California Environmental Protection Agency
Air Resources Board

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

Agenda

- Verification Background for Data Reporters
- Verifier Requirements and Overview
- Planning for Verification
- Approach to Verification – Demonstrating <u>Reasonable Assurance</u>
- 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_2e 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 <u>not</u> 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

This Year

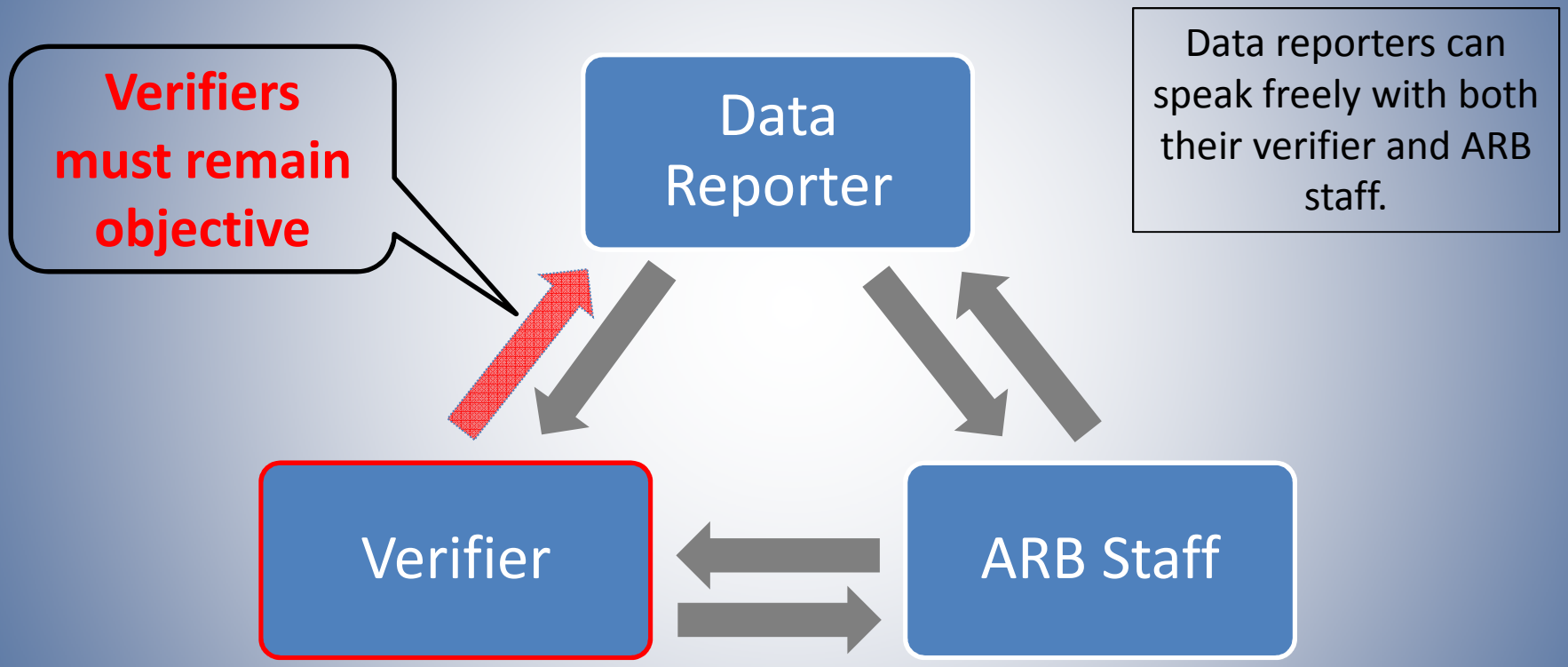
1st

2nd

2009 Data	2010 Data	2011 Data	2012 Data	2013 Data	2014 Data	2015 Data	2016 Data	2017 Data
Full	Less Intensive	Full	Less Intensive	Full	Less Intensive	Full	Less Intensive	Less Intensive

