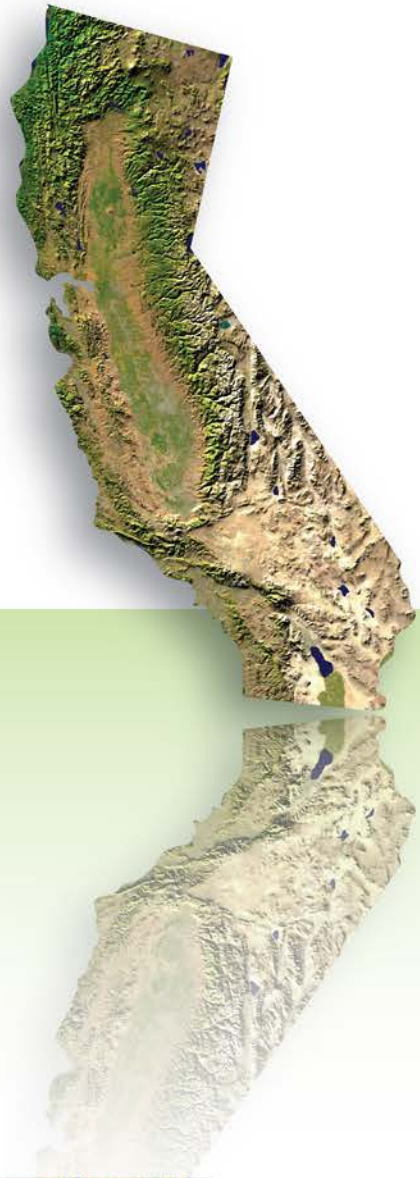
Verifier Accreditation Training for Mandatory Greenhouse Gas Reporting



General Verification
Course 1.1 - Verification Context, Principles, and Program Overview

California Environmental Protection Agency
Air Resources Board

Welcome and Introductions

ARB Management Team:

- Renée Lawver, Manager, Verification Section
- Brieanne Aguila, Manager, Reporting Section
- Jim Aguila, Chief, Program Planning and Management Branch
- Rajinder Sahota, Chief, Climate Change Program Evaluation Branch

ARB Staff Contacts or ghgverify@arb.ca.gov

Sector	
Stationary Combustion, including Electricity Generation and Cogeneration Facilities, and **Process Emissions Specialty:** • Cement, Glass, Lime, Nitric acid, Pulp/Paper, Iron/Steel, and Lead	Chris Halm 916-323-4865 chalm@arb.ca.gov
Biomass Derived Fuels, and **Transactions Specialty**: • Electricity Retail Providers and Marketers • Suppliers of Transportation Fuels • Suppliers of Natural Gas, NGLs, LPG, CNG, LNG, and CO_2	Ryan Schauland 916-324-1847 rschaula@arb.ca.gov
Oil and Gas Systems Specialty: • Petroleum Refineries • Hydrogen Plants • Oil and Gas Production	John Swanson 916-323-3076 jswanson@arb.ca.gov
Manager, Verification Section	Renée Lawver 916-322-7062 rlawver@arb.ca.gov
GHG Reporting Section staff : http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-contacts.htm	

The Climate Registry Team

- The Climate Registry
  - Amy Holm, Program Director
  - Michelle Zilinskas, Program Assistant, Verification Services
- Direct Path Strategies (DPS), Inc.
  - Bill Master
  - Ann Hewitt
  - Don King
  - John Kline

Classroom Basics

- Be on time
- Remain active participants
- Be courteous to others
- Turn cell phone sound off
- Asking questions:
  - Raise your hand
  - Stick to the topics being presented
  - We will also pause throughout the course for Q&A, to check in with ARB staff for clarifications and for short breaks between classes

MRR Verifier Accreditation: Course Content and Exams

Course 1: General Verification for Mandatory GHG Reporting

- 1.1 Verification Context, Principles, and Program Overview
- 1.2 Stationary Fuel Combustion and Sorbent Sources
- 1.3 Accuracy & Product Data
- 1.4 Electricity Generating Units & Cogeneration

Course 2: Transactions Specialty

Course 3: Oil and Gas Systems Specialty

Course 4: Process Emissions Specialty

Disclaimer

This accreditation training is intended to provide administrative detail and recommended practices for compliance with the verification provisions of the California Air Resources Board's (ARB) Regulation for the Mandatory Reporting of Greenhouse Gas (GHG) Emissions (Regulation) (Title 17, California Code of Regulations, § 95100-95158).

Unlike the Regulation itself, this training and associated materials do not have the force of law. The training and associated materials are not intended to and cannot establish new mandatory requirements beyond those that are already in the regulation, and they do not supplant, replace or amend any of the legal requirements of the regulation. Conversely, any omission or truncation of regulatory requirements does not relieve verification bodies, lead verifiers, verifiers of emissions data reports, or reporting entities of their legal obligation to fully comply with all requirements of the regulation.

Note: ARB verification accreditation exams are not limited to this verification accreditation training or associated materials. The exams may test on anything contained in the regulation, this accreditation training, and associated materials.

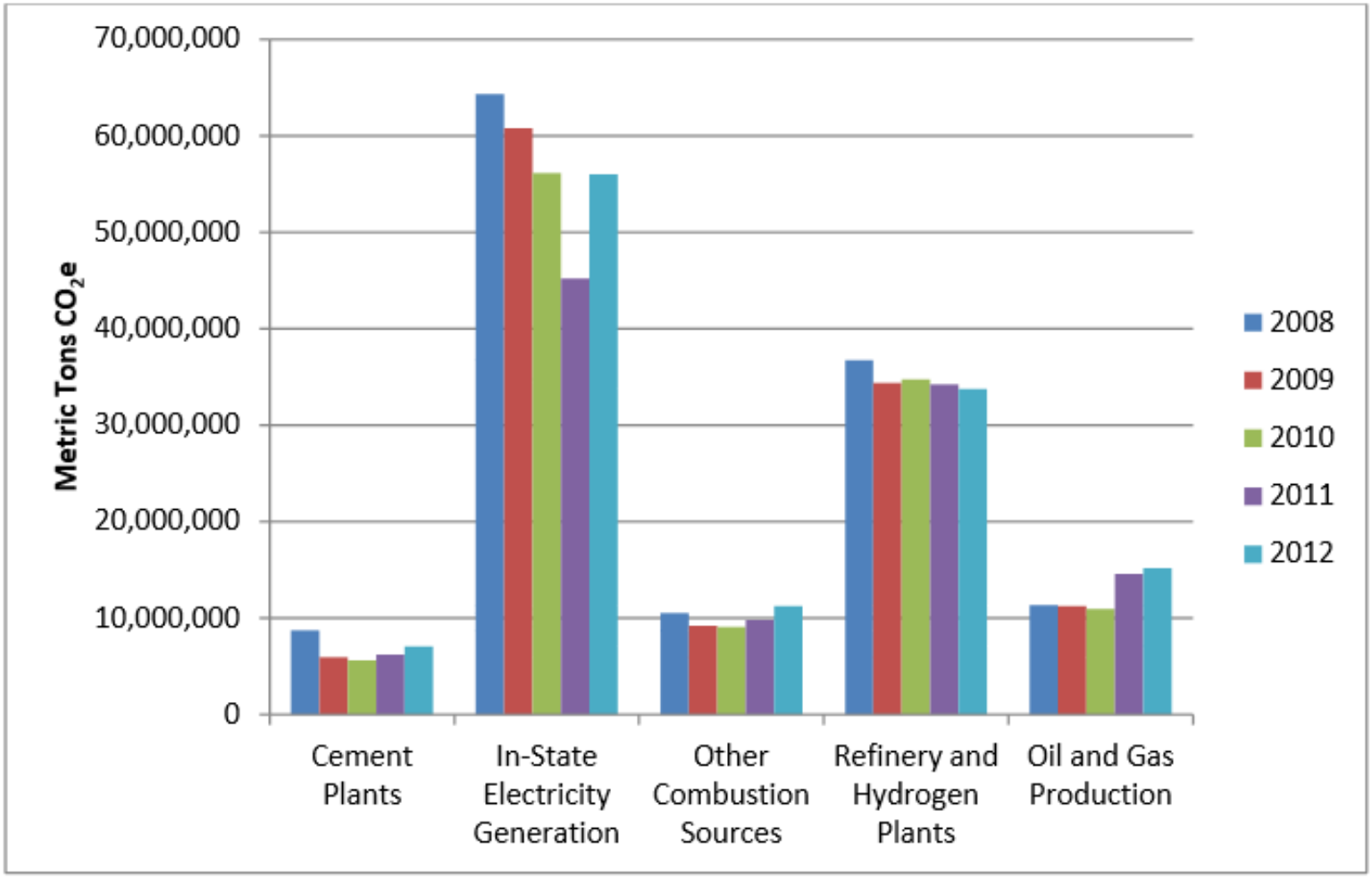
Number of Reports Expected to be Verified[1]

Source Type	Facilities	Source Type	Facilities
EGUs/Cogen	180	CO_2 suppliers	<3
SFCs	95	Cement manufacturing	9
Fuel suppliers[2]	38	Glass production	10
Electric power entities	70	Hydrogen production	7+
Pet. & gas extraction	50	Iron & steel production	<3
Petroleum refineries	23	Lime manufacturing	<3
Pulp & paper	7	Nitric acid production	<3
		Lead Production	<3

[1] Based on public release of 2013 data

[2] Transportation fuels and NG/LNG/LPG suppliers

GHG Emissions Comparison



Mandatory Reporting Regulation (MRR) Requirements Covered in Course 1

Subarticle 1:

§95101 - Applicability

§95102 - Definitions

§95103 - General Requirements

§95104 - Emissions Data Report

§95105 - Recordkeeping

§95106 - Confidentiality

§95107 - Enforcement

§95109 - Standardized Methods

Subarticle 2:

§ 95115 - Stationary Fuel Combustion (SFC) and Sorbent Sources

§95112 - Electricity Generation Units (EGUs) and Cogeneration

Subarticle 3:

§95129 - Substitution of Missing Data for SFC and CEMS

Subarticle 4:

§95130 - 95133 - Verification

Specialist Accreditation Training

Course/Specialty	Sub-specialty
Course 2 **Transactions**	• Electric Power Entities • Suppliers of Transportation Fuels • Suppliers of Natural Gas, Natural Gas Liquids, and Liquefied Petroleum Gas • Suppliers of Carbon Dioxide
Course 3 **Oil and Gas Systems**	• Petroleum Refineries • Petroleum and Natural Gas Systems • Hydrogen Production
Course 4 **Process Emissions**	• Cement Production • Glass Production • Lime Manufacturing • Nitric Acid Production • Pulp and Paper Manufacturing • Iron and Steel Production • Lead production

Verifier Exams - Scope

- All Exams will be based on
  - Training coursework
  - ARB's Mandatory GHG Reporting Regulation (MRR)
  - Relevant portions of EPA's 40 CFR Part 98 (Part 98)
- Participants must know the relevant portions of MRR and Part 98

Verifier Exams - Format

- 90 minute written exam
  - 10 multiple choice (20%)
  - 10 short answer (50%)
  - 2 long answer (30%)
- General exam includes all elements covered in training
- Sector specialty tests may also include general verification elements
- Complete all questions
- Partial credit given

Verifier Exams - Tools

- For the general verifier exam, bring
  - Hard copies of the current Mandatory Reporting Regulation and 40 CFR Part 98 Subparts A, C, and D posted on ARB web
  - Training slides
  - Calculator
- Notes in the margins of slides and regulations are acceptable as well as tabs and highlights
- May NOT bring hand-written or typed notes that are not on slides or in regulations (e.g., do not bring a sheet of notes, equations, etc.)
- See exam policy: Handout 1.1.1

