Power Generation/Electric Utility Verification Protocol

Guidance for Verification of Entity-Wide Greenhouse Gas Emissions Produced by Electric Power Generators and Electric Utilities

Version 1.1

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1 Introduction

The Power Generation/Electric Utility Verification Protocol (Power/Utility Verification Protocol or PUVP) is an appendix to the General Verification Protocol. The intended audience for this document is approved power/utility sector verifiers. However, power/utility entities may also find it useful to review this document to develop a better understanding of the verification activities associated with power/utility sector reporting in the California Climate Action Registry (California Registry).

This PUVP provides guidance for reviewing and verifying the portions of a power/utility entity's inventory that are significant or unique to the activities of electric power generators and electric utilities. These include:

- Stationary combustion emissions from generation of electricity, heat, and steam
- Indirect emissions associated with wholesale electricity and fuel transactions
- Fugitive SF_6 emissions from electricity transmission and distribution

For activities not unique to power generators and electric utilities, reporting guidance is found in the General Reporting and Verification Protocols also available through the California Registry.

All California Registry members must report using the General Reporting Protocol and any industry-specific protocols, if available. All verifiers should conduct verifications using the General Verification Protocol and any available industry-specific requirements.

To conduct power/utility verifications, power/utility verifiers must be familiar with the following California Registry reporting tools:

- General Reporting Protocol (GRP)
- General Verification Protocol (GVP)
- Power/Utility Reporting Protocol (PUP)
- Power/Utility Verification Protocol (PUVP)
- Climate Action Registry Reporting Online Tool (CARROT)

These tools are all available on the California Registry's website at www.climateregistry.org.

Please note that only California Registry-approved power/utility sector verifiers are eligible to verify power/utility entities, as defined by the root NAICS code in the PUP. California Registry-approved verifiers under the California Registry's General Reporting Protocol are not automatically approved to verify power/utility entities. To become an approved power/utility sector verifier, a general verifier must successfully complete a power/utility sector-specific application process. The complete list of power/utility sector verifiers and information on the application process is available on www.climateregistry.org.

1.1 Standard for Verification for Electric Power Generators and Electric Utilities

The California Registry's standard for power/utility sector verification is its General Reporting Protocol and its Power/Utility Protocol (PUP). The PUP contains the California Registry's required sources of direct and indirect emissions, default emission factors and greenhouse gas (GHG) calculations, and is the basis for evaluating whether an entity's GHG emissions are reported appropriately. You should only apply the standards described in the GRP, GVP, PUP,

and this PUVP when assessing a power/utility participant's annual GHG inventory to the California Registry.

1.2 The Verification Process

The California Registry's 10 step verification process is explained in detail in the General Verification Protocol (See GVP Section 2.1). The guidance provided in the PUVP must be followed when completing Step 6 (Conducting Verification Activities) and the initial portion of Step 7 (Verification Documentation) of the verification process.

1.3 Required Reporting Elements

A PUP Report must be completed and uploaded into CARROT as a public PDF document. The PUP Report must include all of a participant's significant emissions within the following categories:

Emission Category	**Reporting Guidance**
Direct Emissions	
▪ Stationary Combustion	PUP Section 5
▪ Mobile Combustion	GRP Chapter 6
▪ Process Emissions	
o from SO_2 Scrubbers	PUP Section 6
Fugitive Emissions	
▪ From Electricity Transmission and Distribution Systems (i.e. SF_6)	PUP Section 7
▪ From Fuel Handling and Storage	PUP Section 7
Indirect Emissions	PUP Section 8
o Purchased electricity, heat, and steam for own consumption	
o Electricity Transmission & Distribution Losses	
Industry-Specific Metrics	PUP Section 9
▪ Electricity Generated (lbs $CO_{2Combustion}$/$MWh_{Net\ Generated}$)	
▪ Fossil Electricity Generated (lbs $CO_{2\ Combustion}$/$MWh_{Net\ Fossil\ Generated}$)	
▪ Electricity Delivered (lbs $CO_{2Combustion\ and\ Purchased}$/$MWh_{Net\ Generated\ and\ Net\ Purchased}$)	

1.3.1 Optional Reporting Elements

An annual PUP Report may also contain additional optional information. This could include, for instance, information about a company's environmental policies and goals, renewable energy certificate purchases, purchase power contracts, additional metrics, etc.

All non-required GHG data is optional, and does not require verification. Optional information should not be considered in assessing the quality of the required emissions information. Optional information will be clearly distinguished from required information in the CARROT and the PUP Report.

