



## Course 2.1: § 95111

### ELECTRIC POWER ENTITIES

Module 2.1.1: Introduction – EPE Entities & Structure

## Course 2.1 Modules

- **2.1.1: Introduction – EPE Entities & Structure**
- Imports, Exports, EIM, RPS, & Wheels Exercises
- 2.1.3: EPE Reporting Workbooks
- 2.1.4: Verifier Requirements Overview, & e-Tags
- 2.1.CS: Case Studies (w/ Solutions)

## Course Material

### Handouts

- Handout 2.1.1
    - Illustrative e-Tag
  - Handout 2.1.2
    - Case Study 3: Database of e-Tags
  - Handout 2.1.3
    - EPE GHG Inventory Program Checklist
1. ONE
  2. TWO: MJRP System EF
  3. THREE: WAPA & DWR
  4. FOUR: ACS System Emission Factor Calculation

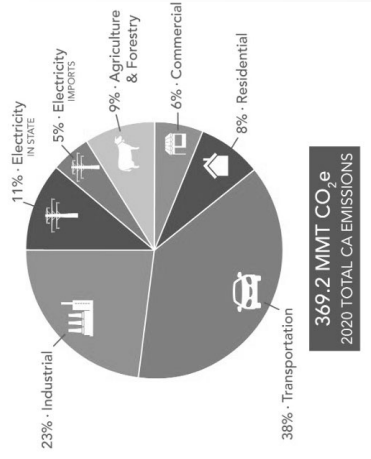
## Key Regulatory Provisions\*

- § 95101(d) Applicability
- § 95101(h)(1)(B) Cessation of Reporting & Verification for EPEs
- § 95102 Definitions
- § 95105(d) EPE Inventory Document Requirements
- § 95111 EPE Reporting Requirements
  - (a)(3),(4),(5) Imports
  - (a)(6) Exports
  - (a)(8) Wheels
  - (g) RPS Adjustment
  - (h) EIM
- C&T § 95852(b)(4) RPS Adjustment

\*All citations in this training reference the currently effective 2018 MRR

## California's GHG Emissions

- ~5% Total 2020 CA GHGs from Electricity Imports
  - 2.7% Specified Imports
  - 2.4% Unspecified Imports



## GHG Intensity of California Electricity 2013 - 2020

Figure 8. GHG Emissions from the Electricity Sector.

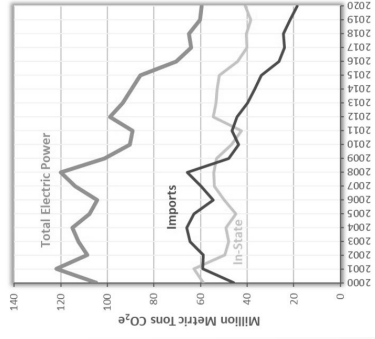
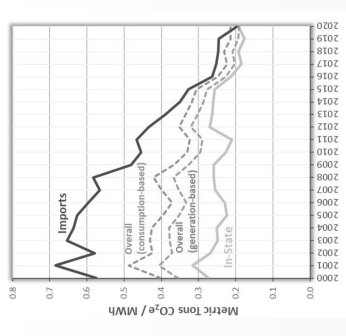
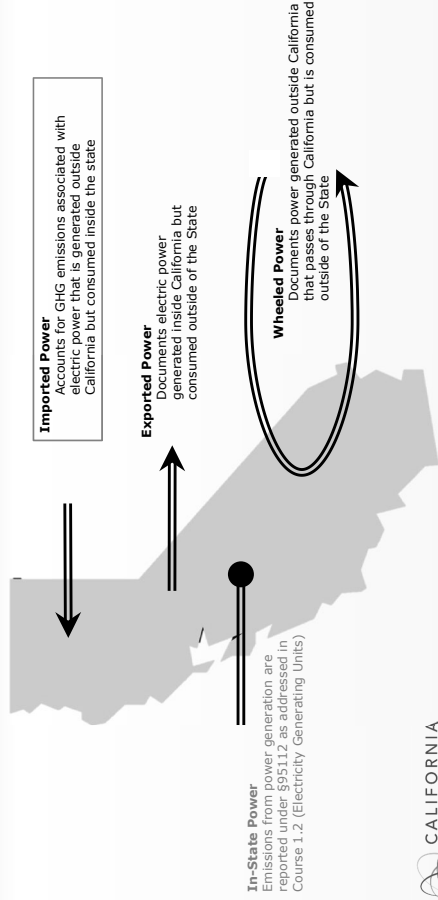


Figure 9. GHG Intensity of Electricity.



CARB 2000-2020 GHG Emissions Trends Report, Figure 9

## Reportable Transactions (Overview) [§ 95111]



## Retail Providers, & Marketers [§95102(a)]

- Retail Providers
  - Entities that provide electricity to retail end users in California, including:
    - Electric corporations, Investor Owned Utilities (IOU)
    - Electric service providers (ESP)
    - Local publicly owned electric utilities (POU)
    - Community choice aggregators (CCA)
    - Western Area Power Administration (WAPA)
      - excludes Electric Cooperatives (CO-OP, can voluntarily report)
- Marketers
  - Purchasing-selling entity (PSE) that delivers electricity and is not a retail provider



## Course 2.1.1 Modules

- 2.1.1.1: Introduction – EPE Entities & Structure
- **2.1.1.2: Imports, Exports, EIM, RPS, & Wheels**
- 2.1.1.Ex: Exercises
- 2.1.1.3: EPE Reporting Workbooks
- 2.1.1.4: Verifier Requirements Overview, & e-Tags
- 2.1.1.CS: Case Studies (w/ Solutions)

## Wholesale Electricity Market (1 of 2)

- Verifiers review electricity transactions that occur in the Wholesale Electricity Market
- Participants include:
  - Independent Power Producers not affiliated with a utility
  - Individual traders or power marketers that buy power on the open market and re-sell it
    - Inter-Continental Exchange (ICE)
  - Traditionally vertically integrated utilities that buy and sell power
  - CAISO

## Wholesale Electricity Market (2 of 2)

- Markets are organized under an Independent System Operator (ISO)
  - Third-party independent operators of the transmission system, e.g. CAISO
  - ISOs conduct "spot" or real-time markets & "day-ahead" markets
- The movement of power is controlled by BAs
- Transmission owners can elect to turn operational control of their facilities over to the ISO and collect access charges from users.
- Regulated by the Federal Energy Regulatory Commission (FERC)

## Specified and Unspecified Import Sources

- Each specified source has an emission factor calculated by CARB based on US EPA (Part 98 data) and/or EIA (Form EIA 923) data (one-year lag)
- The difference between specified and unspecified source electricity is in the contract
  - Specified source electricity is contingent upon delivery of power from a particular facility, unit, or ACS system designated at the time the transaction is executed [ § 95102(a)]
    - See the Power Contract and Specified Source definitions for more detail
  - Unspecified electricity is not designated for delivery from a specific source at the time of entry into the transaction (paper or verbal) [ § 95102(a)]
- Types of Specified Sources [ § 95852(b)(3)]
  - A single facility or unit which is permitted to be claimed as the source of electricity delivered
  - An ACS supplying electricity from a fleet of generation sources that is assigned an emission factor by CARB
  - Multiple dams, if one project for FERC hydroelectric licensing purposes
  - Source owned, controlled, or generation-providing entity (GPE), contract

## Unspecified Sources

- Default Emission Factor for Unspecified Electricity Imports [ §95111(b)(1)]
  - 0.428 MT CO<sub>2</sub>e/MWh
  - Calculated by CARB and Western Climate Initiative (WCI)
  - Modeled to approximate the marginal generation that would be needed for an additional MWh of electricity imported to California
    - <http://www.atb.ca.gov/regact/2010/qhg2010/qhgisor.pdf>, pg 167-169
  - Unspecified source of electricity or unspecified source means a source of electricity that is not a specified source at the time of entry into the transaction to procure the electricity [ §95102(a)]
    - Applicable to written or verbal contracts
    - Buyer and Seller must both agree on the source or its unspecified