Verifier Exams - Scoring

- Exams scored within two weeks
- Results
  - Greater than 70% (unweighted) = pass
  - ≤ 70% = fail; may retake once
- May discuss topics in failed exam with ARB staff
- Exam retakes will be in Sacramento in April 2015

Questions and ARB Comments

Course 1.1 Verification Context, Principles, and Program Overview

- Overview of AB 32 Climate Change Programs
  - Scoping Plan
  - Regulation for the California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms (C&T)
  - Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (MRR)
  - Cost of Implementation Fee Regulation
- Verification Principles and Process Overview
- General Reporting and Verification Requirements
- Verification Process
- ARB Oversight

Course 1.1 Handouts

- 1.1.1 - Exam Policy - already discussed
- 1.1.2 - Excerpts from Cap-and-Trade Regulation
- 1.1.3 - Verification Process Diagram
- 1.1.4 - Issues Log Examples

California Global Warming Solutions Act of 2006 (Assembly Bill 32, Nuñez, Statutes of 2006, Chapter 488)

- "Early action" reductions
- Required ARB to write a "Scoping Plan" to reduce statewide emissions to 1990 levels by 2020
  - Governor's Executive Order to achieve 80% reduction of 1990 levels by 2050
- Adopted
  - GHG emission reduction measures
  - Requirements for GHG reporting and verification
  - Cost of Implementation Fee Regulation

AB 32 Scoping Plan

- Outlines strategy for reaching 2020 target
- Strategy combines
  - Technology-forcing standards
  - Market mechanisms
  - Incentives
  - Voluntary programs
- Creates conditions to spur growth in California's clean technology businesses and jobs
- First Update to the AB 32 Scoping Plan - May 2014

California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms

- Works together with command-and-control measures (e.g., traditional regulation) to reduce GHG emissions
- The “Cap” of the Cap-and-Trade Regulation
  - Limits total GHG emissions from all regulated sources
  - Declines over time to reduce emissions
- Participants may trade GHG emissions allowances
  - Creates flexibility
  - Reduces the cost of compliance

C&T Covered Sectors (C&T § 95811)

- Stationary sources ≥25,000 MT CO_2e in a calendar year
  - Large industrial sources
    (e.g., cement, refineries, oil and natural gas producers)
  - Electricity generation and imports
  - <25,000 MT CO_2e prior to meeting criteria for cessation of reporting
- Upstream coverage of small combustion emissions sources (e.g., fuel wholesaler, or first entity to offer fuel on the market)
  - Transportation fuels
  - Residential and commercial use of natural gas
- Opt-in covered entities

C&T Compliance Obligation and Allocation of Allowances

- Covered entities in C&T must have compliance instruments equal to their *covered* emissions
- Compliance instruments are
  - Allowances
  - Offsets
- Verified data determines compliance obligation and direct allocation of allowances from ARB to certain industrial entities
  - Verified covered emissions → compliance instruments
  - Verified NAICS code and, as applicable, verified covered product data → free allowances

Compliance obligation = total covered emissions for calendar year

Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (MRR)

- Satisfies AB 32 requirements to estimate, report, and track GHG emissions
- Provides accurate, verified, and reporting entity-specific GHG emissions and covered product data
- Original regulation adopted by the Board in Dec. 2007
- Updated in 2010 to support the Cap-and-Trade Program and harmonize with U.S. EPA Greenhouse Gas Reporting Rule
- Updated again in 2012, 2013, and 2014
- Improves California's GHG emissions inventory

U.S. EPA Federal Regulation - 40 CFR Part 98

- Mandatory reporting of GHGs on a facility basis
  - Rule published in October 2009
  - 2010 first emissions reporting year
- Applies to
  - Direct greenhouse gas emitters
  - Fossil fuel suppliers,
  - Industrial gas suppliers,
- Summary emissions data available to the public
  http://www.epa.gov/ghgreporting/ghgdata/reportingdatasets.html

MRR Compared to 40 CFR Part 98 (1 of 2)

- Harmonized calculation and reporting requirements
  - MRR incorporates many provisions of Part 98 by reference
  - Must use the specific version of 40 CFR 98 posted on ARB's website
- Key MRR additions to Part 98 requirements:
  - Lower reporting threshold:[1]
    10,000 MT CO_2e vs. 25,000 MT CO_2e
  - Applicability threshold evaluation includes
    - Biogenic emissions
    - Geothermal emissions
    - Fuel cell emissions

[1] Note verification threshold is ≥ 25,000 MT CO_2e, with some exceptions.

MRR Compared to 40 CFR Part 98 (2 of 2)

- Key MRR additions to Part 98 requirements:
  - More rigorous missing data provisions
  - "Higher tier" monitoring requirements for fuels with variable carbon
  - Requirements for reporting covered product data
  - Third-party verification of emissions and product data:
    - Sources ≥ 25,000 MT CO_2e
    - Cap-and-Trade covered entities
  - Adaptations to support California's Climate Change Programs

2013 and 2014 MRR Amendments (1 of 3)

- Underline strikeout versions help identify areas of nonconformance risk
- Applicability
  - Added new sector - lead production (§ 95124)
  - Added fuel cell emissions to applicability threshold (§ 95101(b)(6))
  - Clarified cessation criteria for reporting and verification (§ 95101(h)-(i))

2013 and 2014 MRR Amendments (2 of 3)

- Specified reporting requirements for legacy contract transition assistance applicants, including energy flow diagrams (§ 95112(i))
- Covered Product Data
  - Added and clarified food processing product data (§ 95115(n))
  - Added requirement to exclude inaccurate covered product data and optional exclusion of covered product data, except for cement sector (§ 95103(l))
  - Clarified provisions to change monitoring and calculation methodologies (§ 95103(m))

2013 and 2014 MRR Amendments (3 of 3)

- Added verification of NAICS code for codes/activities listed in Tables 8-1 and 9-1 of the Cap-and-Trade Regulation: inaccurate NAICS code reporting now results in adverse verification statement
- Clarified verification of correctable errors (§ 95131(b)(9))
- Updated verification data checks, conformance review, and material misstatement assessment (§ 95131(b)(8)and(12))
- Added Cost of Implementation Fee data fields

Questions and ARB Comments

- Overview of AB 32 Climate Change Programs
- Verification Principles and Process Overview
  - Reporting and verification standards
  - Key terms and concepts
  - Overview of verification process
  - Skills and responsibilities
  - Assurance and verification statement
- General Reporting and Verification Requirements
- Verification Process
- ARB Oversight

MRR Definition of Verification § 95102(a)

*A **systematic**, **independent** and **documented** process for evaluation of a reporting entity's emissions data report against ARB's reporting procedures and methods for calculation and reporting of GHG emissions and product data.*

- Systematic: organized, rigorous and thorough
- Independent: based on fact, unbiased, objective
- Documented: process, records, findings
- Judged against a set standard and to a given level of assurance
- Findings based on examination of objective evidence

Verification Standards and GHG Emissions

- Standard stipulates level of accuracy and level of assurance to be achieved
- Specifies an approach to be followed
- Other GHG programs use other reporting standards Examples include
  - CARB Compliance Offset Protocols
  - The Climate Registry (TCR) General Reporting Protocol
  - American Petroleum Institute (API) Compendium of GHG Emissions Estimation Methodologies for the Oil and Natural Gas Industry

MRR as a Reporting Standard

- Specific emissions monitoring and reporting requirements
  - Reporting threshold of 10,000 MT CO_2e per calendar year
  - Verification threshold of 25,000 MT CO_2e per calendar year with some exceptions
    - All C&T covered entities subject to verification
    - C&T opt in covered entities also require verification (see C&T § 95814)
    - Continued reporting and verification during cessation period
- Defines material misstatement (+/-5% error)

MRR as a Verification Standard

- Establishes accreditation program for individual verifiers and verification bodies
- Requires “reasonable assurance,” which means “a high degree of confidence that submitted data and statements are valid”
- Requires separate verification statements for emissions data and for product data

Scope of Verification

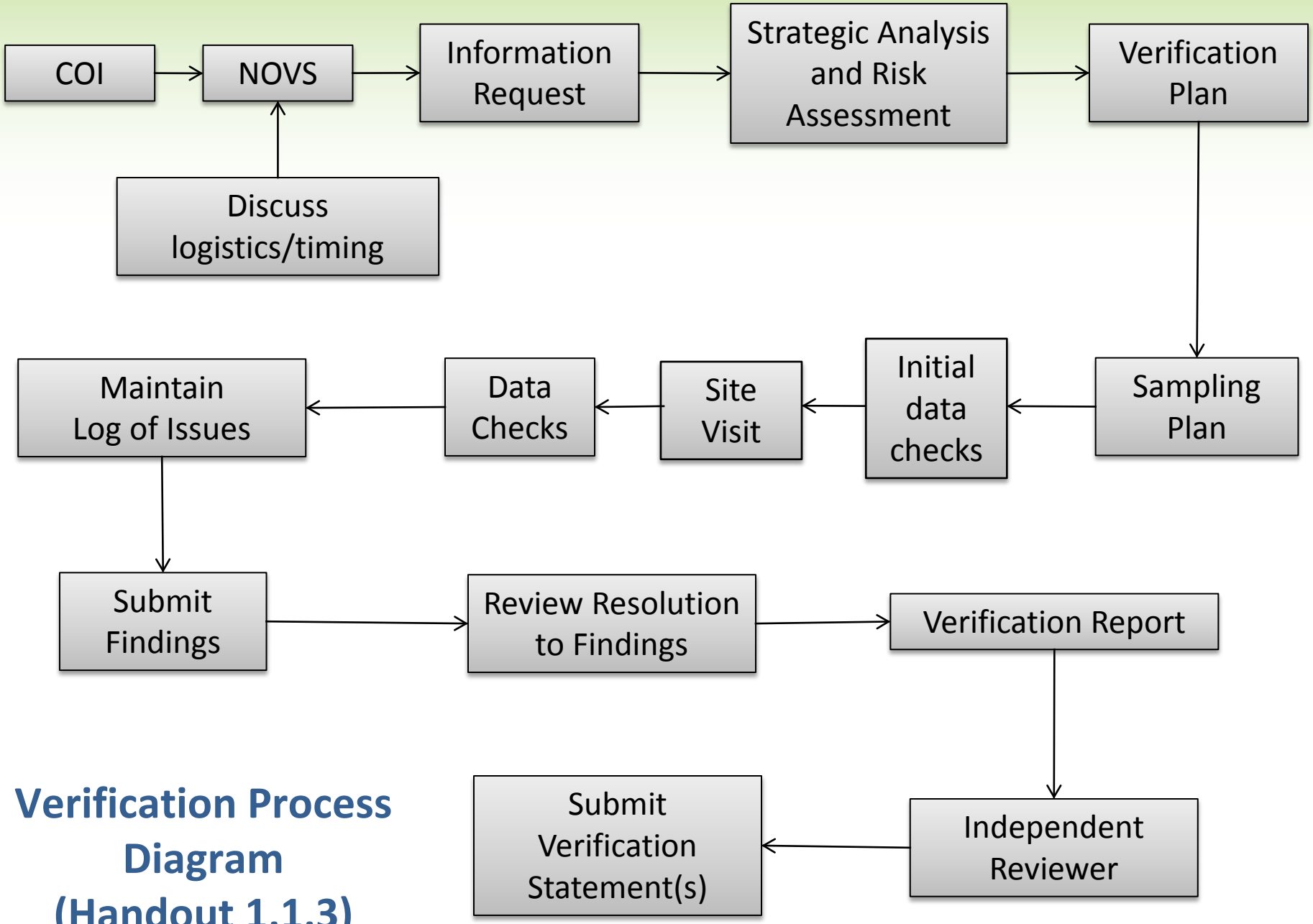
- GHG Emissions
  - Carbon dioxide, methane and nitrous oxide
  - Data, data collection, calculations, and data report
  - Material misstatement and conformance with regulation
  - Review covered and non-covered emissions
  - Covered emissions data are reviewed for accuracy and conformance with the regulation
  - Non-covered emissions are reviewed for conformance with the regulation only, not reviewed for material error
- Covered Product Data - Course 1.3