1.4 Communicating with the California Registry

Reporting a Problem

The California Registry's general and industry-specific reporting and verification protocols are designed to be compatible with each other. Should you encounter a conflict between any of the documents, or if you have questions about carrying out the steps described herein, please contact the California Registry at 213-891-1444.

To provide formal comments or suggestions to the California Registry, please complete and submit a *Protocol Comment Form*, available at www.climateregistry.org/tools/protocols.html. Comments will be posted on the California Registry website for public review and response.

Receiving Updates about the Protocols

The California Registry may update the PUP and PUVP occasionally to reflect new scientific findings or policy direction. The California Registry will notify all power/utility entities and approved power/utility sector verifiers when it updates pertinent documents. The current versions of all protocols will always be available on the California Registry's website: www.climateregistry.org/tools/protocols.html.

2 Core Verification Activities

In addition to the requirements and process outlined in the General Verification Protocol, specific guidance for conducting power/utility entity verification activities for the three (3) core verification activities follows.

To confirm that power/utility entity GHG emissions have been reported accurately, you should review the appropriate documents listed in

Table 1 as part of your verification activities.

Note that the documentation list in

Table 1 is provided by core verification activity as a reference for both you and the power/utility entity. Prior to your first meeting with the power/utility entity you should review and identify for the entity documents you would like to access in order to expedite the verification process. You may also want to provide a list of documents that you deem necessary to complete the verification. (You may determine the need to request additional documents in the course of completing the verification).

Table 1. Documents for review during core verification activities.

Activity or Emissions Source	Documents
Step 1: Identifying Emission Sources	
Emission Source Inventory	▪ CARROT Report ▪ PUP Report ▪ Facility Inventory ▪ List of Facility Permits ▪ Facility Plot Plans Showing Direct Emission Sources ▪ Process Flow Diagrams ▪ Fuel Purchases Records, by fuel type ▪ State Emission Inventory Reports ▪ EPA Acid Rain Reports
Organizational, Operational, and Geographic Boundaries	List of Emission Sources, including: ▪ Stationary Combustion Sources ▪ Mobile Combustion Sources ▪ Fugitive Emission Sources ▪ Process Emission Sources Security and Exchange Commission (SEC) Form 10k Federal Energy Regulatory Commission (FERC): Form 1 Annual Report of Major Electric Utility Form 2 Major Natural Gas Pipeline Annual Report Energy Information Administration: Forms 176, 191, 412, 423, 767, 857, 860, 861, 906, 920 State Public Utility Commission Filings Corporate Annual Reports Map of Operations
Step 2: Understanding Management Systems and Methodologies	
Data Management Systems	▪ Location of Data Collection System (centralized or decentralized) ▪ Type of Management System and Parameters Tracked ▪ Data Acquisition and Handling System
Responsibilities for Implementing GHG Management Plan	▪ Entity Organization Chart ▪ Greenhouse Gas Management Plan ▪ Documentation and Retention Plan
Training	▪ Training Manual ▪ Procedures Manual ▪ Consultant Qualifications Statement ▪ Monitoring Plan
Methodologies	▪ Any Protocols and Emission Factors Used (in addition to the GRP and PUP) ▪ Quality Assurance/Quality Control Plans for Continuous Emissions Monitoring Systems