## Requirements to Report Specified Imports

- Meet the requirements of § 95852(b)(3):
  - Ownership or current written contract rights to the power, and
  - Electricity must be directly delivered [ §95102(a)]
- Seller Warranty
  - The resale of specified source electricity is allowed only if each seller in the market path on the e-Tag warrants the sale of specified source electricity from the source through the market path [ §95111(a)(4)]
  - Generation Providing Entities “automatically” meet the contract requirement and must report imports as specified regardless of contract [ §95102]
  - Asset-Controlling Supplier power is treated the same as specified power with regard to contract requirements and seller warranty
  - Contract and Source on the e-Tags must match

## Specified Source Contracts [ §95102(a)]

- “Written document, including associated verbal or electronic records arranging for the procurement of electricity”
  - Short-term (<1 week) usually no written confirmation (contract) but based on industry standard boilerplate with IM or voice confirmation
    - IM/voice recording should make clear that specified power is transacted, and ambiguity should be interpreted as power being unspecified
  - Long-Term Transactions (≥ 1 Week)
    - Written confirmations required with industry standard contracts like WSPP
    - Consider applicability of the seller warranty requirement for resale power
- Focus on whether the transaction was specified or unspecified at the time the contract is executed between buyer and seller
- All specified contracts will explicitly name a facility(ies)

## Seller Warranty (1 of 3)

- “The sale or resale of specified source electricity is permitted among entities on the e-Tag market path insofar as each sale or resale is for specified source electricity in which sellers have purchased and sold specified source electricity, such that each seller warrants the sale of specified source electricity from the source through the market path.” [ §95111(a)(4)]
  - Power purchased from an 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
    - Between the reporting entity and the source to ensure the power was conveyed as specified
    - Verifier should review a risk-based sample of additional contracts “up the chain”
    - If any link in the chain does not convey power as specified, must be reported as unspecified

## Seller Warranty (2 of 3)

- EPE purchases power in a short-term transaction
  - Claim as specified or unspecified
  - Key evidence
  - Buyer and Seller
  - Assumptions
  - Part of EPE Guidance

Table 1 – Seller Warranty Guidance For Short-Term Transactions	
SPECIFIED SOURCE CLAIM	DID REPORTER ESTABLISH EVIDENCE OF SELLER WARRANTY?
<b>MUST BE CLAIMED AS UNSPECIFIED</b>	<p><b>Yes.</b> At a minimum, voice tape indicates buyer agreed to buy specified power. Supplemental documentation, such as trade logs and/or aggregate daily, weekly, or monthly confirmations can strengthen the claim.</p> <p><b>No, if:</b></p> <ul style="list-style-type: none"> <li>Voice tape indicates buyer agreed to buy unspecified power.</li> <li>Voice tape has no indication buyer agreed to transact specified source power, including ACS power, prior to execution.</li> <li>Buyer cannot demonstrate that the source was specified prior to contract transaction execution.</li> </ul>
<p><b>Note:</b> This table assumes valid contract rights, and direct delivery with appropriate source information. See Table 2 for BPA transactions.</p>	

## Seller Warranty (3 of 3)

- EPE purchases BPA power from 3 different sellers
  - Affects reporting
  - Claim as specified or unspecified
  - Basis for claim
  - Assumptions as noted
  - Part of EPE Guidance

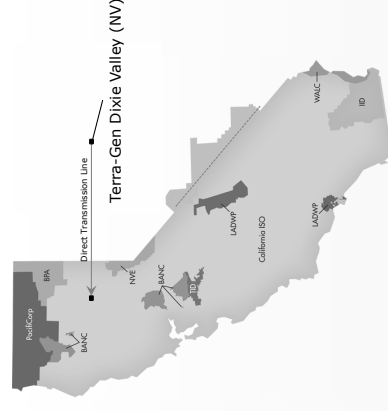
Table 2 – Seller Warranty Guidance Short-Term Transactions for BPA Power			
SPECIFIED SOURCE CLAIM AT THE BPA ACS EMISSION RATE	BUYER PURCHASE SCENARIOS		
	Transacted Directly with BPA	Transacted with Intermediate Seller	Unspecified Power Via Exchange or Broker*
<b>MUST BE CLAIMED AS UNSPECIFIED</b>	Regardless of contracted amount, tags that show source as “BPA Power” or “BPA Slice” and were transacted directly with BPA must be claimed as specified.	See Table 1 guidance for seller warranty.	A specified source claim is not allowed, because the transacted power was by definition unspecified, as the source was unknown prior to contract execution.
	Path out power received from BPA via e-tag (does not list BPA Power or “BPA Slice” as source on e-tag) must be claimed as unspecified.	See Table 1 guidance for seller warranty.	Must be claimed as unspecified, because buyer did not know source prior to contract execution.
<p><b>Note:</b> This table assumes valid contract rights and direct delivery with appropriate source information. Power can be transacted via broker as specified, and ARB requires that all applicable specified source sales, so long as all applicable specified source requirements are met.</p>			

## Specified Source & Direct Delivery

- Specified source electricity must be “directly delivered,” [ § 95111(g)(3) ]
- Directly delivered electricity means electricity that meets one of four criteria [ § 95102(a) ]
  1. Facility has first point of interconnection with a CA BA, or
  2. Facility has first point of interconnection with distribution facilities used to serve end users within a CA BA area, or
  3. Electricity scheduled for delivery from specified source into a CA BA area via continuous transmission path from interconnection of the facility BA area in which the facility is located to final point of delivery located in CA (e-Tag), or
  4. Agreement to dynamically transfer electricity from facility to a CA BA

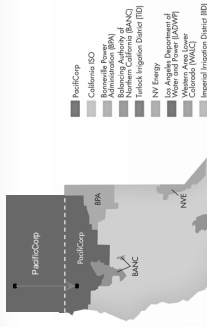
## Direct Delivery Criterion (1 of 3)

1. Facility has 1st point of interconnection with a CA BA
  - Stays within BA but source is outside of CA
  - May or may not have e-Tag generated
  - Need to verify how much electricity was imported, either by metered data or invoices



## Direct Delivery Criterion (2 of 3)

- The 1st point of interconnection with distribution facility used to serve end users in a CA BA
  - Direct delivery to CA across state lines
  - No e-Tag generated
  - Need to verify how much electricity was imported, either by **metered** data and invoices or retail sales in the state

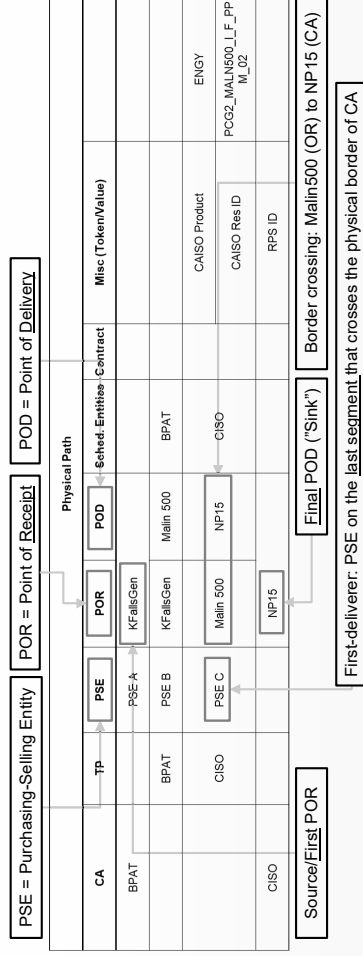


## Direct Delivery Criterion (3 of 3)

- e-Tags
  - Most common type of transaction
  - Tracks transactions among or between BAs
    - Either an import, export, wheel, or neither
  - Not available for all power transactions
  - Cannot be used to establish specified vs. unspecified sources. This is done by looking at contract and GPE information
- Dynamic Transfer
  - Different arrangement where sink BA controls dispatch, e.g. LADWP. Documented via e-Tag. Verified the same way as imports via continuous transmission path.
  - Lesser of Analysis not required for dynamically tagged deliveries

