Course 2.1: § 95111

ELECTRIC POWER ENTITIES

Module 2.1.1: Introduction – EPE Entities & Structure

CALIFORNIA AIR RESOURCES BOARD

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)

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

Reporting Workbooks

1. ONE
2. TWO: MJRP System EF
3. THREE: WAPA & DWR
4. FOUR: ACS System Emission Factor Calculation

Updated from 2020 training. See errata.

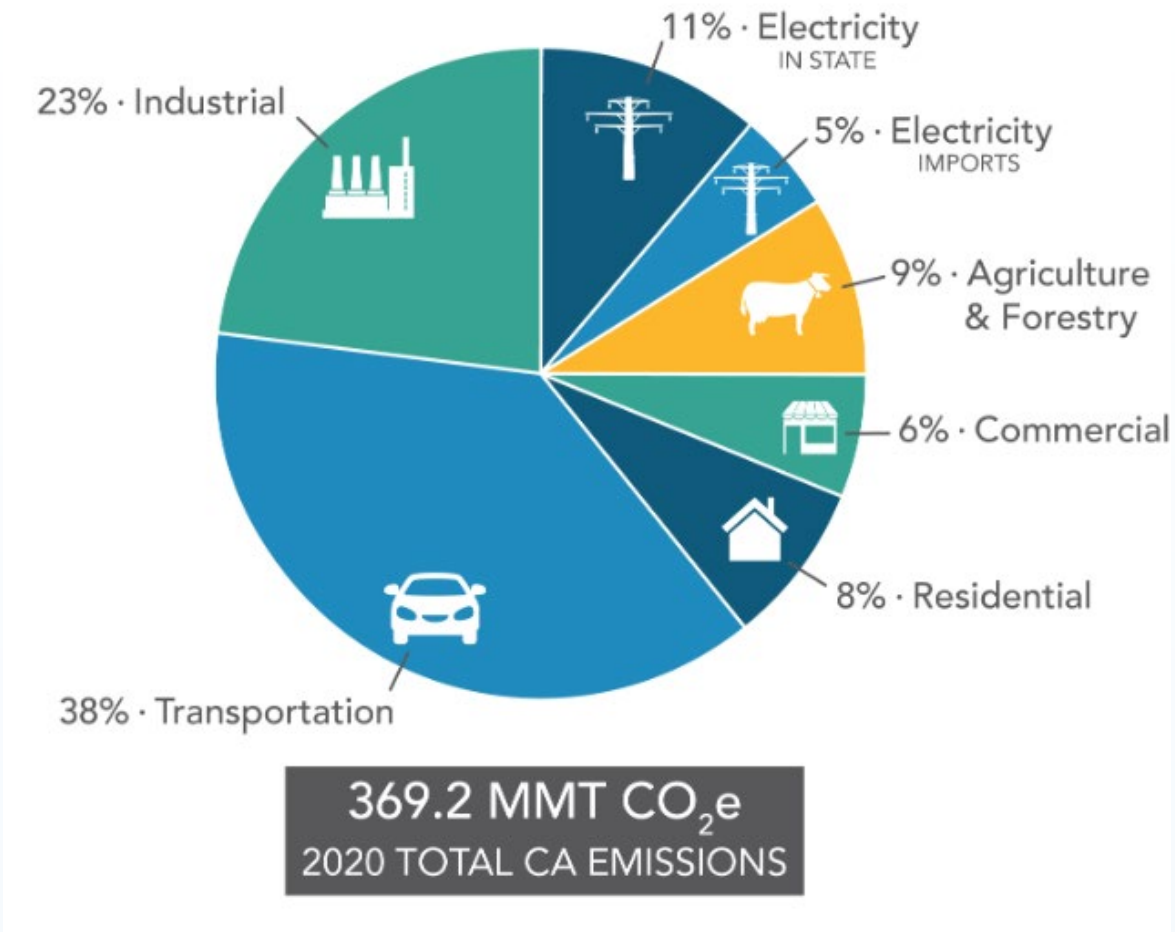
Key Regulatory Provisions*

- § 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



Updated from 2020 training. See errata.

GHG Intensity of California Electricity 2013 - 2020

Figure 8. GHG Emissions from the Electricity Sector.

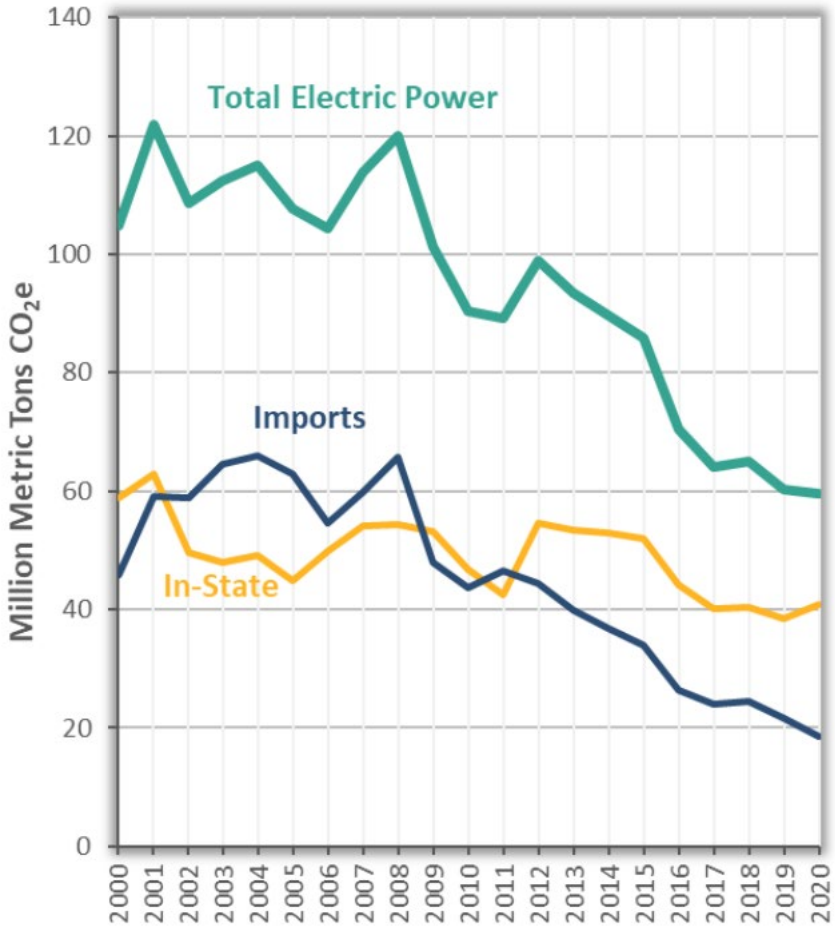
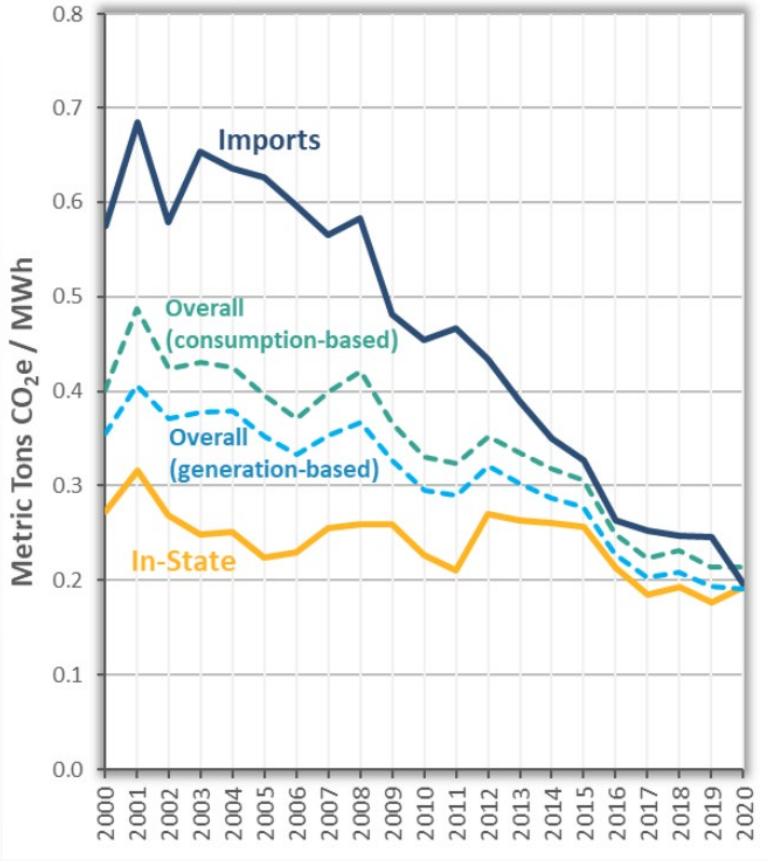


Figure 9. GHG Intensity of Electricity.