Step 3: Verifying Emission Estimates	
Direct Emissions from Stationary Combustion	▪ FERC Form 1 ▪ EIA Forms ▪ CEMS data (See Section 2.2) ▪ Fuel Purchase Records ▪ If Operating Co-Generation: Fuel Consumption Records, Electric and Steam Generation data, and Efficiency Data ▪ Electronic Data Reports ▪ Data Acquisition and Handling System ▪ Relative Accuracy Test Audit results ▪ Accuracy Test Results for Fuel Flow Monitors ▪ Fuel Meter Data ▪ Fuel Meter Calibration and Maintenance Records ▪ Inventory of Stationary Combustion Facilities ▪ Electric Generation Data (MWh) ▪ Steam Generation Data (lbs) ▪ Air Permits ▪ State and Federal Inventory Reports ▪ Any Protocols and Emission Factors Used (in addition to the GRP and PUP)
Direct Emissions from Mobile Combustion	▪ Fuel Purchase Records ▪ Fuel in Stock ▪ Vehicle Miles Traveled ▪ Inventory of Vehicles ▪ Any Protocols and Emission Factors Used (in addition to the GRP)
Direct Emissions from Process Activities	▪ SO_2 Scrubber Installation and Operation Records (if CEMS is not installed) ▪ Calcium Carbonate Purchase Records ▪ Any Protocols and Emission Factors Used (in addition to the GRP and PUP)
Direct Fugitive Emissions from Electricity Transmission and Distribution	▪ State and Federal Inventory Reports ▪ EPA SF_6 Annual Reporting Form ▪ Transmission/Substation Maintenance and Installation Logs ▪ SF_6 Purchase, Sales, and Recycling Records ▪ SF_6 Activity Logs ▪ Any Protocols and Emission Factors Used (in addition to the PUP)
Direct Fugitive Emissions from Air Conditioning and Refrigeration Systems (Stationary and Mobile)	▪ Refrigerant Purchase Records ▪ Refrigerant Sales Records ▪ Any Protocols and Emission Factors Used (in addition to the GRP)
Direct Fugitive Emissions from Fire Suppression Equipment	▪ Fire Suppression Purchase Records ▪ Fire Suppression Sales Records ▪ Any Protocols and Emission Factors Used (in addition to the GRP)
Direct Fugitive Emissions from Handling and Storage of Solid Fuels	▪ Coal Purchase Records ▪ Biomass Purchase Records

	▪ Any Protocols and Emission Factors Used (in addition to the PUP)
Indirect Emissions from Electricity Transmission and Distribution Losses	▪ FERC Form 1 ▪ General Power Purchases and Sales Records ▪ Wholesale Power Purchases and Sales Records ▪ Wheeling Records ▪ Direct Access Records ▪ Total Receipts and Delivery of Electricity to Consumers ▪ Any Protocols and Emission Factors Used (in addition to the PUP, e.g., Line Loss Values)
Indirect Emissions from Entity-Only Electricity Use	▪ Monthly Electric Utility Bills ▪ Emission Factors (if not default)
Indirect Emissions Associated with Cogeneration Power Purchases	▪ Monthly Utility Bills ▪ Fuel and Efficiency Data from Supplier ▪ Emission Factors (if not default)
Indirect Emissions Associated with Imported/Exported Steam	▪ Monthly Utility Bills ▪ Fuel and Efficiency Data from Supplier ▪ Emission Factors (if not default)
Indirect Emissions Associated with District Heating	▪ Monthly Utility Bills ▪ Fuel and Efficiency Data from Supplier ▪ Emission Factors (if not default)
Indirect Emissions Associated with District Cooling	▪ Monthly Utility Bills ▪ Fuel and Efficiency Data from Supplier ▪ Emission Factors (if not default)

Step 1: Identifying Emission Sources

Verifiers should review each power/utility participant's reported emission source inventories (facility, source, and fuel), as compiled in their CARROT and PUP Reports, to ensure that all significant and de minimis sources are identified. Verifiers should then determine the GHGs that will result from the identified significant sources and estimate their magnitude. GHGs that are not required to be reported can be disregarded. Finally, verifiers should rank, by the total annual emissions, the remaining reported emissions (i.e. de minimis emissions) by carbon dioxide-equivalent (CO_2e) to assess the environmental risk associated with the emissions.

When the emission source inventory is complete, verifiers should review the power/utility participant's CARROT and PUP Reports and document answers to the following questions to assess if the CARROT and PUP Reports reflect the geographic, organizational, and operational scope of the power/utility entity:

1. Does the CARROT Report include all significant and de minimis sources, facilities, and sites under the ownership or management control of the participant?

2. Does the CARROT Report include all significant and de minimis sources of GHG emissions within the geographic and organizational boundaries of the participant?

3. Does the CARROT Report include all applicable types of GHGs from each emission source within the geographic and organizational boundaries of the participant?

4. Has the participant specified a baseline or baselines?

a. If so, have any mergers, acquisitions, or divestitures occurred during the current reporting year?
b. Have any significant activities been outsourced in the current year?
c. If either a or b have occurred, has the baseline been adjusted to reflect any structural changes that affect the inventory total by -/+ 10%, when compared to the baseline year?

5. Have the Direct and Indirect Emissions summary data from the CARROT Report been accurately transferred to the PUP Report?

6. If a power/utility entity is reporting to the California Registry for the 2+ year, are the current CARROT and PUP Reports consistent with methodologies utilized in past publicly available CARROT and PUP Reports?

After these questions have been answered, verifiers will be able to determine if the CARROT and PUP Reports accurately reflect the geographic, organizational, and operational scope of the participant.