6-year limit for same VB

Communication



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

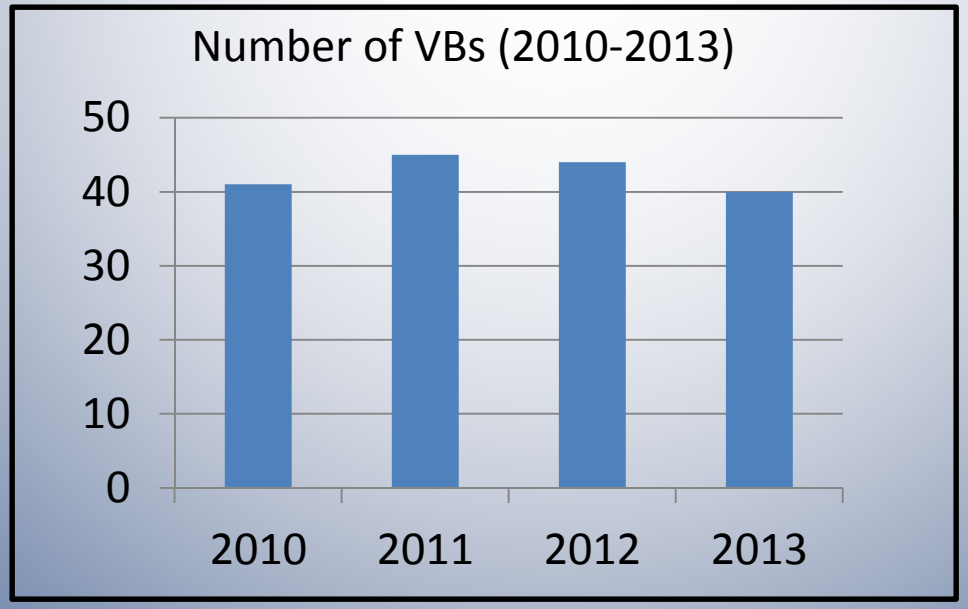
- At least one member of verification team must have sector accreditation (and attend site visit, where applicable)
- Accreditation requires experience and passing ARB exam in that sector
  - Process emissions specialist
    - Cement, glass, lime, pulp and paper, iron and steel, nitric acid
  - Transactions specialist
    - Natural gas, LPG, transportation fuel, and CO_2 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
- 1 new VB this year
- 13 VBs chose not to maintain their accreditation



Air District Verifiers

- 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
- 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
- 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…

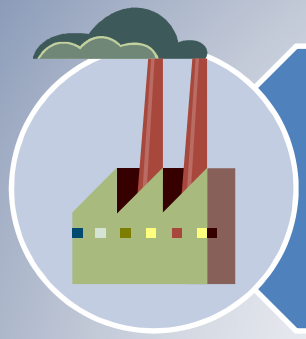
- Use missing data spreadsheet if applicable
- Maintain specific ARB guidance in Plan
- Track version control for all documents/data
- Explain to verifier why it is important to your company to maintain accurate data for reasons other than GHG reporting

  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

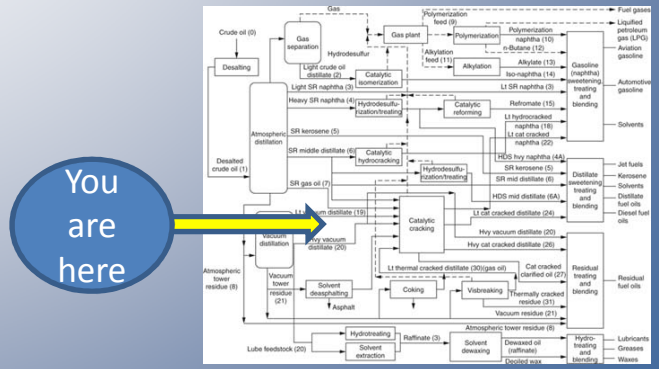
- EPA 98.3(g)(5)

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
  - <u>Simple</u> 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.