CARB 2000-2020 GHG Emissions Trends Report, Figure 9

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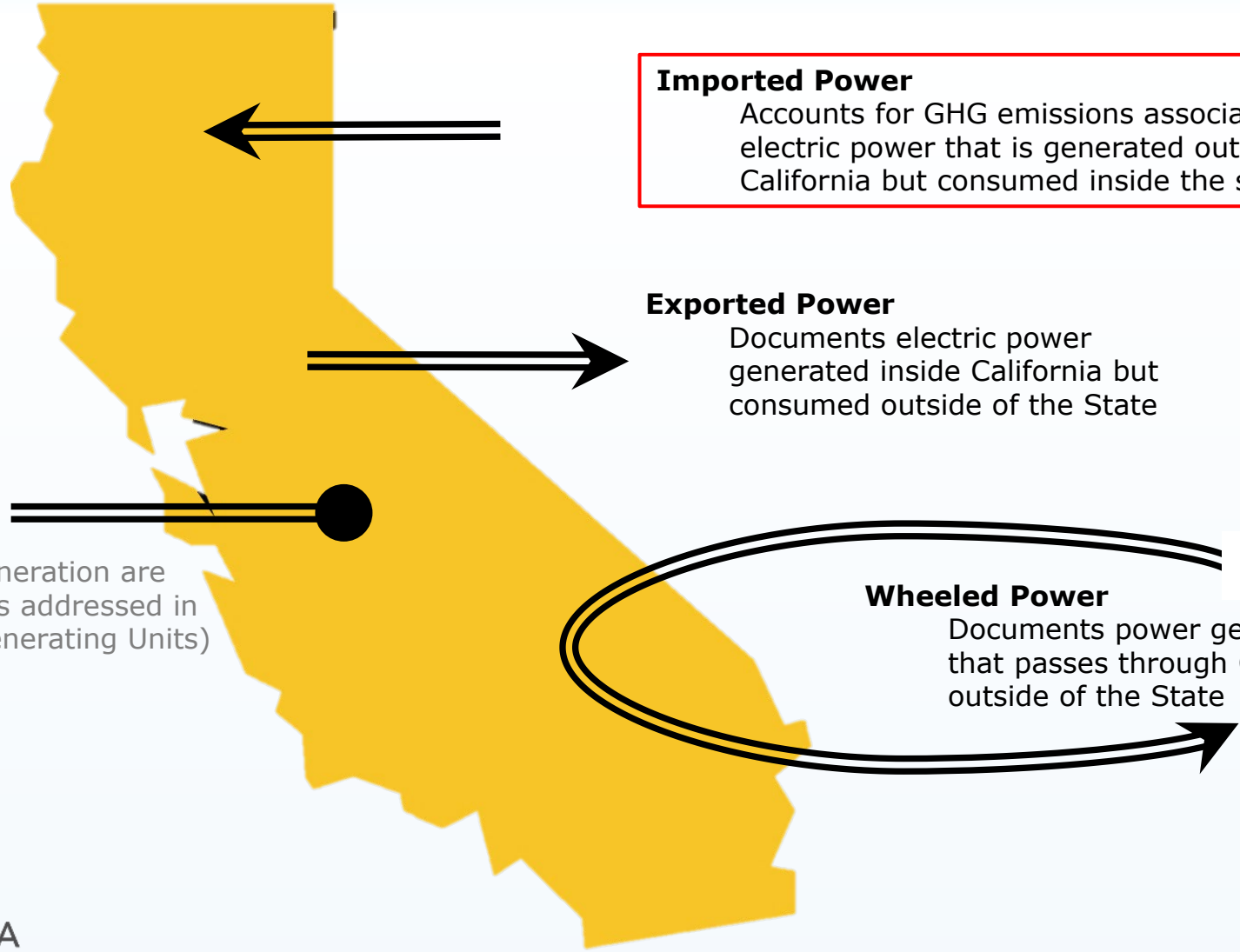
Updated from 2020 training. See errata.

Reportable Transactions (Overview) [§ 95111]



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

In-State Power
Emissions from power generation are reported under §95112 as addressed in Course 1.2 (Electricity Generating Units)

Wheeled Power
Documents power generated outside California that passes through California but is consumed outside of the State

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

ACSs & MJRPs [95102(a)]

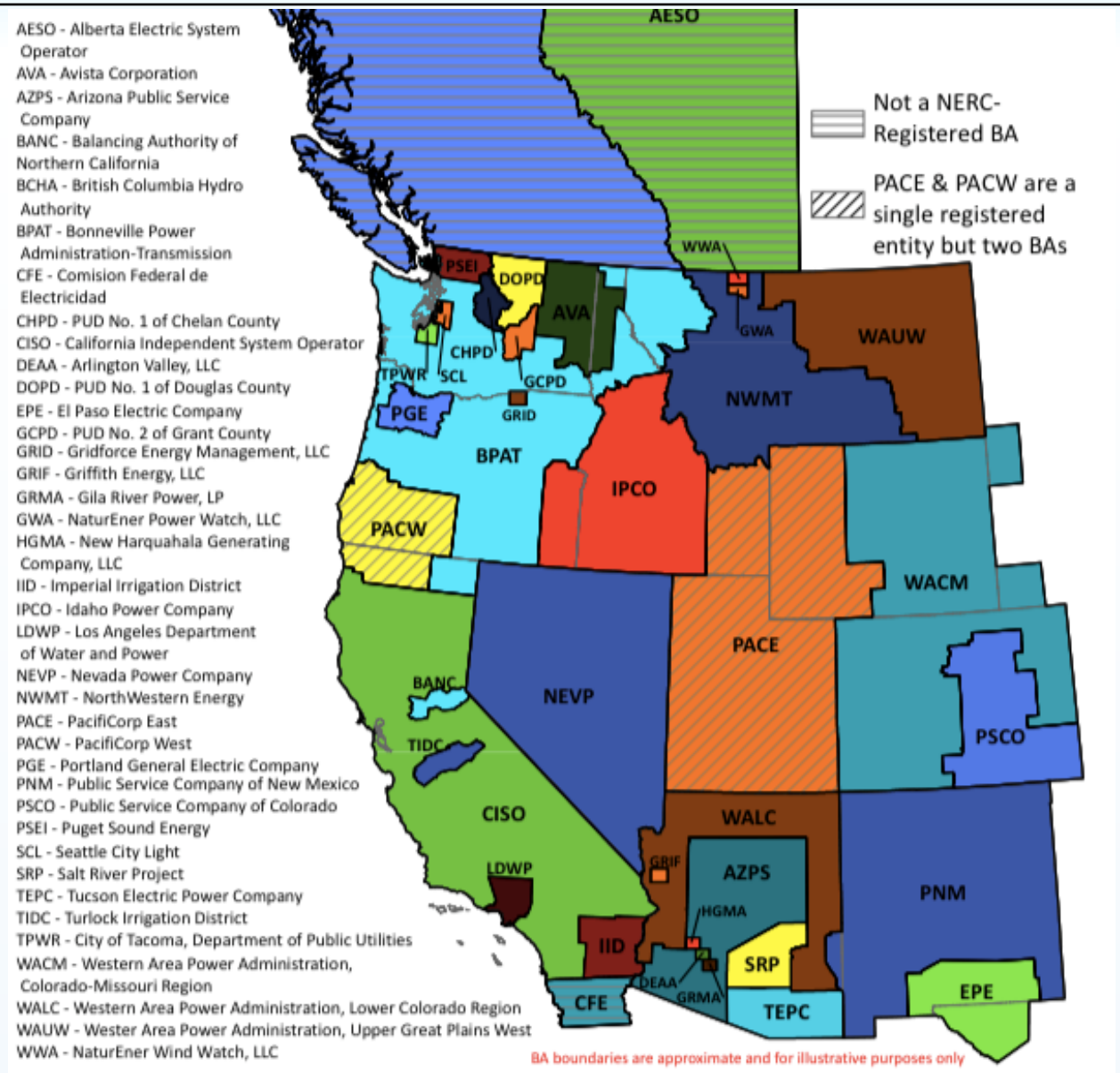
- Asset-Controlling Suppliers are a specific type of EPE registered and approved by CARB
  - Owns or operates interconnected electricity generating facilities, or serves as an exclusive marketer for those facilities
  - Assigned a supplier-specific identification number by CARB
  - Assigned a system emission factor (EF) by CARB
  - ACS are considered specified sources
- Multi-Jurisdictional Retail Providers
  - A retail provider that provides electricity to consumers in California and in one or more other states in a contiguous service territory or from a common power system
  - PacifiCorp is currently the only MJRP

Balancing Authorities [95102(a)]

- Balance load and resources in defined geographic area
  - Integrate power resource plans ahead of time
  - Maintain load-interchange-generation balance within a BA area (BAA)
  - Support interconnection in real time
- Some BA entities participate in EIM
- Power is scheduled to implement terms of agreements and meet the BA requirements
- MRR reporting applicable to the geographic boundary of California, not BA boundaries if those extend beyond CA

Western U.S. & CA Balancing Authority Areas

https://www.wecc.biz/Administrative/Balancing_Authorities_JAN17.pdf



Course 2.1: § 95111

ELECTRIC POWER ENTITIES

Module 2.1.2: Imports, Exports, EIM, RPS, & Wheels

Course 2.1 Modules

- 2.1.1: Introduction – EPE Entities & Structure
- **2.1.2: Imports, Exports, EIM, RPS, & Wheels**
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- 2.1.4: Verifier Requirements Overview, & e-Tags
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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)
  - Traditional 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 suppling 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_2e/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.arb.ca.gov/regact/2010/ghg2010/ghgisor.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	
	Did Reporter Establish Evidence of Seller Warranty?
Specified Source Claim	**Yes.** 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.
Must be Claimed as Unspecified	**No, if:** Voice tape indicates buyer agreed to buy unspecified power. -or- Voice tape has no indication buyer agreed to transact specified source power, including ACS power, prior to execution. -or- Buyer cannot demonstrate that the source was specified prior to contract transaction execution.
Note: This table assumes valid contract rights, and direct delivery with appropriate source information. See Table 2 for BPA transactions.	

