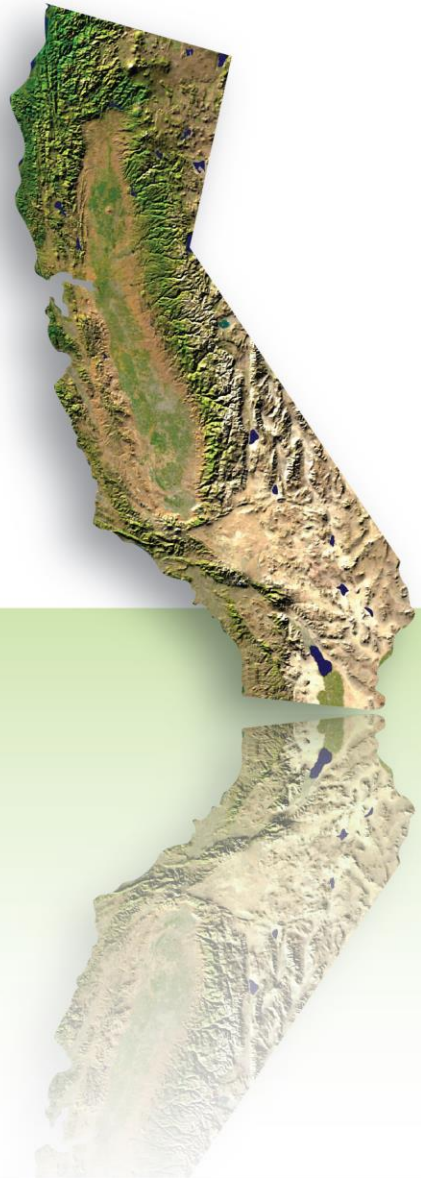
Verifier Accreditation Training for Mandatory Greenhouse Gas Reporting



Transactions Specialty

Course 2.1: Electric Power Entities

California Environmental Protection Agency

Air Resources Board

Welcome and Introductions

- Ryan Schauland
  - 916-324-1847, rschaula@arb.ca.gov
- The Climate Registry Team
  - Ann Hewitt, Direct Path Strategies, Inc. (DPS)

MRR Verifier Accreditation: Course Content and Exams

Course 1: General Verification for Mandatory GHG Reporting

Course 2: Transactions Specialty

- 2.1 Electric Power Entities
- 2.2 Suppliers of Transportation Fuels
- 2.3 Suppliers of Natural Gas, Natural Gas Liquids, Liquefied Petroleum Gas, CNG and LNG
- 2.4 Suppliers of Carbon Dioxide (CO2)

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.

Course 2.1 Handouts

- Handout 2.1.1 – Illustrative e-Tag
- Handout 2.1.2 – EPE GHG Inventory Program Checklist
- Handout 2.1.3 – Case Study 3, Database of e-Tags (physical handout during class with answers)
- Handout 2.1.4 – Location of Interties (may be provided in class or as part of guidance)

Course 2.1 Zip Folder

Background information for participants – not suited for printing

- Workbook 1 EPE Importers and Exporters
- Workbook 2 Supplementary Data for MJRP
- Workbook 3 EPE Supp Data for WAPA and DWR SWP CY2013
- Workbook 4 EPE Optional Asset Controlling Supplier Report CY2013

Course 2.1 Electric Power Entities

1. Overview
   - Key Sections of MRR
   - Reportable Transactions
   - Electricity Primer
2. Assigning Emissions Factors to Electricity Generation Sources
3. Tracking Electricity Transactions
4. Reporting Information
5. Verification

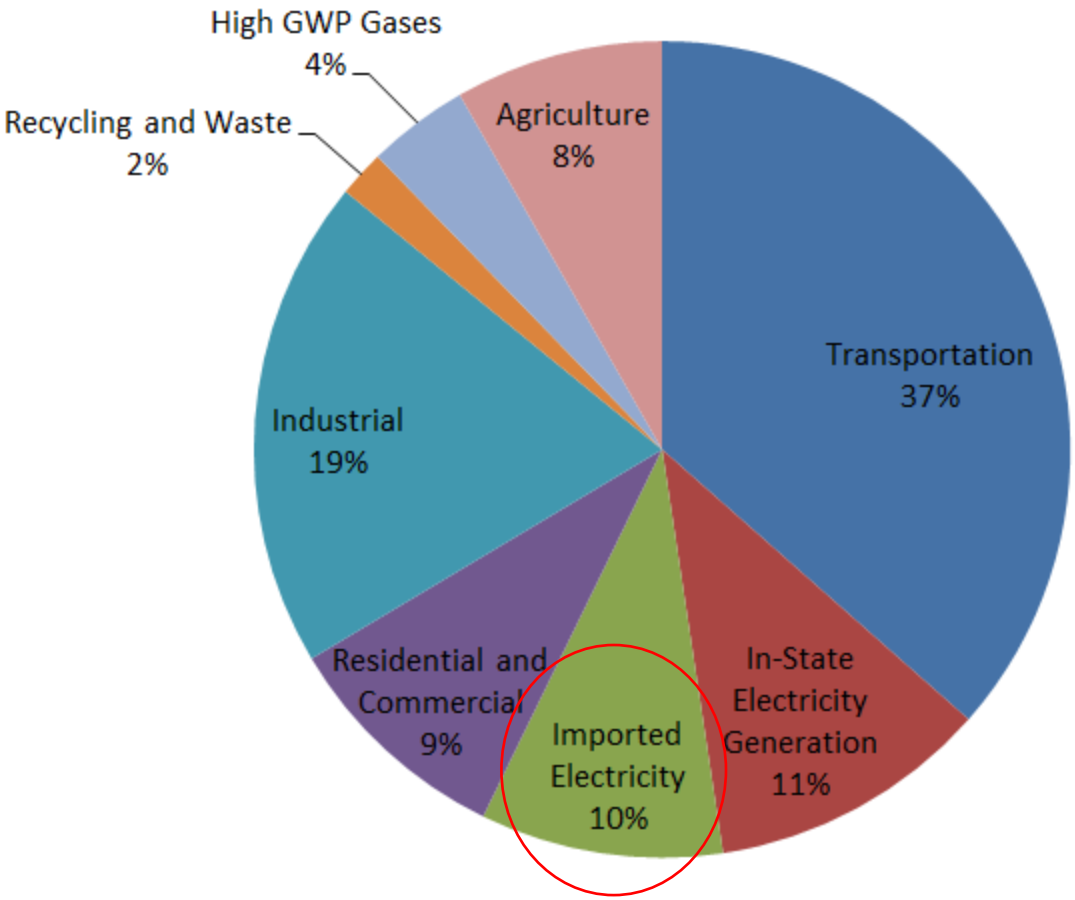
Transactions Specialist

- § 95111 – Electric power entities – Course 2.1
- § 95121 – Suppliers of transportation fuels (petroleum products and biofuels) – Course 2.2
- § 95122 – Suppliers of natural gas, natural gas liquids and liquefied petroleum gas – Course 2.3
- § 95123 – Suppliers of carbon dioxide – Course 2.4

Imported Electricity is a Significant Contributor to California's GHG Emissions

2012 California Emissions Inventory

44 Million MT CO_2e Imported Electricity



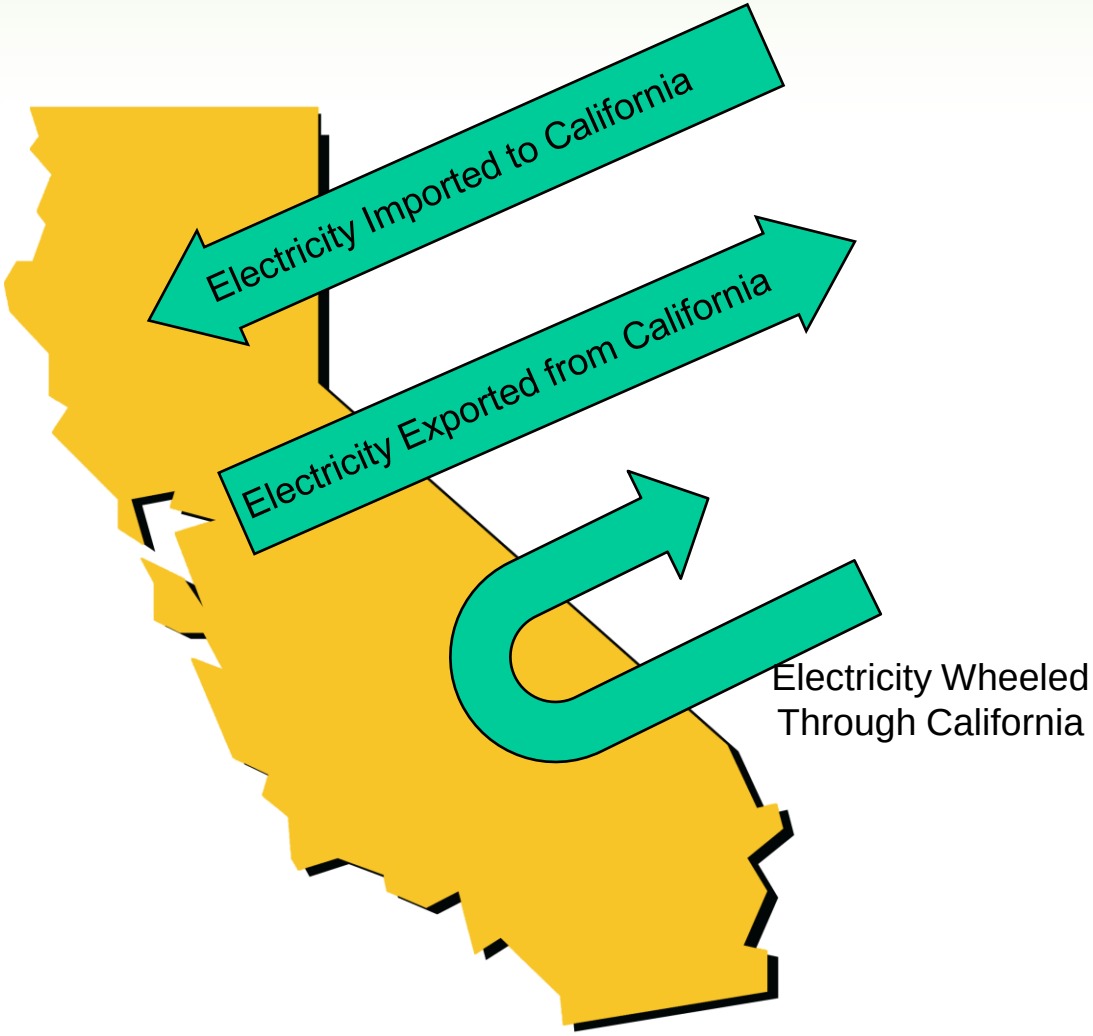
Key Sections of MRR on Reporting Electricity Transactions