## e-Tag: A Record of Power Transacted

- Lists scheduled transactions in electricity markets between/across BA areas
  - POR & POD are webregistry defined grid points of interconnections or substations



## Reporting: Who and How for Imports, Exports, Wheels

- Imported electricity (specified and unspecified) must be reported by:
  - Purchasing-Selling Entity (PSE) on last segment into California on e-Tag Physical Path
  - Specified imports disaggregated (MWh) by generation source
  - Unspecified imports disaggregated (MWh) by first point of receipt (POR) at grid point closest to source
  - Retail providers must report electricity imported on their behalf to serve their load [§ 95111(c)]
- Exported electricity reported by:
  - PSE on last segment out of California on e-Tag Physical Path
  - Specified exports disaggregated (MWh) by final point of delivery (POD) at or near sink (and source)
  - Unspecified exports disaggregated (MWh) by final point of delivery (POD) at or near sink
- Wheeled electricity reported by:
  - PSE on last segment out of California on e-Tag Physical Path
  - Aggregated (MWh) by first POR and by generation source in ONE

## Transmission Loss Factor (TLF) [§ 95111(b)(2)]

- Use TLF of 1.02 to account for losses associated with generation imported from a balancing authority outside California
  - Most common transmission loss factor
- An EPE may use the 1.0 TLF if documentation is provided that demonstrates to the satisfaction of a verifier and CARB that transmission losses have been:
  1. *Accounted for,*
  2. *Supported by a California balancing authority, or*
  3. *Compensated by using electricity sourced from within California*
- Burden of proof is on EPE to justify any use of 1.0 TLF

## Renewable Energy Credits (REC)

- Proof of electricity generated from an eligible renewable energy resource
- Western Renewable Energy Generation Information System (WREGIS)
  - Creates RECs about 90 days after generation based on meter data
  - 1 REC = 1 MWh (partial RECs possible)
- MRR definition of “REC” points to California Energy Commission (CEC) Renewable Portfolio Standard (RPS) Eligibility Guidebook, 7th edition
  - <https://efiling.energy.ca.gov/getdocument.aspx?tn=70867>

Updated from 2020 training. See errata.

## Role of RECs in MRR

- RECs serial numbers must be reported for all specified source imports from RPS-eligible facilities [§ 95111(g)(1)(M)]
  - Failure to report RECs for specified imports will result in a qualified positive verification statement as covered emissions are unaffected
- RECs must be reported for all RPS adjustments
  - Failure to report sufficient RECs to meet RPS adjustments will result in an adverse verification statement and invalidation of the RPS adjustment
- Tradeable RECs themselves do not carry an emissions benefit in Cap-and-Trade – meeting specified source requirements or RPS adjustment requirements do!

## RPS Adjustment (1 of 3)

- “RPS adjustment” provides a reduction in compliance obligation for electricity procured from a California-eligible RPS facility when importers meet the following requirements:
  - Ownership or contract right for electricity and RECs
  - RECs purchased and retired
  - Electricity is not directly delivered to California
  - Additional requirements per Cap-and-Trade Regulation § 95852(b)(4)
- **Reporting is optional**; if any requirements not met, entity must remove RPS adjustment or receive adverse verification statement



## RPS Adjustment (2 of 3)

- Reporting California Renewable Portfolio Standard (RPS) transactions to other agencies is not the same as reporting GHG emissions to CARB
- RPS Adjustments are also separately reported from any unspecified power under an RPS firm and shape contract [ § 95852(b)(3)]
- CEC determines RPS eligibility. List of RPS eligible facilities can be found here: <https://rps.energy.ca.gov>
  - There is a difference between an eligible facility and RPS eligible power produced
  - Eligibility can change from year to year
- Reporting RECs for ineligible facilities, and conversely not reporting RECs for eligible facilities are both nonconformances



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## RPS Adjustment (3 of 3)

- Can be claimed for electricity procured for RPS compliance but not directly delivered to CA by any EPE
  - EPEs must show proof of no direct delivery
    - e.g. e-Tags that sink outside CA
  - RECs must be retired within 45 days following the emissions data report due date
  - Retired RECs must be used to comply with C&T § 95852(b)(4) during the same year the RPS adjustment was claimed
  - RPS adjustments reduce the compliance obligation so it is a high risk and must be checked and reviewed closely



$$CO_2e_{covered} = CO_2e_{unspecified} + (CO_2e_{specified} - CO_2e_{specified-non-com}) - (CO_2e_{RPS} - adjustment) - CO_2e_{traded}$$

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## CAISO Energy Imbalance Market (EIM) Entities (1 of 2)

- Extends CAISO real-time (RT) energy market to BAS
  - Economic dispatch of participating resources
  - Balances load, supply, and energy transfers between BAS
  - Includes 15-minute market with 5-minute dispatch
- EIM Entities
  - Arizona Public Service, Avista, BANC\*, Bonneville Power Administration, Idaho Power Company, LADWP, NorthWestern Energy, NV Energy, PacifiCorp, PGE, Public Service Company of New Mexico, Puget Sound, Salt River Project, Seattle City Light, Tacoma Power, Tucson Electric Power, Turlock Irrigation District, Xcel Energy

\*BANC is the Balancing Authority of Northern California (BANC) and includes Sacramento Municipal Utility District (SMUD), Modesto Irrigation District (MID), Roseville Electric, Redding Electric Utility (REU), Trinity Public Utility District (TPUD) and the City of Shasta Lake.



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Updated from 2020 training. See errata.

## CAISO EIM Entities (2 of 2)

- Deemed imports into California provided to EPEs via CMRI
  - CAISO Market Results Interface (CMRI) contains confidential market results info
- e-Tags are not used for deemed imports
  - Charge Code (CC) 491 (5-min MW) reportable in MWh as imports under MRR
  - EPEs download CAISO data and manage own data for reporting
  - CAISO maintains original data on servers for 3 years for raw data checks
- Same reporting and verification requirements as other EPEs
- Verifiers must ask EPEs to recreate data to have reasonable assurance data is complete and accurate
- Lesser of Analysis is required for all EIM



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## CAISO Energy Imbalance Market (EIM) Entities (1 of 2)

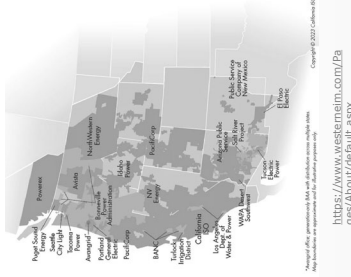
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Updated from 2020 training. See errata.



## Reporting & Verifying Exported Electricity

- Entities that only export power are defined as EPEs under MRR and are required to be verified [ §95102(a) & §95103(f)]
- Exports do not affect total or covered emissions, and export only EPEs are not covered entities under C&T
- Export transactions must be documented on a single e-Tag and all exports are required to be reported as specified and unspecified exports separately in ONE
- Verifiers must review full data set or representative sample of exports e-Tags just as with other reported transactions

## Reporting Wheeled Electricity

- Wheeled transactions are reported separately
- 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 separately reported as imports and exports
- "Electricity Wheeled through California" is defined in MRR
  - Wheels have a more general meaning in the industry

## Verifying Wheeled Electricity

- Verifier must review full data set or representative sample of wheeled e-Tags
- Wheels have to be captured on one e-Tag. If e-Tags are separate or referred to as "broken", each reportable tag must be reported separately
- Transactions that start and end in California, but leave the state along the physical path on a single e-Tag are NOT reportable. These are sometimes called "reverse wheels", but they are not "wheels" as defined in MRR
- "Wheels Only" EPEs do not need to be verified



Course 2.1: § 95111

### **ELECTRIC POWER ENTITIES**

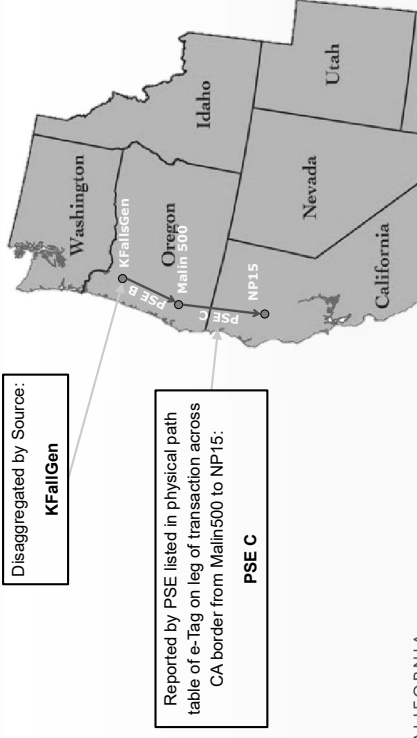
Module 2.1.Ex: Exercises

*The following images are for illustrative purposes only*

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## Exercise I: Which PSE reports this import?