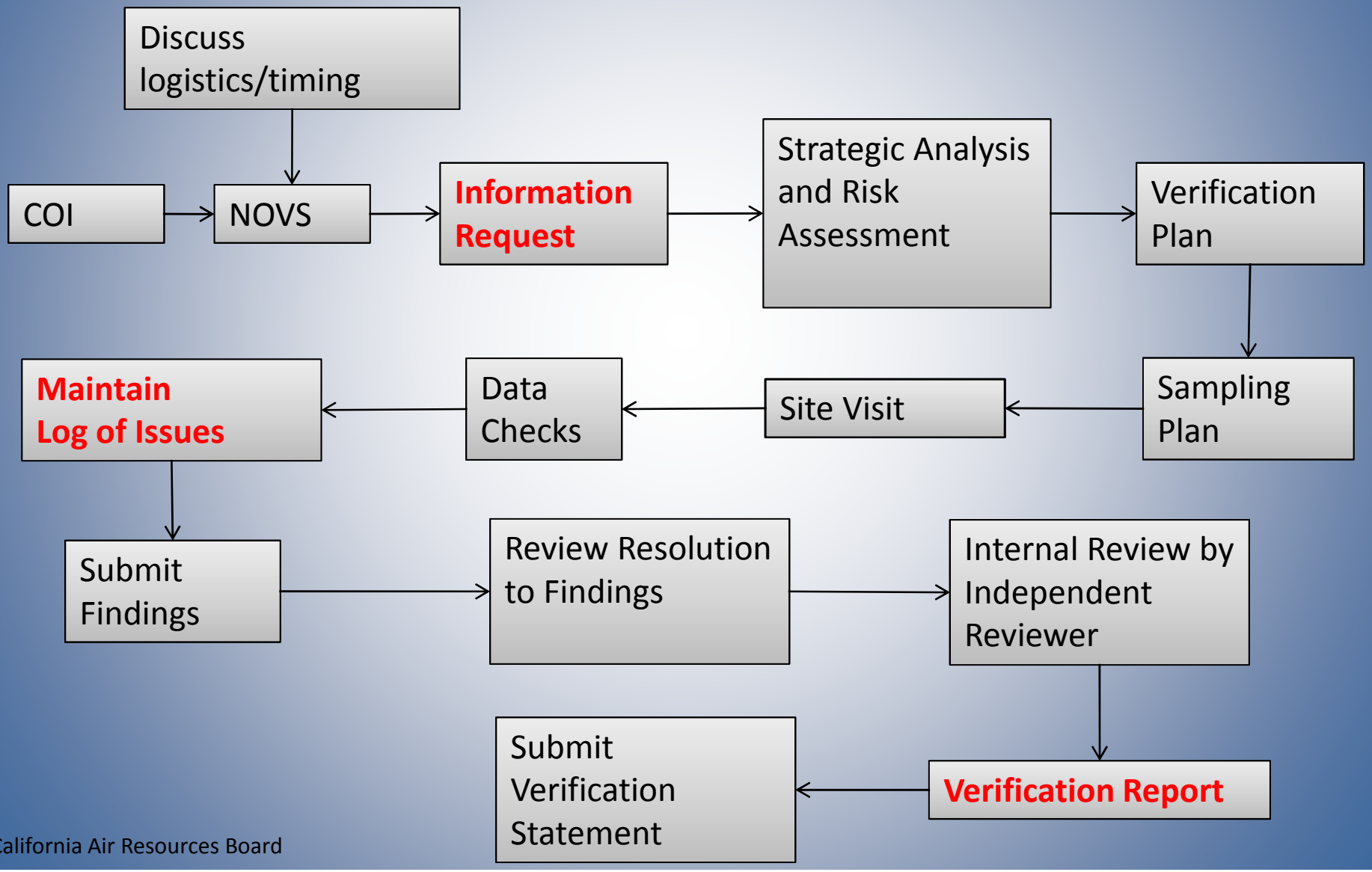
VB conducts a final review of data; submits verification statement by September 3, 2013.

