for GHG Monitoring Plan early
  - Send questions in advance
  - Provide clear communication
  - Get as much as possible completed before and during site visit and provide initial findings at closing meeting
Verifier Requirements and Overview
Verifier Training

Verifier Training and Exam
- Must pass exam to be accredited

Annual Audits
- Must demonstrate proficiency during ARB audits

Regular Training Webinars
- Required attendance; recorded for convenience
Accredited Verifier Requirements

• Be an expert in the regulation requirements
• Review GHG Monitoring Plan/Inventory Program
• Independently evaluate conformance and material misstatement of data
• Review internal QA/QC procedures
• Provide written explanation of evidence to ARB that reported data are accurate
• Reaccredited only if in good standing with ARB
Sector Accreditation Requirements

- At least one member of verification team must have sector accreditation (and attend site visit, where applicable)

- Accreditation requires experience and passing ARB exam in that sector
  - Process emissions specialist
    - Cement, glass, lime, pulp and paper, iron and steel, nitric acid
  - Transactions specialist
    - Natural gas, LPG, transportation fuel, and CO₂ suppliers, and electric power entities
  - Oil and gas systems specialist
    - Refineries, hydrogen production, and oil and gas production
Verification Body Requirements

- Evaluate conflict of interest (COI)
  - Reporting entity can help by providing records to VB regarding business relationships within previous 5 years
  - VB discloses additional work within one year of providing verification services
    - Re-verification if Executive Officer invalidates a verification finding (§95133(g)(5))

- Develop sampling plan and verification report
  - Offer to describe and summarize your data so it is easy for your verifier to copy into their report

- Respond to ARB request for corrective action when nonconformities are observed
Verification Body (VB) Availability

- 39 existing VBs have been re-accredited
  [http://www.arb.ca.gov/cc/reporting/ghg-ver/arb_vb.htm](http://www.arb.ca.gov/cc/reporting/ghg-ver/arb_vb.htm)
- 1 new VB this year
- 13 VBs chose not to maintain their accreditation
• Four air districts are accredited as VBs; North Coast, Placer, Sacramento, South Coast
  – All 4 have experienced staff that can provide verification services
• Only South Coast has verified data so far
  – Three verifications during the past 2 years
• A total of 31 air district staff are accredited
• Held to same standard as private sector
ARB Audits of Verifiers

1. **Verification audit of individual verifiers**
   - More than 14% of all verifications are audited
   - All VBs are audited every year
   - Evaluate site visit skills and technical expertise

2. **Management systems audit of VB**
   - ARB visits office of verification body to evaluate quality of verification services

**ARB’s Goal:** Data reporters can be assured that all accredited verification bodies and verifiers meet regulation requirements
Planning for Verification
ARB Has 2 Types of Verifiers!

- Verifiers for Mandatory Reporting Regulation (MRR)
  - Verifiers annually review emissions data reports from the largest 500 GHG sources
  - Sector specialists (process, transactions, oil & gas)
    [http://www.arb.ca.gov/cc/reporting/ghg-ver/ghg-ver.htm](http://www.arb.ca.gov/cc/reporting/ghg-ver/ghg-ver.htm)

- Verifiers of offset projects
  - Verifiers review reports from forestry, ozone depleting substances, and livestock projects
    - More project types are being considered

- Both support cap-and-trade program
  [http://www.arb.ca.gov/cc/capandtrade/offsets/verification/verification.htm](http://www.arb.ca.gov/cc/capandtrade/offsets/verification/verification.htm)

- Similar requirements, but not the same
Preparing for Verification Services

• Ensure reported data matches your GHG Monitoring/Inventory Plan, observations made during site visit, and other evidence collected
• Know your own data system
  – Anticipate questions about data quality
  – Prepare evidence supporting your data estimates
• Obtain ARB guidance before verification
• No data surprises
• Make needed data revisions all at once
• Avoid last-minute data review before deadline
Quick Tips for Verification

1. Develop and maintain detailed GHG Monitoring Plan
2. Start early
   - Ensure contract includes milestones for both you and your verifier in order to meet deadline
   - Be prepared to demonstrate data “completeness”
3. Consider a site visit if system is complicated, even if not required
   - Gets everyone together in the same room
   - Be sure correct personnel are available
4. Expect clear documentation from verifier
   - Ask for revisions if not clear initially
5. Ask ARB for help and get answers in writing
More Tips...