- Reporting requirements for Electric Power Entities §95111
- Applicability §95101(d)
- Cessation of reporting §95101(h)(3)
- Cessation of verification § 95101(i)
- Definitions §95102
- Inventory documentation for Electric Power Entities §95105(d)

Electricity Imports and California's Cap-and-Trade Program

- First deliverers of electricity have a compliance obligation under Cap-and-Trade
  - Emissions associated with electricity generated in California
    - Addressed in Course 1.2 (Electricity Generating Units)
  - Emissions associated with electricity generated out-of-state and imported into California
- Why were electricity imports included in the program?
  - Statutory mandate to measure total emissions associated with California energy consumption (AB 32)
  - Large portion of electricity consumed in California is generated out-of-state. This reality of the California electricity sector requires imported electricity to be treated similarly to in-state generation. (2010 ISOR, page 164).

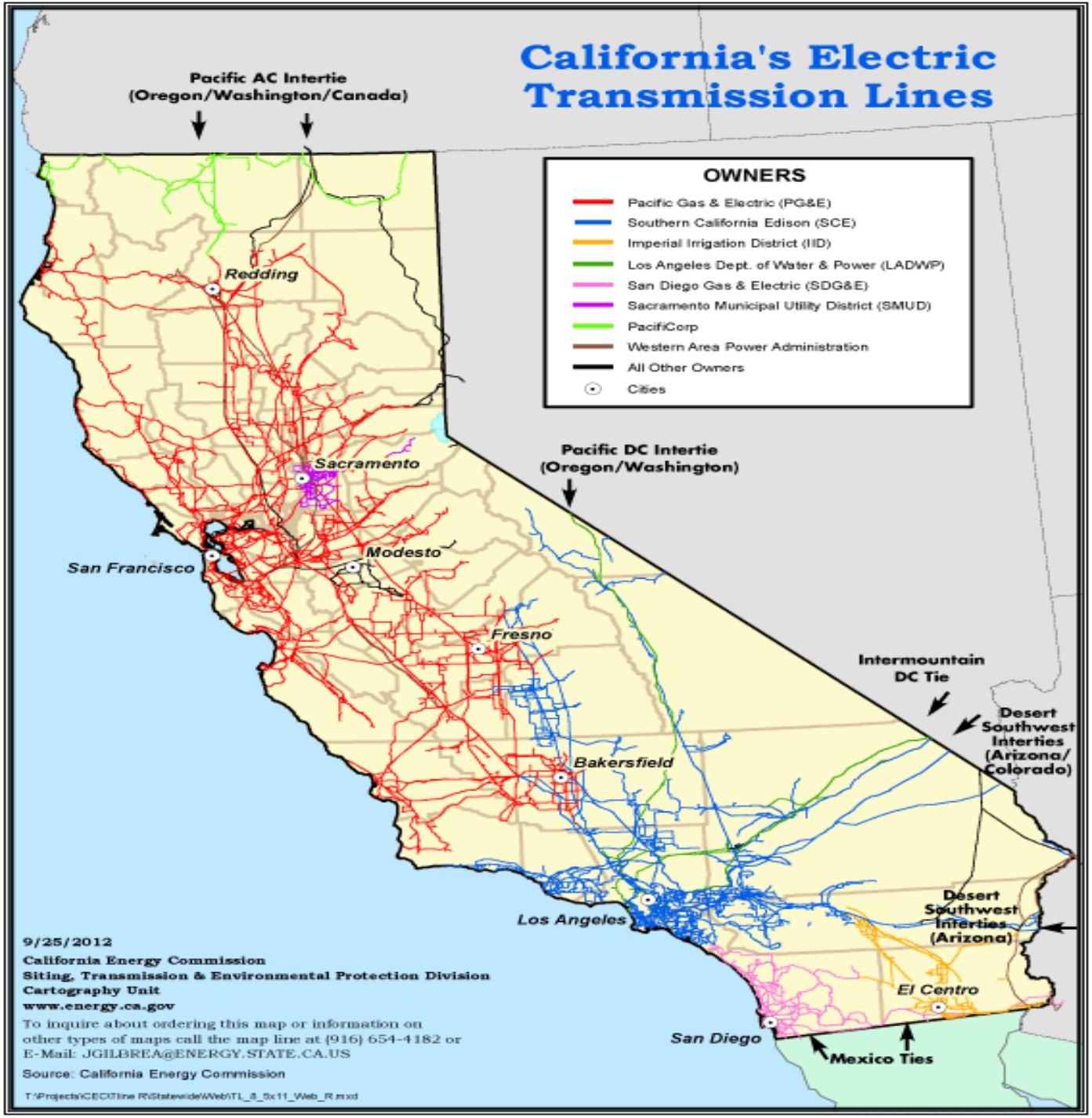
Overview of Transactions Reportable by EPEs



Why is Reporting of Electric Transactions Important?

- Imported Power – accounts for GHG emissions associated with electric power that is generated outside California but consumed inside the state
- Exported Power – documents electric power generated inside California but consumed outside of the State
- Wheeled Power – documents power generated outside California that passes through California but is consumed outside of the State

Electric Power generated and consumed inside California is excluded from electric transaction reporting (generation emissions are reported under § 95112)


California's Electric Transmission Lines
Pacific AC Intertie (Oregon/Washington/Canada)
OWNERS
Pacific Gas & Electric (PG&E)
Southern California Edison (SCE)
Imperial Irrigation District (IID)
Los Angeles Dept. of Water & Power (LADWP)
San Diego Gas & Electric (SDG&E)
Sacramento Municipal Utility District (SMUD)
PacifiCorp
Western Area Power Administration
All Other Owners
Cities
Redding
Sacramento
Pacific DC Intertie (Oregon/Washington)
San Francisco
Modesto
Fresno
Intermountain DC Tie
Desert Southwest Interties (Arizona/ Colorado)
Bakersfield
Los Angeles
Desert Southwest Interties (Arizona)
El Centro
San Diego
Mexico Ties
9/25/2012
California Energy Commission
Siting, Transmission & Environmental Protection Division
Cartography Unit
www.energy.ca.gov
To inquire about ordering this map or information on other types of maps call the map line at (916) 654-4182 or E-Mail: JGILBREA@ENERGY.STATE.CA.US
Source: California Energy Commission

Electricity Primer - Wholesale Electricity Market

- As verifiers under this specialty, you will be reviewing electricity transactions that occur in the wholesale electricity market
- Wholesale electricity market*
  - open access to anyone who, after securing the necessary approvals, can generate power, connect to the grid and find a counterparty willing to buy
  - includes independent power producers (IPPs) not affiliated with a utility, individual traders (or power marketers) who buy power on the open market and re-sell it, and traditional vertically integrated utilities who buy and sell power

*From: http://www.epsa.org/industry/primer/?fa=wholesaleMarket

Electricity Primer - The Wholesale Electric Market has a Multi-level Structure

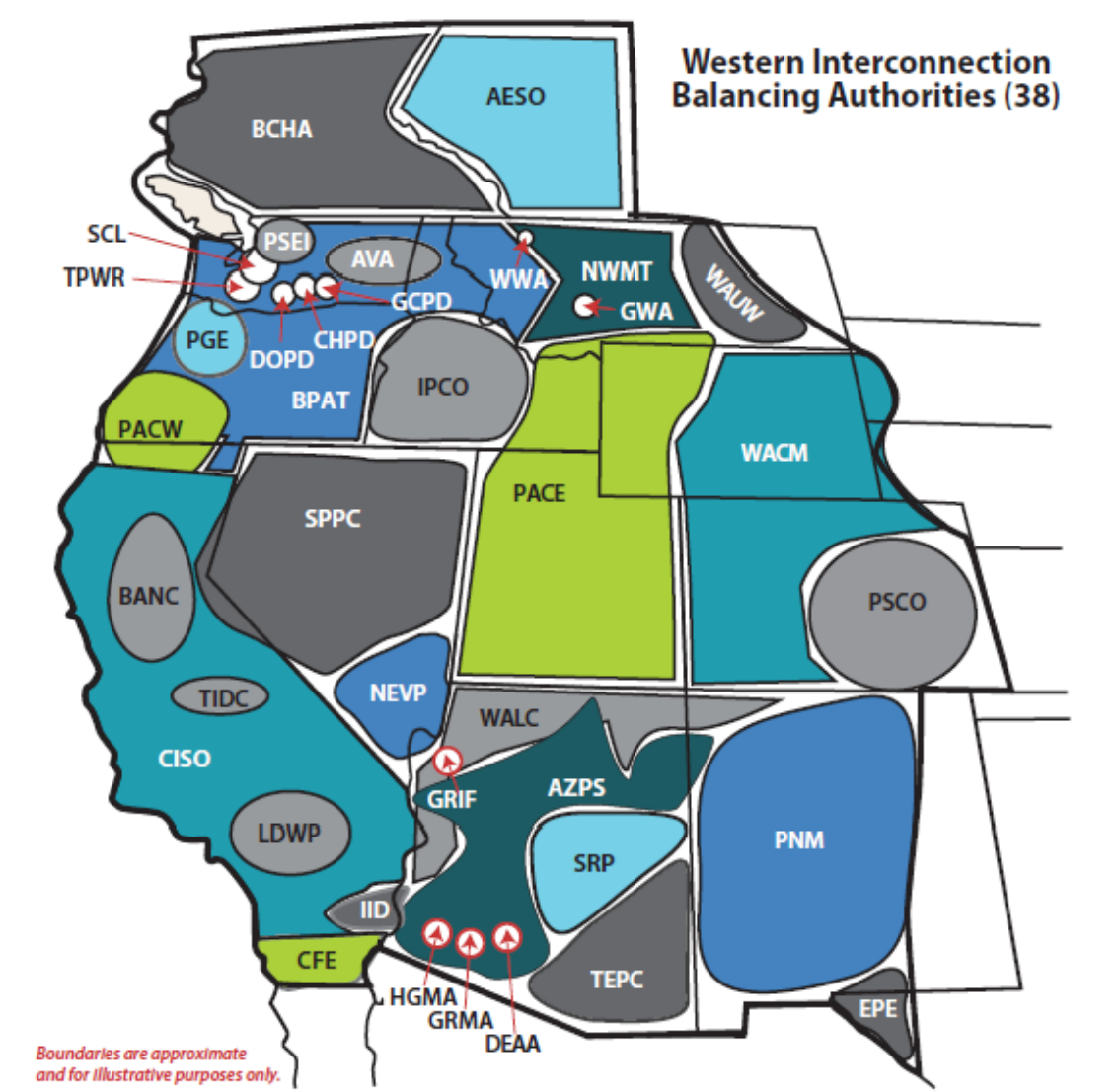
- Split structure of regional wholesale markets
  - markets organized under an independent system operator (ISO), aka regional transmission organization (RTO), such as CAISO
  - the movement of power is controlled by balancing authorities (BA)
  - vertically-integrated utilities retain functional control over the transmission system such as LADWP or PacifiCorp
- An ISO/RTO is a third-party independent operator of the transmission system
- ISO/RTOs conduct "spot" or real-time markets and "day-ahead" markets
- Regulated by the Federal Energy Regulatory Commission (FERC)