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

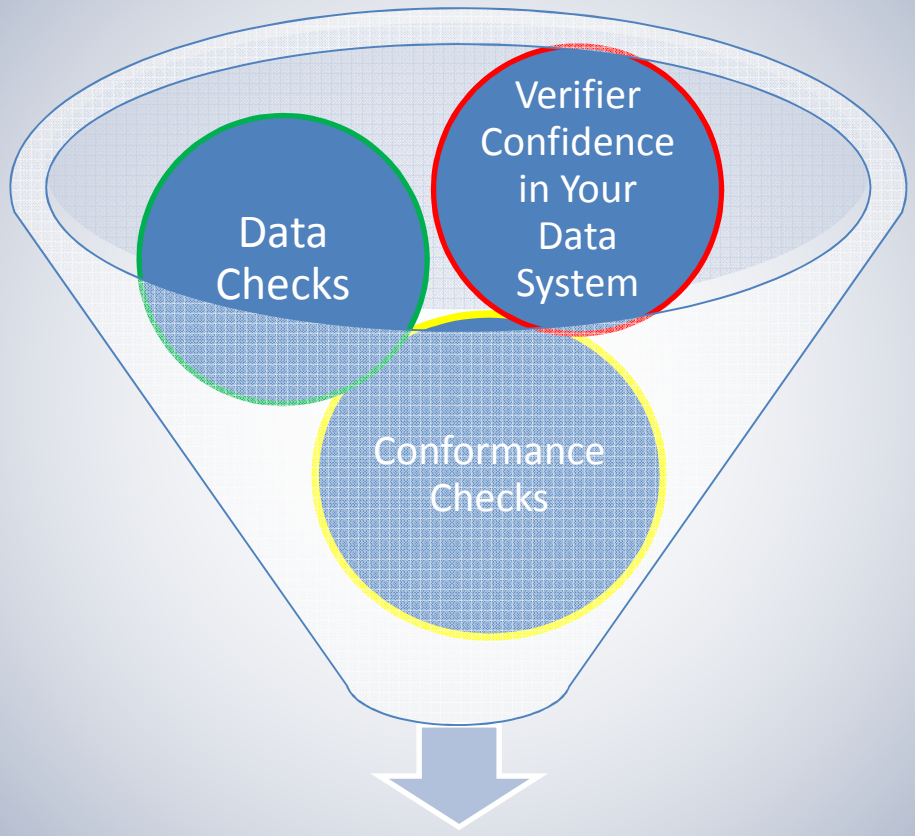
3 Key Steps During Verification



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



Verification Statement

Verifier Confidence in Your Data System

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 CO_2
  - Cross-check with other data

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

- 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

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

- 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

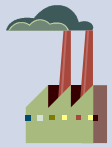
Data Checks

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)