The following Table 2 provides a listing of potential sources from the power/utility sector. This information is also included in the Power/Utility Verification Activities Checklist.

Table 2. List of sources within power/utility sectors (stationary sources).

Technology	**Source Type**
Boilers	Natural Gas Boilers Residual or Distillate Oil Boilers Coal-fired Boilers (pulverized coal, fluidized bed, spreader stoker, tangentially fired, wall fired, etc.) Biomass-fired Boilers Dual-fuel Fired Boilers Auxiliary Boilers, etc.
Turbines	Combined Cycle Gas Simple Cycle Gas Combined Heat and Power Co-Generation Units Microturbines Steam Turbines Integrated Gasification Combined Cycle, etc.
Internal Combustion Engines	Emergency and Backup Generators Reciprocating Engines Compressors Firewater Pumps Black Start Engines, etc.
Flares	Landfill Gas Waste Gas, etc.
Other	Fuel Cells Geothermal Anaerobic Digesters Refuse-derived Fuels, etc.
Fugitive SF_6 Sources	
Segment	**Equipment**
Electricity Transmission	Circuit Breakers Current-Interruption Equipment

	Transmission Lines Transformers Substations		
Electricity Distribution	Circuit Breakers Current-Interruption Equipment Distribution Lines Transformers Substations		
Other Fugitive Emission Sources			
Segment	**Facilities**	**Source**	**Fugitive Emissions**
Solid Fuel Handling and Storage	Electric Generation Facilities, Fuel Storage Facilities	Coal Piles, Biomass Piles	CH_4
Stationary and Mobile Cooling and Refrigeration	Electric Generation Facilities, Office Buildings, Mobile Sources	Air Conditioning and Refrigeration Systems	HFCs
Fire Extinguishers	Electric Generation Facilities	Total Flooding Fire Extinguishing Systems	CO_2, HFCs, or PFCs
Indirect Emission Sources (T&D Losses)			
Segment	**Facilities**	**Equipment**	
Electricity Transmission	Feeders and Transmission Lines	Conductors	
Electricity Distribution	Distribution Systems and Substations	Transformers	
Indirect Emission Sources (Purchased Electricity, Heat, Steam, and Cooling for Own Consumption)			
Segment			
Electricity use in office buildings and other sites			
District cooling use in office buildings and other sites			
District heating use in office buildings and other sites			
Cogeneration use in office buildings and other sites			
Imported steam in office buildings and other sites			

Once you have identified and reviewed all emission sources, please proceed to Step 2 to review the calculation methods used and the management systems employed.

Step 2: Reviewing GHG Management Systems and Estimation Methodologies

After the scope and comprehensiveness of the participant's emission sources has been confirmed, verifiers should review the methodologies and management systems that the participant used to calculate their emissions.

This is principally a risk assessment exercise, in which the verifier must weigh the relative complexity of the scope of the participant's emissions, the participant's methodologies and management systems used to prepare the CARROT and PUP Reports, and the risk of calculation error as a result of reporting uncertainty or misstatement. Through these steps, the verifier should determine the appropriateness of the management systems to provide required data to the California Registry.

A verifier's general review of a participant's GHG management systems should document answers to the following questions:

1. Are calculation methodologies/procedures used to manage GHG emissions data at the unit or the facility level?

2. Are the methodologies/procedures appropriate given the uncertainty and the relative quantity of CO_2e associated with the emissions?

3. Are these methodologies/procedures standard within the power/utility industry as stipulated in 40 CFR Part 75?

4. Are methods used to manage and implement entity-wide GHG emissions reporting programs appropriate for the size and complexity of the organization?

5. If the participant has more than one facility, are the emissions data correctly aggregated at the entity level?

6. Is an individual responsible for managing and reporting GHG emissions? Is this individual qualified to perform this function?

7. Is appropriate training provided to personnel assigned to GHG emissions reporting duties?

8. If the participant relies on external staff to perform required activities, are the contractors qualified to undertake such work? Is there internal oversight to assure quality of the contractor's work?

9. Are appropriate documents created to support and/or substantiate activities related to GHG emissions reporting activities, and is such documentation retained appropriately? For example, is such documentation maintained through reporting plans or procedures, fuel purchase records, etc.?

10. Are the mechanisms used to measure and review the effectiveness of GHG emissions reporting programs appropriate for this purpose? For example, are policies, procedures, and practices evaluated and updated at appropriate intervals?