• Use missing data spreadsheet if applicable
• Maintain specific ARB guidance in Plan
• Track version control for all documents/data
• Explain to verifier why it is important to your company to maintain accurate data for reasons other than GHG reporting

Examples:
  — Required to pass internal audit by corporate office
  — Used for process control and air district reporting
GHG Monitoring Plan/Inventory Program

Facilities
- EPA 98.3(g)(5)
- GHG Monitoring Plan (§95105(c))

Fuel and Natural Gas Suppliers
- EPA 98.3(g)(5)

Electric Power Entities
- GHG Inventory Program (§95105(d))
GHG Monitoring Plan, Inventory Program, and Data Documentation

• Verifier required to review Plan/Program for conformance
  – Include written procedures, explanations

• Provide a copy to verification body early
  – Demonstrates competency with reporting requirements

• Verifier is looking for “assurance” that you understand the regulation and know how to report your data
  – First impressions of data quality (expertise) are important
  – Use (or revise) your plan when explaining your procedures to your verifier
  – Simple drawings are useful
Suggested GHG Management Actions

• Ensure staff understand their role in reporting data, for example:
  – Install visual tags or signs that describe what the meter measures and why it is important to the company, and how maintaining evidence of accuracy is critical

• Cross-train at least 2 people for redundancy and succession planning
  – DR and ADR in Cal e-GGRT
  – Provide your own staff with information about GHG management
    • Verifier gains confidence in accuracy of data if everyone that handles data knows why data is important
Can I Fix My Data?

• Yes, verification is an iterative process
• Many reporting entities have errors that are identified during first years of verification
• Update your GHG Monitoring Plan to include QA/QC steps to ensure mistakes do not occur in future data reports
Data Revisions

Data reported by April 10, 2013; June 3 for electric power entities.

All revisions should be made well before August 15; no guarantee of another opportunity to revise data. Verification body (VB) must have time to review new data and conduct independent review.

VB conducts a final review of data; submits verification statement by September 3, 2013.
What if I Disagree with My Verifier?

• Explain your point of view
• Document data issue and request assistance from ARB
• If still unresolved, may petition ARB before your verification statement is submitted by your verifier
  – Only an option when you and your verifier disagree on the facts
  – Requires data provided to verifier to be sent to ARB
  – ARB determines final outcome of verification
Approach to Verification – Demonstrating Reasonable Assurance
3 Key Steps During Verification

1. **Discuss logistics/timing**
   - COI
   - NOVS
   - **Information Request**

2. **Strategic Analysis and Risk Assessment**
   - Data Checks
   - Site Visit

3. **Verification Plan**
   - **Verification Report**

**Maintain Log of Issues**

- Submit Findings
- Review Resolution to Findings
- Internal Review by Independent Reviewer
- Submit Verification Statement
What to Expect from your Verifier

1. List of requested documents and records
   – Likely included in verification plan

2. Issues log
   – Objective evaluation of evidence with clear explanation of issue
     • Includes the what, where, how, and why of issue
   – Must include regulation citation, potential impact on conformance/materiality, and resolution
   – May NOT tell you how to fix error

3. Verification report
   – Ask to review a draft before report is finalized
Verification of Data

Verifier Confidence in Your Data System

Data Checks

Conformance Checks

Verification Statement
Verifier Confidence in Your Data System

- Transparency provides confidence in data
  - Staff competency/training, knowledge of reporting requirements, how GHG reporting system is integrated with other systems used every day
- Compile a contingency plan for meter failure
  - Tells verifier you understand the importance of accurately reporting your data
- Perform cross-checks using other downstream meters and other process data
Example of a Data Cross-Check

- Cogeneration facility using CEMS to report CO₂
  - Cross-check with other data

<table>
<thead>
<tr>
<th></th>
<th>CEMS CO₂ (MT)</th>
<th>CO₂ (estimated using default HHV/EF)</th>
<th>Operating Hours</th>
<th>Gross Generation (MWh)</th>
<th>% of Annual Data When Comparing to Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>125,005</td>
<td>128,755</td>
<td>2,250</td>
<td>297,140</td>
<td>27%</td>
</tr>
<tr>
<td>Q2</td>
<td>129,995</td>
<td>133,894</td>
<td>2,315</td>
<td>305,720</td>
<td>28%</td>
</tr>
<tr>
<td>Q3</td>
<td>89,010</td>
<td>91,680</td>
<td>1,570</td>
<td>207,340</td>
<td>19%</td>
</tr>
<tr>
<td>Q4</td>
<td>119,450</td>
<td>123,033</td>
<td>2,115</td>
<td>279,310</td>
<td>26%</td>
</tr>
<tr>
<td>Total</td>
<td>463,460</td>
<td>477,362</td>
<td>8,250</td>
<td>1,089,510</td>
<td></td>
</tr>
</tbody>
</table>

