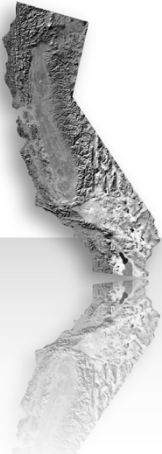


Greenhouse Gas Reporter Training Electric Power Entities

April 26, 2012

California Environmental Protection Agency
 **Air Resources Board**



Disclaimer

This training is intended to provide administrative detail and recommended practices for compliance with the provisions of the California Air Resources Board's (ARB) Regulation for the Mandatory Reporting of Greenhouse Gas (GHG) Emissions (Title 17, California Code of Regulations, § 95100-95157) (MRR or Regulation).

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

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How was the Mandatory Reporting regulation (MRR) revised for electric power entities?

- 2007 MRR required information to support both points of regulation: first deliverer or load-based
- 2010 MRR reflects decision to regulate first deliverers
 - Electricity transactions involving in-state generation that sinks in CA are reported under 95112, while imports and exports are reported under 95111.
- 2010 MRR includes emissions calculations
- Focus on directly delivered electricity documented by NERC e-Tags
 - Provides rigor to support a regional trading program
 - Settled questions about exchanges and RPS electricity

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3

What are the significant differences in the revised MRR and its compliance framework?

- Reporting MWh AND associated emissions
- Reduced information needs
 - SF₆ emissions are separately reported under § 95350
 - Retail providers are no longer required to report electricity transactions for power delivered between in-state generation and in-state usage
- Additional requirements to claim specified power
- Facility-based compliance threshold

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Key sections of the MRR pertaining to power entities

- Reporting requirements – § 95111
- Applicability – § 95101(d)
- Definitions – § 95102 (numerous)
- Cessation of reporting – § 95101(h)(4)
- Inventory documentation – § 95105(d)

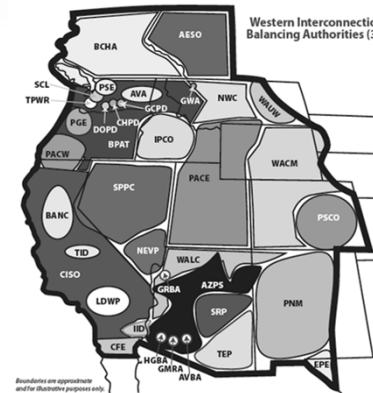
Key sections of the power entities requirements

- General requirements – §95111(a)
- Calculating GHG emissions – §95111(b)
- Requirements for claims of specified sources of electricity and for eligible renewable energy resources in the Renewable Portfolio Standard (RPS) adjustment – §95111(g)
- Additional requirements:
 - Retail providers – §95111(c)
 - Multi-jurisdictional retail providers – §95111(d)
 - WAPA and DWR – §95111(e)
 - Asset-controlling suppliers – §95111(f)

Key sections of the emissions calculations

- From unspecified sources – § 95111(b)(1)
- From specified sources – § 95111(b)(2)
- From asset-controlling suppliers – § 95111(b)(3)
- For multi-jurisdictional retail providers – § 95111(b)(4)
- Emission covered under Cap-and-Trade – § 95111(b)(5)

Balancing Authorities in the Western Electricity Coordinating Council (WECC)



MRR & Role of Balancing Authority Areas

- Reporting boundaries – geographical boundaries of California, not balancing authority boundaries
- Trading and scheduling – integrate resource plans ahead of time, maintain load-interchange-generation balance within a balancing authority area, and support interconnection frequency in real time
- CAISO market and basic requirements – facilitates the wholesale Energy and Ancillary Services Markets for buyers and sells

Role of NERC e-Tags in MRR Compliance

- North American Electric Reliability Corporation (NERC) energy tags (e-Tags) represent energy transactions in bulk electricity market scheduled to flow between or across balancing authorities
 - Identify the purchasing-selling entity (PSE) for each physical path segment
 - Identify the responsible entity – the PSE on the last segment that crosses the physical border of California.

NERC e-Tags (Continued)

- *Point of receipt (POR)* – point on transmission/distribution system where receiver receives electricity from a deliverer
- *Point of delivery (POD)* – point on transmission/distribution system where deliverer makes electricity available to a receiver or available to serve load

NERC e-Tags (Continued)

- **Electricity importer. POR Outside, POD Inside CA.** Identified on the NERC e-Tag as the purchasing-selling entity (PSE) on the last segment of the tag's physical path with the point of receipt located outside the state of California and the point of delivery located inside the state of California, per 95102(a)(121).
- **Electricity Exporter. POR Inside, POD Outside CA.** The entity that exports electricity is identified on the NERC e-Tag as the purchasing-selling entity (PSE) on the last segment of the tag's physical path, with the point of receipt located inside the state of California and the point of delivery located outside the state of California, per 95102(a)(118).