Verifiers should also consider how participants' management systems are designed to support reporting five categories of emission sources (indirect, mobile, stationary, process, and fugitive). Consequently, in reviewing a participant's CARROT and PUP Reports, verifiers should document answers to the following questions:

1. Does the management system capture the diversity of the sources that comprise each emission category? For example, are there multiple types of electric generating sources and other stationary combustion sources that require different emission estimation methodologies?

2. Does the system capture all the GHGs emitted from each emission source category?

3. Has the participant used the emission factors and standardized estimation methods in the California Registry's Power/Utility Protocol or General Reporting Protocol to calculate emissions in each source category?
    a. If not, has the participant or its technical assistance provider developed estimation methods independently?
    b. If the participant uses alternative emission factors, are they documented and explained appropriately?
    c. Are these acceptable to the verifier and California Registry?

4. Does the participant's GHG management system appropriately track emissions in all of the emission source categories?

Once the verifier has assessed the overall risk of misstatement associated with the management systems, those risks should be assessed in conjunction with the weighted CO_2e estimates determined in Step 1 (Identifying Emission Sources).

Verifiers should then identify the areas with the greatest potential for material misstatements (either based on volume of emissions, lack of management systems, or both) to determine the best risk-based strategy to identify a representative sample of emissions to recalculate in Step 3 below.

Step 3: Verifying Emission Estimates

The final step in completing the core verification activities is to verify the emission estimates. To do so, you will re-calculate a subset of the power/utility entity's emissions and compare your calculated results from this sub-sample with the power/utility entity's calculated results from the same sources to determine if the GHG emissions inventory is free of material misstatements. Based on a participant's identified emission sources, management systems, and corresponding risk profile of GHG emissions, verifiers should select a representative sample of calculations to verify and sites to visit. Sampling procedures may entail conducting site visits, but should include reviewing documents such as fuel purchase records or emissions monitoring results, and recalculating emission estimates based on underlying activity data.

This step is principally a risk assessment exercise, in which you must weigh the relative complexity of the scope of and diversity of the power/utility entity's GHG emissions, the appropriateness of a power/utility entity's calculation methodologies and GHG management systems used to prepare the annual inventory report, along with the risk of calculation or reporting error to determine the best risk-based strategy to identify a representative sample to sample and re-calculate. You must compare your emissions data and calculations to the power/utility entity's emissions data and calculations for the same sources.

To finish Step 3, you must complete the following tasks:

1. Assess the areas of greatest impact and uncertainty in the emissions profile.

2. Select a representative sample of data to recalculate and sources to visit.

3. Develop and implement a strategy to recalculate the GHG emissions and visit the sources in the sample.

4. Assess the power/utility entity's data collection.

5. Compare your estimated GHG emissions to those of the power/utility entity to determine if any material misstatements exist.

2.1 Reviewing Documentation

When assessing the participant's reported emissions, you will review a number of corporate documents, including invoices, purchases, financial reports, and regulatory filings to ascertain the validity of the reported information. As part of your recalculation, you should compare information from multiple sources to verify the accuracy of significant data points. For instance, to identify an entity's complete inventory, you could compare, for example, their permitting information, their corporate annual report and information reported on their Web site, to determine if the complete inventory of sources has been reported.

The power/utility sector already reports entity-level assets, operational, financial, and emissions data to local, state, and federal agencies. These reports are third party audited and verified by the receiving agencies. For purposes of the PUVP, verifiers can accept that data taken from previously audited reports, including FERC, SEC, U.S. EPA, CPUC, and AQMD filings, are correct. However, verifiers should verify that data has been transferred into the CARROT correctly, and also review the participant's operations to ensure that the meters and sensors that collect data reported to these agencies are properly maintained and functioning.

2.2 Verifying Emissions from CEMS

For participants reporting CO_2 emissions from their stationary combustion sources using CEMS under 40 CFR Part 75, at your discretion, you may review CEMS-specific Monitoring Plans, CEMS specific QA/QC Plans, CEMS specific maintenance records, Data Acquisition and Handling System (DAHS), and Relative Accuracy Test Audits (RATA) as you verify the participant's GHG inventory.

If you are uncertain of the accuracy of the CEMS data, you may cross-check this data with the CO_2 emissions based on total fuel use calculations. In any instance where a participant's CO_2 emissions reported from CEMS data differs significantly (greater than 10%) from that calculated from fuel use, this may constitute a material misstatement. As such, if you complete the CEMS to fuel based calculation cross check and the values differ by greater than 10%, then you should investigate the cause and request that the entity correct the misstatement prior to verifying the inventory.