- If other fuels data, operating hours, and generation data align with the reported data, verifier will have even more confidence in the accuracy of the report
### Example of Risk Evaluation by Verifier

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Emissions (MT)</th>
<th>Risk of Error</th>
<th>Verifier Strategy</th>
<th>% Review Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated gas</td>
<td>586,500</td>
<td>High</td>
<td>Check all flow meters and sampling</td>
<td>75</td>
</tr>
<tr>
<td>Natural gas</td>
<td>660,700</td>
<td>Low</td>
<td>Quick check of utility bills</td>
<td>8</td>
</tr>
<tr>
<td>Low-Btu gas to flare</td>
<td>13,540</td>
<td>Medium</td>
<td>Evaluate system to track flaring</td>
<td>15</td>
</tr>
<tr>
<td>Waste gas to heater</td>
<td>3,050</td>
<td>Low</td>
<td>Quick evaluation of de minimis</td>
<td>2</td>
</tr>
</tbody>
</table>

- Verifier identifies associated gas as having a high risk of errors
  - All flow meters and gas samples are reviewed
- Natural gas from utility is low risk (meter is accurate)
- Flaring **system** checked to make sure each flare event is tracked
- Waste gas is *de minimis* so a quick check suffices
Data Checks

• If verifier has confidence in data system
  – Data checks may be as simple as asking for random days/months of data during the reporting year and comparing with reported data
• If verifier does NOT have confidence in your data
  – More data checks will be necessary
• Errors found during verification likely require verifier to increase amount of data to review
“Covered” Emissions and Product Data

- Forms basis for whether you receive a positive or adverse verification statement
- Determines cap & trade obligation (emissions), and allowances/allocations (product data)

<table>
<thead>
<tr>
<th>Examples of “Covered” Data</th>
<th>NOT Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fossil fuel combustion emissions from refineries, power plants, etc.</td>
<td>Emissions from wood waste, landfill gas, some venting/fugitives, etc.</td>
</tr>
<tr>
<td>Gasoline and diesel fuel sold</td>
<td>Ethanol and biodiesel sold</td>
</tr>
<tr>
<td>Fossil-derived power imports</td>
<td>Wheeled power</td>
</tr>
<tr>
<td>Product data used by ARB to determine allowance allocations</td>
<td>Other U.S. EPA product data requirements (not for all sectors)</td>
</tr>
</tbody>
</table>
Conformance Checks

• Verifier required to review your emissions data report for completeness/accuracy

Regulation Requirements:
• Completeness (are all sources included)
• Calculation methods and emission factors
• GHG Monitoring Plan
• Nameplate generating capacity
• Gross and net electricity generation
• Aggregation of units
• Natural gas provider information
• Fuel sampling frequencies and test methods
• Any other 40 CFR Part 98 requirements, etc.
Conceptual GHG Emissions Data Chain

- Instruments/Data Collection
- Data Management System/Data Processing
- Emissions Data Calculation Spreadsheets
- ARB Emissions Data Report
Fuel Measurement Accuracy

• Some requirements, if not met, trigger a non-conformance
  – Qualified positive statement if data still accurate
• If meter fails calibration or cannot be calibrated, or is otherwise out of service
  – Other data can be used to support contention that data is accurate, including engineering estimates*
• Burden of proof for demonstration of accuracy resides with data reporter
  – Default is missing data substitution or adverse verification statement

* Proof of accuracy still required
De Minimis Emissions

• Must contribute less than 20,000 MT CO$_2$e and <3% of total emissions
• Method and data must be reasonable
  – Data accuracy requirements in §95103(k) do not apply
  – Frequently used for CH$_4$ and N$_2$O if CEMS used to measure CO$_2$
• May not be used to report product data
• Not applicable for electric power entities (EPEs)
Correctable Errors Must be Fixed

• Regulation requires all correctable errors to be fixed (§95131(b)(9))
  – Failure to fix a correctable error identified by your verifier triggers an adverse verification statement
  – No threshold – ANY ERROR that includes emissions data must be fixed