Electricity Primer - The Movement of Power is Controlled by "Balancing Authorities" (BA)

- Trading and scheduling – participants in the electricity market agree on transactions ahead of time. Power is scheduled to implement terms of agreements and meet the BA requirements
- Balancing authority areas integrate power resource plans ahead of time, maintain load-interchange-generation balance within a balancing authority area, and support interconnection frequency in real time*
- Note that MRR reporting boundaries are the <u>geographical</u> boundaries of California, not the balancing authority boundaries

*http://www.spp.org/publications/JTA%20List%20for%20BA%20Role.pdf

Western U.S. Balancing Authorities



https://www.ferc.gov/market-oversight/mkt-electric/wecc-balancing-authorities.pdf

California's Balancing Authorities

http://www.caiso.com/about/Pages/OurBusiness/UnderstandingtheISO/The-ISO-grid.aspx

Questions and ARB Comments

1. Overview
2. **Assigning Emissions Factors to Electricity Generation Sources**
   - **Specified vs. Unspecified Sources**
   - **Specified Sources Reporting Requirements**
   - **Direct Delivery Criteria**
3. Tracking Electricity Transactions
4. Reporting Information
5. Verification

Types of Electric Power Entities that Submitted 2013 Emissions Data Reports

- Retail providers (30)
- Marketers (41)
- Multi-jurisdictional retail provider (1; PacifiCorp)
- Asset-controlling suppliers (2; BPA and Powerex)
- California Department of Water Resources
- Federal Western Area Power Administration
  - Sierra Nevada Region
  - Desert Southwest Region

Specified and Unspecified Sources (§ 95102(a))

What is a "specified source"?

- A single facility or unit which is permitted to be claimed as the source of electricity delivered
- An asset-controlling supplier (ACS) - entity that supplies electricity from a specific fleet of generation sources that is assigned an emission factor for the electricity procured from its system and imported into California
- Multiple dams, as long as they are considered as one project for FERC hydroelectric licensing purposes
- Power is delivered under contract to supply power from a specific generating facility or unit or by the generation-providing entity (GPE, defined in §95102(a))

- "Unspecified electricity" means a source of electricity not specified at the time of transaction (§ 95102(a))

Specified and Unspecified Sources - Emission Factors (§ 95111(b))

- Each specified source has an emission factor calculated by ARB based on the most recent data published by the US EPA (Part 98 data) and/or EIA (Form EIA 923)
  - Ranges from 0 MTCO2e/MWh to > 1 MTCO2e/MWh
- Unspecified source emission factor
  $EF_{\text{unspecified source}} = 0.428\ MTCO_2e/MWh$*
  - Calculated by ARB and Western Climate Initiative
  - Modeled to approximate the marginal generation that would be needed for an additional MWh of electricity imported to California

*http://www.arb.ca.gov/regact/2010/ghg2010/ghgisor.pdf , pages 167-169

Specified Source Reporting Requirements - Directly Delivered Electricity (1 of 2)

- Claims of specified source electricity must be "directly delivered," meaning that the actual power that flowed is what is reported (§ 95111(g)(3))
- Directly delivered electricity means electricity that meets <u>one</u> of four criteria (§ 95102(a)):
  1. Facility has first point of interconnection with a CA balancing authority
  2. Facility has first point of interconnection with distribution facilities used to serve end users within a CA balancing authority area
     (continued)

Specified Source Reporting Requirements - Directly Delivered Electricity (2 of 2)

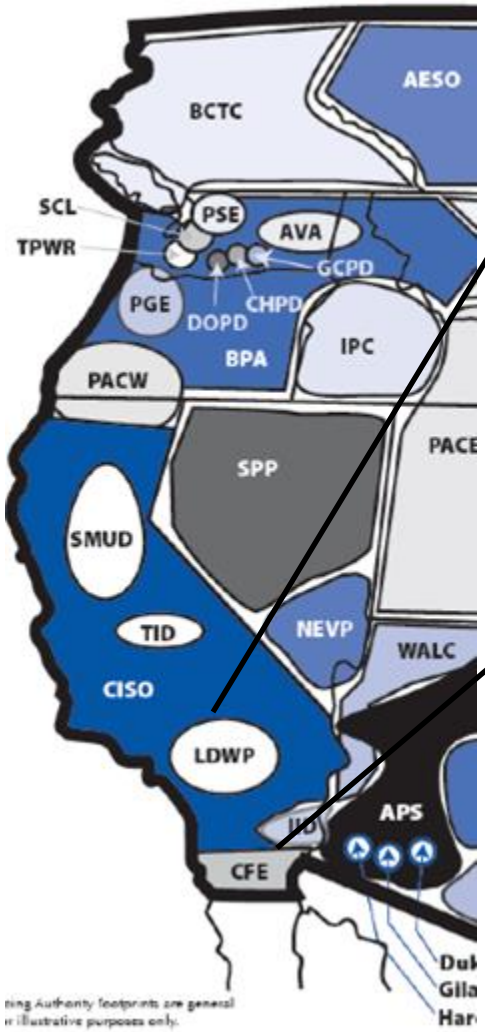
Directly delivered electricity means electricity that meets one of four criteria (§ 95102(a)) (continued):

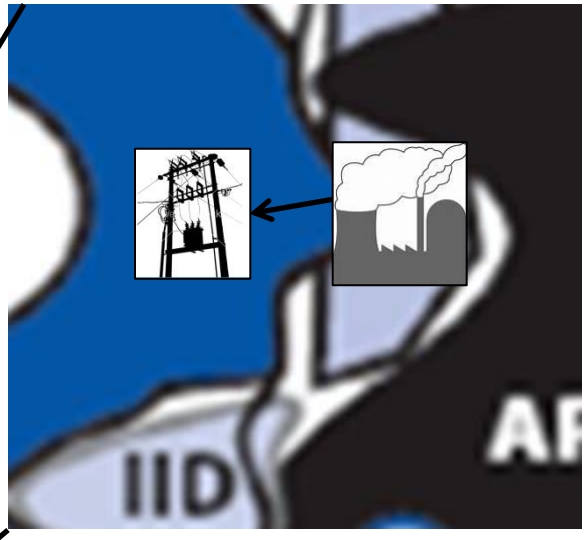
3. **Electricity scheduled for delivery from specified source into a CA balancing authority area via continuous transmission path from interconnection of the facility in balancing authority area in which the facility is located to final point of delivery located in CA**
4. Agreement to dynamically transfer electricity from facility to a CA balancing authority

Direct Delivery Criterion 3 - Continuous Physical Transmission Pathway to California

- Most common type of transaction
- "Electricity scheduled for delivery from specified source into a CA balancing authority via continuous transmission path from interconnection of the facility in balancing authority in which the facility is located to final point of delivery located in CA" (§ 95102(a))
- Any transaction among or between balancing authorities is tracked via e-Tag~~s~~ (discussed later)
- Also includes CAISO EIM transactions (discussed later)