"Covered Emissions"

- Defined in MRR § 95102(a):"Covered emissions" mean all emissions included in a compliance obligation under C&T § 95852 - § 95852.2
  - Listed in Handout 1.1.2 Cap and Trade Regulation Excerpts
- Determine a reporter's Cap-and-Trade compliance obligation:
  - Covered entities (C&T § 95811)
  - Covered gases (C&T § 95810)
  - Emissions with and w/o compliance obligation (C&T § 95852-95852.2)
- Verified for material misstatement and for conformance (measured and calculated following MRR procedures)

"Non-covered Emissions"

- Emissions w/o a compliance obligation (C&T § 95852.2)
- Partial List of "non-covered emissions"
  - Exempt biogenic emissions
  - Geothermal emissions
  - Most fugitive and vented emissions from oil and gas production
- Verified for conformance with MRR
- No material misstatement assessment



Verification Process Diagram (Handout 1.1.3)

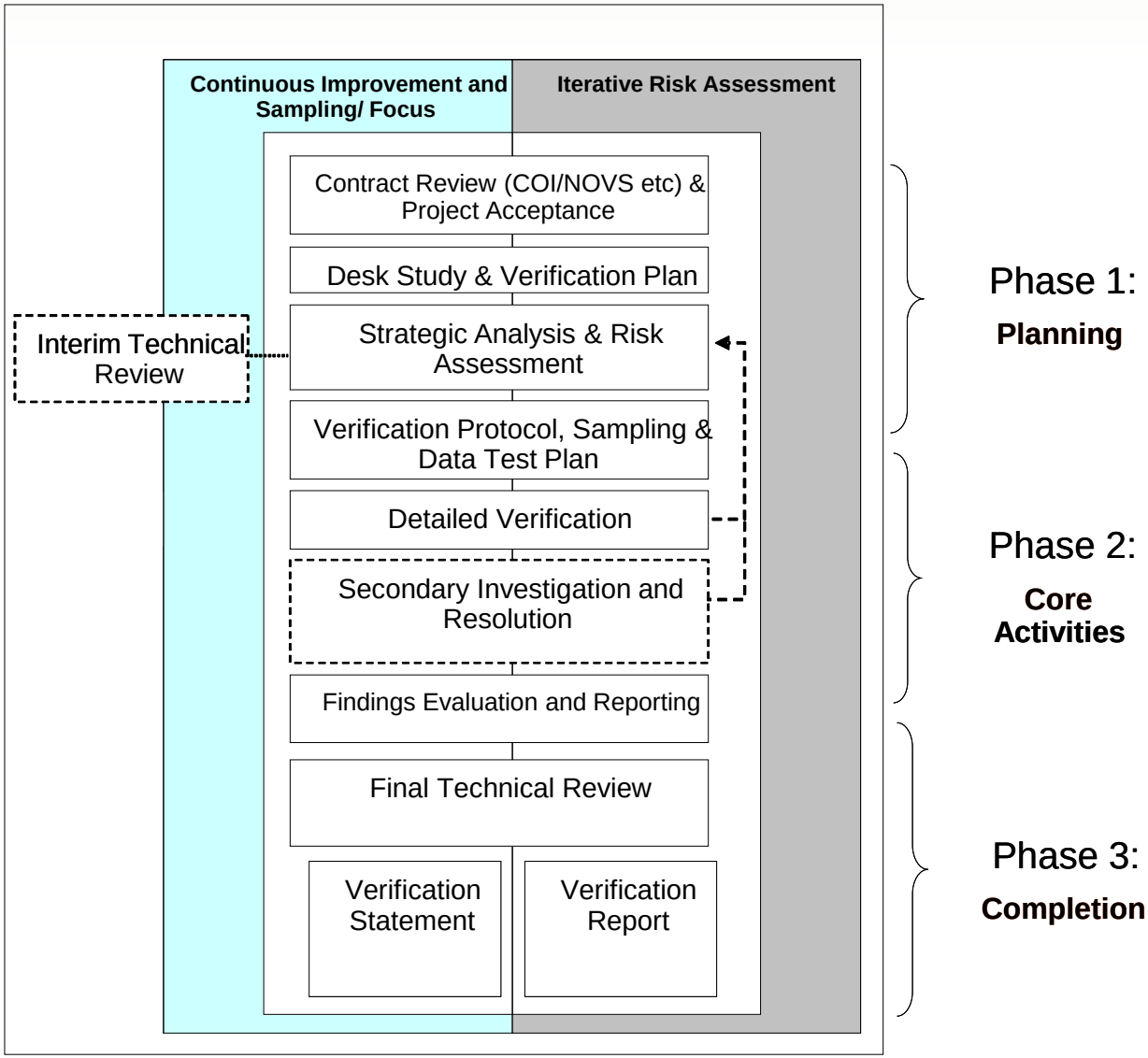
Overview of Verification Process (1 of 2)

- Pre-Verification Activities
  - Determine scope of verification services
  - Secure contract with reporting entity
  - Submit conflict of interest (COI) self-assessment and Notification of Verification Services (NOVS) for ARB approval
    - Wait for ARB approval before beginning *verification services* (§ 95102(a))
- Planning Verification Services
  - Review GHG monitoring plan and emissions data report, confirm verification scope, send data request
  - Conduct preliminary data review, strategic risk analysis, write verification plan and sampling plan, potential independent review
  - Identify any immediate issues in preliminary issues log

Overview of Verification Process (2 of 2)

- Conducting Verification:
  - Complete site visit to evaluate data management systems, emissions sources, and product data (if applicable)
  - Check data to identify errors and provide issues log to reporter (this may be an iterative process)
- Completing Verification:
  - Complete verification report summarizing resolution of issues
  - Conduct independent review—Independent Reviewer assesses procedures, judgment, and conclusions of verification team
  - Submit emissions data verification statement to ARB
  - Submit separate product data verification statement, but only if applicable

Verification Overview—Iterative Process



Skills and Responsibilities of an Effective ARB-Accredited Verifier (1 of 2)

- Understand and adhere to MRR and associated regulations and laws
- Understand reasonable assurance and how it applies to emissions data report verification
- Prepare, plan, stay organized, and keep good records
- Communicate effectively with reporting entities
  - Listen, ask questions
  - **Do NOT give advice**
  - Contact ARB for guidance, as needed

Skills and Responsibilities of an Effective ARB-Accredited Verifier (2 of 2)

- Maintain independence and objectivity
- Perform with integrity and honesty
- Review emissions data reports on behalf of ARB
- Focus on safety and efficiency

The Importance of Impartiality

- Conflict between self-interest and ability to maintain independence and objectivity
- Conflict of interest can be real or perceived
- Perceived COI can undermine public support and confidence in the quality of the reported data
- Conflict of interest can damage the reputation of impartiality of a verification body or verifier
- Conflict of interest is assumed to impair the quality of verification

Types of Conflict of Interest MRR § 95133

High COI 95133(b)	Medium COI 95133(d)	Low COI 95133(c)
• Sharing of staff between reporting entity and Verification Body (VB) • Providing services within 5 years — air emissions or GHG reduction project consulting; — brokering GHG credits; — IT systems services • Providing non-monetary incentive to secure a verification contract	• When high or low COI does not exist • Personal or familial relations between VB and reporting entity management • COI mitigation plan is required	• No High-COI conditions exist AND • Any non-verification services provided within the last 5 years are less than 20% of verification contract value • Verification services are provided within 6 calendar years, or following 3 year break • Verification that follows ARB COI requirements

Conflict of Interest (COI) / Notice of Verification Services (NOVS) Forms §95133

- ARB recommends combined submittal of COI/NOVS forms after the VB holds the verification contract
  - ARB response required within 30 working days
  - May not begin work w/o ARB written approval
  - Resubmit form if change in lead verifier or independent reviewer
- If NOVS submitted after ARB approval of COI, services can begin 10 working days from NOVS submittal
- May submit COI during response to proposal, but do not submit NOVS until you hold the contract

COI Requirements and Air Districts §95133(h)

- Any regular air district activities contained on list of high COI types of activities constitute medium COI if verification team is isolated from other district staff
- Must certify to prevent and/or mitigate any COI
- Hiring of subcontractors requires full COI evaluation of all VB (district) staff

Data Confidentiality § 95106

- Verifier can review all relevant data
  - Verifiers and Verification Bodies are responsible for maintaining confidentiality
- Emissions data, after release by ARB, is public information
  - Process rates and fuel characteristics can be marked confidential by reporting entities
- Similarly, data released by U.S. EPA is public information

Questions and ARB Comments

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  - Assurance and verification statement
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Assurance

- Intended to increase user confidence in information/data
- Three types of assurance: absolute, reasonable and limited
  - Reasonable assurance for MRR
- Financial audits have high level of rigor
  - Covered emissions and covered product data have financial implications and must have same level of rigor

Levels of Assurance

- Absolute assurance
  - 100% certainty that data/reports are correct because all data are checked
  - Considered onerous

- Limited assurance
  - Limited review of data and controls
  - Assurance is given in the negative: "nothing has come to our attention that causes us to believe that the emissions data report is not materially correct"

Reasonable Assurance

- Reasonable assurance is used in MRR § 95102(a)
  - High degree of confidence that submitted data and statement are valid
- If reasonable assurance of no material misstatement is not demonstrated by the reporting entity, results in adverse verification statement
  - Data Sampling
  - Conformance Checks

Establish Reasonable Assurance of No Material Misstatement § 95131(b)(12)

Any discrepancy, omission or misreporting (or combination) that leads the verifier to believe that the total reported covered emissions or covered product data have errors > +/-5%

$$Percent\ error = \sum \frac{[Discrepancies + Omissions + Misreporting\ ] \times 100\%}{Total\ reported\ Covered\ emissions}$$

$$Percent\ error = \sum \frac{[Discrepancies + Omissions + Misreporting\ ] \times 100\%}{Total\ Covered\ \ product\ data}$$

Examples of Discrepancies, Omissions, and Misreporting of Emissions

Discrepancies **Differences between what was reported and what verifier calculates**	**Omissions** **Missing data that should have been reported**	**Misreporting** **Data that should or should not have been reported**
• Error in calculations • Use of incorrect data	• Source not reported • Period of time missing	• Duplicated emissions • Excluded source reported

Establish Reasonable Assurance of Report Conformance with MRR Requirements

- "Nonconformance" means the failure to use the methods or emission factors specified to calculate emissions, or the failure to meet any other requirements of the regulation (§ 95102(a))
- Verifier must have reasonable assurance that methods specified in MRR to calculate emissions and covered product data are followed
- Scope of the conformance review of other reported information must also be considered in risk assessment and discussed in sampling plan

Examples of Nonconformance

- Incorrect emission factor used
- Fuel bill did not include 10 days in December
- Stationary combustion emissions reported under wrong subpart (hydrogen production)
- Small boiler observed on-site was not included (incomplete reporting)
- The sum of fuel meters double-counted a fuel stream
- Incorrect substitution of missing data
- Fuel flow measurement that represents half of total facility emissions has 10% error
- Incorrect product reported and/or product specification does not meet MRR definition