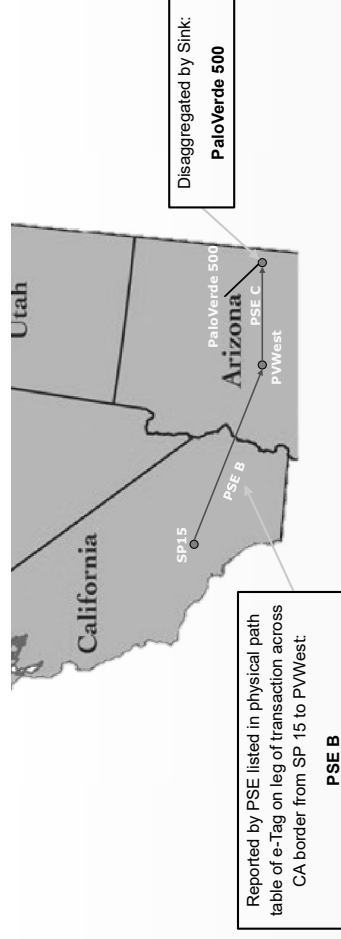


## Exercise I: e-Tag Import Example

Source / First POR	Physical Path					Border crossing: Malin500 (OR) to NP15 (CA)	
CA	TP	PSE	POR	POD	Sched. Entities	Contract	Misc (Token/Value)
BPAT		PSE A	KFallGen				
	BPAT	PSE B	KFallGen	Malin 500	BPAT		
	CISO	PSE C	Malin 500	NP15	CISO	CAISO Product	ENGY
						CAISO Res ID	PG2_MALIN500_I_F_PP_M_02
							RPS ID

"PSE C" is the PSE at the border crossing into CA, and must report this transaction.  
 Sink / Final POD  
 The "Source" is outside California and the "Sink" is inside California, so this transaction is reported as an electricity import.

## Exercise II: Which PSE reports this export?



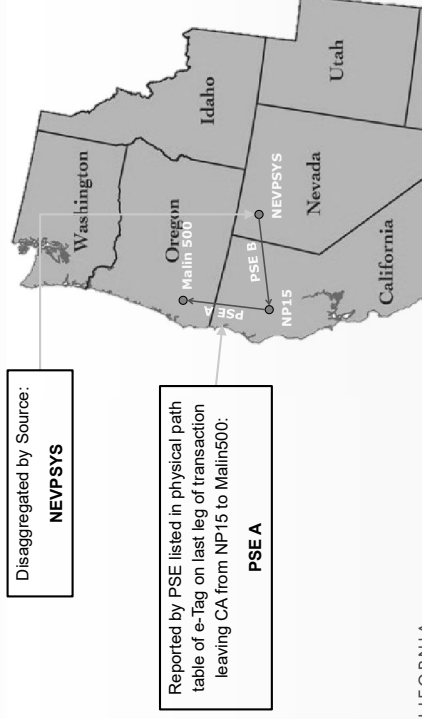
## Exercise II: e-Tag Export Example

First POR is inside CA		Border crossing: SP15 (CA) to PWWest (AZ)			
CA	TP	PSE	POR	Sched. Entities Contract	Misc (Token/Value)
		PSE A	SP15		
	CISO	PSE B	SP15	PWWest	
	CISO	PSE C	PWWest	Palo Verde 500	
	SRP	PSE C	Palo Verde 500	SRP	RPS ID

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

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

## Exercise III: Which PSE reports this Wheel?



## Exercise III: e-Tag Wheel Example

First POR is outside CA		Border crossing: NEVPSYS (NV) to NP15 (CA)			
CA	TP	PSE	POR	Sched. Entities Contract	Misc (Token/Value)
		PSE C	NEVPSYS		
	CISO	PSE B	NEVPSYS	NP15	
	CISO	PSE A	NP15	Malin 500	
	SRP	PSE A	Malin 500	SRP	RPS ID

"PSE A" is the PSE at the last border crossing out of California and must report this transaction as a wheel. Border crossing: NP 15 (CA) to Malin 500 (OR)

The "Source" is outside CA and the "Sink" is outside CA, so this transaction is reported as a wheel.



## Course 2.1: § 95111 ELECTRIC POWER ENTITIES Module 2.1.3: EPE Reporting Workbooks

Notice: All workbooks are currently being extensively updated for 2020 data reported in 2021. The screenshots in this module are the first look at the beta version of the new ONE

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## Report Using Excel Workbooks

- o All reportable data is submitted via upload of CARB Excel workbooks to Cal e-GGRT:
  - o ONE: Importers & Exporters
  - o TWO: MJRP System EF & Load Served
  - o THREE: Supplementary Data for WAPA & DWR
  - o FOUR: ACS System EF
- o Workbooks are annually revised and made available on the Cal e-GGRT site. Only the most recent version can be uploaded
- o Reporting entities can use workbooks to check data, but must ensure that the final report submitted to Cal e-GGRT is accurate

## ONE Overview: Required Fields

- o All fields are required unless stated or instructed otherwise
  - o Green
  - o Yellow
  - o Yellow with red boarder
  - o White with red boarder
- o Must answer ‘Yes’ if ‘EIM Purchaser per § 95102(a)
- o CARB Staff will notify all EIM Purchasers of their status in the EPE QA Reports

EPE Information:

Entity Name	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.
Entity ID	EIM ID (for users who use the program) or CO <sub>2</sub> e ID (for users who do not)
Annual Emissions (tonnes CO <sub>2</sub> e)	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.
Annual Emissions (tonnes CO <sub>2</sub> e) - Verified	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have been verified by an approved verifier.
Annual Emissions (tonnes CO <sub>2</sub> e) - Unverified	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have not been verified by an approved verifier.
Annual Emissions (tonnes CO <sub>2</sub> e) - Total	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.
Annual Emissions (tonnes CO <sub>2</sub> e) - Verified (per MTR)	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have been verified by an approved verifier.
Annual Emissions (tonnes CO <sub>2</sub> e) - Unverified (per MTR)	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have not been verified by an approved verifier.
Annual Emissions (tonnes CO <sub>2</sub> e) - Total (per MTR)	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.

California Retail Sales: *(Users <math>EF\_{CO\_2}</math> in MTR)*

*Reporting entities have the option to report their California Retail Sales (CRS) data.*

Reporting entities have the option to report their California Retail Sales (CRS) data for a given year. Reporting entities should report their CRS data for a given year if they have been verified by an approved verifier.

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EIM Purchaser (EIM Only): *(Users <math>EF\_{CO\_2}</math> in MTR)*

Reporting entities have the option to report their California Retail Sales (CRS) data for a given year. Reporting entities should report their CRS data for a given year if they have been verified by an approved verifier.

Other Information:

Entity Name	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.
Entity ID	EIM ID (for users who use the program) or CO <sub>2</sub> e ID (for users who do not)
Annual Emissions (tonnes CO <sub>2</sub> e)	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.
Annual Emissions (tonnes CO <sub>2</sub> e) - Verified	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have been verified by an approved verifier.
Annual Emissions (tonnes CO <sub>2</sub> e) - Unverified	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have not been verified by an approved verifier.
Annual Emissions (tonnes CO <sub>2</sub> e) - Total	Annual Emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.