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

Emissions

Conformance Checks

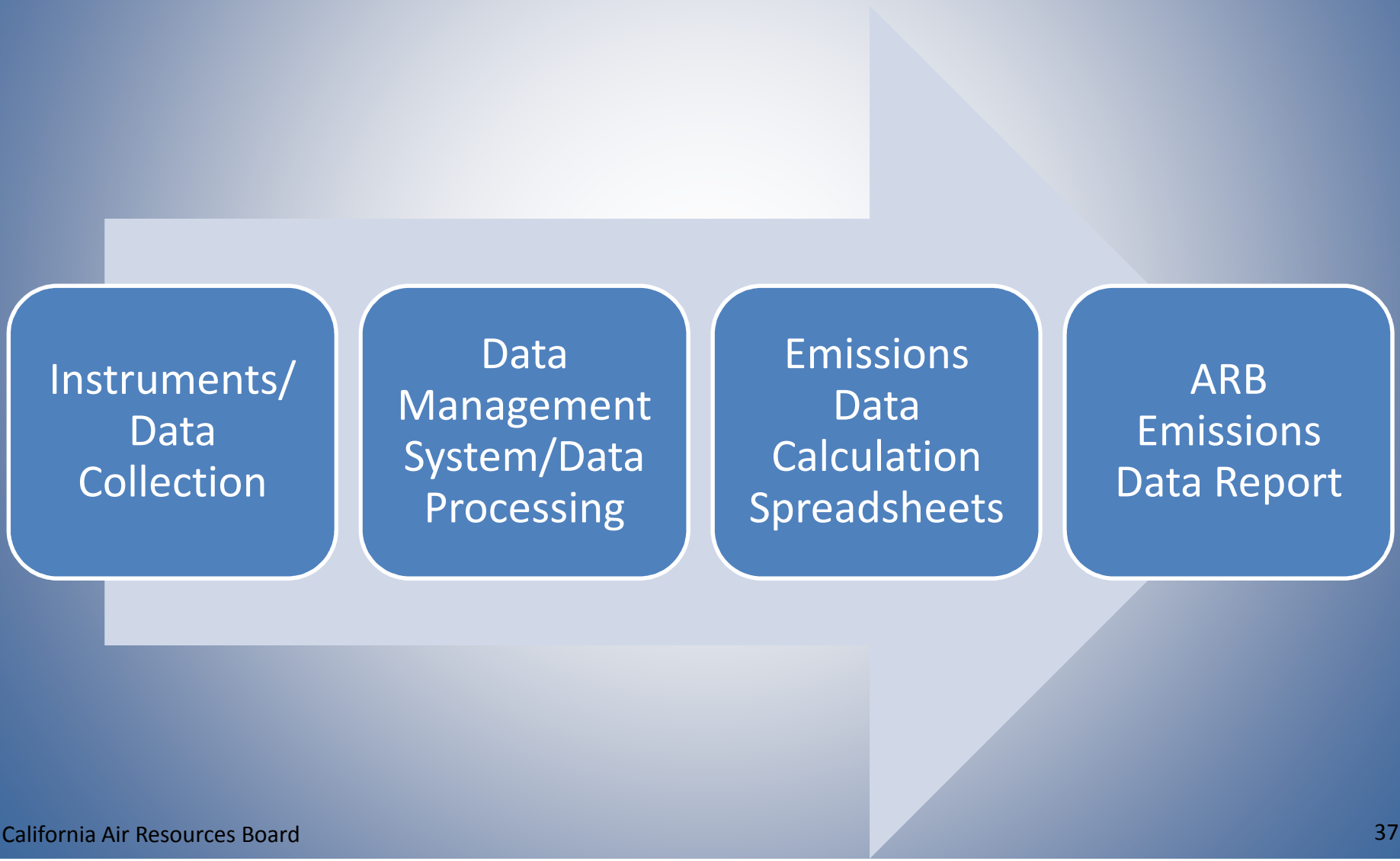
Conformance Checks

- 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



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_2e 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_2O if CEMS used to measure CO_2
- May <u>not</u> 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

Source	Issue	Description	Reference	Resolution
Boiler #2	Calculation Error; Non conformance	2,364 MT CO_2e discrepancy between reported emissions and verifier calculated emissions due to spreadsheet formula calculation error	95115(c)(1)	Operator re-calculated emissions for the source and the discrepancy was resolved (OK)
Process Heater #1	Non-conformance	Incorrect emission factor used - heater combusts distillate fuel oil but operator used EF for motor gasoline	95115(c)	Operator re-calculated emissions using the appropriate emission factor (OK)
Diesel fuel tank	Non-conformance; possible material misstatement	Fuel meter on diesel fuel tank does not meet +/-5% accuracy requirement, *and* it has not been classified as a de minimis source	95103(k)(2)	Because the fuel tank results in <3% of total emissions and <20,000 MT CO2e, the source was classified as de minimis (OK)
Correctable Errors	Potential Non-conformance	All correctable errors listed above must be fixed or explained, or an adverse verification statement is triggered	95131(b)(9)	All errors were corrected (OK)

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

Updated Verification Guidance Materials Coming Soon

- 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

Key Dates with Suggested Verification Milestones

Date	Activity
March	**Contract with verification body (and schedule site visit if applicable). Note: verification services may begin after certification of emissions data report**
April 10	Regulatory deadline: Reporting deadline for facilities and suppliers of fuels and carbon dioxide, except when subject to abbreviated reporting
June 3	Regulatory deadline: Reporting deadline for electric power entities and those subject to abbreviated reporting
July 1	**Try to get answers to all questions from ARB and request (final) issues log from verifier**
July 15	Regulatory deadline: Deadline for corrections to RPS Adjustment data required for electric power entity data reports
September 3	Regulatory deadline: Final verification statements due (emissions data and product data)

GHG Reporting Contacts

Subject Matter	Contact
GHG Mandatory Reporting (General)	ghgreport@arb.ca.gov or Dave Edwards, Manager 916.323.4887
Reporting Requirements, Stationary Combustion, Other Sectors (cement, glass, pulp and paper, etc.)	Patrick Gaffney 916.322.7303
Reporting Tool Registration and General Questions	Karen Lutter 916.322.8620
Electricity Generation and Cogeneration Facilities	Anny Huang 916.323.8475
Electricity Retail Providers and Electricity Marketers	Wade McCartney 916.327.0822
Fuel and CO_2 Suppliers - Transportation Fuels, Natural Gas, LPG, CO_2	Syd Partridge 916.445.4292
Petroleum Refineries, Hydrogen Plants, Oil & Gas Production	Byard Mosher 916.323.1185
Product Data – Refineries, and Oil & Gas	Joelle Howe 916.322.6349
Chief – Greenhouse Gas Emission Inventory Branch	Richard Bode, Chief 916.323-8413

GHG Verification Contacts

Subject Matter	Contact
All General Questions	**ghgverify@arb.ca.gov**
Greenhouse Gas Report Verification	Renee Lawver, Manager 916.322.7062
Stationary Combustion **Process Emissions** Specialist and Associated Product Data: Cement Production Glass Production Lime Manufacturing Nitric Acid Production Pulp and Paper Manufacturing Iron and Steel Production	Chris Halm 916.323.4865
Biomass Derived Fuels **Transactions** Specialty: Electricity Retail Providers and Marketers Suppliers of Transportation Fuels Suppliers of Natural Gas, NGLs, LPG, CNG, LNG Suppliers of Carbon Dioxide	Ryan Schauland 916.324.1847
Oil and Gas Systems Specialty: Petroleum Refineries Hydrogen Plants Oil and Gas Production	John Swanson 916.323.3076
Verifier Accreditation and Conflict of Interest Evaluations	Suzanne Hambleton 916.323.2308

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