Emissions Data Report Non-conformances vs. Other Regulatory Non-conformances

- Your verification statement applies to (a) statements made by reporting entity in the emissions data report, and (b) conformance with GHG Monitoring Plan requirements
- Your verification statement does not include
  - Identified non-conformances with the regulation that are NOT included in the entity's GHG report (e.g., records related to GHG emissions not kept for 10 years)
  - Weaknesses
- Weaknesses should be considered in risk assessment and sampling plan and documented in the issues log, e.g.,
  - GHG Monitoring Plan includes staff training section, but not all relevant training is included
  - New staff unfamiliar with monitoring procedures

Issues Log Example (Handout 1.1.4)

#	Date	Description of Issue/Source	Regulation Citation	Potential Impact upon GHG Data	Action Required by Reporting Entity	Resolution
1	4/23/2014	GHG Monitoring Plan incomplete.	MRR §95105(c)	Meter location, description, and calibration records not made available. Non-conformance if not provided.	Please email these documents to me before the site visit on May 15, 2014. Failure to demonstrate accuracy may result in possible material misstatement and an adverse verification statement.	**Resolved on 5/10 via email.** Revised Plan emailed on 5/10 and was found to be complete.
2	5/15/2014	Emissions from propane heaters in Bldg. 54-A not reported.	40 CFR §98.32, and MRR §95115	Non-conformance; correctable error.	Provide invoices from 2012 and 2013 that includes the delivery date and amount of fuel delivered. Report propane emissions in Cal e-GGRT. This error must be fixed, or an adverse emissions data verification statement would be triggered.	**Resolved on 5/20 via email.** Invoices clearly showed fuel usage for 2013, and were clearly billed starting on the first day of each month. Propane emissions reported as de minimis. Calculation method is reasonable (Tier 1); emissions confirmed to be <3% of total and <20,000 MT CO2e.
3	5/15/2014	The reporting entity calculated emissions from RUZ10 boiler burning non-pipeline quality natural gas using the default high heating value of 1,028 Btu/scf for pipeline quality natural gas.	MRR §95115(c) and 40 CFR §98.33(b)	Non-conformance; correctable error.	Provide the regulation citation that allows for the use of a Tier 1 calculation for non-pipeline quality natural gas. Please determine if §95115(c)(4) applies to your facility and revise your emissions data report by 5/30/2014. Please contact ARB staff if you have questions about which Tier to use to report your emissions data.	**Resolved on 5/25 via email.** Reporting entity revised their emissions calculation to use Tier 3. Calibrations, MW calcs, flow measurements and corrections are all provided in GT40-GHGdata.xlsx spreadsheet. Calculation is in conformance (EDR certified in Cal e-GGRT 5/24).

Types of Verification Statements

- **Positive**
- **Adverse**
  - Due to material misstatement
  - Due to correctable error
  - Both
- **Qualified Positive**
  - No material misstatement
  - Other nonconformances
- Separate Verification Statements:
  (1) emissions and (2) product data
  - Separate verification statements are rendered, but both emissions and product data are included in emissions data report (in Cal e-GGRT)
- A qualified positive or adverse verification statement requires full verification the following year

Effect of Nonconformance on Verification Statement ("VS")

- If not corrected, reporting non-conformances lead to either a qualified positive VS or an adverse VS
- If non-conformance is a "correctable error" and not corrected, verifier must submit an adverse VS (§ 95131(b)(9))
- Note:
  - All nonconformances should be included in the issues log and sent to reporting entity to be addressed
  - Include all non-conformances observed based on original certified emissions data report, even when the reporting entity identifies the error

Correctable Errors (1 of 2)

- § 95131(b)(9) states "the verification team must document the source of any difference identified, including whether the difference results in a correctable error"
- Correctable errors means "errors identified by the verification team that affect covered emissions data, non-covered emissions data, or covered product data in the submitted emissions data report that result from a non-conformance with this article." (§ 95102(a))
  - i.e., most errors that affect emissions or covered product data are considered correctable and lead to an adverse VS, if not addressed
- **If not fixed, results in adverse verification statement**
- **Contact ARB staff if there is a question whether an error is correctable**

Correctable Errors (2 of 2)

- Not all differences in data checks are errors and not all errors are correctable errors
  - Reasonable differences from rounding or truncation are acceptable (not considered an error)
  - If verifier sampling plan called for cross-check of data, differences might not represent correctable errors
  - If error does not affect covered emissions, non-covered emissions or covered product data (e.g., net electricity generation), it is not a "correctable error", but may still be a non-conformance that results in a qualified positive VS
- Verifier should investigate differences and justify in data checks and sampling plan whether observed difference was a correctable error

Examples of "*Correctable Errors*"

- Natural gas bills used to report emissions spanned December 15, 2013 to December 14, 2014 and were not prorated for calendar year, resulting in a 0.2% difference
- Operator did not report emissions from propane space heating, resulting in a 0.07% difference
  - Source has to be included
- Operator used data from an incorrect year from a database
- Operator improperly included pass-through natural gas
- Operator changed calculation method without ARB approval
- Missing data provisions used incorrectly
- NAICS code listed in Table 8-1 of Cap-and-Trade Regulation does not represent facility activities

Examples of Other Nonconformances that Result in Qualified Positive VS if not Addressed

The following non-conformances are not considered part of the "correctable error" definition but still must be addressed to avoid a qualified positive VS

- Operator reported net electricity generation as kWh instead of MWh
- The GHG Monitoring Plan did not include required elements outlined in § 95105(c)
- Required calibration was not performed on a given meter used to calculate emissions

Examples of Issues that DO NOT Affect VS

- Rounding differences - Verifier's data check includes a difference from the emissions data report, which is due to reasonable differences in rounding
- Late Reports - Emissions data report submitted after the reporting deadline or verifier submits the verification statement after the verification deadline because the verification was part of an enforcement settlement
- Recordkeeping requirements
  - Previous emissions data reports not kept § 95105(a)
  - GHG Monitoring Plan includes all required elements outlined in § 95105(c) but does not explain all methods and procedures completely

If not corrected, what Verification Statement is issued, absent other issues?

Issues	Positive	Qualified Positive	Adverse
Incorrect emission factor used, leading to 0.4% error that is not fixed			X
GHG Monitoring Plan missing a required element		X	
Spreadsheet error, leading to 10% error in covered emissions that is not fixed			X
Rounding error leads to difference of 3 metric tons, 0.001%	X		
Incorrect missing data substitution procedures used			X
Net electricity generation does not include month of January		X	
NAICS code incorrectly reported			X

Material Misstatement Assessment

- To calculate percent error (to determine materiality of errors), the following formula convention should be used:

$$\% \text{ Error} = 100 \times (\text{Reported Value} - \text{Verifier Value}) / \text{Reported Value}$$

- This formula results in a positive error if emissions were over-reported (reported inventory is too high)
- This formula results in a negative error if emissions were under-reported (reported inventory is too low)

Extrapolation of Errors in Sampled Data During Initial Review

- When an error is identified in a data sample, the verifier must first determine if it is a correctable error
  - If yes, the verifier notes the error in the issues log and discontinues quantitative analysis of the sampled area
  - If it is not correctable, the verifier continues quantitative analysis

- If the error identified in the sampled data is thought to be representative of the full data record, then the error should be extrapolated to all emissions reported for the full data record

- If the verifier is unsure if the error is representative of the full data record, then the sample must be expanded to determine the extent of the full data record that contains the identified error

Nonconformances - Reporting in Cal e-GGRT § 95104(e)

- Reporting entities are not responsible for reporting data required under this article that cannot be reported in the reporting tool
- If the reporting entity states that they cannot report some required information in Cal e-GGRT, **always contact ARB for confirmation**
  - In these cases, ARB will provide written confirmation and issue can be resolved by citing § 95104(f) in the issues log

Questions and ARB Comments

- Overview of AB 32 Climate Change Programs
- Verification Principles and Process Overview
- General Reporting and Verification Requirements
  - Thresholds, cessation, deadlines
  - GHG Monitoring Plan
  - Standardized methods
  - Changes in emissions calculation method
  - Recordkeeping requirements
  - Accreditation requirements for verification bodies and use of subcontractors
- Verification Process
- ARB Oversight

Reporting Thresholds § 95101

- Reporters with no threshold that have not met cessation criteria
  - Includes refineries, cement plants, nitric acid production, and others
  - Electricity importers
- Operators with emissions ≥10,000 MT CO_2e from stationary fuel combustion and process emissions
  - Includes biomass-derived fuels, geothermal sources, and fuel cells
  - Excludes vented and fugitive emissions
- Operators and suppliers with emissions ≥25,000 MT CO_2e
  - Includes vented and fugitive emissions
  - Includes portable non-self-propelled equipment from oil and gas
- Abbreviated (simplified) reporting allowed for operators with 10,000 - 25,000 MT CO_2e
  - Not subject to verification
  - Not allowed for operators with a compliance obligation or who have not met verification cessation requirements

MRR and C&T Applicability Terms

- Entities and sources reporting under MRR but not subject to C&T referred to as “non-covered”
- “Non-covered” included in the reporting and verification applicability assessment
  - Geothermal electricity generation emissions
  - Exempt biomass-derived fuel combustion emissions
  - Fuel cell emissions
- MRR § 95103(l) Must estimate *excluded* covered product data (Course 1.3)
- MRR § 95101(f) excludes sources from reporting such as
  - Emergency generators designated in air quality permits
  - Fire suppression systems and equipment
  - Agricultural irrigation pumps

Reporting and Verification Cessation § 95101(h)-(i) and C&T § 95812(e) - (f)

Covered entities are subject to both C&T and MRR

MRR requirements apply once no longer subject to C&T

- If emissions drop below 10,000 MT CO_2e, report for 3 years
- If emissions drop below 25,000 MT CO_2e, verify for that year
- Report and verify for year of shut down
- Report again for first full year after shut down, but do not verify

Deadlines for Submitting Reports and Verification Statements § 95103(e)

Source Type or Conditions	Reporting Deadline	Verification Deadline
All source types, excluding electric power entities and abbreviated reporters	April 10	September 1
Electric power entities	June 1	September 1
Abbreviated reporters	June 1	N/A
Corrected abbreviated reporters to correct cumulative errors that (§95103(a)(8)): • Exceed 5% of total CO_2e reported, OR • Result in total emissions ≥ 25,000 MT CO_2e	Within 90 days of discovery of error	• N/A • Case-by-case

If a reporter subject to a compliance obligation under the Cap-and-Trade Program fails to submit their emissions data report OR obtain a positive or qualified positive emissions data verification statement by the deadlines, then an emissions level will be assigned by the Executive Officer (§ 95103(h); § 95131(i)(5)(A)-(C)).