• An error that is NOT correctable may still trigger a qualified positive verification statement if the total emissions data is otherwise accurate
## Issues Log Example

<table>
<thead>
<tr>
<th>Source</th>
<th>Issue</th>
<th>Description</th>
<th>Reference</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiler #2</td>
<td>Calculation Error; Non-conformance</td>
<td>2,364 MT CO$_2$e discrepancy between reported emissions and verifier calculated emissions due to spreadsheet formula calculation error</td>
<td>95115(c)(1)</td>
<td>Operator re-calculated emissions for the source and the discrepancy was resolved (OK)</td>
</tr>
<tr>
<td>Process Heater #1</td>
<td>Non-conformance</td>
<td>Incorrect emission factor used - heater combusts distillate fuel oil but operator used EF for motor gasoline</td>
<td>95115(c)</td>
<td>Operator re-calculated emissions using the appropriate emission factor (OK)</td>
</tr>
<tr>
<td>Diesel fuel tank</td>
<td>Non-conformance; possible material misstatement</td>
<td>Fuel meter on diesel fuel tank does not meet +/-5% accuracy requirement, and it has not been classified as a de minimis source</td>
<td>95103(k)(2)</td>
<td>Because the fuel tank results in &lt;3% of total emissions and &lt;20,000 MT CO$_2$e, the source was classified as de minimis (OK)</td>
</tr>
<tr>
<td>Correctable Errors</td>
<td>Potential Non-conformance</td>
<td>All correctable errors listed above must be fixed or explained, or an adverse verification statement is triggered</td>
<td>95131(b)(9)</td>
<td>All errors were corrected (OK)</td>
</tr>
</tbody>
</table>
Electric Power Entities

• Less-intensive verification (no site visit required), but site visit facilitates:
  – Contract review; reduces challenges with data transfer and confidentiality
  – eTag query discussion; Verifier can review database and query steps on-site
• Verifiers told to “strongly consider” site visit for this year. If no site visit, consider use of webinar/desktop sharing software.
• Verifiers may request meter data for specified sources
  – New requirement (95111(g)(1)(N))
  – Lesser of scheduled imports (eTags) vs. generation data can be claimed
  – If meter data is not on hand, consider requesting from operator of specified source ahead of time to streamline verification
Verifier Guidance
• ARB will be posting verification guidance in May
  – May allow you to anticipate needs of verifier
• Previous ARB guidance from 2010 MRR may be out of date
  – Verifiers will re-confirm previous guidance with ARB this year
  – EPA Guidance important, but not final word
• GHG Reporting guidance already posted
  http://www.arb.ca.gov/cc/reporting/ghg-rep/guidance/guidance.htm
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td>Contract with verification body (and schedule site visit if applicable). Note: verification services may begin after certification of emissions data report</td>
</tr>
<tr>
<td>April 10</td>
<td>Regulatory deadline: Reporting deadline for facilities and suppliers of fuels and carbon dioxide, except when subject to abbreviated reporting</td>
</tr>
<tr>
<td>June 3</td>
<td>Regulatory deadline: Reporting deadline for electric power entities and those subject to abbreviated reporting</td>
</tr>
<tr>
<td><strong>July 1</strong></td>
<td><strong>Try to get answers to all questions from ARB and request (final) issues log from verifier</strong></td>
</tr>
<tr>
<td>July 15</td>
<td>Regulatory deadline: Deadline for corrections to RPS Adjustment data required for electric power entity data reports</td>
</tr>
<tr>
<td>September 3</td>
<td>Regulatory deadline: Final verification statements due (emissions data and product data)</td>
</tr>
<tr>
<td>Subject Matter</td>
<td>Contact</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>GHG Mandatory Reporting (General)</td>
<td><a href="mailto:ghgreport@arb.ca.gov">ghgreport@arb.ca.gov</a> or <a href="mailto:Dave.Edwards@arb.ca.gov">Dave Edwards</a>, Manager 916.323.4887</td>
</tr>
<tr>
<td>Reporting Requirements, Stationary Combustion, Other Sectors (cement, glass, pulp and paper, etc.)</td>
<td><a href="mailto:Patrick.Gaffney@arb.ca.gov">Patrick Gaffney</a> 916.322.7303</td>
</tr>
<tr>
<td>Reporting Tool Registration and General Questions</td>
<td><a href="mailto:Karen.Lutter@arb.ca.gov">Karen Lutter</a> 916.322.8620</td>
</tr>
<tr>
<td>Electricity Generation and Cogeneration Facilities</td>
<td><a href="mailto:Anny.Huang@arb.ca.gov">Anny Huang</a> 916.323.8475</td>
</tr>
<tr>
<td>Electricity Retail Providers and Electricity Marketers</td>
<td><a href="mailto:Wade.McCartney@arb.ca.gov">Wade McCartney</a> 916.327.0822</td>
</tr>
<tr>
<td>Fuel and CO₂ Suppliers - Transportation Fuels, Natural Gas, LPG, CO₂</td>
<td><a href="mailto:Syd.Partridge@arb.ca.gov">Syd Partridge</a> 916.445.4292</td>
</tr>
<tr>
<td>Petroleum Refineries, Hydrogen Plants, Oil &amp; Gas Production</td>
<td><a href="mailto:Byard.Mosher@arb.ca.gov">Byard Mosher</a> 916.323.1185</td>
</tr>
<tr>
<td>Product Data – Refineries, and Oil &amp; Gas</td>
<td><a href="mailto:Joelle.Howe@arb.ca.gov">Joelle Howe</a> 916.322.6349</td>
</tr>
<tr>
<td>Chief – Greenhouse Gas Emission Inventory Branch</td>
<td><a href="mailto:Richard.Bode@arb.ca.gov">Richard Bode</a>, Chief 916.323-8413</td>
</tr>
</tbody>
</table>
# GHG Verification Contacts