2.3 Conducting Site Visits

Verifiers should consult the General Verification Protocol for guidance on site visits, including the recommended minimum number of facilities to be visited and when site visits are required during the verification cycle.

2.4 Questions to Consider in Verifying Emissions Estimates

A verifier's verification of emission estimates should document the answers to the following questions:

1. Is the reported total stationary fuel use by fuel type consistent with the fuel use records?

2. Is the reported total consumption of fuels in motor vehicles consistent with available documentation and by vehicle type? If the entity calculates transportation emissions

based on vehicle mileage, is the reported vehicle mileage consistent with vehicle mileage records?

3. Are the reported process and fugitive emissions consistent with activity data, maintenance records, or purchase and sales records?

4. Are the emission factors used by the participant appropriate? If California Registry default factors are not used, do the alternative emission factors provide increased accuracy? Is their derivation and explanation of increased accuracy properly documented and reasonable?

5. Are the reported electricity, steam, and district heating and cooling use consistent with utility bills?

6. Does a sample of the participant's calculations agree with your re-calculated direct (mobile, stationary, process and fugitive) and indirect emission estimates?

7. Does the participant use an approved CEMS configuration?

8. Is this the first year that a participant is reporting CO_2 emissions to the California Registry using CEMS?
   - If so, does the fuel based calculations corroborate the CO_2 emissions reported?

9. Has the CO_2 emission rate (lbs CO_2/MWh) changed by 10% or more from the previous year at a unit where CEMS is used to report emissions?
   - If so, do the fuel-based calculations corroborate this change?

10. Have you documented your process for determining the appropriate sampling plan?

11. Have you performed data triangulations where reasonable?

12. Are all significant and de minimis GHG emissions included? Are all emissions that are considered de minimis emissions documented as such?

13. Are the current year's reported emissions significantly different from the prior year's emission levels? If so, do you understand the reasons for the changes, and to the best of your knowledge, do they explain the differences in emissions?

14. If the accumulated change in reported emissions, since the last baseline update, is due to a structural change; does this change affect the inventory by more than ten (10) percent when compared to the Direct and/or Indirect Emissions baseline years? If so, has the baseline(s), if any, been recalculated?

15. Are there any discrepancies between your emissions estimates and the participant's material? If so, have you addressed those discrepancies with the participant? And has the CARROT Report been adjusted and reviewed?

2.5 Finishing the Verification Process

Upon completion of these activities, you should have completed Steps 1 – 6 and the initial portion of Step 7 of the Verification Process (see GVP Section 2.1). To complete verification,

follow the remaining steps, as detailed in the General Verification Protocol. Note that California Registry staff will complete Step 10 of the Verification Process.

2.6 The PUP Report

The PUP Report is a locked Excel workbook created and updated by the California Registry. It contains three (3) worksheets: Instructions, PUP Report, and HFC & PFC Worksheet. The PUP Report worksheet contains cells in which the power/utility entity must enter data, and cells that calculate emissions using built-in formulas to help the power/utility entity report under the PUP. This workbook is password protected to ensure consistency among all reporters.

You should review the Instructions worksheet to understand how power/utility entities are required to complete the PUP Report.

As a part of the verification activities, you must verify the accuracy of the PUP Report; the questions below should help you:

1. Do the direct, indirect, and de minimis emissions match the corresponding totals in the CARROT Report?

2. Is the amount in cell E71 (PUP Report – Green section) similar to the amount in cell D33 (PUP Report – Blue section)?

3. Do cells E71 – E85 of the PUP Report only include CO_2 emissions (i.e. not CO_2e)?

4. Is the power/utility entity reporting the correct metrics?

5. Is the PUP Report a public document? (All entities/facilities with the NAICS code 2211 must have a publicly available PUP Report.)

3 PUP Verification Activities Log

3.1 Completing the PUP Verification Activities Log

As a part of Step 9 of the Verification Process (see GVP Section 2.1), you should complete the PUP Verification Activities Log (**Error! Reference source not found.**) for any power/utility entity reporting to the California Registry. You should complete and upload the PUP Verification Activities Log into CARROT ***instead of*** the GVP Verification Activities Log, whenever verification activities are conducted for a power/utility entity.

Table 3. PUP Verification Activities Log.