GHG Monitoring Plan Requirements for Facility Operators § 95105(c)[1]

- Identification of fuel use and covered product data measurement devices and locations
- Training practices of personnel
- Identification of any low-flow cutoffs
- Dates of measurement device calibration and scheduled re-calibration
- Equations used to calculate mass or volume flows
- Records of most recent orifice plate inspections
- Copies of methods used for fuel-based emissions analyses and standardized methods chosen
- Missing data procedures
- Original equipment manufacturer (OEM) documentation related to instrument accuracy, maintenance, calibration
- Fuel monitoring plan (optional weekly fuel meter check to reduce risk of missing data)

[1]Different requirements for suppliers (40 CFR § 98.3(g)(5)) and electricity importers or exporters (§ 95105(d))

Standardized Methods Incorporated by Reference § 95109 & 40 CFR 98.7

- Methods must be documented in a GHG Monitoring Plan (§ 95105(c))
  - Verifier reviews a copy of Monitoring Plan prior to site visit
  - Verifier documents areas where
    - Monitoring Plan deviates from MRR requirements
    - Actual operations deviate from Monitoring Plan and MRR
- Fuel characteristics for gaseous fuels may be determined by gas chromatograph (40 CFR 98.34)
- Alternative methods allowed but must be pre-approved by ARB Executive Officer § 95103(m)

Changes in Emissions and Covered Product Data Calculation Method § 95103(m)

- Methods chosen for monitoring or emissions calculations for emissions data cannot be changed, except
  - To improve methods (e.g., move to higher tier), or
  - To avoid missing data or comply with missing data provisions (e.g., replace monitoring system and move to higher tier)
  - Temporary methods allowed to avoid missing data
  - Other changes **require** specific ARB pre-approval
- Changes to covered product data calculation method require ARB pre-approval
- If change allowed/approved
  - Must demonstrate the difference between old and new method
  - Can only be implemented after the completion of a data year
- Verification issues
  - Monitoring plan must describe change and reason
  - New method must comply with missing data procedures (emissions only)

Recordkeeping Requirements

- Does not impact verification statement
- For reporters (§ 95105), duration is
  - 10 years if entity has compliance obligation
  - 5 years if reporter has no compliance obligation under the Cap-and-Trade Regulation
- For verifiers (§ 95131(b)(7)), duration is
  - 10 years
  - Applies to Sampling Plan, and all material reviewed, or generated as part of rendering a verification statement
    - Retain summary description of data and ways to identify specific records reviewed (e.g., invoice type and date) if data are confidential and not taken off-site

Verification Body Accreditation and Renewal Requirements § 95132(b)-(d)

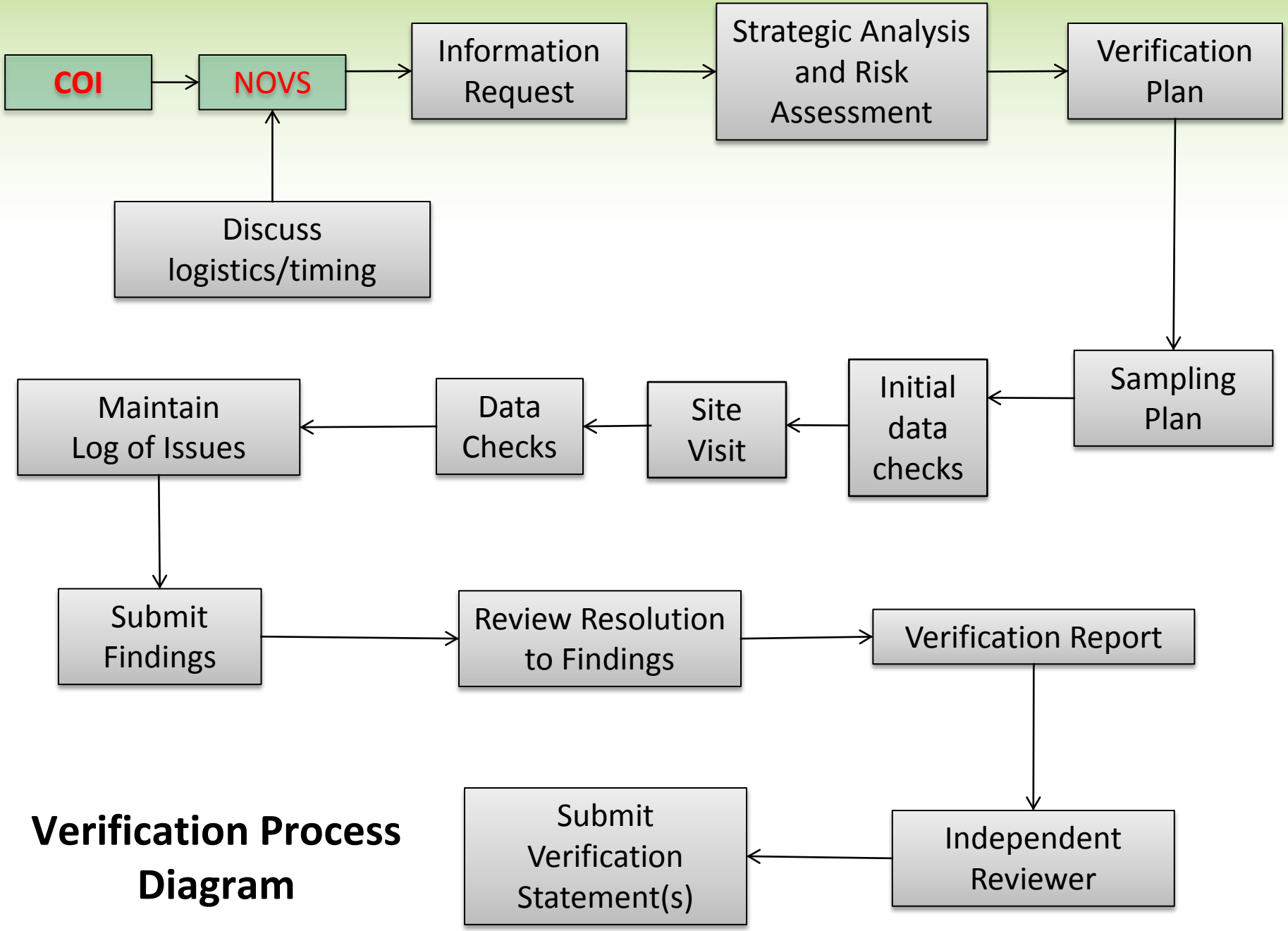
- VB submits application to ARB
- VB discloses staffing plan, professional liability insurance, COI prevention policies
- Unique requirements for air districts
- For VB re-accreditation, ARB conducts "performance review"
- Professional liability insurance may not be general or umbrella
- Simple process to voluntarily withdraw from ARB's verification program

Subcontracting Verification Services § 95132(e)

- Subcontractors must be ARB-accredited
- Subcontractors can serve the functions of
  - Verifiers or Lead Verifiers
  - Transactions, Oil and Gas Systems, or Process Emissions Specialists
- Subcontractors cannot
  - Be used to meet minimum of 5 staff and 2 leads required
  - Serve as independent reviewers
  - Further subcontract any services to another verifier

Questions and ARB Comments

- Overview of AB 32 Climate Change Programs
- Verification Principles and Process Overview
- General Reporting and Verification Requirements
- Verification Process
  - Pre-verification activities
  - Planning verification services
  - Conducting verification
  - Completing verification
- ARB Oversight



Verification Process Diagram

The Verification Team § 95131(a)(1)-(2)

Verification Body (VB)	A firm accredited by ARB according to MRR.
Verification Team:	All persons working for a VB, including subcontractors, who conduct verification activities for a reporting entity.
• **Lead Verifier**	A person accredited by ARB according to MRR to perform verification services, who may act as a lead verifier or an independent reviewer.
• **Verifier**	A person accredited by ARB according to MRR to perform verification services.
• **Sector Specialist**	A person accredited by ARB according to MRR to perform verification services, who is either a verifier or lead verifier, and is accredited in: • Transactions • Oil and Gas Systems • Process Emissions
• **Independent Reviewer**	An employee of the VB who: • Is a lead verifier • Has not been involved in the verification activities for a reporting entity • Conducts an independent review of verification services performed for the reporting entity.
• **Subcontractor**	A person who is not an employee of the VB, who is hired by the VB, is accredited as either a lead verifier, verifier, or sector specialist, and conducts verification work as part of a verification team.

Conflict of Interest (COI) Form

California Air Resources Board
SECTION A - CONFLICT OF INTEREST / SECTION B - NOTICE OF VERIFICATION SERVICES
FOR GREENHOUSE GAS EMISSIONS DATA REPORTS

See instructions at the end of Section B.

SECTION A. CONFLICT OF INTEREST

PART I. VERIFICATION BODY INFORMATION

VERIFICATION BODY NAME:	EMISSIONS DATA YEAR: 2013 ☐

PART II. REPORTING ENTITY INFORMATION

1. Reporting Entity Name(s):	ARB ID #:	Contact Name:	Phone number:	Email:
(one per line – must be same operator)				

2. Describe the Operational Control for each Reporting Entity listed above (see instructions).

3. Is a Sector Accreditation Required for this Verification? ☐ No ☐ Yes. Check the appropriate box below.
☐ Process emissions specialist ☐ Oil and gas systems specialist ☐ Transactions specialist

Part III. CONFLICT OF INTEREST SELF-EVALUATION

Based on my assessment, I believe my verification body's risk for a conflict of interest is

☐ HIGH ☐ MEDIUM ☐ LOW

Part IV. ATTACHMENTS:

1. **Organization Chart and Business Description**
Please attach an organization chart of your verification body and any entities related to your verification body. Only submit once per year, unless changes occur.
2. **Conflict of Interest Mitigation Plan (if applicable)**

NOVS Form

PART IV. VERIFICATION SERVICE DATES AND LOCATIONS: Required for all submittals	
VERIFICATION SERVICES START DATE ("upon approval" is acceptable):	
Reporting entity name(s) and site visit date(s) (one per line, if submitting multiple):	
Part V VERIFICATION BODY SIGNATURE (Required for all submittals of Section B):	
In signing this form, I certify under penalty of perjury of the laws of California that the information contained in this form, PTSD/GHG_03 Section B is true, accurate and complete. I further certify that I am duly authorized to represent and legally bind the verification body on all matters related to this form.	
SIGNATURE:	PRINTED NAME:
TITLE:	DATE:

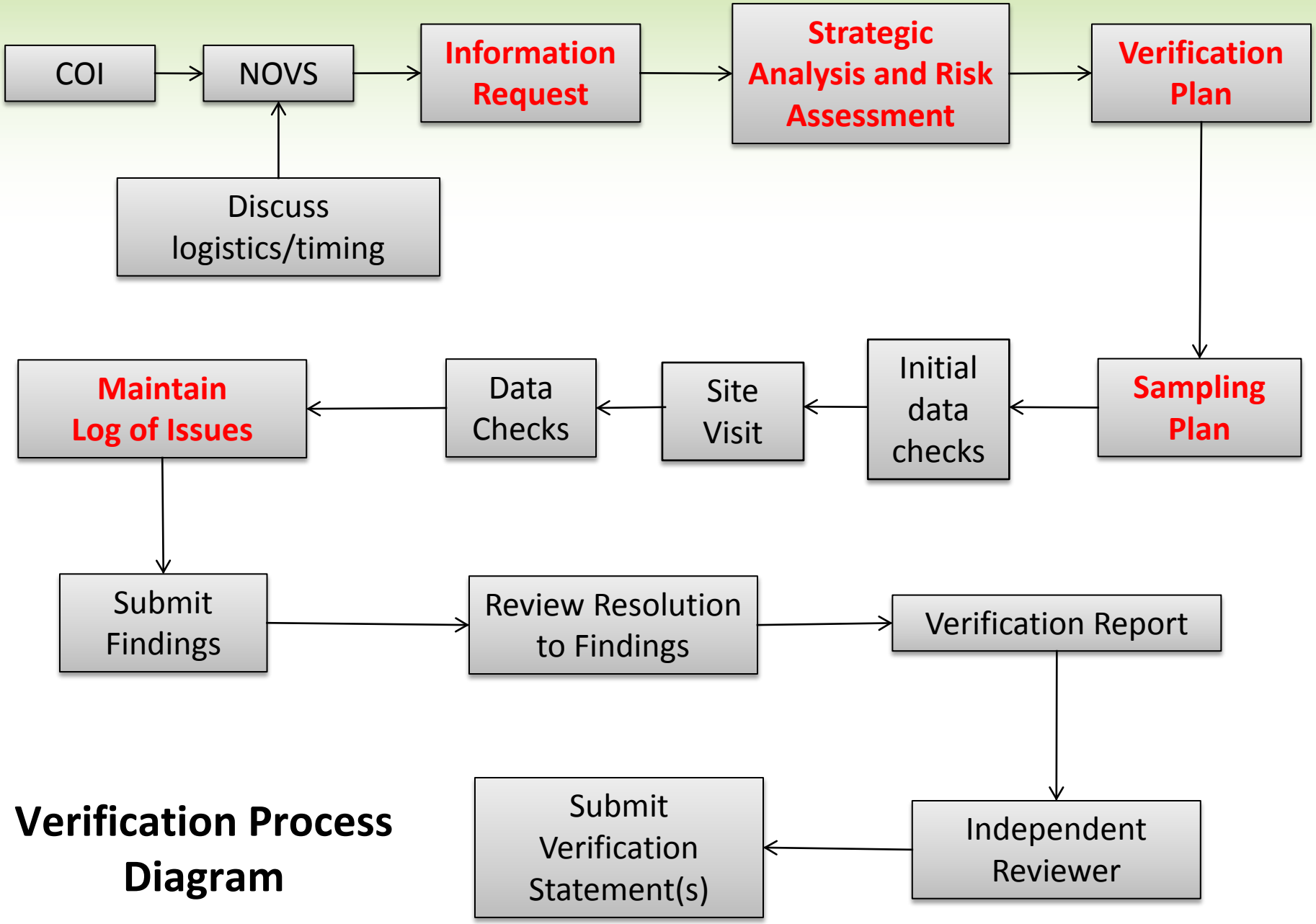
Multiple facilities for the same operator can be included on the same form (with COI form)