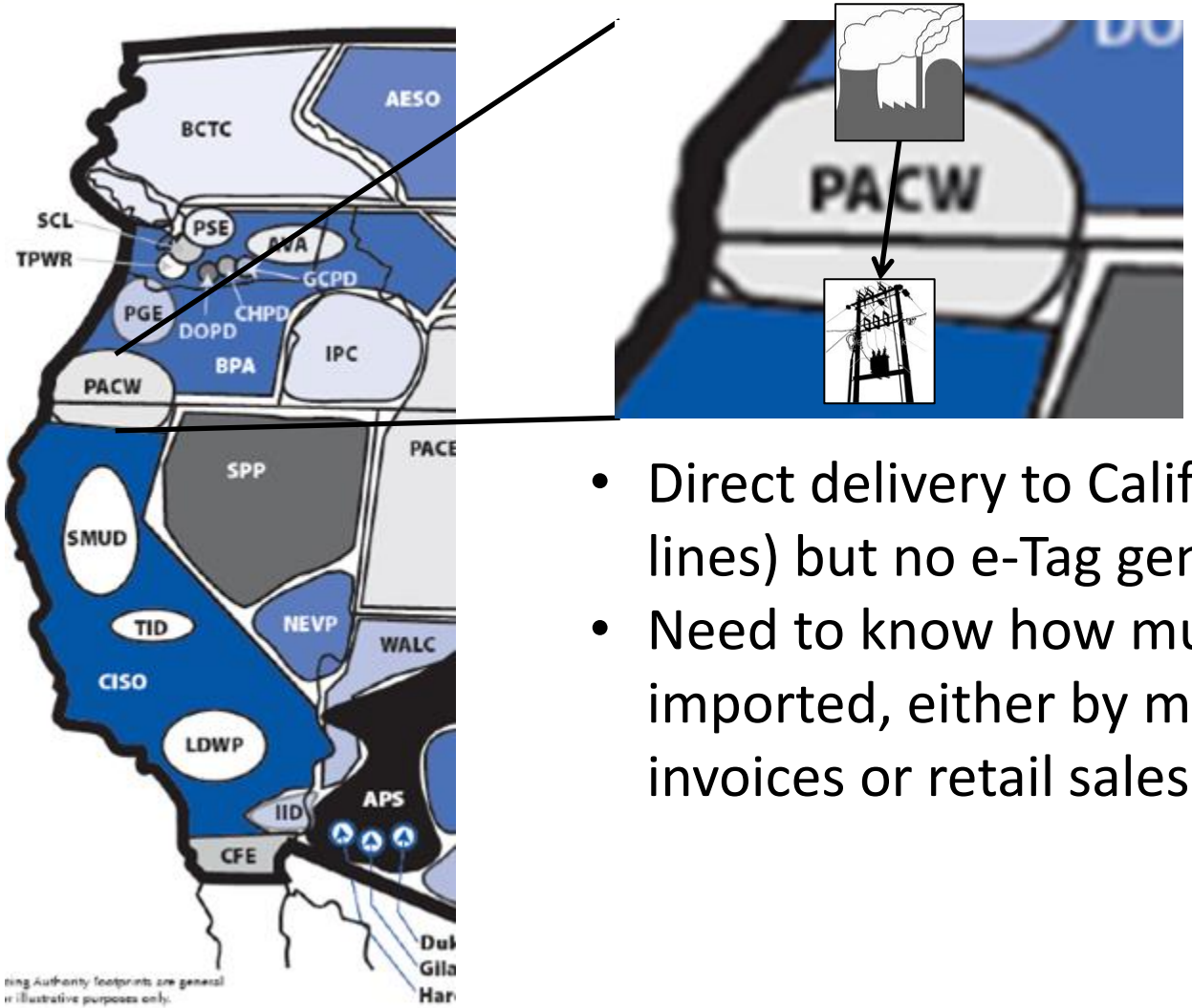
Direct Delivery Criterion 1 - Facility has first point of interconnection with a CA balancing authority





- Stays within CAISO but source is outside of CA. No e-Tag generated.
- Need to know how much electricity was imported, either by metered data or invoices.

Direct Delivery Criterion 2 - First point of interconnection with distribution facility used to serve end users in a CA BA



- Direct delivery to California (crosses state lines) but no e-Tag generated
- Need to know how much electricity was imported, either by metered data and invoices or retail sales in the state

Direct Delivery Criterion 4 - Dynamic Transfer of electricity to CA BA

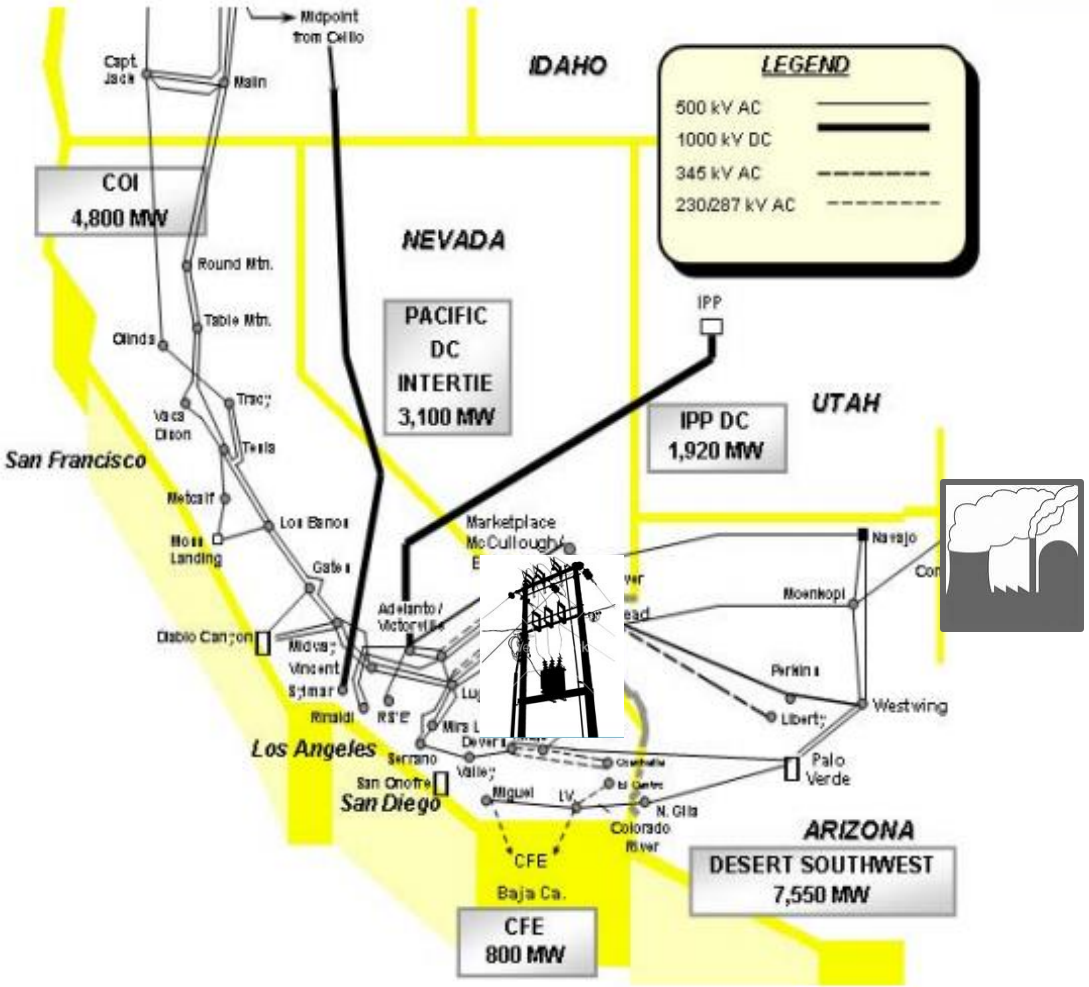


Figure 2 – California's 18,170 MW of EHV Transmission Interconnections

Different arrangement where sink BAA (like CAISO) controls dispatch. This is documented via e-Tag, so it's verified the same way as imports via continuous transmission path

Questions and ARB Comments

1. Overview
2. Assigning Emissions Factors to Electricity Generation Sources
3. **Tracking Electricity Transactions**
   - **NERC e-Tags**
   - **Reporting Imported Electricity Transactions**
   - **Reporting Wheeled Electricity Transactions**
4. Reporting Information
5. Verification

NERC e-Tags Track Electricity Transactions

PSE = Purchasing-Selling Entity

POR = Point of Receipt

First Point of Receipt, also called the "Source"

POD = Point of Delivery

Physical Path								
CA	TP	PSE	POR	POD	Sched Entities	Contract	Misc (Token/Value)	
BPAT		PSE A	KFallsGen					
	BPAT	PSE B	KFallsGen	Malin500	BPAT			
	CISO	PSE C	Malin500	NP15	CISO		CAISO Product	ENGY
							CAISO Res ID	PCG2_MalN500_I_F_PPM_02
CISO			NP15				RPS ID	

Final Point of Delivery, also called the "Sink"

Border crossing (Malin500 is in OR, NP15 is in CA)

Tracking Electricity (*NERC e-Tags)* (1 of 2)

- North American Electric Reliability Corporation (NERC) energy tags (e-Tags)
- Represents transactions in bulk electricity markets scheduled to flow between or across balancing authority areas
- Identifies the “purchasing-selling entity” (PSE) for each physical path segment

Tracking Electricity (*NERC e-Tags)* (2 of 2)

- Identifies the “first deliverer” – the PSE on the last segment that crosses the physical border of California
- E-tags are not available for all power transactions
- E-tags cannot be used to establish specified vs. unspecified sources: this is done by looking at contract and generation-providing entity information

Reporting Imported Electricity Transactions (1 of 2)

- *Imported electricity* is electricity generated outside the state of California and delivered to serve load located inside the state of California
- The electricity is reported by the *purchasing-selling entity o*f the electricity when it crosses the border into California
- For reporting imported electricity, individual transactions may be grouped together - (aggregated/disaggregated) § 95111(a)(2)
  - Individual **unspecified import** transactions with the same first point of receipt listed on all e-Tags (the first POR listed on the e-Tag) can be summed together for reporting
  - Individual **specified import** transactions with the same first point of receipt <u>AND</u> same specified generation source can be summed together for reporting

Review of Electricity Transaction Terminology

- *Point of receipt (POR)* – interconnection or substation where power is received (NERC Registry defined points that are listed as PORs on e-Tags).-The “First Point of Receipt” is the first POR listed on the e-Tag (also called the “source”)
- *Point of delivery (POD)* – interconnection or substation where power is delivered. The “Final Point of Delivery” is the last POD listed on the e-Tag (also called the “sink”).
- *Purchasing selling entity (PSE)* – means the entity that is identified on the NERC e-Tag for each physical path segment.

Specifying the First Deliverer

- The first deliverer is the PSE on the last CA border crossing
- In the workbook, reporter identifies when they are the first deliverer
  - If so, emissions are counted for that transaction
- Retail providers must, in addition, report transactions where another entity imports power on their behalf to serve the retail provider's load (§ 95111(c))

Reporting Imported Electricity Transactions (2 of 2)

Examples of electricity imports include:

- Power delivered in California across balancing areas--documented via e-Tag
- Power imported into California over a multi-jurisdictional retail provider's transmission and distribution system, e.g., PacifiCorp
- Power imported from a generating facility located outside California but inside CA balancing area; for example, the La Rosita power plant in Mexico
- CAISO energy imbalance market (EIM) went live in November 2014. E-Tags only show net energy exchange among BAs, and no PSE information, so will need to rely on market results publication which will document regulated entities.