## ONE: Covered and Non-Covered Emissions

- o Covered Emissions = Cap and Trade Compliance Obligation
  - o + Specified Imports
  - o + Unspecified Imports
  - o - RPS Adjustment
- o Non-covered Emissions = No Cap and Trade Compliance Obligation
  - o Biomass derived emissions
  - o Geothermal emissions
  - o Other required reporting (no emissions)
  - o CAISO Sales and Retail Sales
  - o Exports
  - o Wheels

CALCULATION OF COVERED EMISSIONS PER §95110(b)(9)

COVERED	Specified Covered	Unspecified Imports	RPS Adjustment	Unk'd
Annual emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.	Annual emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have been verified by an approved verifier.	Annual emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have not been verified by an approved verifier.	Annual emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.	Annual emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.
0	0	0	0	0

INVENTORY ONLY CALCULATION

TOTAL EMISSIONS	Specified Imports	Unspecified Imports
Annual emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program.	Annual emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have been verified by an approved verifier.	Annual emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have not been verified by an approved verifier.
0	0	0

SPECIFIED TOTALS INTEGRITY CHECK

Specified Imports	Unspecified Imports	Tasks Check
Annual emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have been verified by an approved verifier.	Annual emissions (tonnes CO <sub>2</sub> e) for all entities covered by the program, including those not participating in the program, that have not been verified by an approved verifier.	Done the specified tasks to ensure the accuracy of the data. The accuracy of the data is verified by an approved verifier.
0	0	TRUE

# ONE Overview: Auto-populated Fields

- Selecting a facility will auto-populate CARB assigned/calculated attributes/emission factors for each line item
  - Manual attributes/factors not used

Physical Transaction Attributes -- Specified Imported Power	CARB Calculated Emission Factors (MT CO2e/MWh)				
Regional Fuel Characteristics Emission Factor (MT CO2e/MWh) Specified Imported Power (MWh)	High Voltage AC Emission Factor (MT CO2e/MWh) Specified Imported Power (MWh)	Medium Voltage AC Emission Factor (MT CO2e/MWh) Specified Imported Power (MWh)	Low Voltage AC Emission Factor (MT CO2e/MWh) Specified Imported Power (MWh)	Natural Gas Emission Factor (MT CO2e/MWh) Specified Imported Power (MWh)	Diesel Emission Factor (MT CO2e/MWh) Specified Imported Power (MWh)

# ONE: Overview – First Deliverer Determination

- Only “Yes” line items are included in covered emissions (if applicable)
- For reporting under § 95111(c)(4), retail providers must report imports by others on their behalf. For these, mark “no”, they are excluded from covered emissions.

### First Deliverer Assessment

Are you the PSE on the NERC e-tag in the Physical Path table on the last California border crossing, or meet the first deliverer definition in §951002?

If YES, then you are the first deliverer. **Are you first deliverer?**

Answer only if not first deliverer

Select from dropdown; if unlabeled, enter name into cell

	FIRST DELIVERER LISTED
--	------------------------

# ONE: Retail Providers

- Retail providers have additional reporting requirements outlined in § 95111(a)(12), (c), & (h)(2)(B)
- Review reporting for consistency with § 95111
  - Conformance only as this does not affect materiality
- All verifiable requirements are included in ONE
- See High GHG tab, and Spec Imports tab
- Must report California retail sales
  - Verification is optional for retail providers with no imports/exports – Retail Sales Only (RSO) EPEs

# ONE: On Behalf of & High GHG

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

Retail Providers Only			
On Behalf of Imports §95111(c)(4)		High GHG Tab Reporting Applicability §95111(h)(3)	
Are you a Retail Provider?	Was the power brought in on your behalf?	Do you own or operate the resource?	Is this a High GHG resource?
Yes to both	Yes to both	No to both	No to both
No to both	Yes to both	No to both	No to both

## ONE: High GHG Tab [ §95111(c)(3)(C) ]

- Retail providers must report high-GHG electricity to which they are entitled but are not importing ("laying off")

High GHG Threshold [§95111(c)(3)]				Calculated Emissions from High GHG Power Not Imported into CA [§95111(c)(3)(C)]			
Is the source fully or partially owned by the retail provider?	Is this a high GHG resource?	Ownership Share	Retail Provider Share	Imported MWh	Power NOT Imported	Net Generation	Net Generation
From the untagged import tab	High GHG Total Emissions above the untagged import tab	Ownership share in facility or unit, treat as percentage	Net Generation X Ownership Share	Owned by Retail Provider from the Monthly Reported Power into CA	Owned by Retail Provider from the Monthly Reported Power into CA	for the whole facility for the entire reporting year	for the whole facility for the entire reporting year
Yes/No	Yes/No			Total MWh From Imported Power	Total MWh NOT Imported		
	§95111(c)(3)						

Must be "owned" if "yes", they must fill in columns to right. If "no", they stop here.

Must be "high GHG" (EF > 0.428 MTCO2e/ MWh)

Net gen x OS = retail provider share

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

In reporting month, is reporting required? Required when imported MWh are less than 100 MWh or 10% of total facility or unit.

## REC Serial Numbers, Meter Data, & Lesser of Analysis

First Deliverers Only			
Renewable Energy Credit (REC) Serial Number Reporting	Meter Data, & Lesser of Analysis [§95111(b)(2)(E)]		
<p>Is the power from an eligible renewable energy resource?</p> <p>CEC RPS Eligibility Advisory</p> <p>See CEC RPS Eligible Resource List</p>	<p>Is this a zero emission or RPS eligible resource?</p> <p>Number of REC serial numbers required for this time period</p>	<p>Is this resource excluded from the meter data requirement?</p> <p>Select the applicable exclusion</p>	<p>Is a Lesser of Analysis required?</p>
Eligible_Resource	REC_Requirement	Meter_Data_Resource_Excluded	Meter_Data_Req

## ONE: High GHG Tab [ §95111(c)(3)(C) ]

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High GHG Threshold [§95111(c)(3)]				Calculated Emissions from High GHG Power Not Imported into CA [§95111(c)(3)(C)]			
Is the source fully or partially owned by the retail provider?	Is this a high GHG resource?	Ownership Share	Retail Provider Share	Imported MWh	Power NOT Imported	Net Generation	Net Generation
From the untagged import tab	High GHG Total Emissions above the untagged import tab	Ownership share in facility or unit, treat as percentage	Net Generation X Ownership Share	Owned by Retail Provider from the Monthly Reported Power into CA	Owned by Retail Provider from the Monthly Reported Power into CA	for the whole facility for the entire reporting year	for the whole facility for the entire reporting year
Yes/No	Yes/No			Total MWh From Imported Power	Total MWh NOT Imported		
	§95111(c)(3)						

Must be "owned" if "yes", they must fill in columns to right. If "no", they stop here.

Must be "high GHG" (EF > 0.428 MTCO2e/ MWh)

Net gen x OS = retail provider share

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

In reporting month, is reporting required? Required when imported MWh are less than 100 MWh or 10% of total facility or unit.