POWER/UTILITY ENTITY INVENTORY: VERIFICATION ACTIVITY LOG			
Verification Body:			
California Registry Member:	**Emissions Year:**		
PREPARING FOR VERIFICATION	**DATE ACHIEVED**		
Submit Notification of Verification Activities and Request for Evaluation of Potential for COI between Verifier and California Registry member to the California Registry			
Conduct Kick-off Meeting With Power/Utility Entity			
CORE VERIFICATION ACTIVITIES			
STEP 1: IDENTIFY POTENTIAL EMISSION SOURCES	**DATE ACHIEVED**		
Review and confirm the entity's GHG emissions inventory includes all required sources and meets the California Registry's standards: direct (stationary, mobile, fugitive, and process) and indirect (purchased and consumed electricity, steam, heat, and T&D losses).			
Review and confirm the power/utility entity's geographic boundaries and organizational boundaries (review ownership and reporting scope).			
Confirm the power/utility entity's reporting responsibility (classified under one or more NAICS codes).			
Check state and federal records to determine all key sources of the entity are included.			
If a baseline is specified:	**-----**		
Assess if any structural or organic changes occurred within the entity.			
Determine if emission sources have changed.			
Confirm all changes of more than 10% are described in the CARROT Movement Report (*should be included in the Movement Report even if no baseline is specified*)			
QUESTIONS	**YES**	**NO**	**N/A**
1. Does the GHG Emissions Report include all significant emissions from all direct and indirect emissions sources by the entity within the state of California, including:	☐	☐	☐
Stationary Sources: Boilers, turbines, internal combustion engines, flares, and other?	☐	☐	☐
Fugitive SF_6 Sources: ▪ Electricity transmission: Circuit breakers, current-interruption equipment, transmission lines, and transmission substations? ▪ Electricity distribution: Circuit breakers, current-interruption equipment, transmission lines, and transmission substations?	☐	☐	☐
Other Fugitive Emission Sources: from fuel-handling and storage, stationary, and mobile cooling and refrigeration?	☐	☐	☐
Indirect Emission Sources associated with T&D Losses: feeders, transmission lines, and distribution systems and substations?	☐	☐	☐
Indirect Emission Sources associated with Purchased Energy: electricity, steam, heating and cooling bills?	☐	☐	☐
2. Does the report include all significant GHG emissions from each of the required sources within the geographic and organizational boundaries of the power/utility entity?	☐	☐	☐
3. Have any mergers, acquisitions, or divestitures occurred during the current reporting year?	☐	☐	☐
4. Have any activities been outsourced in the current year?	☐	☐	☐
5. If a baseline has been set, has it been adjusted accordingly, if necessary?	☐	☐	☐
Comments on responses to questions 1-5:			
STEP 2. REVIEW METHODOLOGIES AND MANAGEMENT SYSTEMS	**DATE ACHIEVED**		
Review the power/utility entity's GHG management plans.			

If the power/utility entity has established an entity baseline, review the baseline assumptions and confirm the appropriateness of the baseline.			
Review the power/utility entity's quantification methodologies and emission factors and confirm they meet the California Registry's criteria, and assess its appropriateness.			
Review the power/utility entity's monitoring and measurement methodologies, confirm they meet the California Registry's criteria, and assess their appropriateness.			
Evaluate GHG personnel training and ability to prepare the Annual Emission Report			
QUESTIONS	**YES**	**NO**	**N/A**
6. Does the power/utility entity have an appropriate management plan for each primary activity?	☐	☐	☐
7. Are appropriate methods used to manage and implement entity-wide GHG emissions reporting programs?	☐	☐	☐
8. Are the power/utility entity's emissions data correctly aggregated and monitored?	☐	☐	☐
9. Is the individual responsible for managing and reporting GHG emissions qualified to do this?	☐	☐	☐
10. Is appropriate training provided to personnel assigned to GHG emissions reporting duties? If the power/utility entity relies on external staff to perform required activities, are the contractors qualified to undertake such work?	☐	☐	☐
11. Are appropriate documents created to support and/or substantiate activities related to GHG emissions reporting activities, and is such documentation retained appropriately?	☐	☐	☐
12. Are appropriate mechanisms used to measure and review the effectiveness of GHG emissions reporting programs? For example, are policies, procedures, and practices evaluated and updated at appropriate intervals?	☐	☐	☐
13. Does the power/utility entity have a sound annual data gathering system in place to provide accurate data for the entity's annual report?	☐	☐	☐
14. Has the power/utility entity used the California Registry's default calculation methodologies to calculate emissions in each source category?	☐	☐	☐
14a. If the power/utility entity uses alternative calculations, are they documented and explained appropriately?	☐	☐	☐
14b. If the power/utility entity uses alternative calculations, do they meet the California Registry's criteria for accuracy and precision?	☐	☐	☐
14c. If the power/utility entity uses alternative calculations, are these calculations consistent with what the member did in other reporting years?	☐	☐	☐
15. Have any activities been outsourced in the current year?	☐	☐	☐
15a. If a baseline has been set, has it been adjusted accordingly, if necessary?	☐	☐	☐
16. Has the power/utility entity used the California Registry's default emission factors to calculate emissions in each source category?	☐	☐	☐
16a. If power/utility entity uses alternative emission factors are they documented and explained appropriately?	☐	☐	☐
16b. Do they meet the California Registry's criteria for accuracy and precision?	☐	☐	☐
16c. If the power/utility entity uses alternative emission factors are these factors consistent with what the member used in other reporting years?	☐	☐	☐
Comments on responses to questions 6-16:			
STEP 3. VERIFY EMISSION ESTIMATES	**DATE ACHIEVED**		
Create a risk-based sampling method to directly sample power/utility entity's sources.			
Survey a sub sample of sources by area:	**-----**		