Which PSE reports this import?

Who reports this import?

Disaggregated by First POR (source) here

Reported by the PSE listed in physical path table of e-tag on leg of transaction from Malin500 to NP15

Imported Electricity Example

Physical Pat								
CA	TP	PSE	POR	POD	Sched Entities	Contract	Misc (Token/Value)	
BPAT		PSE A	KFallsGen					
	BPAT	PSE B	KFallsGen	Malin500	BPAT			
	CISO	PSE C	Malin500	NP15	CISO		CAISO Product CAISO Res ID	ENGY PCG2_MalN500_I_F_PPM_02
CISO			NP15				RPS ID	

"Source" or "first point of receipt".

"PSE C" is the PSE at the border crossing into California, and must report this transaction.

Sink or "final point of delivery"

The "Source" is outside California and the "Sink" is inside California, so this transaction is reported as an electricity import.

Reporting Exported Electricity Transactions

- *Exported electricity* is electricity generated inside California and delivered to serve load located outside the state
- Electricity exports are reported by the entity with rights to the electricity when it crosses the border out of California (the "purchasing-selling entity" listed on the e-Tag at the border crossing)
- Per § 95111(a)(2), for reporting exports, individual transactions are grouped together as follows
  - Unspecified exports with the same final point of delivery (sink) listed on the e-Tag (the last POD listed on the e-Tag) are summed together for reporting
  - Specified exports with the same final point of delivery AND same specified generation source are summed together for reporting
- Exports are not included in covered emissions

Example e-Tag for an Electricity Export

Source/first POR is inside CA

Physical Path								
CA	TP	PSE	POR	POD	Sched Entities	Contract	Misc (Token/Value)	
		PSE A	SP15					
	CISO	PSE B	SP15	PVWest	CISO			
	CISO	PSE C	PVWest	PaloVerde 500	CISO			
	SRP	PSE C	PaloVerde 500		SRP		RPS ID	

"PSE B" is the PSE at the border crossing out of California and must report this transaction as an export.

Sink/Final POD is outside CA.

Reporting Wheeled Electricity Transactions (1 of 2)

- Wheeled electricity is electricity that is generated outside the state of California and delivered into California with the final point of delivery outside California
- Wheeled electricity transactions are reported separately from imports or exports
- Wheeled electricity transactions are reported by the purchasing-selling entity when it crosses the border out of California (the PSE listed on the e-Tag at the **last** border crossing)
- Per § 95111(a)(2), for reporting wheeled power, individual transactions with the same first point of receipt (source) listed on the e-Tag are summed together for reporting

Reporting Wheeled Electricity Transactions (2 of 2)

- A wheeled electricity transaction is
  - Documented on a single e-Tag
  - Not included in total or covered emissions
  - Different from an exchange, which happens between or among two or more e-Tags. Exchanges must be reported as a separate import and export.
- "Electricity Wheeled through California"
  - Note this term is defined in MRR – the term has a more general meaning when used in industry
  - A transaction with source and sink both inside California is NOT reported

Who Reports this Wheeled Transaction?

Reported by the PSE listed in physical path table of e-tag on last leg of transaction leaving CA (from NP15 to Malin500)

Disaggregated by FirstPOR here

Aggregating Reported Transactions (1 of 2)

- Transactions are grouped (aggregated) based on reporting emissions disaggregated by delivered electricity categories
- Delivered electricity (MWh) disaggregated by first point of receipt (first POR) or final point of delivery (sink)
  - Imported from unspecified sources (first POR)
  - Imported from specified facilities or units (by specified facility, then first POR)
  - Imported supplied by asset-controlling suppliers (by ACS and then first POR)

Aggregating Reported Transactions (2 of 2)

Transactions are classified based on reporting categories

- Exported (specified, unspecified, qualified exports are subset) (aggregated by sink)
- Wheeled (aggregated by first POR)
- Exchange agreements (report as separate imports and exports) (aggregated by POR/POD)

Questions and ARB Comments

1. Overview
2. Assigning Emissions Factors to Electricity Generation Sources
3. Tracking Electricity Transactions
4. **Reporting Information**
   - **Requirements**
   - **Unspecified imports**
   - **Examples**
5. Verification

Reporting of Information (1 of 2)

- All required data is submitted via ARB Excel workbooks (XML upload to Cal e-GGRT)
  - Workbook 1 is for retail providers and marketers (most common)
  - Workbook 2 is for Multi-Jurisdictional Retail Providers
  - Workbook 3 is for WAPA and DWR
  - Workbook 4 is for Asset-Controlling Suppliers
- Excel workbooks provided to you in zip files. (For reference only—latest version will be on Cal e-GGRT site)
- Workbook 1 is uploaded via XML to create final data report. Reporting entities can use workbook to check data, but must ensure that final report submitted to Cal e-GGRT is accurate

Reporting of Information (2 of 2)

- Workbooks contain all emissions reporting requirements
- Includes calculation of covered emissions (basis for material misstatement calculation)
  - Also includes calculation of total emissions which does not include QE and RPS adjustments
- Emissions disaggregated by delivered electricity categories

Workbook 1

CALCULATION OF COVERED EMISSIONS per 95111(b)(5)

$$CO_2e_{covered} = CO_2e_{unspecified} + (CO_2e_{specified} - CO_2e_{specified-not\ covered}) - CO_2e_{RPS_adjustment} - CO_2e_{QE_adjustment} - CO_2e_{linked}$$

COVERED		Unspecified Imports	Specified Imports	Specified Not Covered	RPS Adjustment	QE Adjustment	Linked
[$CO_2e_{covered}$] Annual metric tons of CO_2e with a compliance obligation.	=	[$CO_2e_{unspecified}$] Annual metric tons of CO_2e from unspecified imported electricity calculated pursuant to MRR 95111.	[$CO_2e_{specified}$] Annual metric tons of CO_2e from imported electricity from specified sources that meet the requirements of MRR sections 95111.	[$CO_2e_{specified-not\ covered}$] Annual metric tons of CO_2e without a compliance obligation pursuant to section 95852.2.from specified sources that meet the requirements in MRR section 95111	[$CO_2e_{RPS_adjustment}$] Annual metric tons of CO_2e calculated pursuant to MRR that meets the requirements of section 95852(b)(4).	[$CO_2e_{QE_adjustment}$] Annual metric tons of CO_2e from qualified exports pursuant to MRR section 95111 that meet the requirements of section 95852(b)(5).	[CO_2e_{linked}] Annual metric tons of CO_2e from electricity with a first point of receipt located in a jurisdiction where a GHG emissions trading system has been approved for linkage by the Board pursuant to subarticle 12.
0		0	0	0	0	0	0

INVENTORY ONLY CALCULATION

TOTAL EMISSIONS		Unspecified Imports	Specified Imports
[$CO_{2e\ Total}$] Annual metric tons of CO_2e	=	[$CO_2e_{unspecified}$] Annual metric tons of CO_2e from unspecified imported electricity calculated pursuant to MRR 95111.	[$CO_2e_{specified}$] Annual metric tons of CO_2e from imported electricity from specified sources that meet the requirements of MRR sections 95111.

Instructions | Version | Guidance | Data Export XML | Reporter Info | **COVERED EM CALC** | Retail Provi

Handout 2.1.2 - Workbook 1 - EPE Importers and Exporters

First Deliverer Determination

Only “Yes” line items are included in covered emissions

For reporting under 95111(c)(4), retail providers must report imports by others on their behalf. For these, mark “no”. Excluded from covered emissions.

FIRST DELIVERER DETERMINATION

Required = Validation check!

Are YOU the PSE on the NERC eTag in the Physical Path table on the last California border crossing? If yes, then you are the First Deliverer. (Required)	Name of the First Deliverer? Select from List, or enter "Other" (Required)	If you selected "Other", who is the First Deliverer?	Your Relationship to the Specified Source Transaction, e.g., "I am the ___."
Yes	3 Phases Renewables - 3006		Party to a Specified Power Contract
Yes	3 Phases Renewables - 3006		Party to a Specified Power Contract
No	3 Phases Renewables - 3006		Party to a Specified Power Contract

Direct Delivery and First Deliverer Example

Physical Path								
CA	TP	PSE	POR	POD	Sched Entities	Contract	Misc (Token/Value)	
BPAT		PSE A	KFallsGen					
	BPAT	PSE B	KFallsGen	Malin500	BPAT			
	CISO	PSE C	Malin500	NP15	CISO		CAISO Product	ENGY
							CAISO Res ID	PCG2_MalN500_I_F_PPM_02
CISO			NP15				RPS ID	

"PSE C" is the PSE at the border crossing into California, and is therefore the first deliverer and must report this transaction.

This electricity was imported because the source (KfallsGen) is outside CA and the sink (NP15) is inside CA

Electric Power Entities (EPEs) - e-Tag Records

- EPEs have access to all e-Tags where they were PSEs, **regardless of proximity to California,** as part of a large, third-party database maintained for electricity reliability
- EPEs (or their contractors) will query the database based on parameters designed to meet MRR requirements
- They then report a subset of transactions where they are the required reporter under MRR
- Here's what to look for in that database query, tracking the reported data back to the source:

Order of Operations for Reporting

1. Query NERC e-TAG data
2. Sort queried data
3. Identify interties
4. Retain only PSE transactions
5. Clarify import and export deliveries
6. Select specified imports transmission loss factor
7. Disaggregate specified imports
8. Conduct lesser-of analysis
9. Aggregate unspecified transactions

Example of Order of Operations for Reporting Entity - Source Data → Reported Data (1 of 5)

1. Query NERC e-Tag data for all schedules implemented (electricity flowed) in calendar year where
   - Entity appears as a purchasing selling entity on any segment of the physical path **and**
   - Any POR/POD is located inside California
2. Sort queried data into imports, exports, wheels
   - Imports - Source outside CA and sink inside
   - Exports - Source inside CA and sink outside
   - Wheels - both source and sink outside CA with one or more intermediate POR/POD(s) inside

Example of Order of Operations for Reporting Entity - Source Data → Reported Data (2 of 5)

3. Identify interties on each side of California geographical boundary for each transaction's physical path
4. Retain only transactions for which the reporting entity is identified as the PSE on the last physical path segment crossing CA geographical boundary

Example of Order of Operations for Reporting Entity - Source Data → Reported Data (3 of 5)

5. Classify queried import and export deliveries (MWh) as Specified Source or Unspecified Source, based on additional records such as ownership, contracts, invoices consistent with direct delivery requirements

   Imports – Unspecified and Specified (Facility A, Facility B, Facility C, etc.)