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

	Buyer Purchase Scenarios		
	Transacted Directly with BPA	**Transacted with Intermediate Seller**	**Unspecified Power Via Exchange or Broker***
Specified Source Claim at the BPA ACS emission rate	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
Must be Claimed as Unspecified	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

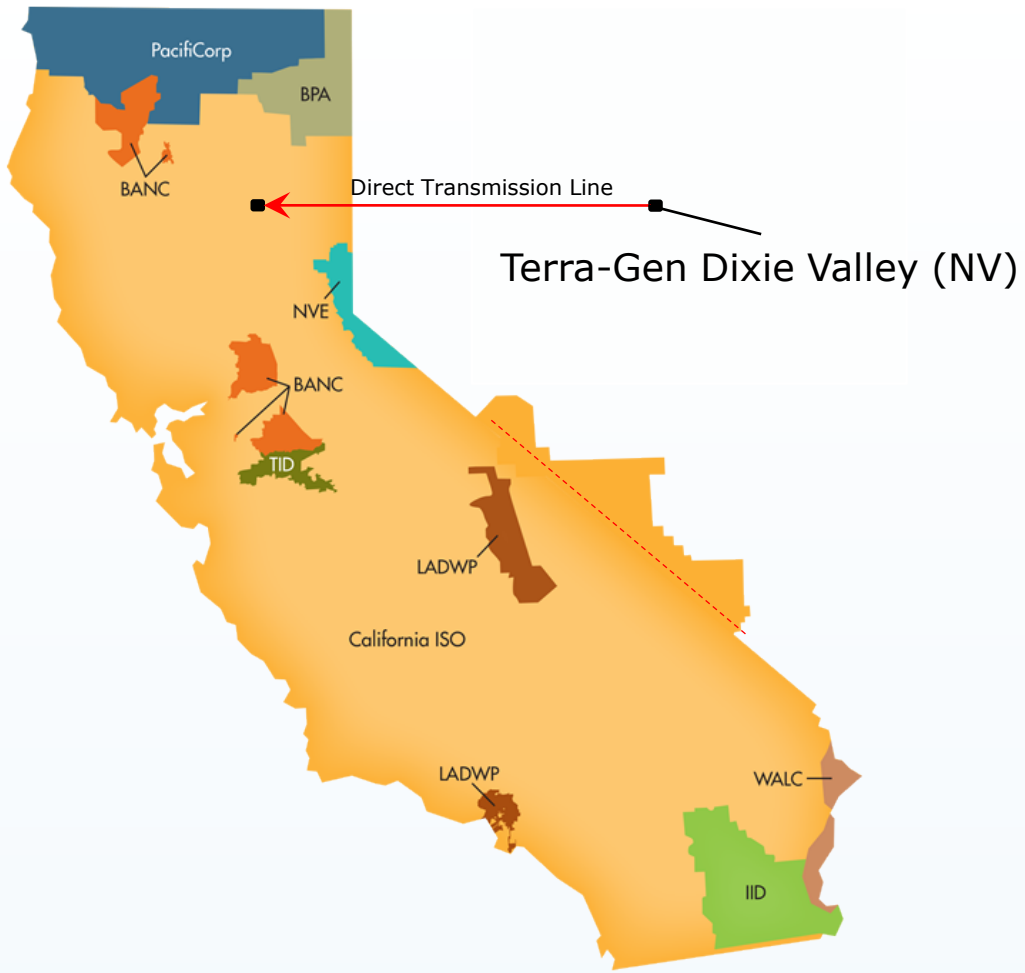
Note: This table assumes valid contract rights and direct delivery with appropriate source information. *Power can be transacted via broker as specified, and ARB regulations and guidance in no way prohibit brokered specified source sales, so long as all applicable specified source requirements are met.

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

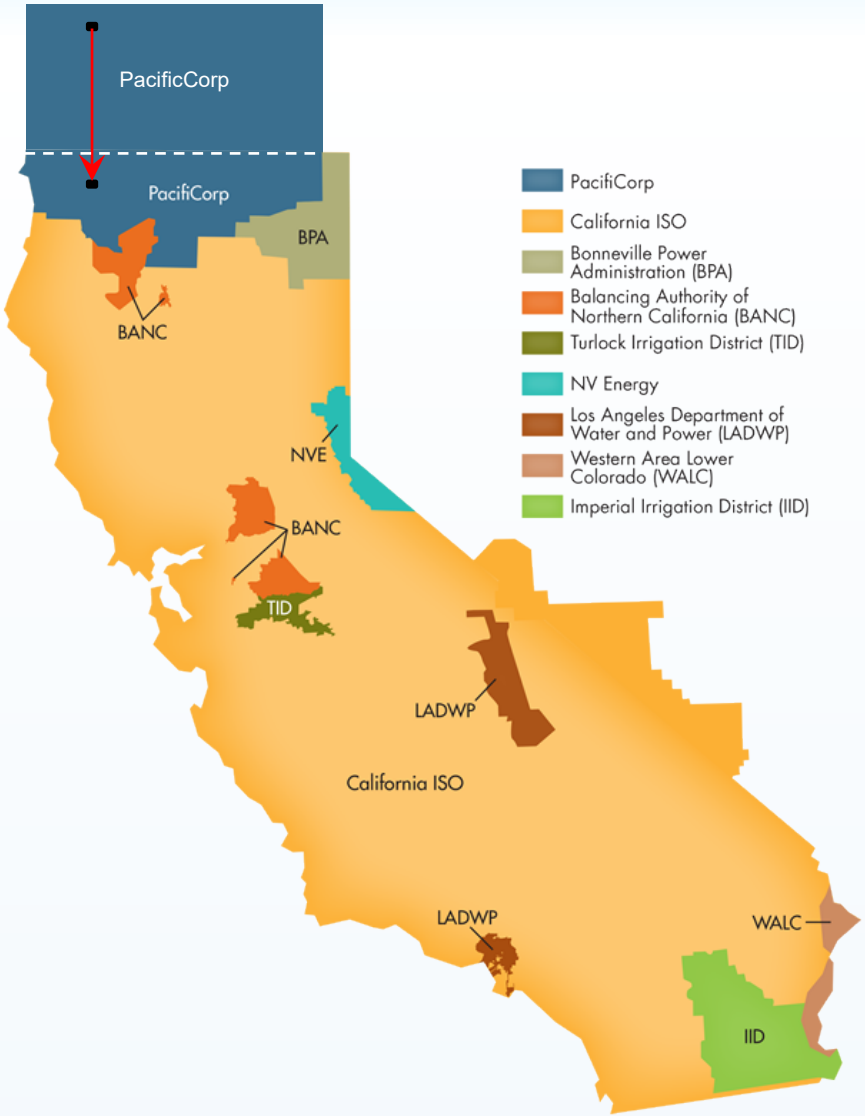
Direct Delivery Criterion (1 of 3)

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)

2. 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)

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
4. 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

PSE = Purchasing-Selling Entity

POR = Point of Receipt

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	Malin 500	BPAT			
	CISO	PSE C	Malin 500	NP15	CISO		CAISO Product	ENGY
							CAISO Res ID	PCG2_MALN500_I_F_PPM_02
CISO			NP15				RPS ID	

Source/First POR

Final POD ("Sink")

Border crossing: Malin500 (OR) to NP15 (CA)

First-deliverer: PSE on the last segment that crosses the physical border of CA

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*
- <u>Burden of proof is on EPE to justify any use of 1.0 TLF</u>

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 results 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

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

$$CO_2e_{covered} = CO_2e_{unspecified} + (CO_2e_{specified} - CO_2e_{specified-not\ covered}) - CO_2e_{RPS\_adjustment} - CO_2e_{QE\_adjustment} - CO_2e_{linked}$$

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

https://www.westerneim.com/Pages/About/default.aspx

*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

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

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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?

Disaggregated by Source:

KFallGen

Reported by PSE listed in physical path table of e-Tag on leg of transaction across CA border from Malin500 to NP15:

PSE C

Exercise I: e-Tag Import Example

Source / First POR

Border crossing: Malin500 (OR) to NP15 (CA)

Physical Path								
CA	**TP**	**PSE**	**POR**	**POD**	**Sched. Entities**	**Contract**	**Misc (Token/Value)**	
BPAT		PSE A	KFallsGen					
	BPAT	PSE B	KFallsGen	Malin 500	BPAT			
	CISO	PSE C	Malin 500	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 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?