COI/NOVS Form Tips from ARB Staff

- Submit COMPLETED COI form
  - Proofread all submissions
    - Lead verifier signs the form under penalty of perjury
    - Errors can result in non-conformances even if ARB approves COI assessment
  - Ensure Subcontractors list all potential conflicts, every year
  - Sign the COI/NOVS form
- Send ALL COI/NOVS communications to ghgverify@arb.ca.gov, even if you have the personal email of a verification staff person

Verification Process

- Pre-verification activities
- Planning verification services
  - Verification Plan
  - Planning Meeting
  - Sampling Plan
  - Preliminary Issues Log
- Conducting verification
- Completing verification



Verification Process Diagram

Verification Plan § 95131(b)(1)

- Scope of verification activities
- Schedule of activities (date of site visits, completion of services)
- Verifier requests information on which to base the verification plan:
  - Sources, boundaries (**GHG Monitoring Plan**)
  - Expertise of personnel responsible for emissions and covered product data reporting
  - Methodologies for emissions and covered product data
  - Any data necessary to develop the verification plan
  - Information on emissions data management system
  - Previous verification reports
- Revisions, as necessary throughout the verification
- **Reporting entity must make all information and documentation available to the verifier as requested (per §95131(b)(5))**

Planning Meeting § 95131(b)(2)

- Discuss Verification Plan (via phone)
  - Review scope of verification
  - Discuss site visit logistics and planned interviews and participants
  - Develop a detailed agenda/schedule for the site visit – send to client a week in advance
- Ask questions about data already provided
- Describe types of information that are still needed
  - For example, elements of GHG Monitoring Plan, including
    - Equipment and processes (PFD, P&ID)[1]
    - Location and types of fuel and process meters
    - Any other emission sources
    - Data reporting responsibilities of staff

[1] PFD, P&ID = Process flow diagram, Piping and Instrumentation Diagram

Purpose of a Sampling Plan

- Overall, sampling plan sets context and outlines verifier's path to reasonable assurance
  - of no material misstatement *AND*
  - of conformance with MRR (includes information that is additional to emissions and covered product data)
- Assess uncertainty associated with all emissions and all covered product data sources
  - Include all applicable upstream data handling and management
- Explain what data sources are targeted for review
  - How does that mitigate risk?
- Revise to incorporate outcome of review
  - Is more review necessary or did everything meet standards?

Contents of Sampling Plan § 95131(b)(7)

→ Must describe how risks uncovered <u>after</u> data review and <u>after</u> site visit were addressed (explain and justify your actions)

- Rankings
  - Rank emissions based on amount of contribution to total CO_2e
  - Rank emission sources with largest calculation uncertainty
  - Rank covered products with largest calculation uncertainty

- Narrative of approach to uncertainty assessment for
  - Monitoring/measurement equipment
  - Data sampling, frequency
  - Data processing, tracking
  - Emissions calculations
  - Covered product data
  - Data reporting
  - Management policies and practices

The Sampling Plan is not just a plan that you create and then set aside before you conduct a site visit! You must document what you found, explain how you dealt with risks, and then finalize your Sampling Plan.

Preparing a Sampling Plan (1 of 2)

- Review emissions data report (Cal e-GGRT) and any data collected prior to site visit, especially
  - GHG Monitoring Plan
  - Data management systems
  - Inputs for development of emissions report
  - Records related to operation and maintenance of equipment/systems to develop data (e.g., instrument calibration, etc.)
- Brief discussion during opening meeting
- Use verification team knowledge of sector and, if applicable, prior experience with reporting entity

Preparing a Sampling Plan (2 of 2)

- Include listings of (as applicable)
  - Emissions sources
  - All covered product data, other production data
  - Data sources and transactions to be targeted for records review, and why they are targeted (risk analysis)
- Update the Sampling Plan to show
  - Results of the risk assessment and how the identified risks were addressed
  - Completed tasks and issues that emerge related to misstatements and nonconformance
- Retain Sampling Plan for at least 10 years

Sampling Plan and Risks

- Materiality guides approach and focus
- Sampling plan should address three types of uncertainty risk
  - Inherent (type of industry, complexity of emission sources)
  - Control (types of internal control)
  - Detection (failure to identify material misstatement)
- Sampling plan should also address risk of misreporting
  - Emissions from largest sources
  - *Any and all* covered product data

Sampling Plan - Qualitative Risk

- GHG Monitoring Plan does not include information on CEMS testing, calibration, short tons to metric tons, etc.
- Boilers are not properly identified in Monitoring Plan and may not be separately metered or accounted for
- Reporter does not have clear documentation on purchase of fuel from utilities – missing invoices
- There have been significant changes in personnel since the last reporting period
- Others?

Sampling Plan Considerations

WEAK	STRONG
Generic	Specific and industry-specific
Quantitative only	Includes consideration of qualitative risk
Little or no need for revision	Dynamic - Reporter-specific issues are taken into account, often leading to revised sampling plan
Little consideration for sources	Documents “drill down” to sources and document data checks required

Log of Issues § 95131(b)(11)

- Note any issues uncovered that may affect determinations of material misstatement and nonconformance
- Indicate whether failure to resolve the issue may lead to adverse verification statement
- State specific regulatory provision (citation) in question
  - Could include sub-sub paragraphs
- Describe if and how the reporter corrected the problem
- Justify to your independent reviewer that major issues and required corrections have been addressed by the reporter
- Assist next year's verification team in understanding issues
- Provide documentation of verifier and reporter actions in case of ARB audit

Issues Log: Group Participation Exercise 1.1.1 - Handout 1.1.4 (1 of 2)

Reporting Entity: ACME Combustion (ARB ID# 100999)

Subparts Reported: C

Year of Emissions Data: 2014

Lead Verifier: Mary Smith

#	Date	Description of Issue/Source	Regulation Citation	Potential Impact upon GHG Data	Action Required by Reporting Entity	Resolution
1	4/23/2014	GHG Monitoring Plan (1)	MRR §95105 (2)	Meter and calibration issues may affect report. (3)	Correct error. (4)	**Resolved. (5)**
2	5/15/2014	Propane heaters (6)	MRR §95115 (7)	Non-conformance (8)	Report emissions from propane as De Minimis.(9)	**Reporter used verifier calculations (10)**
3	5/15/2014	The reporting entity calculated emissions from RUZ10 boiler burning non-pipeline quality natural gas using the default high heating value of 1,028 Btu/scf for pipeline quality natural gas.	MRR §95115(c) and 40 CFR §98.33(b)	Non-conformance; correctable error.	Provide the regulation citation that allows for the use of a Tier 1 calculation for non-pipeline quality natural gas. Please determine if §95115(c)(4) applies to your facility and revise your emissions data report by 5/30/2014. Please contact ARB staff if you have questions about which Tier to use to report your emissions data.	**Resolved on 5/25 via email.** Reporting entity revised their emissions calculation to use Tier 3. Calibrations, MW calcs, flow measurements and corrections are all provided in GT40-GHGdata.xlsx spreadsheet. Calculation is in conformance (EDR certified in Cal e-GGRT 5/24).

Issues Log: Group Participation Exercise 1.1.1 - Handout 1.1.4 (2 of 2)

ABC Verification Company, Inc.

Two Issues Logs for Verification of ACME Combustion (2014)

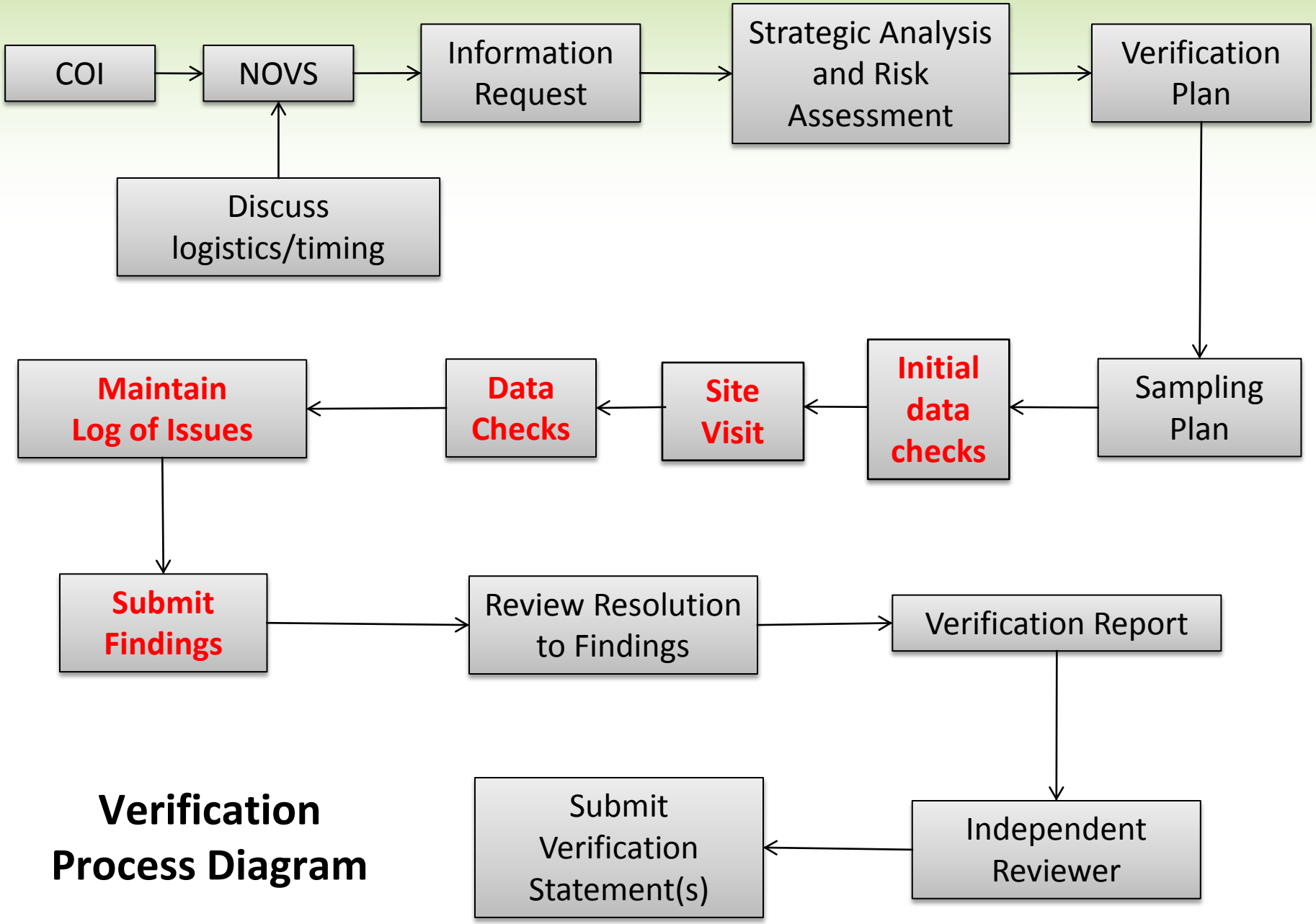
Example #1

Reporting Entity: ACME Combustion (ARB ID# 100999)
Subparts Reported: C
Year of Emissions Data: 2014
Lead Verifier: Mary Smith