   Exports – Unspecified and Specified (Facility X, Facility Y, Facility Z, etc.)

Example of Order of Operations for Reporting Entity - Source Data → Reported Data (4 of 5)

6. For specified imports, reporting entity
   - Applies TL factor of 1.0 (0% loss) when losses are supported by CA balancing authority, made up by CA electricity sources, or other evidence provided to verifier that losses are accounted for (ARB will issue guidance on TL)
   - Applies transmission loss (TL) factor 1.02 (2% loss) when losses are otherwise unaccounted for or no evidence can be provided that reported value accounts for losses

Example of Order of Operations for Reporting Entity - Source Data → Reported Data (5 of 5)

7. Disaggregate specified imports for emissions data year by generating facility or unit and “source” on e-Tag
8. Conduct Lesser-of analysis (discussed later)
9. Aggregate unspecified transactions
   - Imports by “source” shown on the physical path
   - Exports by “sink” shown on the physical path
   - Wheels by “source” shown on the physical path

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   - Case Studies
   - Verification Process

How to Verify Data Reported via e-Tags (1 of 5)

- Review GHG Inventory Plan (should contain description of e-Tag database query used)
  - Review query for consistency with MRR
- Interview staff about query construction
- Review spreadsheet or database for consistency with reported data
- Ask staff to download sample of raw data while on-site (or via webinar) to ensure consistency with reported data
  - E.g., compare control totals for representative period time between raw (third-party database) and reported

How to Verify Data Reported via e-Tags (2 of 5)

- Sample a number of “paper” e-Tags (likely PDF) from the database
- Consider requesting read-only access to database (including links to “paper” e-Tags) to allow for dynamic sampling

How to Verify Data Reported via e-Tags (3 of 5)

- **Don't assume data presented is complete.** Verifiers must confirm that no reportable transactions were excluded—i.e., do not merely sample from transactions in emissions data report –look at raw data
- Consider risk associated with not using primary data (e.g., OATI vs. "mirror database")

How to Verify Data Reported via e-Tags (4 of 5)

Document your approach in sampling plan

- How did you verify the construction of the query? Was it explained adequately? Did you ask staff to compare raw and reported data?
- What were the risks identified for data management, reporting, and for different types of transactions?

How to Verify Data Reported via e-Tags (5 of 5)

Document your approach in sampling plan (continued)

- Did you trace data all the way to raw data, rather than relying on spreadsheet copies?
- How many e-Tags were reviewed and why was that sufficient for reasonable assurance? Did you sample e-Tags from all known transactions, or did you rely on the data provided?

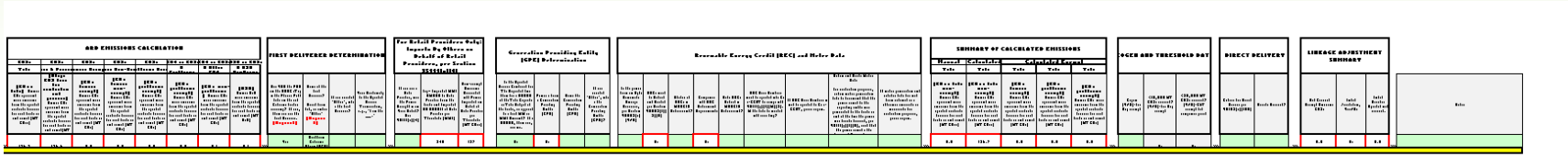
Verification of CAISO EIM Entities (1 of 2)

- California ISO Energy Imbalance Market began operation on November 1, 2014
- EIM allows for real-time trading among additional balancing authorities in the west, including PacifiCorp
- Can result in electricity imports/exports; not documented on e-Tag, so different steps required by reporter and verifier
- Helpful background included in reporter FAQ document posted: http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep-power/eim-faqs.pdf

Verification of CAISO EIM Entities (2 of 2)

- Subject to same reporting and verification requirements as other EPEs
- E-Tags are not used in reporting EIM: EPEs will download CAISO data and maintain their own database used for reporting
- CAISO maintains original data on their servers for 3 years for raw data checks
  - Verifiers MUST ask EPEs to recreate data to have reasonable assurance data is complete and not edited
  - ARB plans to add FAQs to guidance to discuss verification

Notes on Specified Imports Section of Workbook



- Physical Transaction Attributes (MWhs) - choose facility from a dropdown menu or input
- ARB Emissions Factors automatically imported after facility selected (unless new)
- Manual emissions factor (generally not used)
- ARB Emissions Calculation - exempt and non-exempt
- REC status – serial numbers uploaded
  - However, RECs do not need to be retired for imports
  - Must be retired for RPS adjustment though! (discussed later)

RPS Adjustment Guidance

$$CO_2e_{covered} = CO_2e_{unspecified} + (CO_2e_{specified} - CO_2e_{specified-not\ covered}) - CO_2e_{RPS_adjustment} - CO_2e_{QE_adjustment} - CO_2e_{linked}$$

- RPS adjustment can be claimed for electricity procured for RPS compliance but <u>not</u> delivered to California by the reporting entity
- REC serial numbers must be uploaded to Cal e-GGRT
- RECs must be placed in retirement subaccount by July 15th
- RECs retired must be used to comply with CA RPS requirements during the same year the RPS adjustment was claimed (§ 95852(b)(4))
- Reduces covered emissions so must be reviewed closely
- RPS facilities http://www.energy.ca.gov/portfolio/documents/list_RPS_certified.html

RECs in "RPS Adjust" tab

RPS ADJUSTMENT REQUIREMENTS – Field Set from Workbook 1 in the RPS Adjustment Tab

ELIGIBLE RESOURCE Is the power from an Eligible Renewable Energy Resource, per Section 95802(a) (Y/N)	RIGHTS Electricity Importer Must Have Either of the following, per 95852(4)(A)	REC STATUS RECs must be used to comply with California RPS requirements during the same year in which the RPS adjustment is claimed, per 95852(4)(B)	REC DATE Date RECs Retired in WREGIS Subaccount?	DELIVERY No RPS adjustment may be claimed for an eligible renewable energy resource when its electricity is directly delivered, per 95852(4)(D).	ELIGIBLE RESOURCE Is the power from an Eligible Renewable Energy Resource, per Section 95802(a) (Y/N)	RIGHTS Electricity Importer Must Have Either of the following, per 95852(4)(A)	REC STATUS RECs must be used to comply with California RPS requirements during the same year in which the RPS adjustment is claimed, per 95852(4)(B)	DELIVERY No RPS adjustment may be claimed for an eligible renewable energy resource when its electricity is directly delivered, per 95852(4)(D).	ELIGIBLE RPS ADJUSTMENT Eligible for RPS Adjustment?
Yes	Ownership or Contract Rights	Retired in WREGIS	5/1/13	Not Directly Delivered to CA	0	0	0	0	Eligible
Yes	On Behalf of Owner or Contracted Entity	Will Be Retired Later		1st POR via Distribution Grid	0	0	1	1	No
No	Neither	Uncertain, Did Not Buy RECs		Not Directly Delivered	1	1	1	1	No
Yes	Ownership or Contract Rights	Uncertain, Sold the RECs		Not Directly Delivered	0	0	1	1	No

These questions determine RPS adjustment eligibility

Must result in all zeroes to appear as "eligible".

If not eligible, the emissions are not subtracted from covered emissions

QE Adjustment

- "Qualified export" (C&T § 95802(a)) means electricity that is exported simultaneous (meaning **in the same hour)** as imported electricity and documented by NERC e-Tags
  - Imports and exports must occur in the same hour
  - The entity can reduce their covered emissions by reporting any "simultaneous" imports and exports.

Retail Provider Reporting Requirements

- Retail providers have additional reporting requirements outlined in § 95111(c) and § 95111(a)(12)
- Review reporting for consistency with § 95111 - conformance only; does not affect materiality
- All requirements that must be verified are included in Workbook 1
- Must report California retail sales
  - Retail providers with no imports/exports and not classified as confidential, verification is optional

Retail Providers - Imports on Behalf

- Retail providers must report all imports made by others on their behalf to serve load
- Not part of covered emissions calculation; review for conformance only

For Retail Providers Only: Imports By Others on Behalf of Retail Providers, per Section 95111(c)(4)		
If you are a Retail Provider, was the Power Brought in on Your Behalf? See 95111(c)(4)	Isp = Imported MWh OWNED by Retail Provider from the Facility and Imported ON BEHALF of Retail Provider per Thresholds (MWh)	Non-exempt Emissions Associated with Power Imported on Behalf of Retail Provider per Thresholds (MT CO_2e)
	0	0

Retail Providers - Electricity "Not Imported"

Pursuant to 95111(c)(3)(C), retail provider must report high-GHG electricity to which they are entitled but are not importing ("laying off")

Ownership & High GHG Threshold			CO2e Not Imported, per Section 95111(c)(3)(C)(1)					
If any of the following apply, the resource is "Owned": Does the Retail Provider (1) operate the resource, (2) fully or partially owned the resource, and/or (3) have a Specified Source Contract for a SHARE of the Total Capacity or Total Output of the Facility, as opposed to a Fixed Amount? 95111(c)(3)	This IS or IS NOT considered a High GHG Resource as it is above 0.428 MT CO2e/MWh per 95111(c)(3)	**This IS or IS NOT considered "Reportable Power" where power meets the Combined Criteria Under Section 95111(c)(3) for Ownership & GHG Level**	Whole Facility Net Generation: EGsp = "Facility or unit net generation" which means Total Annual Facility or Unit Net Generation for the WHOLE facility for the entire Reporting Year (MWh)	Ownership Share: OS = Fraction Ownership Share in Facility or Unit	Retail Provider Share: Product of Net Generation and Ownership Share (MWh)	Isp = Imported MWh Owned by Retail Provider from the Facility (MWh)	NOT Imported (MWh)	Imported Total MT CO2e
	Low GHG	No			0		0	0

Must be "owned"

Must be "high GHG" (EF >0.428 $MTCO_2e$/ MWh)

If "yes", they must fill in columns to right. If "no", they stop here.