Reported by PSE listed in physical path table of e-Tag on leg of transaction across CA border from SP 15 to PVWest:

PSE B

Disaggregated by Sink:

PaloVerde 500

Exercise II: e-Tag Export Example

First POR is inside CA

Border crossing: SP15 (CA) to PVWest (AZ)

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.

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?

Disaggregated by Source:

NEVPSYS

Reported by PSE listed in physical path table of e-Tag on last leg of transaction leaving CA from NP15 to Malin500:

PSE A

Exercise III: e-Tag Wheel Example

First POR is outside CA

Border crossing: NEVPSYS (NV) to NP15 (CA)

Physical Path								
CA	**TP**	**PSE**	**POR**	**POD**	**Sched. Entities**	**Contract**	**Misc (Token/Value)**	
		PSE C	NEVPSYS					
	CISO	PSE B	NEVPSYS	NP15	CISO			
	CISO	PSE A	NP15	Malin 500	CISO			
	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.

Final POD is outside CA

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.

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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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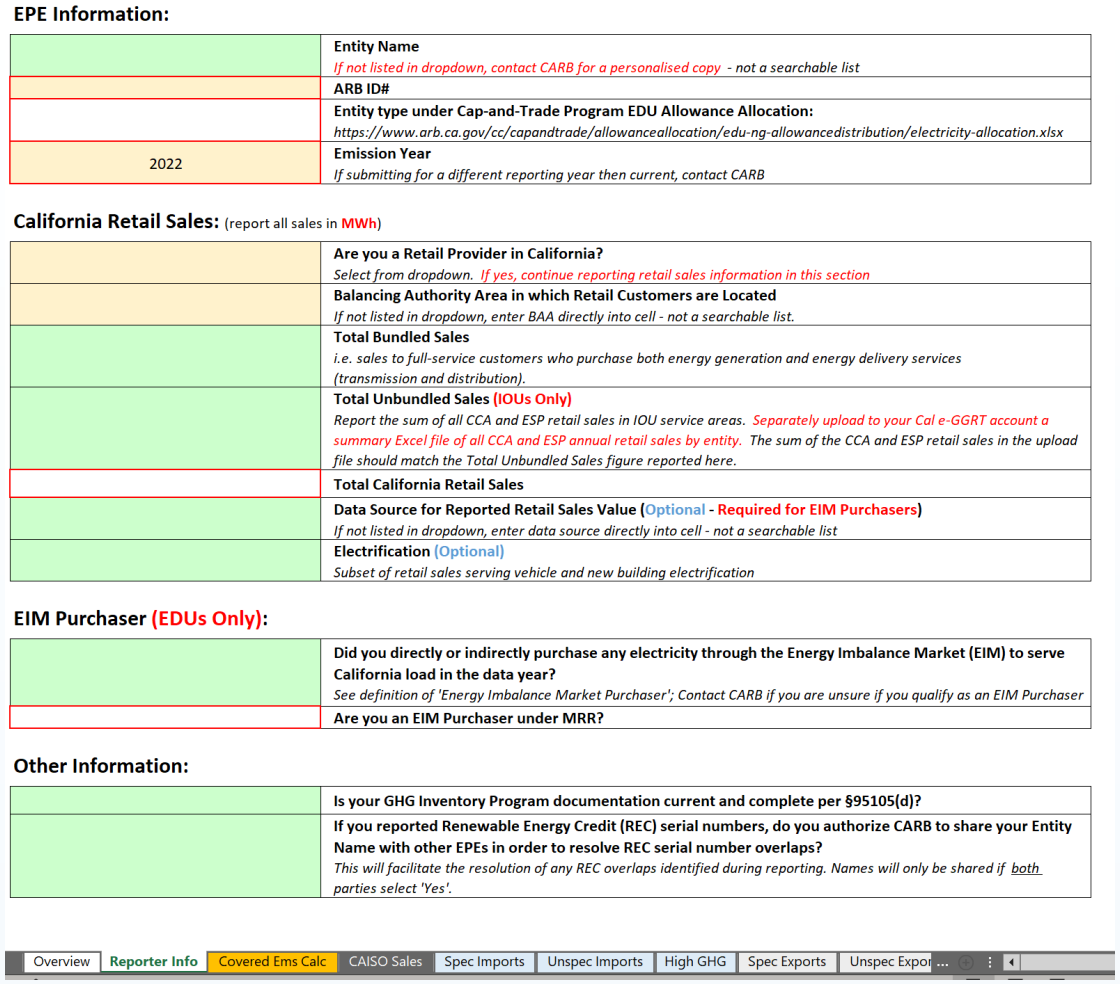
Report Using Excel Workbooks

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

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



EPE Information:

	Entity Name *If not listed in dropdown, contact CARB for a personalised copy - not a searchable list*
	ARB ID#
	Entity type under Cap-and-Trade Program EDU Allowance Allocation: *https://www.arb.ca.gov/cc/capandtrade/allowanceallocation/edu-ng-allowancedistribution/electricity-allocation.xlsx*
2022	**Emission Year** *If submitting for a different reporting year then current, contact CARB*

California Retail Sales: (report all sales in MWh)

	Are you a Retail Provider in California? *Select from dropdown. If yes, continue reporting retail sales information in this section*
	Balancing Authority Area in which Retail Customers are Located *If not listed in dropdown, enter BAA directly into cell - not a searchable list.*
	Total Bundled Sales *i.e. sales to full-service customers who purchase both energy generation and energy delivery services (transmission and distribution).*
	Total Unbundled Sales (IOUs Only) *Report the sum of all CCA and ESP retail sales in IOU service areas. Separately upload to your Cal e-GGRT account a summary Excel file of all CCA and ESP annual retail sales by entity. The sum of the CCA and ESP retail sales in the upload file should match the Total Unbundled Sales figure reported here.*
	Total California Retail Sales
	Data Source for Reported Retail Sales Value (Optional - Required for EIM Purchasers) *If not listed in dropdown, enter data source directly into cell - not a searchable list*
	Electrification (Optional) *Subset of retail sales serving vehicle and new building electrification*

EIM Purchaser (EDUs Only):

	Did you directly or indirectly purchase any electricity through the Energy Imbalance Market (EIM) to serve California load in the data year? *See definition of 'Energy Imbalance Market Purchaser'; Contact CARB if you are unsure if you qualify as an EIM Purchaser*
	Are you an EIM Purchaser under MRR?

Other Information:

	Is your GHG Inventory Program documentation current and complete per §95105(d)?
	If you reported Renewable Energy Credit (REC) serial numbers, do you authorize CARB to share your Entity Name with other EPEs in order to resolve REC serial number overlaps? *This will facilitate the resolution of any REC overlaps identified during reporting. Names will only be shared if both parties select 'Yes'.*

Overview | Reporter Info | Covered Ems Calc | CAISO Sales | Spec Imports | Unspec Imports | High GHG | Spec Exports | Unspec Expor...

CALIFORNIA AIR RESOURCES BOARD

Updated from 2020 training. See errata.

ONE: Covered and Non-Covered Emissions

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

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

COVERED	Specified Covered	Unspecified Imports	RPS Adjustment	Linked
[$CO_2e_{covered}$] Annual metric tons of CO_2e with a compliance obligation	Annual metric tons of CO_2e from imported electricity from specified sources that meet the requirements of MRR §95111 with a compliance obligation	[$CO_2e_{unspecified}$] Annual metric tons of CO_2e from unspecified imported electricity calculated pursuant to MRR §95111	[$CO_2e_{RPS\_adjustment}$] Annual metric tons of CO2e calculated pursuant to MRR that meets the requirements of §95852(b)(4)	[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

INVENTORY ONLY CALCULATION

TOTAL EMISSIONS		Specified Imports	Unspecified Imports
[CO_2e_{Total}] Annual metric tons of CO_2e	=	[$CO_2e_{specified}$] Annual metric tons of CO_2e from imported electricity from specified sources that meet the requirements of MRR §95111	[$CO_2e_{unspecified}$] Annual metric tons of CO_2e from unspecified imported electricity calculated pursuant to MRR §95111
0		0	0

SPECIFIED TOTALS INTEGRITY CHECK

Specified Exempt	Totals Check
[$CO2e_{specified\text{-}not\ covered}$] Annual metric tons of CO2e without a compliance obligation pursuant to §95852.2.from specified sources that meet the requirements in MRR §95111	Does the specified covered, specified exempt, and total specified emissions equate?
0	TRUE