## Specified Imports: REC Reporting [C&T §95852(b)(3)(D)]

- If RECs were created when the power claimed as a specified import was generated, RECs serial numbers must be reported in the REC Serials tab of ONE
- RECs do not need to be *retired* for specified imports
- This is a conformance requirement only; emissions are not affected
  - Failure to report REC serial numbers leads to a nonconformance
  - Failure to correct results in a qualified positive, not adverse, verification statement

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

- Applies to most RPS and zero emission resources
  - The 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
  - 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 Sample Calculation

	Description	Hour 1: Under-Generation (MWh)	Hour 2: Over-Generation (MWh)
1	Metered Generation at the Source	85	115
2	Scheduled & Delivered on e-Tag	100	100
3	Lesser Of Meter or Scheduled	Metered (85)	Scheduled (100)
4	<b>Imported Zero Emission Power</b> Reported as Imported Specified Source Power	Lesser of value = 85	Lesser of value = 100
5	<b>Substitute Power</b> Reported as Unspecified Import	100 - 85 = 15	100 - 100 = 0
6	<b>Excess Zero Emission Power</b> Reported as RPS Adjustment (if RPS req. are met)	0 (No excess generation)	115 - 100 = 15

## Specified Imports: Direct Delivery Reporting

- o "Directly Delivered?" Must be listed as "Yes"
  - o Red flag if "Not directly delivered to CA" is selected
  - o For other options, consider sampling for conformance

Direct Delivery
-----------------

Criteria for Direct Delivery	Directly Delivered?
\$951021(a)(108)	Yes
1st POR to 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

## ONE: RPS Adj. Tab

**RPS Adjustment Requirements**  
§95827(b)(4) & §95111(g)(1)(M)

REC ID	REC STATUS	REC TYPE	REC VALUE	REC WEDGE
REC1	Retired in WREGIS or subsequently withdrawn	Not eligible for RPS adjustment	0	0
REC2	Not retired in WREGIS or subsequently withdrawn	Not eligible for RPS adjustment	0	0
REC3	Retired in WREGIS or subsequently withdrawn	Not eligible for RPS adjustment	0	0
REC4	Not retired in WREGIS or subsequently withdrawn	Not eligible for RPS adjustment	0	0
REC5	Retired in WREGIS or subsequently withdrawn	Not eligible for RPS adjustment	0	0
REC6	Not retired in WREGIS or subsequently withdrawn	Not eligible for RPS adjustment	0	0
REC7	Retired in WREGIS or subsequently withdrawn	Not eligible for RPS adjustment	0	0
REC8	Not retired in WREGIS or subsequently withdrawn	Not eligible for RPS adjustment	0	0
REC9	Retired in WREGIS or subsequently withdrawn	Not eligible for RPS adjustment	0	0
REC10	Not retired in WREGIS or subsequently withdrawn	Not eligible for RPS adjustment	0	0

These questions determine RPS adjustment eligibility

- Ownership or Contract Rights On Behalf of Owner or Contracted Entity
- Neither

If not eligible, the emissions are not subtracted from covered emissions, and the line item must be removed

**ONE: RPS Adjustment**

- o Confirm contract/ownership rights for RPS resource [§ 95852(b)(4)(A)]
- o Confirm RECs reported appropriately, accounting for all RPS adjustment claims
  - o Ensure retirement status via WREGIS sub-portal
- o Confirm electricity claimed is NOT directly delivered to California
  - o E-Tags should show that at least as much power claimed as RPS adjustment sank outside California
- o Understand circumstances for reporting renewable imports and RPS adjustment, and how it affects risk of misreporting. Questions to ask:
  - o Do they own the resource or purchase via contract? Are they providing the electricity to other entities? Do multiple entities procure electricity or RECs from that resource? If so, do they communicate to ensure appropriate reporting? Do they sell the power immediately after purchasing from resource or use it to serve customers?
- o Only RECs representing electricity generated within the CEC's rolling 3 year window are eligible to be used towards RPS adjustment [C&T § 95852(b)(4)]





## QA Findings – The Detailed Results

Entity	Year	Reported	Approved	Import_QA	Export_QA	Wheel_QA	Import_QA_Off	Export_QA_Off	Wheel_QA_Off
99999999999999999999	2018	25000	10000						
99999999999999999999	2018	5000	10000						Under Reported

- o CARB will provide QA results in an easy-to-read spreadsheet
- o All checks are run for every routine, but tabs are only created for each report where there are findings
- o Every line in a table represents a different finding that was flagged under that QA Check
  - o Some QA Checks yield one finding, others can have as many lines as were reported
- o The QA results spreadsheet includes a notes field that provides additional context for each finding, esp. where multiple types of findings can be identified within a QA Check

## QA Issue Resolution

### For Verifiers

- o Record all issues in the Log of Issues!
- o Work with your reporter as you normally do to resolve all issues
  - o Resolutions must be provided for all issues in the issues log even if some did not require correction
  - o Check with CARB if you have any questions

### For Reporters

- o Review the QA results that are uploaded to the 'CARB Attachments' section of your reporting account in the tool
  - o If an identified issue requires correction, work with your verifier to revise report
  - o If the issue has already been resolved or does not require correction, communicate this with your verifier
  - o Check with your verifier or CARB if you do not understand any identified issues



## Course 2.1: § 95111

### ELECTRIC POWER ENTITIES

- o 2.1.4: Verifier Requirements Overview, & e-Tags

## Course 2.1 Modules

- o 2.1.1: Introduction – EPE Entities & Structure
- o 2.1.2: Imports, Exports, EIM, RPS, & Wheels Exercises
- o 2.1.3: EPE Reporting Workbooks
- o 2.1.4: Verifier Requirements Overview, & e-Tags
- o 2.1.5: Case Studies (w/ Solutions)

## Verification Applicability

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

## Key Verification Documents

- Completed report and EPE workbook from Cal e-GGRT
- GHG Inventory Program Documentation [ § 95105(d)]
  - Information on how e-Tags are queried, and data aggregated
- Access to OATI and OATI's specifications for WebCARB, and other settlement systems to review individual transactions
- Copies of reports submitted to person(s) responsible for reporting

## GHG Inventory Program Documentation [ § 95105(d)]

- Is required to have information on...
  1. Overview of entity boundaries, operations, and electricity transactions
  2. Management policies
  3. Key personnel
  4. Training practices & documentation
  5. 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

## Key Verification Planning Documentation

- Prepare a Verification Plan
  - Discussed in Course 1
- Prepare Preliminary Sampling Plan
  - Categorize and rank emissions sources
    - Rank imports and exports separately
    - Consider consolidating by generation source, and ranking by MWh separating specified & unspecified

## Sampling Plan and Risk Assessment

- Consider and rank uncertainty in your narrative
  - Both quantitative & qualitative
  - Consider risk of under or over reporting
  - Don't assume data presented is complete
    - How does EPE ensure all reportable transactions are included?
  - Zero emissions imports ≠ low risk
    - Must verify quantity, specified source eligibility, lesser of analysis
  - Document overall verification approach
    - 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?

## Full Verification – Site Visit

- Review GHG Inventory Program documentation & confirm EPE follows steps outlined therein
- Interview staff and oversee execution of raw e-Tag data queries from beginning to end. Check against reported data
  - Walkthrough and review query code
  - Request query of sample tags/data and associated contracts
  - Inquire about any reporting issues or protocols for addressing potential issues

## Less-Intensive Verification

- EPEs are eligible for less-intensive verification if same VB, positive verification statement, and not first year of compliance obligation
  - A site visit is not required during a less-intensive
- Consider site visit, even if not required, to facilitate data sharing and overall verification process, it might be time-efficient
- Consider a webinar at minimum
  - Ask for re-creation of sample of data (from OATI database, etc.) while on a webinar
  - May review contracts for conformance
- 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?
- Sampling only eTags from among reported data is not sufficient for reasonable assurance. Sample from raw data!