Net gen times OS = retail provider share

If retail provider share * 90% > imported MWh, must report replacement electricity

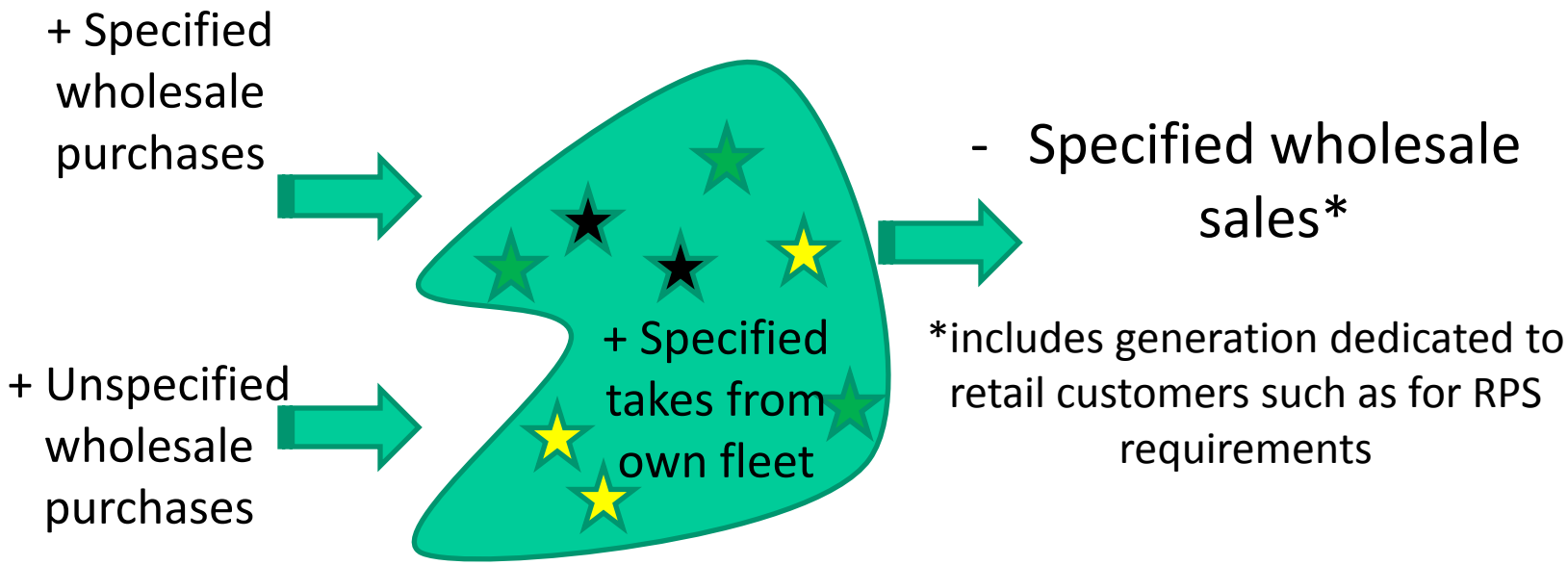
Reporting Requirements for WAPA and DWR

- WAPA must include all information for retail providers, and the amount of electricity used for pump loads to operate the Central Valley Project
- DWR must include all information for retail providers, and the amount of electricity used for pump loads to operate the State Water Project

Reporting Requirements for Asset-Controlling Suppliers and Multi-Jurisdictional Retail Providers

- Currently only 2 asset-controlling suppliers and 1 multi-jurisdictional retail provider (potentially more in future)
- Additional data are required for ARB to calculate a system emission factor
- Asset-Controlling Supplier participation is voluntary; if decision made to report, then subject to all facets of program
- MJRP must report out-of-state retail sales (as well as in-state)

Footprint Calculation for ACSs and MJRPs



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Case Study 1 - Covered Emissions

A retail provider procures electricity from three eligible renewable energy resources to meet the requirements of California's RPS and retires the Renewable Energy Certificates (RECs):

- Facility A: Wind power facility in Washington, which produces 125,000 MWh. The total net electricity generated is sold by the retail provider into the local balancing authority area. The retail provider purchases 125,000 MWh of bulk system power and imports it into California to meet its load.
- Facility B: Solar photovoltaic facility in Nevada, which produces 12,500 MWh. The retail provider directly schedules this power into the CAISO day ahead market and is the purchasing selling entity on the NERC e-tag on the physical transmission path that crosses into California and sinks in California.
- Facility C: Biomass burning facility in Oregon, which produces 20,000 MWh and is measured at the busbar. The retail provider is the PSE on the NERC e-tag on the physical transmission path that crosses into California and sinks in California. ARB specified emission factor is 1 $MTCO_2$/MWh. (Ignore CH_4 and N_2O for this example.)

1. **Calculate the emissions associated with each of these electricity purchases to find the total covered emissions.**
2. **Discuss what happens if RECs are not retired for renewable transactions.**

Case Study 1 - Covered Emissions Solution (1 of 2)

- Facility A - This is two transactions and should not be combined until entered into the Covered Emissions Equation.
  - RPS Adjustment - 125,000 MWh x 0.428 MT CO_2e/MWh = 53,500 MT CO_2e
  - Unspecified Purchase - 125,000 MWh x 0.428 MT CO_2e/MWh x 1.02 = 54,570 MT CO_2e
- Facility B - This is directly delivered electricity with EF=0 MT CO_2e/MWh. It is entered into the Covered Emissions Equation as a specified import.
- Facility C - Specified-Not Covered: 20,000 MWh x 1 MT CO_2e/MWh = 20,000 MT CO_2e

Case Study 1 - Covered Emissions Solution (2 of 2)

- <u>Covered Emissions Equation</u>

  CO_2e(unspecified): 54,570 MT CO_2e

  + CO_2e(specified) – CO_2e(not covered): (20,000 – 20,000) = 0

  – CO_2e(RPS_adjustment): 53,500 MT CO_2e

  = 1,070 MT CO_2e

- If RECs weren't retired, two possible outcomes
  1. RECs not retired during a direct delivery of renewable energy is okay if serial numbers uploaded
  2. RECs not retired in an RPS adjustment invalidates the RPS adjustment and could affect materiality.

$$CO_2e_{covered} = CO_2e_{unspecified} + (CO_2e_{specified} - CO_2e_{specified-not\ covered}) - CO_2e_{RPS_adjustment} - CO_2e_{QE_adjustment} - CO_2e_{linked}$$

Case Study 2 - Covered Emissions

Calculate the total covered CO_2e emissions in metric tons for a retail provider with the following types of transactions

- #1 - 500,000 MWh imported electricity from unspecified sources, aggregated at various transmission source points.
- #2 - 150,000 MWh imported electricity from a specified facility under contract, measured at the busbar. The ARB-calculated facility-specific emission factor is 1 MT CO_2e/MWh.
- #3 - 10,000 MWh purchased under contract from an eligible renewable energy resource outside of California to meet RPS requirements, but does not meet the definition of *directly delivered electricity* in section 95102(a). RECs are ***not*** retired.
- #4 - 15,000 MWh geothermal directly delivered from Nevada and measured at the busbar. Emission factor of 0.073 $MTCO_2e$/MWh.
- #5 - 20,000 MWh electricity from verified biomass fuels directly delivered from Oregon and **not** measured at the busbar. Emission factor of 1.376 $MTCO_2e$/MWh.
- #6 - 250,000 MWh electricity –Transmissions source and sink points on e-Tag are both located inside CA.

Case Study 2 - Covered Emissions Solution (1 of 2)

- Transaction 1 - Unspecified Transaction 500,000 MWh x 0.428 MT CO_2e/MWh x 1.02 = 218,280 MT CO_2e
- Transaction 2 - Specified Transaction 150,000 MWh x 1 MT CO_2e/MWh = 150,000 MT CO_2e
- Transaction 3 - Not a specified import (since not directly delivered) and not eligible for RPS adjustment because RECs not retired
- Transaction 4 - Specified 15,000 MWh x 0.073 MT CO_2/MWh = 1,095 MT CO_2e (not covered)

Case Study 2 - Covered Emissions Solution (2 of 2)

- Transaction 5 - Specified 20,000 MWh x 1.376 MT CO_2e/MWh x 1.02 = 28,070 MT CO_2e (not covered)
- Transaction 6 - In-state electricity is not an import
- Covered Emissions Equation

  [**CO_2e unspecified**: (#1) 218,280 MT] + [**CO_2e specified**: (#2) 150,000 MT + (#4) 1,095 MT + (#5)28,070 MT] **–** [**CO_2e,specified-not covered**: (#4) 1,095 MT + (#5)28,070 MT] = 368,280 MT CO_2e

$$CO_2e_{covered} = CO_2e_{unspecified} + (CO_2e_{specified} - CO_2e_{specified-not\ covered}) - CO_2e_{RPS_adjustment} - CO_2e_{QE_adjustment} - CO_2e_{linked}$$

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Verification Applicability

- § 95103(f) Verification is required if either applies
  - EPE is an electricity importer or exporter in the current reporting year (defined terms in § 95102(a))
  - EPE was electricity importer/exporter and does not meet cessation of verification requirements (§ 95101(i))
- Wheels are not considered an import or export--separate category
- Retail providers that are not importers/exporters do not require verification if retail sales are listed as non-confidential