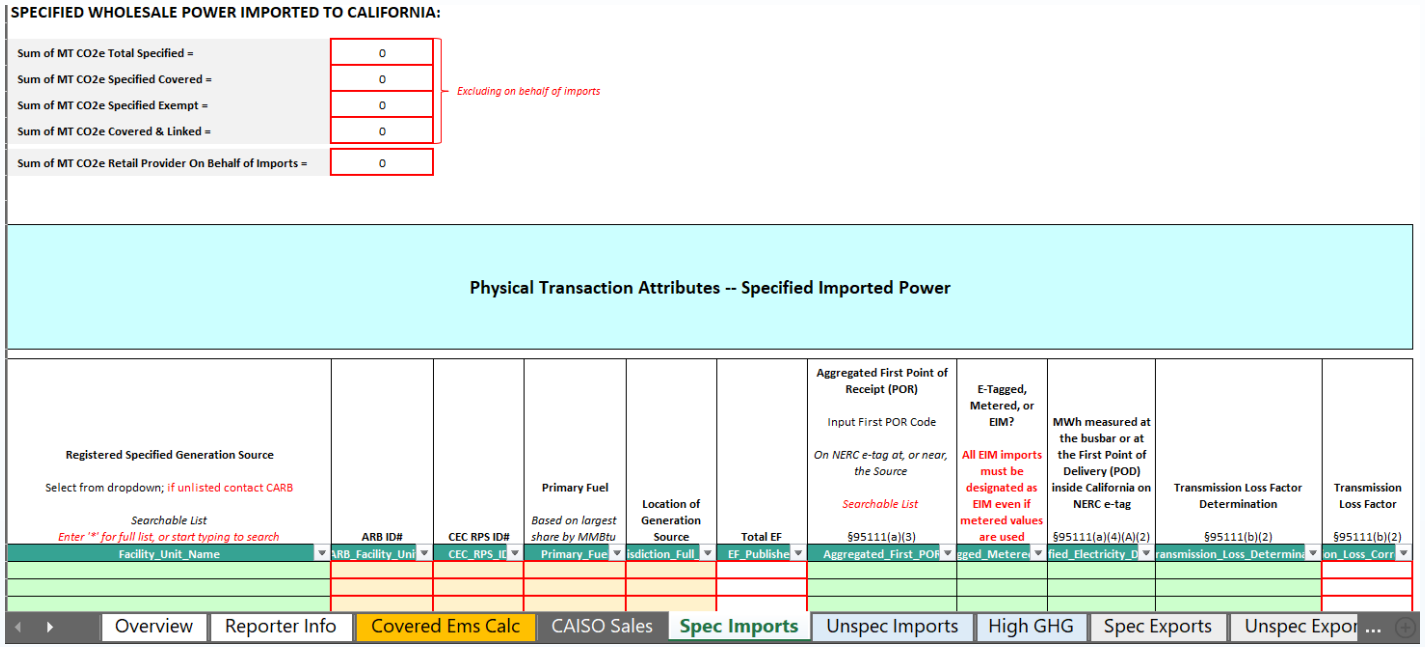
Overview | Reporter Info | Covered Ems Calc | CAISO Sales | Spec Imports | Unspec Imports | High GHG | Spec Exports | Unspec Expor...

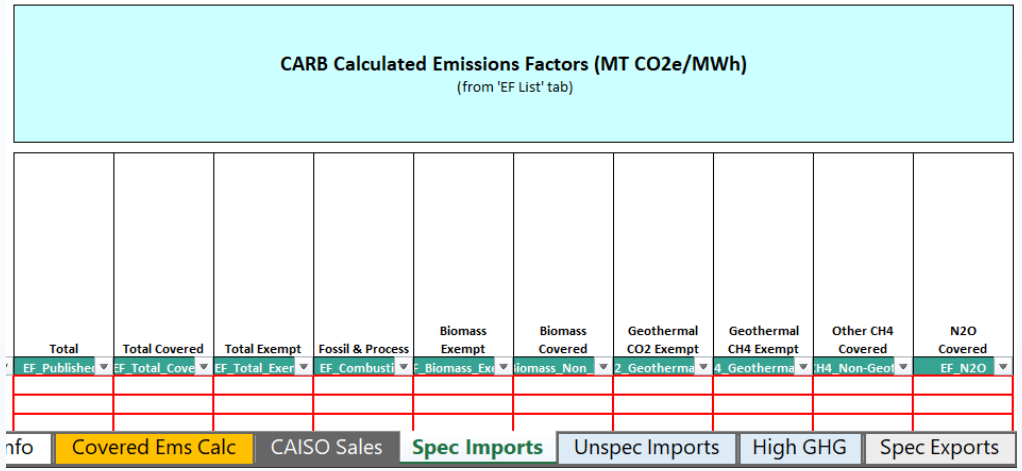
CALIFORNIA AIR RESOURCES BOARD

Updated from 2020 training. See errata.

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

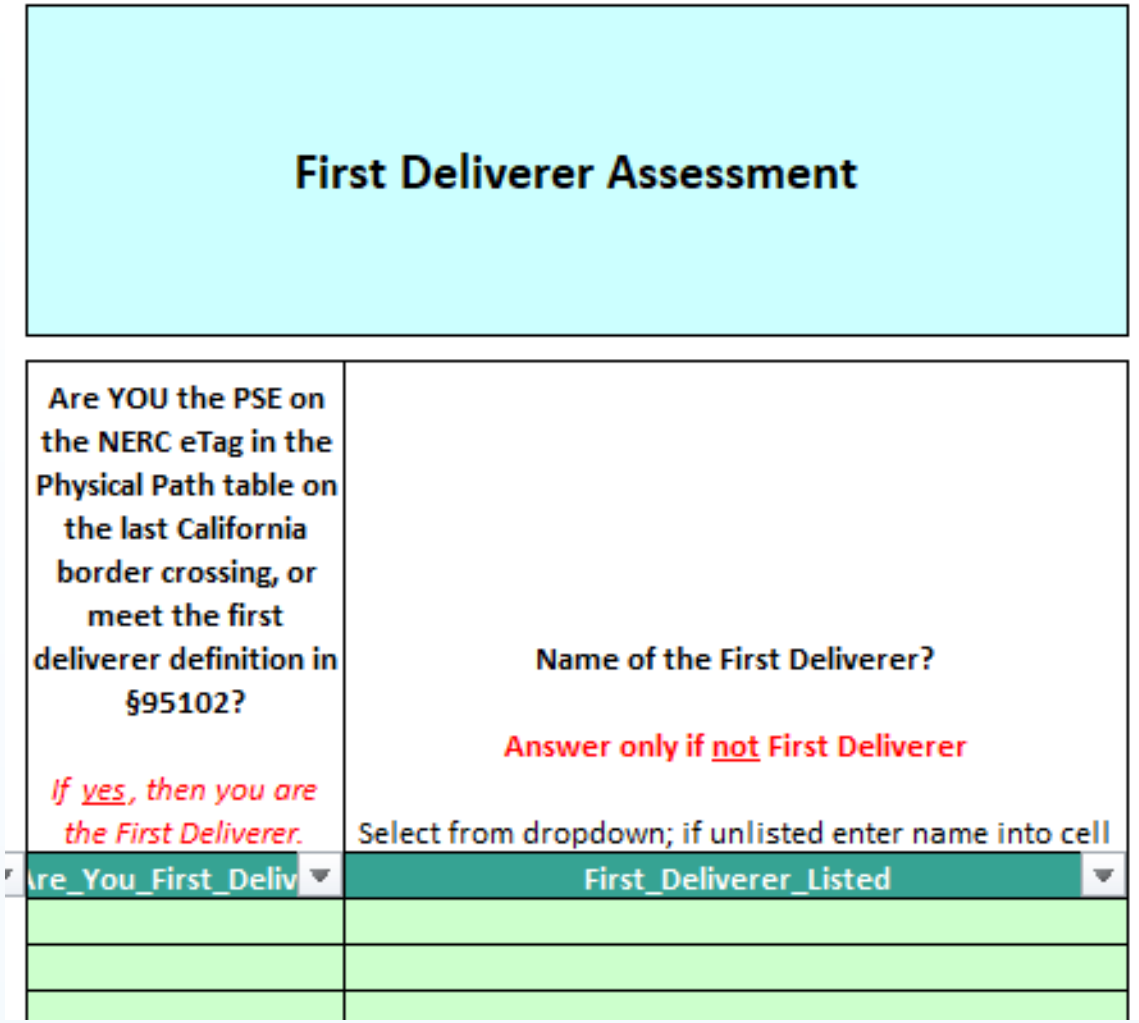




Updated from 2020 training. See errata.

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 eTag in the Physical Path table on the last California border crossing, or meet the first deliverer definition in §95102? *If yes, then you are the First Deliverer.*	Name of the First Deliverer? Answer only if not First Deliverer Select from dropdown; if unlisted enter name into cell
Are_You_First_Deliv	First_Deliverer_Listed

Updated from 2020 training. See errata.

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(c)(3)]			
Are you a Retail Provider? *From Reporter Info tab*	Was the power brought in on your behalf?	MWh imported on behalf of Retail Provider	Covered emissions associated with power imported on behalf of Retail Provider (MT CO2e)	Do you own or operate this resource? §95111(c)(3)(C)	Is this a high GHG resource? *High GHG resources have Total EFs above the unspecified EF of 0.428 MT CO2e/MWh?*	Line items marked as 'Yes' MUST be reported in the High GHG tab	CHECK (from High GHG tab) Was required line item reported in the High GHG tab?
RR_Retail_Pro	ver_Brought_	l_Imported_P	s_Power_Impor	l_Or_Partial_C	igh_GHG_Resc	ansaction_Rep	gh_GHG_Repo

Updated from 2020 training. See errata.