Direct Stationary Combustion Emissions	
Direct Mobile Combustion Emissions	
Direct Fugitive Emissions	
Direct Process Emissions	
Indirect Emissions from T&D Losses	
Indirect Emissions from Purchased and Consumed Electric, Heat, and Steam	
Compare your results from your sub-samples with the power/utility entity's results using the methodologies and emissions factors and determine if any material misstatements exist.	

QUESTIONS	**YES**	**NO**	**N/A**
17. Did you survey the sources described by the power/utility entity to confirm the accuracy of their descriptions?	☐	☐	☐
18. Does your verification sampling methodology account for the diversity of sources and activities within the power/utility entity?	☐	☐	☐
19. Total number of facilities: Total number of facilities visited:			
20. Are the reported emissions calculations accurate (within 5% of your an independent calculation)?	☐	☐	☐
21. Does the participant have approved CEMS Monitoring Plans, Data Acquisition and Handling Systems, QA/QC Plans, and Relative Accuracy Test Audit Results?	☐	☐	☐
22. Is this the first year that a participant is reporting CO_2 emissions to the California Registry using CEMS?	☐	☐	☐
22a. If yes, do their fuel-based calculations corroborate the results?	☐	☐	☐
23. Has the CO_2 emission rate (lbs CO_2/MWh) changed by 10% or more from the previous year at units that report using CEMS?	☐	☐	☐
23a. If yes, do their fuel-based calculations corroborate the results?	☐	☐	☐
24. If your sampling results differed by more than 5% from the power/utility entity's, did the power/utility entity adjust its results to be consistent with your findings? (If yes, please provide an explanation below.)	☐	☐	☐
25. Have you performed data triangulations where reasonable?	☐	☐	☐
26. Are the current year's reported emissions significantly different from the prior year?	☐	☐	☐
26a. If yes, are the causes of changes understood by you and reasonable?	☐	☐	☐
27. Has the accumulated change in reported emissions, since the last baseline update, changed by more than 10%?	☐	☐	☐
28. Has the methodology with which the power/utility entity calculated emissions changed from previous years?	☐	☐	☐
28a. If yes, have previous years been recalculated?	☐	☐	☐
Comments on responses to questions 17-28:			

VERIFY ACCURACY OF THE PUP REPORT	**YES**	**NO**	**N/A**
29. Do the direct and indirect emission amounts for CO_2e, CO_2, CH_4, N_2O, HFCs, PFCs, & SF_6 in the PUP Report (BLUE section) match the totals in the CARROT report?	☐	☐	☐
30. Does the Owned Generation Total (Net) CO_2 amount match the Total Stationary Combustion CO_2 amount from Electric Power Generation?	☐	☐	☐
31. Does the Purchased Power Total (Net) CO_2 amount match the Indirect Emissions from Owned Facilities CO_2 amount?	☐	☐	☐

32. Has the member reported all applicable efficiency metrics?	☐	☐	☐
Comments on responses to questions 29-32::			

COMPLETING THE VERIFICATION PROCESS	**DATE ACHIEVED**
Prepare a Detailed Verification Report and present to power/utility entity	
Prepare a Verification Opinion for the entity's GHG emissions inventory and present to power/utility entity for their signature *(participant sends fully executed opinion to the California Registry)*	