Verification Process

- Download Cal e-GGRT report and reporter workbook
- Request
  - GHG Inventory Program (§ 95105(d))
  - Any management documentation, which may include OATI's specifications for WebCARB, or internal collation of data based on settlements; this should include information on how NERC e-Tags are queried
  - Copies of reports submitted to person responsible for reporting, including OATI data files or other settlement files
  - Access to OATI and other settlement systems to review individual transactions

The GHG Inventory Program § 95105(d)

Information on

1. Boundaries
2. Management policies
3. Key personnel
4. Training practices
5. NERC e-Tag source data and query description
6. Data management systems and records, contracts, etc.
7. Steps and calculations used to aggregate data
8. Records of preventive and corrective actions taken in the past
9. Log of emissions data report modifications made after initial certification
10. Written description of internal audit program

Planning and Site Visit (full verification) (1 of 2)

- Prepare a Verification Plan (as discussed during Course 1)
- Prepare Preliminary Sampling Plan
  - Rank categorization of emission sources (imports and exports separately)
    - Consider ranking by MWh. May separate specified and unspecified
  - Consider uncertainty in your narrative, both quantitative and qualitative
  - Consider risk of under or over reporting

Planning and Site Visit (full verification) (2 of 2)

Conduct Site Visit

- Review GHG Inventory Program and confirm EPE follows steps outlined
- Ask responsible staff to walk through the process from starting with raw eTag data queries to input to the GHG report
- Confirm control totals for imports, exports, and wheels
- Interview staff about query construction
- Ask staff to recreate sample of queried data while on-site

Verifying in Less-Intensive Year

- Site visit not required, but still might be time-efficient
- What has changed this year?
  - Is there a strong monitoring plan? Was it updated?
  - Are there new contracts or are they all carried over?
  - Have query parameters changed?
- Consider webinar at minimum
  - Ask for re-creation of sample of data (from OATI database, etc) while on webinar
  - May review contracts for conformance
- MUST verify control totals—sampling only eTags from among reported data is not sufficient for reasonable assurance

Data Checks (1 of 2)

Revise sampling plan

- Identify those tags you intend to review, and why
  - Because you have determined some uncertainty, perhaps in reporting procedures while on your site visit
  - Because they document very high or very low volume imports
  - Because they represent imports from specified sources
  - Random selection of tags to confirm correct reporting

Data Checks (2 of 2)

You may have electronic access to database for dynamic sampling. If not, you will need to ask for PDFs

- **Don't assume data presented is complete:** Verifiers must confirm that no reportable transactions were excluded - i.e., do not merely sample from transactions in emissions data report
- Go back to settlement reports, randomly select some tags and confirm that they are included in the Cal e-GGRT report

Asset-Controlling Supplier (ACS) Power

- Asset-Controlling Supplier is an entity that supplies electricity from a specific fleet of generation and is assigned a system-wide emission factor for electricity provided by that entity
- Treated the same as specified power with regard to contract requirements and seller warranty
  - One exception: Purchasing power directly from BPA is considered specified if sourced from BPA Power or BPA Slice
- Also discussed in last year's guidance
  http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep-power/specified_source_acs_faqs.pdf

Verifying Specified Sources - Contract/GPE Requirements (1 of 2)

- A current contract or generation providing entity status (defined in § 95102(a)) is required for ALL specified source claims
- If the importer is GPE, they “automatically” meet the contract requirement
- Timeline for contracts - Must report electricity imports as required by MRR with regard to the contract language, regardless of when the contract was entered into. (No grandfathered contracts.)

Verifying Specified Sources - Contract/GPE Requirements (2 of 2)

- No time restriction - contracts may be short-term or “per event”
- Contract is “written document, including associated verbal or electronic records arranging for the procurement of electricity” (§ 95102(a))
  - Short-term (<1 week) will have overarching contract in place and transaction confirmed by IM or voice
- Focus is on whether source is conveyed as specified or not
  - IM/voice recording should make clear that specified power is transacted. Ambiguity should be interpreted as power being unspecified
- See last year’s guidance: http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep-power/specified_source_acs_faqs.pdf

Seller Warranty

- Power purchased from entity who is not the source may be eligible as specified source claim
- The power must be conveyed as specified throughout the entire chain of buyers/sellers. Others are allowed in market path but all must convey as specified
  - Verifier should review a risk-based sample of additional contracts "up the chain" – between the reporting entity and the source to ensure the power was conveyed as specified
  - If any link in the chain does not convey power as specified, must be reported as unspecified
- Seller warranty is discussed in the specified source guidance: http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep-power/specified_source_acs_faqs.pdf

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Specified Imports: Lesser Of Analysis (§ 95111(b)(2)(E))

Applies to most RPS and zero emission resources

- Clarifies requirement to retain meter generation data
- For applicable imports, reporter is required to compare imports listed on e-Tag with actual generation from the resource
- If e-Tag value is greater, the generated value can be claimed as a specified import, with the balance claimed as “substitute power” (unspecified import)
- If generation exceeds tagged imports, the e-Tag value is specified import; the excess generation may be claimed as RPS adjustment if RPS requirements are met
- Verifier should review sample of tags, meter generation data, and hourly comparison spreadsheet

Lesser Of Analysis Example

Meter Data Requirement During Under- and Over Generation Illustration for Two Hours of Generation, Scheduled, and Delivered			
	Description	Hour 1: Under-Generation (MWh)	
1	Metered Generated at the Source	85	
2	Scheduled & Delivered on e-Tag	100	
3	Lesser Of: Meter or Scheduled?	Metered: 85	
4	**Reported: Zero Emission Specified Source Imported**	**Lesser of value = 85**	
5	**Reported: Substitute Power, Unspecified Import**	**100 – 85 = 15**	
6	**Reported: RPS Adjustment**	**0. No excess generation**	

Specified Source - REC retirement (C&T Reg § 95852(b)(3)(D))

- If RECs were created when the power claimed as a specified source was generated, RECs serial numbers must be reported in workbook 1

- This is a conformance requirement only. Emissions are not affected. Failure to report REC serial numbers leads to a non-conformance; failure to correct results in qualified positive, not adverse, verification statement

Verifying QE Adjustment

- Reported in workbook, which calculates lesser of imports and exports, and lesser of two emission factors

SUMMARY OF QUALIFIED EXPORT ADJUSTMENTS

Hour in CY2012	Quantity of IMPORTS in Each Hour (MWh)	Quantity of EXPORTS in Each Hour (MWh)	Lowest Emission Factor of any portion of the IMPORT in each hour (MT CO_2e/MWh)	Lowest Emission Factor of any portion of the EXPORT in each hour (MT CO_2e/MWh)	Lowest Quantity of Imports or Exports in Each Hour (MWh)	Lowest Emission Factor of Imports or Exports in each hour (MT CO_2e/MWh)	QE Adjustment MT CO_2e
1	200	100	1.200	0.850	100	0.850	85

Lesser of imports and exports

Lesser of the two emission factors

- Verifier's sample of e-Tags should include certain hours subject to QE adjustment. e-Tags should match the data presented in the QE adjustment section

Verifying RPS Adjustment

RPS ADJUSTMENT REQUIREMENTS									
ELIGIBLE RESOURCE Is the power from an Eligible Renewable Energy Resource, per Section 95802(a) (Y/N)	RIGHTS Electricity Importer Must Have Either of the following, per 95852(b)(4)(A)	REC STATUS RECs must be used to comply with California RPS requirements during the same year in which the RPS adjustment is claimed, per 95852(b)(4)(B)	REC DATE Date RECs Retired in WREGIS Subaccount?	DELIVERY No RPS adjustment may be claimed for an eligible renewable energy resource when its electricity is directly delivered, per 95852(b)(4)(D)	ELIGIBLE RESOURCE Is the power from an Eligible Renewable Energy Resource, per Section 95802(a) (Y/N)	RIGHTS Electricity Importer Must Have Either of the following, per 95852(b)(4)(A)	REC STATUS RECs must be used to comply with California RPS requirements during the same year in which the RPS adjustment is claimed, per 95852(b)(4)(B)	DELIVERY No RPS adjustment may be claimed for an eligible renewable energy resource when its electricity is directly delivered, per 95852(b)(4)(D).	ELIGIBLE RPS ADJUSTMENT Eligible for RPS Adjustment?
Yes	Ownership or Contract Rights	Retired in WREGIS	7/1/13	Not Directly Delivered to CA	0	0	0	0	Eligible

- Depending upon the number of RECs, you may review all or sample some of the serial numbers
- Confirm by reviewing retirement status on WREGIS subportal
- Only RECs representing electricity generated after 12/31/12 are eligible to be used towards RPS adjustment (C&T Reg § 95852(b)(4)). Then, rolling 3 year window.

Direct Delivery Documentation in Workbook

- Direct delivery options are in drop-down menu
- Located in the "far right" side of Spec Imports tab

DIRECT DELIVERY	
Criteria for Direct Delivery per 95102(a)(108)	Directly Delivered?
1st POR is CA BAA	Yes
1st POR via Distribution Grid	Yes
Spec Source to POD in CA	Yes
Dynamic Transfer	Yes
Not Directly Delivered to CA	No

Must be listed as "Yes"

Red flag if "Not directly delivered to CA". For other options, consider sample for conformance

Wheeled Electricity

- Verifier must review sample of wheeled tags as part of review of the appropriate reporting of e-Tags
- Transactions that start and end in California (on a single e-Tag) are NOT reportable at all (as wheels, exports or imports). These are sometimes called “reverse wheels”, but they are not wheels” as defined in MRR.
- Wheels have to be captured on one e-Tag. If e-Tags are separate or referred to as “broken”, each transaction must be reported as separate import and export

Case Study 3 - Database of Transactions

See Handout 2.1.3

Questions and ARB Comments

Course 2: Transactions Specialty

Complete:

2.1 Electric Power Entities

Next:

2.2 Suppliers of Transportation Fuels

2.3 Suppliers of Natural Gas, Natural Gas Liquids, Liquefied Petroleum Gas, CNG and LNG

2.4 Suppliers of Carbon Dioxide (CO2)