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)]				Answer only for 'Reportable Power' Calculated Emissions from High GHG Power Not Imported into CA [§95111(c)(3)(C)(1)]								
Are you a Retail Provider? *From Reporter Info tab*	**Is the source fully or partially owned or operated by the retail provider?** *From Spec Import Tab*	**Is this a high GHG Resource?** *High GHG resources have Total EFs above the unspecified EF of 0.428 MT CO2e/MWh?*	**Is this "Reportable Power"?** §95111(c)(3)	**Net Generation** For the whole facility for the entire reporting year (MWh)	**Ownership Share** Ownership share in facility or unit; input as percentage	**Retail Provider Share** Net Generation X Ownership Share (MWh)	**Imported MWh** Owned by Retail Provider from the facility and imported into CA	**Imports as a percentage of total share of facility or unit output**	**Total MT CO2e from Imported Power**	**Power NOT Imported** Owned by Retail Provider from the facility, but not imported into CA (MWh)	**NOT Imported Total MT CO2e**	**Is reporting replacement generation required?** Required when Imported MWh are less than 90% of Total Facility or Unit

Must be "owned"

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

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

Net gen x OS = retail provider share

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

Covered Ems Calc | CAISO Sales | Spec Imports | Unspec Imports | High GHG | Spec Exports | Unspec Exports | Wheels | RPS Adj | REC Serials | SAIC | EF List

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)]

CEC RPS Eligibility Advisory *See CEC RPS Eligible List at: rps.energy.ca.gov*	Is the power from an eligible renewable energy resource? §95802(a)	Number of REC serial numbers required for this line item?	Is this a zero emission or RPS eligible resource?	Is this resource excluded from the meter data requirement? Select the applicable exclusion	Is a Lesser of Analysis required?
Eligible_Advisor	_Eligible_Ren	RECs_Requir	eter_Data_Zer	Meter_Data_Resource_Excluded	Meter_Data_Le

Updated from 2020 training. See errata.

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

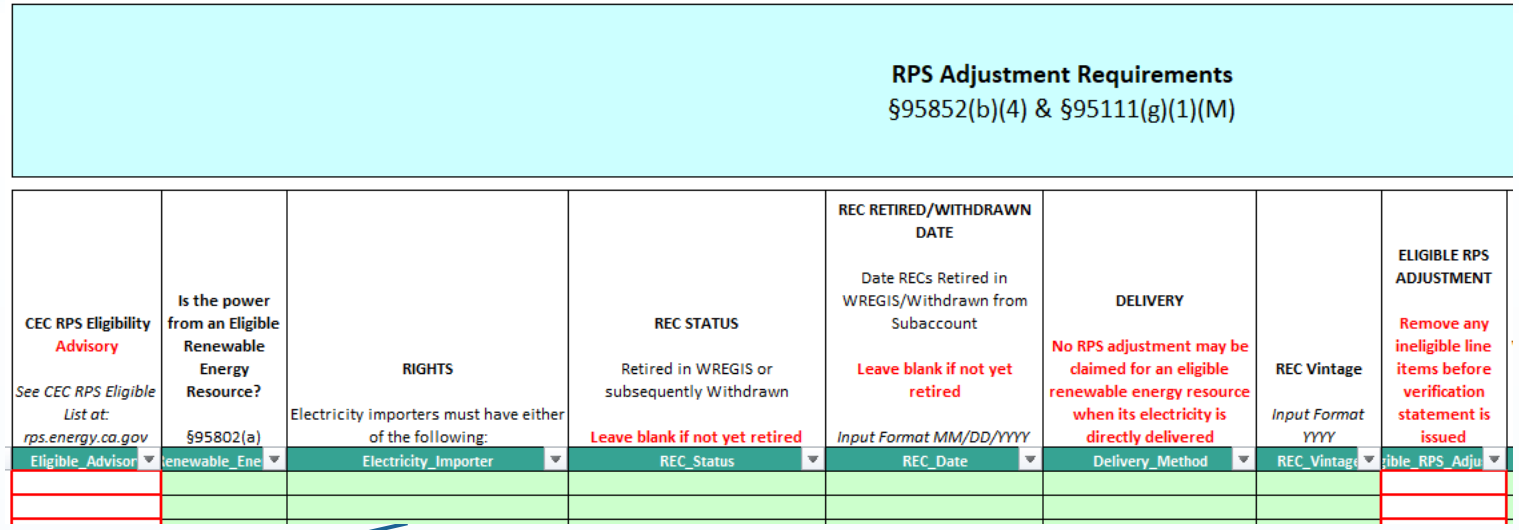
	Description	Hour 1: Under-Generation (MWh)	Hour 2: Over-Generation (MWh)
1	Metered Generation at the Source	85	115
2	Scheduled & Delivered on e-Tag	100	100
3	Lesser Of Meter or Scheduled	Metered (85)	Scheduled (100)
4	**Imported Zero Emission Power** Reported as Imported Specified Source Power	Lesser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

Specified Imports: Direct Delivery Reporting

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

Direct Delivery	
Criteria for Direct Delivery §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

ONE: RPS Adj. Tab



RPS Adjustment Requirements
§95852(b)(4) & §95111(g)(1)(M)

CEC RPS Eligibility Advisory *See CEC RPS Eligible List at: rps.energy.ca.gov*	Is the power from an Eligible Renewable Energy Resource? §95802(a)	RIGHTS Electricity importers must have either of the following:	REC STATUS Retired in WREGIS or subsequently Withdrawn Leave blank if not yet retired	REC RETIRED/WITHDRAWN DATE Date RECs Retired in WREGIS/Withdrawn from Subaccount Leave blank if not yet retired *Input Format MM/DD/YYYY*	DELIVERY No RPS adjustment may be claimed for an eligible renewable energy resource when its electricity is directly delivered	REC Vintage *Input Format YYYY*	ELIGIBLE RPS ADJUSTMENT Remove any ineligible line items before verification statement is issued
Eligible_Advisor	enewable_Ene	Electricity_Importer	REC_Status	REC_Date	Delivery_Method	REC_Vintag	ible_RPS_Adju

1. Ownership or Contract Rights
2. On Behalf of Owner or Contracted Entity
3. Neither

These questions determine RPS adjustment eligibility

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

Updated from 2020 training. See errata.

ONE: RPS Adjustment

- Confirm contract/ownership rights for RPS resource [§95852(b)(4)(A)]
- Confirm RECs reported appropriately, accounting for all RPS adjustment claims
  - Ensure retirement status via WREGIS sub-portal
- Confirm electricity claimed is NOT directly delivered to California
  - E-Tags should show that at least as much power claimed as RPS adjustment sank outside California
- Understand circumstances for reporting renewable imports and RPS adjustment, and how it affects risk of misreporting. Questions to ask:
  - 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?
- 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)]

ONE: REC Serial Tab

RENEWABLE ENERGY CREDIT (REC) SERIAL NUMBERS [§95111(g)(1)(M)]

REC Serial Number Reporting and Reconciliation

Description	Total RECs	Specified Source	RPS Adjustment	Withdrawn RPS Adjustment
Reported on this "REC Serial" tab	0	0	0	0
Reported in the RPS Adjust & Spec Imports tabs	0	0	0	
Difference	0	0	0	

Physical Transaction Attributes -- REC Serials

Registered Specified Generation Source Select from dropdown; if unlisted contact CARB *Searchable List* *Enter '*' for full list, or start typing to search*	ARB ID#	CEC RPS ID#	Location of Generation Source	CEC RPS Eligibility Advisory *See CEC RPS Eligible List at: rps.energy.ca.gov*	Total RECs Field populates based on responses in cells to the right	Specified Source RECs Field populates based on responses in cells to the right §95111(g)(1)(M)(3)	RPS Adjustment RECs Field populates based on responses in cells to the right §95111(g)(1)(M)(1)	Previously reported but subsequently Withdrawn RECs used for a prior RPS Adjustment Contact CARB if reporting in this field §95111(g)(1)(M)(2)	Are RECs Serials for this line item associated with Specified Imports, RPS Adjustments, or Withdrawn Certificates?	REC Status *If 'Other' please explain in Notes field*	Where did you obtain the information required to report the RECs? *If 'Not Listed' please explain in Notes field*	Spec Imports Only Are YOU the PSE on the NERC eTag in the Physical Path table on the last California border crossing? *From Spec Import Tab*
Facility_Unit_Name	_Facility_U	CEC_RPS_I	diction_Full	Eligible_Advisory	Total_RECs	REC_Specified_Source	REC_RPS_Adjustment	thdrawn_RPS_A	MWh_Tabulati	REC_Status	REC_Informati	re_You_First_Delive

Copy REC Se

Subaccount	WREGIS Generating Unit ID	Generator Plant-Unit Name	Fuel Type	Vintage Year/Month (MM/YYYY)	Certificate Serial Numbers MUST conform to WREGIS format as follows: [Asset ID]-[state or province postal abbreviation]-[serial batch #]-[serial block start] to [serial block end] All other formats will result in error messages.	Quantity
Sub_Accour	IS_Generatin	ator_Plant_Ur	Fuel_Type	ntage_Year_M	Certificate_Serial_Numbers	Quantity

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Updated from 2020 training. See errata.