#	Date	Description of Issue/Source	Regulation Citation	Potential Impact upon GHG Data	Action Required by Reporting Entity	Resolution
1	4/23/2015	GHG Monitoring Plan incomplete.	MRR §95105(c)	Meter location, description, and calibration records not made available. Non-conformance if not provided.	Please email these documents to me before the site visit on May 15, 2014. Failure to demonstrate accuracy may result in possible material misstatement and an adverse verification statement.	**Resolved on 5/10 via email.** Revised Plan emailed on 5/10 and was found to be complete.
2	5/15/2015	Emissions from propane heaters in Bldg. 54-A not reported.	40 CFR §98.32, and MRR §95115	Non-conformance; correctable error.	Provide invoices from 2012 and 2013 that includes the delivery date and amount of fuel delivered. Report propane emissions in Cal e-GGRT. This error must be fixed, or an adverse emissions data verification statement would be triggered.	**Resolved on 5/20 via email.** Invoices clearly showed fuel usage for 2013, and were clearly billed starting on the first day of each month. Propane emissions reported as de minimis. Calculation method is reasonable (Tier 1); emissions confirmed to be <3% of total and <20,000 MT CO2e.
3	5/15/2015	The reporting entity calculated emissions from RUZ10 boiler burning non-pipeline quality natural gas using the default high heating value of 1,028 Btu/scf for pipeline quality natural gas.	MRR §95115(c) and 40 CFR §98.33(b)	Non-conformance; correctable error.	Provide the regulation citation that allows for the use of a Tier 1 calculation for non-pipeline quality natural gas. Please determine if §95115(c)(4) applies to your facility and revise your emissions data report by 5/30/2014. Please contact ARB staff if you have questions about which Tier to use to report your emissions data.	**Resolved on 5/25 via email.** Reporting entity revised their emissions calculation to use Tier 3. Calibrations, MW calcs, flow measurements and corrections are all provided in GT40-GHGdata.xlsx spreadsheet. Calculation is in conformance (EDR certified in Cal e-GGRT 5/24).

Verification Process

- Pre-verification activities
- Planning verification services
- Conducting verification
    - Site visits
    - Detailed review of data
    - Assessing material misstatement and conformance
- Completing verification



Verification Process Diagram

Full Verification - Site Visit Required § 95130(a)(1)

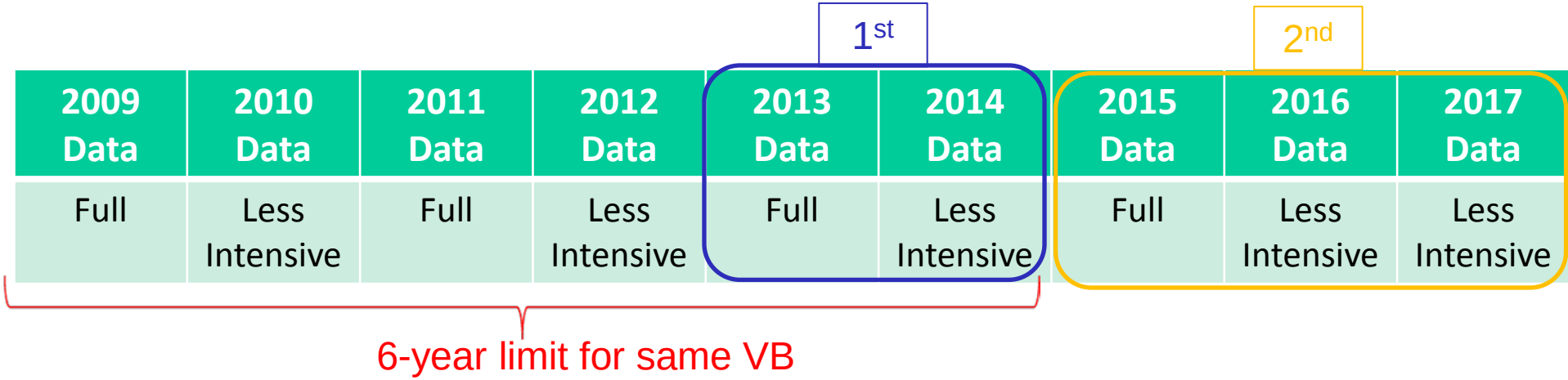
- 1st year of operation ≥ 25,000 MT CO_2e
- 1st year of each compliance period under cap-and-trade
  - 2013 emissions data reported in 2014
  - 2015 emissions data reported in 2016
  - 2018 emissions data reported in 2019
- Change in Verification Body
- If operational control changes (revised requirement)
- "Adverse" or "qualified positive" emissions/product data verification previous year
- If verification body concludes that full verification is warranted
- Conditions for "less intensive" verification (§95102(a))
  - 2nd and 3rd years of each compliance period AND
  - None of the conditions listed above

Less Intensive Verification for 2014 Data

§ 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 operational control
- Not first year of compliance period



Site Visits - § 95131(b)(3)-(5)

- Conduct at least one site visit each year for full verification

- Who attends?
  - At least 1 accredited verifier
  - Sector specialist, if applicable
    - These can be the same person
  - **Facility personnel** responsible for data collection/management
  - ARB staff if verification is being audited

Conducting a Site Visit - Planning

- Written agenda
  - Activities and participants
- Prepare a checklist and interview questions specific to the reporter and the emissions data report
- Plan your day allowing some flexibility
- Use your sampling plan as a guide
- Ensure you will have access to areas/equipment/meters as needed
- Ensure availability of key facility personnel
- Know what safety equipment you need to take, incl. water
- Know where you're going - get there on time

Conducting a Site Visit - Opening Meeting

- Safety briefing
- Confirm availability of personnel
- Discuss site visit plan with reporter
- Request site plan and/or system diagrams
- Identify outstanding data requests
- Take notes and add to your issues log

Conducting a Site Visit - Physical Inspection and Interviews (1 of 2)

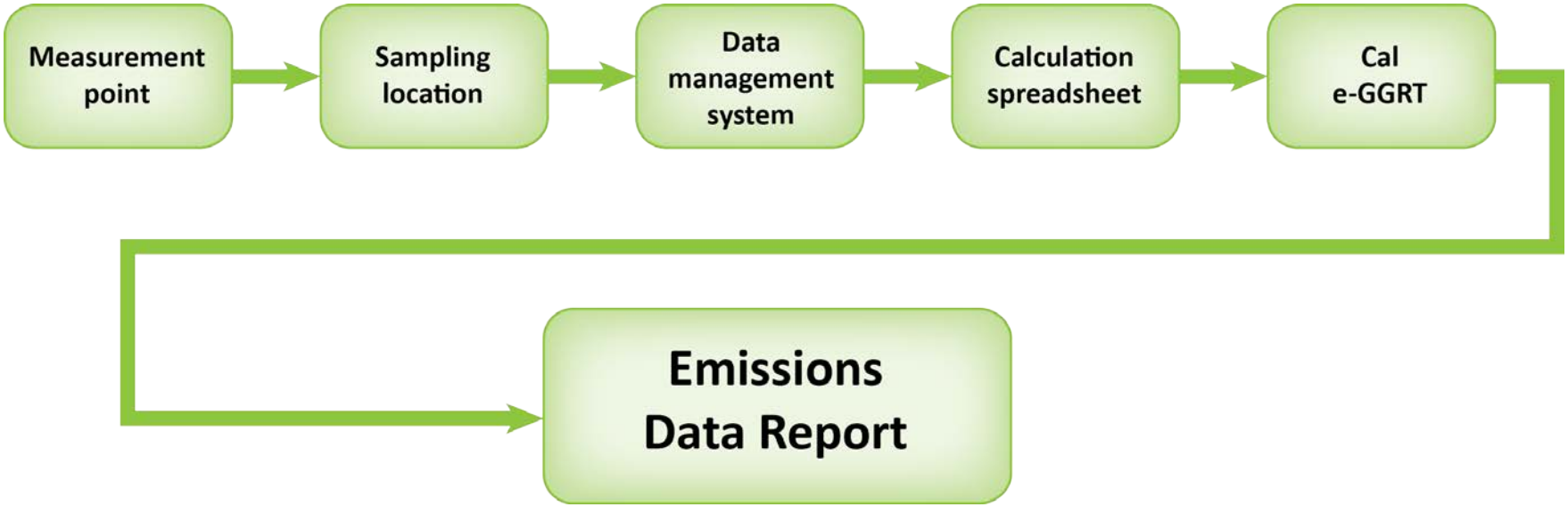
- Confirm all emissions sources and covered product data reported
- Observe major and high-risk sources
  - Take pictures
- Follow the audit trail
  - Ask how the reporter arrived at numbers in report and supporting summary spreadsheets
  - What are primary sources of data?

Conducting a Site Visit - Physical Inspection and Interviews (2 of 2)

- Follow the audit trail (graphic on next slide)
  - Ask contact to reproduce a source report used to complete ARB report
  - Observe on-line data acquisition systems and other fuel and emissions reporting software **in action**
  - Review QA/QC records

- Ask questions!