<table>
<thead>
<tr>
<th>Subject Matter</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>All General Questions</td>
<td><a href="mailto:ghgverify@arb.ca.gov">ghgverify@arb.ca.gov</a></td>
</tr>
<tr>
<td>Greenhouse Gas Report Verification</td>
<td>Renee Lawver, Manager</td>
</tr>
<tr>
<td>Stationary Combustion</td>
<td></td>
</tr>
<tr>
<td><strong>Process Emissions</strong> Specialist and Associated Product Data:</td>
<td></td>
</tr>
<tr>
<td>Cement Production</td>
<td></td>
</tr>
<tr>
<td>Glass Production</td>
<td></td>
</tr>
<tr>
<td>Lime Manufacturing</td>
<td></td>
</tr>
<tr>
<td>Nitric Acid Production</td>
<td></td>
</tr>
<tr>
<td>Pulp and Paper Manufacturing</td>
<td></td>
</tr>
<tr>
<td>Iron and Steel Production</td>
<td></td>
</tr>
<tr>
<td>Stationary Combustion</td>
<td></td>
</tr>
<tr>
<td><strong>Process Emissions</strong> Specialist and Associated Product Data:</td>
<td></td>
</tr>
<tr>
<td>Cement Production</td>
<td>Chris Halm</td>
</tr>
<tr>
<td>Glass Production</td>
<td>916.323.4865</td>
</tr>
<tr>
<td>Lime Manufacturing</td>
<td></td>
</tr>
<tr>
<td>Nitric Acid Production</td>
<td></td>
</tr>
<tr>
<td>Pulp and Paper Manufacturing</td>
<td></td>
</tr>
<tr>
<td>Iron and Steel Production</td>
<td></td>
</tr>
<tr>
<td>Biomass Derived Fuels</td>
<td></td>
</tr>
<tr>
<td><strong>Transactions</strong> Specialty:</td>
<td></td>
</tr>
<tr>
<td>Electricity Retail Providers and Marketers</td>
<td>Ryan Schauland</td>
</tr>
<tr>
<td>Suppliers of Transportation Fuels</td>
<td>916.324.1847</td>
</tr>
<tr>
<td>Suppliers of Natural Gas, NGLs, LPG, CNG, LNG</td>
<td></td>
</tr>
<tr>
<td>Suppliers of Carbon Dioxide</td>
<td></td>
</tr>
<tr>
<td><strong>Oil and Gas Systems</strong> Specialty:</td>
<td></td>
</tr>
<tr>
<td>Petroleum Refineries</td>
<td>John Swanson</td>
</tr>
<tr>
<td>Hydrogen Plants</td>
<td>916.323.3076</td>
</tr>
<tr>
<td>Oil and Gas Production</td>
<td></td>
</tr>
<tr>
<td>Verifier Accreditation and Conflict of Interest Evaluations</td>
<td>Suzanne Hambleton</td>
</tr>
<tr>
<td></td>
<td>916.323.2308</td>
</tr>
</tbody>
</table>
End