WAPA & DWR Reporting Requirements

- WAPA & DWR report using THREE
- WAPA must include all information for retail providers, and the amount of electricity used for pump loads to operate the Central Valley Project (CVP)
- DWR must include all information for retail providers, and the amount of electricity used for pump loads to operate the State Water Project (SWP)

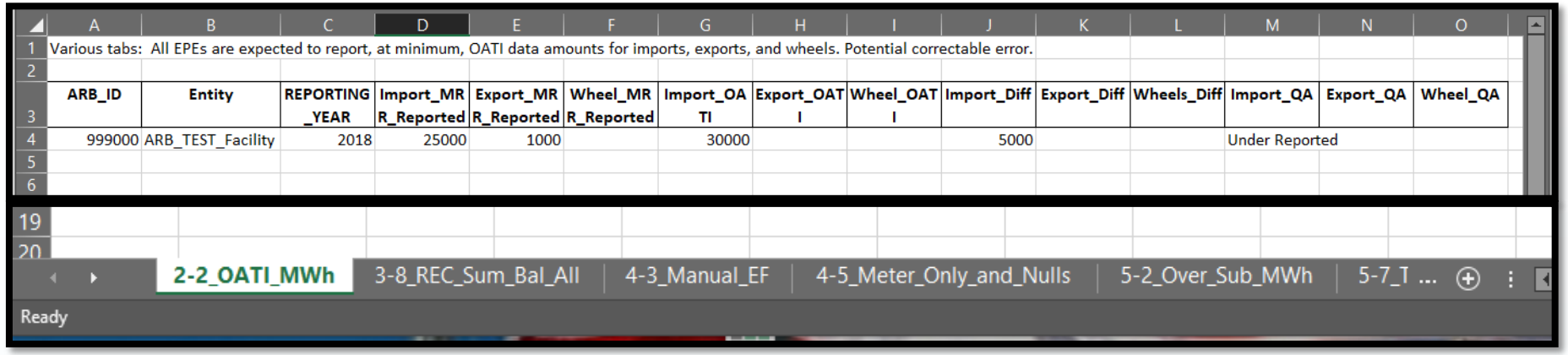
TWO and 4: MJRP & ACS System EF Calculation

- Annually, each ACS and MJRP must report and verify their system emission factor calculations by June 1
  - TWO for MJRP, and FOUR for ACS
  - Both are weighted average calculations based on reported energy for each resource less any specified sales
  - Calculations are set forth in § 95111(b)(3) & (4), respectively
- MJRP imports to serve its retail load in CA reported at its system emission factor rate

CARB Internal Quality Assurance Process

- Our goal:
  - More consistent, comparable, structured results & communications
  - Allow plenty of time for reporters and verifiers to resolve issues
- Based on feedback, CARB intends to have two rounds of QA, with the first occurring following the June 1 deadline, and the last occurring after the RPS retirement deadline in July
- The results of CARB's QA will be uploaded to Cal e-GGRT under "CARB Attachments"
- Both reporters & verifiers will be notified via email if any issues are identified through the QA process
- Reminder: CARB QA does not take the place of verification. CARB QA provides systematic review but can never replicate verification

QA Findings – The Detailed Results



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Various tabs: All EPEs are expected to report, at minimum, OATI data amounts for imports, exports, and wheels. Potential correctable error.														
2															
3	ARB_ID	Entity	REPORTING_YEAR	Import_MR R_Reported	Export_MR R_Reported	Wheel_MR R_Reported	Import_OATI	Export_OATI	Wheel_OATI	Import_Diff	Export_Diff	Wheels_Diff	Import_QA	Export_QA	Wheel_QA
4	999000	ARB_TEST_Facility	2018	25000	1000		30000			5000			Under Reported		
5															
6															

19
20

2-2_OATI_MWh | 3-8_REC_Sum_Bal_All | 4-3_Manual_EF | 4-5_Meter_Only_and_Nulls | 5-2_Over_Sub_MWh | 5-7_T ...

Ready

- CARB will provide QA results in an easy-to-read spreadsheet
- All checks are run for every routine, but tabs are only created for each report where there are findings
- Every line in a table represents a different finding that was flagged under that QA Check
  - Some QA Checks yield one finding, others can have as many lines as were reported
- 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

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

For Reporters

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

Course 2.1: § 95111

ELECTRIC POWER ENTITIES

2.1.4: Verifier Requirements Overview, & e-Tags

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)

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

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

Verifying e-Tag Data – I-IV (2 of 5)

I. Review GHG Inventory Plan
   - Should contain description of e-Tag database query used
   - 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
   - E.g. Compare data for a representative period of time between raw (third-party database) and reported

Verifying e-Tag Data – V (3 of 5)

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

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?

Course 2.1: § 95111

ELECTRIC POWER ENTITIES

2.1.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)

- **A deck of the following slides without answers has been provided for practice. Please review those before proceeding.**
- 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_2e/MWh; 20% non-exempt CO_2e*
  - 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)

- Transaction A – RPS Adjustment
  - 125,000 MWh x 0.428 MT CO_2e/MWh = 53,500 MT CO_2e
- Transaction B – Specified Import
  - 2,300 MWh x 1.02 x 0 MT CO_2e/MWh = 0 MT CO_2e
- Transaction C – Specified Import
  - 40,000 MWh x 1.02 x 1 MT CO_2e/MWh x 0.2 non-exempt = 8,160 MT CO_2e
- Transaction D – Unspecified Import
  - 162,000 MWh x 1.02 x 0.428 MT CO_2e/MWh = 70,722 MT CO_2e

Case Study 1 – Solution (3 of 3)

$$CO_2e_{covered} = CO_2e_{unspecified} + (CO_2e_{specified} - CO_2e_{specified-not\ covered}) - CO_2e_{RPS\_adjustment} - CO_2e_{QE\_adjustment} - CO_2e_{linked}$$

1. CO_2e (unspecified) + CO_2e (specified) - CO_2e (RPS adjustment)
   - 70,722 + (0 + 8,160) - 53,500 = 25,382 MT CO_2e

2. If RECs weren't retired, two possible outcomes:
   - REC serial numbers associated with a direct delivery of renewable energy do not need to be retired, but do need to be reported
   - 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)

- Calculate the total covered CO_2e 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_2e/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_2e/MWh.
  5. 20,000 MWh electricity from verified biomass fuels directly delivered from Oregon. Emission factor of 1.376 MT CO_2e/MWh, 17% non-exempt*
  6. 250,000 MWh electricity purchased from PVWest (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)

- Transaction 1 – Unspecified Transaction
  - 500,000 MWh x 1.02 x 0.428 MT CO_2e/MWh = **218,280** MT CO_2e
- Transaction 2 – Specified Transaction
  - 150,000 MWh x 1.02 x 1 MT CO_2e/MWh = **153,000** MT CO_2e
- Transaction 3 – RPS Adjustment (Partial!)
  - 15,000 MWh x 0.428 MT CO_2e/MWh = **6,420 MT** CO_2e
- Transaction 4 – Specified Import (exempt)
  - 15,000 MWh x 1.02 x 0.073 MT CO_2e/MWh = **1,117** MT CO_2e
- Transaction 5 – Specified Import
  - 20,000 MWh x 1.02 x 1.376 MT CO_2e/MWh x 0.17 = **4,772** MT CO_2e
- Transaction 6 – Non-reportable transaction

Case Study 2 – Solution (3 of 3)

$$CO_2e_{covered} = CO_2e_{unspecified} + (CO_2e_{specified} - CO_2e_{specified-not\ covered}) - CO_2e_{RPS\_adjustment} - CO_2e_{QE\_adjustment} - CO_2e_{linked}$$

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
Covered Emissions		**369,632 MT CO_2e**	

Case Study 3 – Solution (1 of 3)