Tracing Reported Emissions to their Origin



Conducting a Site Visit - Closing Meeting

- Discuss GHG Monitoring Plan
  - Identify areas where MRR, the Monitoring Plan, and actual practice appear to deviate
  - Identify areas where more detail may reduce verification uncertainty (weaknesses)
- Discuss outcomes of site visit
  - Any outstanding or additional data requests
  - Any issues you uncovered during the visit
- Review next steps in the verification process
  - Log of issues
  - Focus on correctable errors!
- Follow up in writing

Verifying an Emissions Data Report § 95131(b)(8) (1 of 2)

- Ensure all applicable sources were reported
- Confirm appropriate measurement and calculation methods were used
- Check calculations and ensure equation inputs are substantiated

Verifying an Emissions Data Report § 95131(b)(8) (2 of 2)

- Tools to use
  - GHG Monitoring Plan
  - Sampling Plan
  - Emissions Data Report
  - System diagrams
  - Site visit observations
  - MRR and 40 CFR 98
  - Training materials

- Track reported emissions/covered product data to its origin

Evaluate Data Management System(s) § 95131(b)(1)(A)(4)

- Initial review for developing Verification Plan
  - Strategic analysis and risk assessment
- Detailed review
  - Understand the reporting entity's systems that track, quantify and report GHG emissions and product data
- Document findings in Issues Log and Sampling Plan
  - Resolution of any problems found must be documented in Verification Report
- May help to point to nonconformances with regulation
  - Incorrect methods
  - Oversight of sources (e.g., biomass)
  - Missing data

Recalculate Emissions § 95131(b)(8)(G)

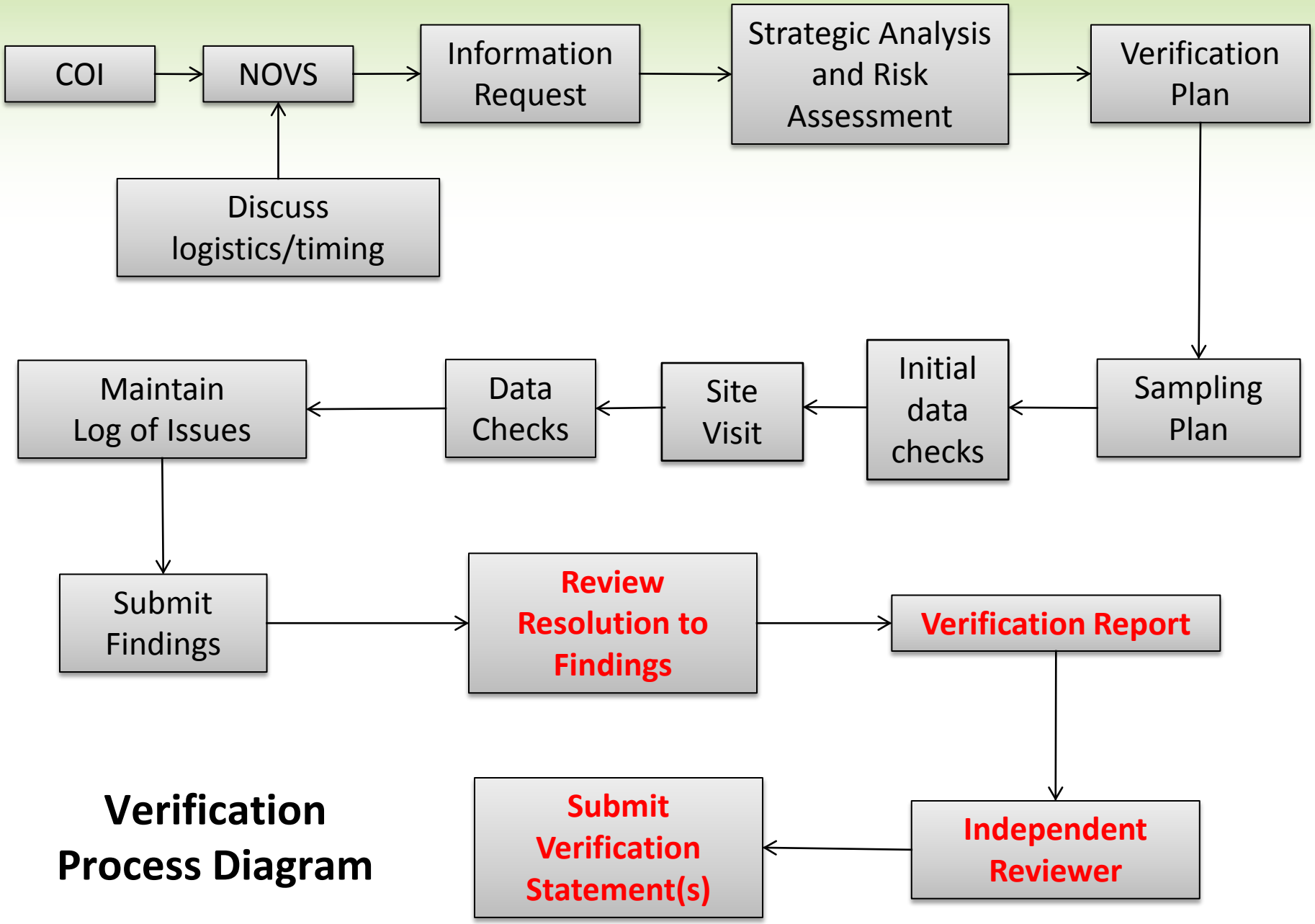
- Evidence to request
  - Documentation of selection of methods
  - Inputs to Cal e-GGRT
  - Spreadsheets with documentation on calculations
  - Records of fuel usage, receipts
- How to evaluate evidence
  - **Re-calculate emissions for selected sources (data checks)**
  - Check for proper unit conversions
  - Compare to emissions data report
- Document in issues log any differences in methods

Compare Results

- Compare verifier's calculated results to reported results
  - Investigate all discrepancies (§ 95131(b)(8)(F))
- Narrative of the comparison between verifier's and reporter's results for verification report
  - Which transactions were checked
  - Quantity of data evaluated
  - Percentage of total emissions and total product data covered by the data checks

Verification Process

- Pre-verification activities
- Planning verification services
- Conducting verification
- Completing verification
    - Verification Report
    - Independent review
    - Verification statements



Verification Process Diagram

Verification Report § 95131(c)(3) (1 of 3)

- Report objective - Provide a comprehensive description of the process followed during verification and of the findings

- The verification report is submitted to the reporter after independent review and before (or with) the verification statement

- The verification report is submitted to ARB upon request

Verification Report (2 of 3)

The report must contain, at minimum, detailed descriptions of the following:

1. Emissions sources and covered product data
2. Data management system(s)
3. Verification Plan (updated. as necessary, to reflect new information gained during verification services)
4. Data checks and comparisons
5. Issues log
6. Any qualifying comments, including comments about revisions made through the verification process
7. Material misstatement assessment calculation of percent error for covered emissions and covered product data, using MRR formulae
8. Optional – data packet with all materials used in verification

Verification Report (3 of 3)

- What kinds of data would you include in the complete data packet?

- What are the pros and cons of including a complete data packet in your verification report?

Role of the Independent Reviewer (1 of 2)

- Provides final objective review of strategy of verification team
- Protects VB risk/liability
- Identifies errors in planning and data sampling
- Evaluates judgment of verification team based on entire evidence package
- May require multiple reviews until every issue has been fully resolved
- Review sampling plan during interim review to provide feedback on general approach

Role of the Independent Reviewer (2 of 2)

- Data needed for Independent Reviewer
  - Verification report, sampling plan, verification plan, **issues log**, site visit notes, reporter data: complete verification packet
- Independent Reviewer activities
  - Review risk assessment and sampling plan (first step)
  - Review issues log and request additional information if unclear
  - Recalculate a sample
  - Review verification report and confirm materiality calculations
  - Confirm that verification report and Cal e-GGRT numbers match
  - **Create a review log**

Emissions Data Report Verification Statements § 95131(c)(1)

- Prepare separate verification statements for emissions and product data
- Submit to Independent Reviewer
- Submit to reporting entity and ARB by deadline

Emissions Data Verification Statement

California Air Resources Board

VERIFICATION STATEMENT - EMISSIONS DATA REPORT (excluding product data)

PART I. EMISSIONS DATA REPORT INFORMATION

1. REPORTING YEAR:
2014 data reported in 2015

PART II. VERIFICATION BODY INFORMATION

1. VERIFICATION BODY NAME:

Part III. REPORTING ENTITY INFORMATION

1. NAME OF REPORTING ENTITY:

2. ARB ID NUMBER:

Part IV. VERIFICATION STATEMENT INFORMATION

1. This verification statement attests that the submitted data are (check one)

- ☐ reasonably assured of being free of material misstatement
- ☐ **NOT** reasonably assured of being free of material misstatement

2. This verification statement attests that the submitted data are (check one)

- ☐ reasonably assured of being in conformance with the regulation
- ☐ **NOT** reasonably assured of being in conformance with the regulation
- ☐ **NOT** reasonably assured of being in conformance with the regulation, including **NOT** in conformance with §95131(b)(9): failure to correct data errors discovered during data checks

3. As a result of the selections above, the final verification statement is (check one)

- ☐ positive: reasonably assured of no material misstatement and in conformance with the regulation
- ☐ qualified positive: reasonably assured of no material misstatement, but not reasonably assured in conformance with the regulation
- ☐ adverse: not in conformance with §95131(b)(9) and/or not reasonably assured of no material misstatement

Adverse Emissions Data Verification Statement § 95131(c)(4) (1 of 2)

- As soon as this appears probable, consult with ARB
  - Especially if reporter is unresponsive and error is correctable
- If unable to resolve
  - VB required to formally notify reporter and ARB in writing (via email) of potential adverse verification statement
  - Data reporter must be given at least 10 working days to correct misstatements or nonconformances
    - VB determines the timing to allow for timely verification statement
- If reporter makes corrections, verification is complete and verification statement is either positive or qualified positive

Adverse Emissions Data Verification Statement (2 of 2)

- If reporter does not make corrections
  - Reporter can petition ARB to make final decision before the verification statement is submitted by the VB

- If reporter receives an adverse emissions verification statement for a reporting year, ARB will assign an emissions level

Reminder - Adverse Verification Statement and Required Modifications (1 of 2)

§ 95102(a) “Adverse emissions data verification statement” means a verification statement rendered by a verification body attesting that the verification body cannot say with reasonable assurance that the submitted emissions data report is free of material misstatement and is in conformance with section 95131(b)(9) for the emissions data.

Reminder - Adverse Verification Statement and Required Modifications (2 of 2)

§ 95131(b)(9) Emissions Data Report Modifications. As a result of data checks by the verification team and prior to completion of a verification statement(s), the reporting entity must make any possible improvements or corrections to the submitted emissions data report, and submit a revised emissions data report to ARB.

Questions and ARB Comments

- Overview of AB 32 Climate Change Programs
- Verification Principles and Process Overview
- General Reporting and Verification Requirements
- Verification Process
- ARB Oversight
  - Verification statement petition and set-aside processes
  - Audits
  - Maintaining accreditation

ARB Oversight

- Verifiers are crucial to ensuring data quality
- Petition and set-aside processes provide additional mechanisms for ARB data quality assurance
- ARB maintains quality standards that all verification bodies must meet
- VB audits and verification audits by ARB
  - Verification body audits include a review of management systems to inform oversight and other audit activity

Petitioning an Adverse Verification Statement § 95131(c)(4))

Reporting entity that disagrees with VB has the option of petitioning ARB BEFORE the verification statement is submitted by the VB

- Based on disagreement with the requirements of the regulation
- Important for VB to give reporting entity 10 working days to petition ARB
  - Failure to provide required time to reporting entity is the most serious non-conformance by a VB

Verification Statement Set Aside § 95131(e)

- A verification statement may be set aside if
  - An error that impacts data quality was identified by ARB, the reporting entity, or the VB
  - The accreditation of the verification body is revoked because of a serious lapse in judgment for that, or a different verification
  - High level of COI is discovered or emerges after Verification Statement is submitted
- Requires the report to be re-verified by a new VB

ARB Oversight - Verification Audits

- More than 10% of all verifications are audited by ARB staff
  - All VBs are audited at least once per year
  - Some include a site visit observation by ARB
  - All include review of your verification report, sampling plan, and data checks, and material misstatement evaluation
- Audits are chosen based on reporting sector (subpart), geographic coverage statewide, and to ensure consistent quality across verifications

Maintaining Your Accreditation

- Complete verifications by deadline
- Document your verifications and be subject to ARB audits
  - Verifier nonconformances must be addressed by a corrective action by VB (most do not impact quality of emissions data report but represent risk)
- Attend ongoing webinar trainings
- Be in close contact with ARB staff to ensure you follow ARB Guidance
- Poor performance (lack of quality control) is grounds for accreditation revocation of **your entire VB**

Questions and ARB Comments

Course 1: General Verification

Complete:

1.1 Verification Principles, Requirements, and Procedures

Next:

1.2 Stationary Fuel Combustion and Sorbent Sources

1.3 Accuracy & Product Data

1.4 Electricity Generating Units & Cogeneration