## Reporting e-Tags (1 of 6)

- Purchasing-Selling Entities have access to their e-Tags nationwide 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 and report a subset of transactions where they are the required reporter under MRR
  - Each entity may have different codes, queries, and data processing methodologies

## Reporting e-Tags – Overview (2 of 6)

- Here's what to look for in that database query, tracking the reported data back to the source:
  1. Query 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

## Reporting e-Tags – Steps 1 & 2 (3 of 6)

1. Query e-Tag data for all schedules where electricity flowed in calendar year where:
  - Entity appears as a PSE on any segment of the physical path, and
  - Any POR or POD is located inside California
2. Identify interties on each side of California's geographical boundary for each transaction's physical path

## Reporting e-Tags – Steps 3, 4, & 5 (4 of 6)

3. Sort queried data by:
  - Imports
  - Exports
  - Wheels
4. Retain only transactions for which the reporting entity is identified as the PSE on the last physical path segment crossing CA geographical boundary
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

## Reporting e-Tags – Step 6 (5 of 6)

6. For specified imports the reporting entity...
  - Applies TLF of 1.0 (0% loss) when losses are supported by CA BA, made up by CA electricity sources, or other evidence provided to verifier that losses are accounted for
  - Applies TLF 1.02 (2% loss) when losses are otherwise unaccounted for or no evidence can be provided that reported value accounts for losses

## Reporting e-Tags – Steps 7, 8, & 9 (6 of 6)

7. Disaggregate specified imports for emissions data year by generating facility or unit and “source” on e-Tag
8. Conduct Lesser-of analysis
9. Aggregate *unspecified* transactions



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## Verifying e-Tag Data – Overview (1 of 5)

Suggested processes for verifying e-Tag data:

- I. Review GHG Inventory Plan
- II. Conduct interviews
- III. Review data records
- IV. Oversee data retrieval methods
- V. Sample data
- VI. Completeness check
- VII. Update sampling plan



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## Verifying e-Tag Data – I-IV (2 of 5)

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



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## Verifying e-Tag Data – V (3 of 5)

- V. Sample a number of individual (PDF) e-Tags from the database
  - o Consider requesting read-only access to database, including links to “paper” e-Tags, to allow for dynamic sampling
  - o Consider sampling on the basis of...
    - o uncertainty, perhaps in reporting procedures
    - o EPE has very high or very low volume imports
    - o e-Tags represent imports from specified sources



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## Verifying e-Tag Data – VI (4 of 5)

- Don't assume data presented is complete. Verifiers must confirm that no reportable transactions were excluded
- Do not merely sample from transactions in the workbooks, review raw data
- Consider risks associated with not using primary data, e.g., OATI vs. "mirror database"
- Ensure data report include all PSE imports entity is responsible for
  - Ask for NERC registration if unsure
- Review queries used to reconcile e-tag data
  - Are the queries based on actual intertie locations or other reference points
  - Entities occasionally only query for imports sunk in CAISO BA, but there are multiple BAs
- Entities need to prove to YOU that their queries capture all imports, so ask questions! CARB has included 'completeness checks' as a part of some verification audits that in-part focus on this how verifiers manage this review

## Verifying e-Tag Data – VII (5 of 5)

- VII. 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?
  - 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?

## Verifying e-Tag Data – VI (4 of 5)

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- Consider risks associated with not using primary data, e.g., OATI vs. "mirror database"
- Ensure data report include all PSE imports entity is responsible for
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- Review queries used to reconcile e-tag data
  - Are the queries based on actual intertie locations or other reference points
  - Entities occasionally only query for imports sunk in CAISO BA, but there are multiple BAs
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## Verifying e-Tag Data – VII (5 of 5)

- VII. Document your approach in sampling plan
- How did you verify the construction of the query?
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### Course 2.1: § 95111

#### ELECTRIC POWER ENTITIES

- 2.1.1.CS: Case Studies

## Course 2.1 Modules

- 2.1.1: Introduction – EPE Entities & Structure
- 2.1.2: Imports, Exports, EIM, RPS, & Wheels
- 2.1.Ex: Exercises
- 2.1.3: EPE Reporting Workbooks
- 2.1.4: Verifier Requirements Overview, & e-Tags
- **2.1.CS: Case Studies (w/ Solutions)**

## Covered Emissions – Case Study 1 (1 of 3)

- o A deck of the following slides without answers has been provided for practice. Please review those before proceeding.
- o A retail provider, P2P, executes the following transactions under contract:
  - A. 125,000 MWh from a eligible renewable energy wind power facility in Washington is sold by P2P and sunk into the local (WA) balancing authority area
  - B. 2,300 MWh from a eligible renewable energy solar photovoltaic facility in Nevada is brought into the CAISO day ahead market with P2P as the PSE on the physical transmission path of the e-Tag that crosses into and sinks in CA.
  - C. 40,000 MWh is imported from a eligible renewable biomass burning facility in Oregon. P2P is the PSE on the e-Tag on the physical transmission path that crosses into CA and sinks in CA. The CARB specified EF is 1 MT CO<sub>2</sub>e/MWh; 20% non-exempt CO<sub>2</sub>e\*
  - D. 162,000 MWh of bulk system power is purchased and imported by P2P into CA to meet its load
- 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 – Solution (2 of 3)

- o Transaction A – RPS Adjustment
  - o 125,000 MWh x 0.428 MT CO<sub>2</sub>e/MWh = 53,500 MT CO<sub>2</sub>e
- o Transaction B – Specified Import
  - o 2,300 MWh x 1.02 x 0 MT CO<sub>2</sub>e/MWh = 0 MT CO<sub>2</sub>e
- o Transaction C – Specified Import
  - o 40,000 MWh x 1.02 x 1 MT CO<sub>2</sub>e/MWh x 0.2 non-exempt = 8,160 MT CO<sub>2</sub>e
- o Transaction D – Unspecified Import
  - o 162,000 MWh x 1.02 x 0.428 MT CO<sub>2</sub>e/MWh = 70,722 MT CO<sub>2</sub>e

## Case Study 1 – Solution (3 of 3)

$$CO_2\ e_{cov\ end} = CO_2\ e_{unspecified} + (CO_2\ e_{specified} - CO_2\ e_{specified-not\ cov\ end}) - CO_2\ e_{RPS\_adjustment} - CO_2\ e_{DG\_adjustment} - CO_2\ e_{linked}$$

1. CO<sub>2</sub>e (unspecified) + CO<sub>2</sub>e (specified) - CO<sub>2</sub>e (RPS adjustment)
  - o 70,722 + (0 + 8,160) - 53,500 = 25,382 MT CO<sub>2</sub>e
2. If RECs weren't retired, two possible outcomes:
  - o REC serial numbers associated with a direct delivery of renewable energy do not need to be retired, but do need to be reported
  - o RECs not retired in an RPS adjustment invalidates the RPS adjustment and could affect materiality leading to an adverse statement

## Covered Emissions – Case Study 2 (1 of 3)

- o Calculate the total covered CO<sub>2</sub>e emissions for a retail provider with the following types of transactions under contract:
  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 with EF of 1 MT CO<sub>2</sub>e/MWh
  3. 25,000 MWh purchased from an eligible renewable energy resource outside of CA. The power does not meet the MRR definition of directly delivered electricity. 15,000 RECs are retired.
  4. 15,000 MWh geothermal directly delivered from Nevada with EF of 0.073 MT CO<sub>2</sub>e/MWh.
  5. 20,000 MWh electricity from verified biomass fuels directly delivered from Oregon. Emission factor of 1.376 MT CO<sub>2</sub>e/MWh, 17% non-exempt\*
  6. 250,000 MWh electricity purchased from PWest (AZ) and imported to CA. E-Tag shows transmission source and sink points on e-Tag both located inside CA



## Case Study 2 – Solution (2 of 3)

- o Transaction 1 – Unspecified Transaction
  - o 500,000 MWh x 1.02 x 0.428 MT CO<sub>2</sub>e/MWh = **218,280 MT CO<sub>2</sub>e**
- o Transaction 2 – Specified Transaction
  - o 150,000 MWh x 1.02 x 1 MT CO<sub>2</sub>e/MWh = **153,000 MT CO<sub>2</sub>e**
- o Transaction 3 – RPS Adjustment (Partial!)
  - o 15,000 MWh x 0.428 MT CO<sub>2</sub>e/MWh = **6,420 MT CO<sub>2</sub>e**
- o Transaction 4 – Specified Import (exempt)
  - o 15,000 MWh x 1.02 x 0.073 MT CO<sub>2</sub>e/MWh = **1,117 MT CO<sub>2</sub>e**
- o Transaction 5 – Specified Import
  - o 20,000 MWh x 1.02 x 1.376 MT CO<sub>2</sub>e/MWh x 0.17 = **4,772 MT CO<sub>2</sub>e**
- o Transaction 6 – Non-reportable transaction