#	TAG CODE	GCA	LCA	MWh	PSE	POR	POD	Solutions
1	MQF323	GWA	CISO	95	NATU01	GLWND1		Correctly reported as import, but incorrect MWh reported
	MQF323	GWA	CISO	95	MSCG01	GLWND1	BPAT	
	MQF323	GWA	CISO	95	MSCG01	BPAT	CaptainJack	
	MQF323	GWA	CISO	95	EZE	Captain Jack	NP15	
	MQF323	GWA	CISO	95	SMUD01	NP15		
2	1447852	PGE	CISO	500	PGEMPG	PGEGEN		Correctly Reported
	1447852	PGE	CISO	500	PGEMPG	PGEGEN	Malin500	
	1447852	PGE	CISO	500	EZE	Malin500	RDM230	
	1447852	PGE	CISO	500	PG&E	RDM230	CTW230	
	1447852	PGE	CISO	500	PG&E	CTW230		
3	Z28548	PSEI	SRP	210	VNTG01	WINDRIDGE		<Border Crossing – Import <Border Crossing – Export WHEEL – NEED TO REPORT!
	Z28548	PSEI	SRP	210	PWX01	WINDRIDGE	NOB	
	Z28548	PSEI	SRP	210	EZE	NOB	SYLMAR	
	Z28548	PSEI	SRP	210	EZE	SYLMAR	FourCorners345	
	Z28548	PSEI	SRP	210	SRP	FourCorners345	PVWEST	
	Z28548	PSEI	SRP	210	SRP	PVWEST		
4	IR4475	BPAT	CISO	200	PPMIRT	LeanJnpr2		Not a reportable transaction – properly excluded
	IR4475	BPAT	CISO	200	EZE	LeanJnpr2	LaGrande	
	IR4475	BPAT	CISO	200	EZE	LaGrande	CaptainJack	
	IR4475	BPAT	CISO	200	SPPS1	CaptainJack		
5	144782	CISO	SRP	250	PAC01	DEVERS230		Correctly reported as Export, but Final POD is PVWEST not MCCULLOUG230
	144782	CISO	SRP	250	EZE	DEVERS230	Eldorado500	
	144782	CISO	SRP	250	EZE	Eldorado500	PVWEST	
	144782	CISO	SRP	250	AZPS	PVWEST		

Case Study 3 – Solution (2 of 3)

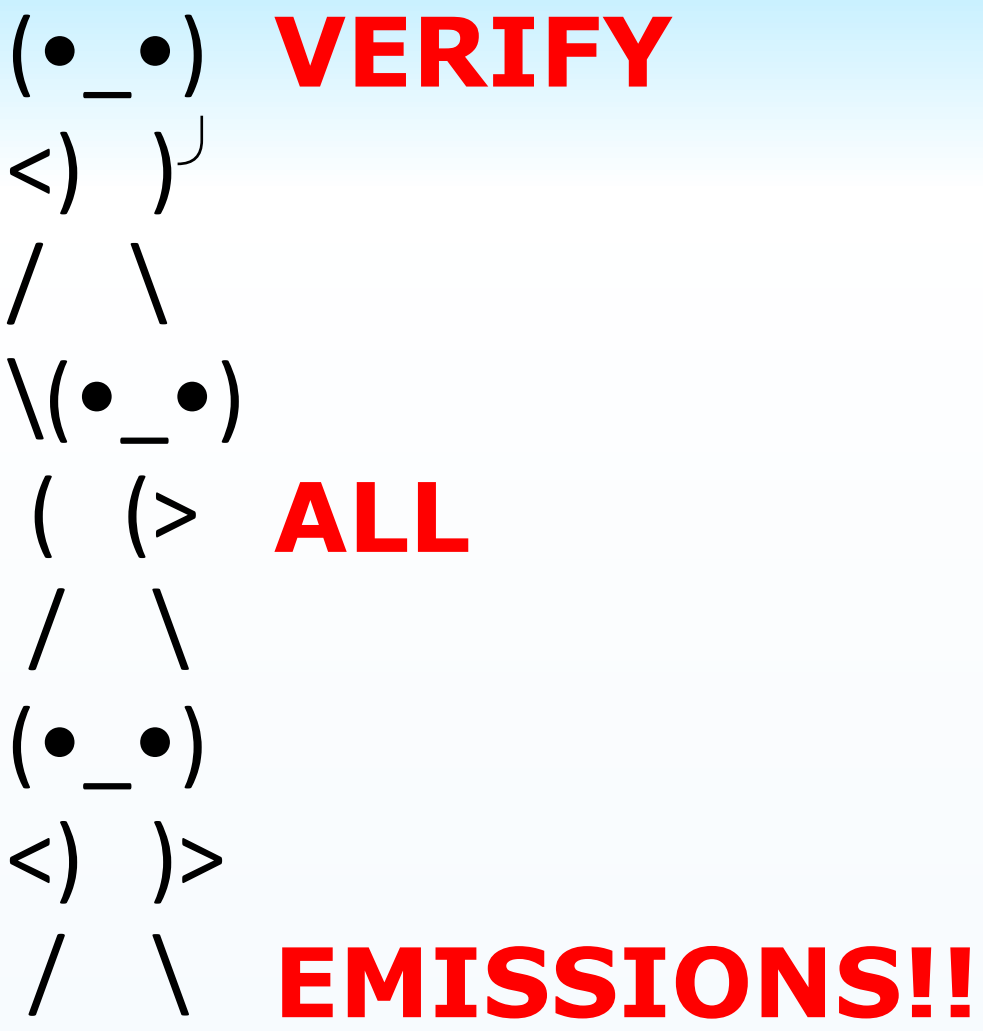
#	TAG CODE	GCA	LCA	MWh	PSE	POR	POD	Solutions
6	MER9966	CISO	SPPC	150	MCPI01	MossLndng		
	MER9966	CISO	SPPC	150	EZE	MossLndng	NP15	
	MER9966	CISO	SPPC	150	EZE	NP15	Marble60	
	MER9966	CISO	SPPC	150	EZE	Marble60	SUMMIT120	<Border Crossing – Export
	MER9966	CISO	SPPC	150	SRP	SUMMIT120		EXPORT – NEED TO REPORT
7	QC53981	BPAT	PACW	63	BPAT	JnprCnynBPA		
	QC53981	BPAT	PACW	63	EZE	JnprCnynBPA	JohnDay	Not a reportable transaction – properly excluded
	QC53981	BPAT	PACW	63	EZE	JohnDay	Malin230	
	QC53981	BPAT	PACW	63	PPMIRT	Malin230		
8	IBR1754	BPAT	CISO	160	PACW	KFallsGen		
	IBR1754	BPAT	CISO	160	PACW	KFallsGen	Malin500	
	IBR1754	BPAT	CISO	160	PACW	Malin500	Hilltop345	<Border Crossing – Import
	IBR1754	BPAT	CISO	160	EZE	Hilltop345	NP15	… but EZE is not the PSE on the import &
	IBR1754	BPAT	CISO	160	PG&E	NP15		SHOULD NOT REPORT
9	QC07107	IID	LDWP	300	PPMIRT	DEVERS230		
	QC07107	IID	LDWP	300	PPMIRT	DEVERS230	Eldorado500	<Border Crossing – Export
	QC07107	IID	LDWP	300	EZE	Eldorado500	NOB	
	QC07107	IID	LDWP	300	EZE	NOB	SYLMAR	<Border Crossing – Import
	QC07107	IID	LDWP	300	LDWP	SYLMAR		Not a reportable transaction EZE SHOULD NOT REPORT
10	IBR1754	BPAT	CISO	200	PACW	PGEGEN		
	IBR1754	BPAT	CISO	200	PACW	PGEGEN	Malin500	
	IBR1754	BPAT	CISO	200	EZE	Malin500	RDM230	<Border Crossing – Import
	IBR1754	BPAT	CISO	200	EZE	RDM230	NP15	Correctly reported as Import, but nc contract so UNSPECIFIED &
	IBR1754	BPAT	CISO	200	PG&E	NP15		COMBINED WITH OTHER PGEGEN

Case Study 3 – Solution (3 of 3)

Issues Log

Reporting Entity: EZ Electricity (CARB ID# 123456) **Lead Verifier:** John Smith **Subparts Reported:** EPE **Data Year:** 2019

#	Date	Description of Issue/Source	MRR Citation	Potential Impact upon GHG Data	Action Required by Reporting Entity	Resolution
1	10/28/2020	Glacier Wind reported MWh imported does not match associated e-tags	§95111(a)(2)	Nonconformance. Potential correctable error. Unclear whether this affects emissions and material misstatement, but is required to be accurately reported	Review transaction records and revise Cal e-GGRT report	
2	10/28/2020	E-tag transaction #3 is not reported	§95111(a)(2)	Nonconformance. EPE reporters are required to report all transactions. Potential correctable error that does affect material misstatement	Review transaction records for conformance with §95111(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 reported export from MCCULLOUG230	§95111(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 #6 appears to be incorrectly excluded	§95111(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 §95111(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 conform to the PSE requirements per the definition of imported electricity as defined in §95102(a) 'Electricity Importer'	§95102(a) 'Electricity Importer'	Nonconformance. More evidence is required for this transaction to be reported as an import. Potential correctable error that does affect material misstatement.	Provide additional documentation supporting the definition of specified source power in §95102(a) and §95111(a)(3), or revise the report to correct error.	
6	10/28/2020	Reported transaction C does not conform to the PSE requirements per the definition of imported electricity as defined in §95102(a) 'Electricity Importer'	§95102(a) and §95111(a)(3)	Nonconformance. More evidence is required for this transaction to be reported as an import. Potential correctable error that does affect material misstatement.	Provide additional documentation supporting the definition of specified source power in §95102(a) and §95111(a)(3), or revise the report to correct error.	
7	10/28/2020	Need more documentation/evidence to report transaction #10 as specified import	§95102(a) and §95111(a)(4)	Nonconformance. More evidence is required for this transaction to be reported as a specifed import. Potential correctable error that does affect material misstatement.	Provide additional documentation supporting the definition of specified source power in §95102(a) and §95111(a)(4), or revise the report to correct error.	



VERIFY

ALL

EMISSIONS!!

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