## Case Study 2 – Solution (3 of 3)

$$CO_2\text{ covered} = CO_2\text{ unspecified} + (CO_2\text{ specified} - CO_2\text{ specified-not covered}) - CO_2\text{ RPS adjustment} - CO_2\text{ EZE adjustment} - CO_2\text{ linked}$$

Emission Type	Transaction(s)	Covered Calculation	Subtotal
Unspecified Emissions	1	218,280	218,280
Specified Emissions	2, 5	153,000 + 4,772	157,772
Specified Emissions (Exempt)	4	0	0
RPS Adjustment	3	- 6,420	- 6,420
<b>Covered Emissions</b>		<b>369,632 MT CO<sub>2</sub>e</b>	

## Case Study 3 – Solution (1 of 3)

#	TAG CODE	GLA	LCA	MWH	PSE	POB	POD	Solutions
1	MOF323	GWA	CISO	95	NATU01	GLWIND1	GLWIND1	
	MOF323	GWA	CISO	95	MSC001	GLWIND1	GLWIND1	
	MOF323	GWA	CISO	95	MSC011	BPAT	CapitanJACK	
	MOF323	GWA	CISO	95	EZE	CapitanJACK	NP15	Correctly reported as Import, but incorrect MWh reported
2	144782	PSE	CISO	500	POEMPG	POEGEN	POEGEN	
	144782	PSE	CISO	500	EZE	Main000	Main000	
	144782	PSE	CISO	500	PGAE	ROM230	ROM230	
	144782	PSE	CISO	500	PGAE	CTW020	CTW020	Correctly Reported
3	Z38638	PSE	SRP	210	NT0201	WINDR02E	WINDR02E	
	Z38638	PSE	SRP	210	PR0001	WINDR02E	NOR	
	Z38638	PSE	SRP	210	EZE	NOR	STLMAR	<Border Crossing – Import
	Z38638	PSE	SRP	210	SRP	FourComes345	FourComes345	<Border Crossing – Export
4	IR4475	BPAT	CISO	200	PPMRT	Lambuz2	Lambuz2	
	IR4475	BPAT	CISO	200	EZE	LaGrande	LaGrande	
	IR4475	BPAT	CISO	200	SPPS11	CapitanJACK	CapitanJACK	
	IR4475	BPAT	CISO	200	SPPS11	DEVERS230	DEVERS230	
5	144782	CISO	SRP	250	EZE	Ebone050	Ebone050	
	144782	CISO	SRP	250	EZE	PW1EST	PW1EST	Correctly reported as Export, but Final FOD is PW1EST not MCOLL00230

## Case Study 3 – Solution (2 of 3)

#	TAG CODE	GLA	LCA	MWH	PSE	POB	POD	Solutions
6	ME R0966	CISO	SRPC	150	MCP011	Mosallong	Mosallong	
	ME R0966	CISO	SRPC	150	EZE	Mosallong	NP15	
	ME R0966	CISO	SRPC	150	EZE	Main050	Main050	
	ME R0966	CISO	SRPC	150	EZE	Main050	SUMMIT120	<Border Crossing – Export
7	OC3381	BPAT	PACVJ	63	BPAT	JngCnyBPA	JngCnyBPA	
	OC3381	BPAT	PACVJ	63	EZE	JngCnyBPA	JanDay	Not a reportable transaction – property included
	OC3381	BPAT	PACVJ	63	EZE	JanDay	Main020	
	OC3381	BPAT	PACVJ	63	PPMRT	Main020	Main020	
8	IBR1754	BPAT	CISO	160	PACVJ	KFallsGen	Main050	
	IBR1754	BPAT	CISO	160	PACVJ	Main050	Main050	
	IBR1754	BPAT	CISO	160	PGAE	Hilops45	NP15	
	IBR1754	BPAT	CISO	160	PGAE	Hilops45	NP15	<Border Crossing – Import ... but EZE in use PSE on the SHOULD NOT REPORT
9	OC0707	ID	LDWP	300	PPMRT	DEVERS230	Ebone050	
	OC0707	ID	LDWP	300	EZE	Ebone050	NOR	
	OC0707	ID	LDWP	300	EZE	NOR	SYLMAR	
	OC0707	ID	LDWP	300	LDWP	SYLMAR	PGEGEN	
10	IBR1754	BPAT	CISO	200	PACVJ	ROM230	Main050	
	IBR1754	BPAT	CISO	200	PACVJ	Main050	ROM230	
	IBR1754	BPAT	CISO	200	EZE	ROM230	NP15	
	IBR1754	BPAT	CISO	200	PGAE	NP15	NP15	<Border Crossing – Import Correctly reported as Import, but no contrast so UNSPECIFIED & COMBINED WITH OTHER PSEGEN

## Case Study 3 – Solution (3 of 3)

Issues Log						
Reporting Entity	EZ Electricity (CARE ID# 133456)	Lead Verifier	John Smith	Data Year: 2019		
#	Date	Description of Issue/Source	MRR Citation	Potential Impact upon GHG Data	Subparts Reported: EPE Action Required by Reporting Entity	Resolution
1	10/28/2020	Glacier Wind reported MWh imported does not match associated e-tags	§8511(a)(2)	Nonconformance. Potential correctable error. User to review whether this affects emissions and material misstatement, but is required to be accurately reported	Review transaction records and revise Cal e-GHG report	
2	10/28/2020	E-tag transaction #B3 is not reported	§8511(a)(2)	Nonconformance. EPE records are required to report all transactions. Potential correctable error that does affect material misstatement.	Review transaction records for conformance with §8511(a) and revise report or provide an explanation for exclusion of the e-tag from reporting.	
3	10/28/2020	No transaction records provided for import transaction #B1 from MCCULLOUGH230	§8511(a)(6)	Nonconformance. Exports do not affect material misstatement but are required to be reported accurately with supporting evidence of the transaction. Qual pos VS if not corrected.	Provide transactions records for reported import	
4	10/28/2020	E-tag transaction #B1 appears to be incorrectly excluded	§8511(a)(2)	Nonconformance. Exports do not affect material misstatement but are required to be reported accurately with supporting evidence of the transaction. Qual pos VS if not corrected.	Review transaction records for conformance with §8511(a) and revise report or provide an explanation for exclusion of the e-tag from reporting.	
5	10/28/2020	Reported transaction B does not meet the definition of imported electricity as defined in §85102(p) Electricity Importer	§85102(b) Electricity Importer	Nonconformance. More evidence is required for this correctable error that does affect material misstatement.	Provide additional documentation supporting the definition of specified source power in §85102(b) and §8511(a)(3), or revise the report to correct error.	
6	10/28/2020	Reported transaction C does not meet the definition of imported electricity as defined in §85102(p) Electricity Importer	§85102(b) and §8511(a)(3)	Nonconformance. More evidence is required for this correctable error that does affect material misstatement.	Provide additional documentation supporting the definition of specified source power in §85102(b) and §8511(a)(3), or revise the report to correct error.	
7	10/28/2020	Need more documentation/evidence to report transaction #10 as specified import	§85102(b) and §8511(a)(4)	Nonconformance. More evidence is required for this correctable error that does affect material misstatement.	Provide additional documentation supporting the definition of specified source power in §85102(b) and §8511(a)(4), or revise the report to correct error.	

## Transactions Specialist Courses

### COMPLETE

- Course 2.1: § 95111
  - Electric Power Entities (EPE)

### NEXT

- Course 2.2: § 95121
  - Suppliers of Transportation Fuels
    - Petroleum Products & Biofuels
- Course 2.3: § 95122
  - Suppliers of Natural Gas, Natural Gas Liquids & Liquefied Petroleum Gas
- Course 2.4: § 95123
  - Suppliers of Carbon Dioxide

## VERIFY

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## EMISSIONS!!