CAISO Operating Procedure #2510: NERC Tagging Requirements

- When CAISO accepts a bid, the market participant is required to document and deliver with a NERC e-Tag
- The responsible entity is the PSE on the physical transactions path when the electricity enters the geographical border of California. The PSE must report.
- CAISO Operating Procedure #2510:
NERC Tagging Requirements
 - <http://www.caiso.com/Documents/2510.pdf>
 - <http://www.caiso.com/Documents/2500%20-%20Interchange%20management>

Important Terminology – Types of Entities

- Retail provider
- Marketer
- Electricity importer
- Electricity exporter
- Multi-jurisdictional retail provider
- Asset-controlling supplier
- WAPA and DWR

Definition – Retail Provider 95102(a)(351)

- Retail provider is one of the following:
 - Electric corporation (PUC section 218) (PG&E, SCE, SDG&E)
 - Electric service provider (PUC section 218.3) (e.g., Calpine PowerAmerica-CA, Noble Americas Energy Solutions, etc.)
 - Local publicly owned electric utility (PUC section 224.3) (e.g., LADWP, SMUD)
 - Community choice aggregator (PUC section 331.1) (e.g., Marin Energy Authority, etc.)
 - Western Area Power Administration (WAPA)
- Electric cooperatives (PUC section 2776) are excluded

Definition – Marketer 95102(a)(233)

- Marketer is a purchasing-selling entity (PSE) that delivers electricity and is not a retail provider for California (e.g., Morgan Stanley, Shell Energy North American, etc.)

Definition – Electricity Importer

Per 95102(a)(121)

- Marketers and retail providers that deliver imported electricity
- Electricity delivered between balancing authority areas – importer is identified on e-Tag as purchasing-selling entity (PSE) on last segment with point of receipt (POR) outside CA and point of delivery (POD) inside CA
- Facilities physically located outside CA with first point of interconnection to CA balancing authority's transmission and distribution system – importer is facility operator or scheduling coordinator
- Federal and state agencies, such as WAPA, BPA, and DWR are subject to regulatory authority of ARB under this article

Definition – Electricity Exporter

Per 95102(a)(118)

- Marketers and retail providers that deliver exported electricity
- Electricity delivered between balancing authority areas – exporter is identified on e-Tag as purchasing-selling entity (PSE) on last segment with point of receipt (POR) inside CA and point of delivery (POD) outside CA

Important Terminology – Types of Electricity

- Imported and exported
 - Directly delivered
 - Specified and unspecified sources
 - Exchanges
- Wheeled
- Specified sources
 - Facilities/units
 - Asset-controlling suppliers

Definition – Directly Delivered Electricity

Per 95102(a)(108)

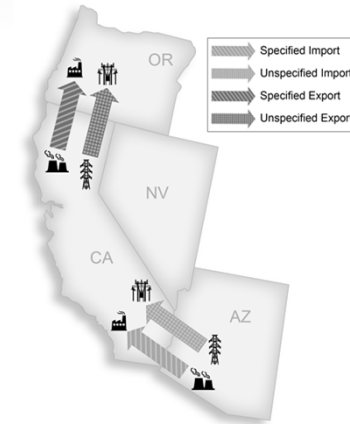
Directly delivered electricity means electricity that meets one of the following criteria:

1. Facility has first point of interconnection with a CA balancing authority.
2. Facility has first point of interconnection with distribution facilities used to serve end users within a CA balancing authority area.
3. **Electricity scheduled for delivery** from **specified source** into a CA balancing authority **via continuous transmission path** from interconnection of the facility in balancing authority in which the facility is located to final point of delivery located in CA.
4. Agreement to dynamically transfer electricity from facility to a CA balancing authority.

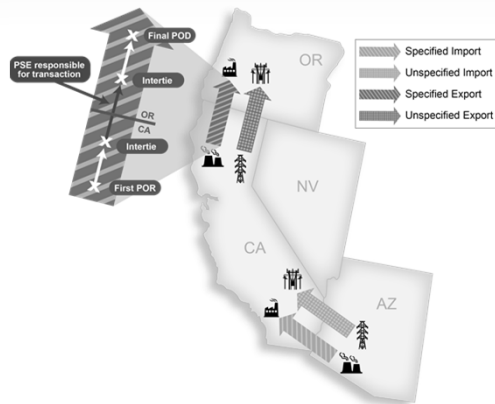
Definitions – Imported, Exported, Specified, and Unspecified

- Imported – Electricity generated outside of CA and delivered to serve load inside of CA
- Exported – Electricity generated inside of CA and delivered to serve load outside of CA
- Specified – Electricity for which a facility or unit is permitted to be claimed as the source of electricity delivered; through ownership (full or partial) or formal agreements (written power contracts)
- Unspecified – Electricity procured and delivered without limitation at the time of transaction to the generation of a specific facility/unit; typically from grid or balancing authority

Direct delivered, specified, unspecified, imported, and exported electricity



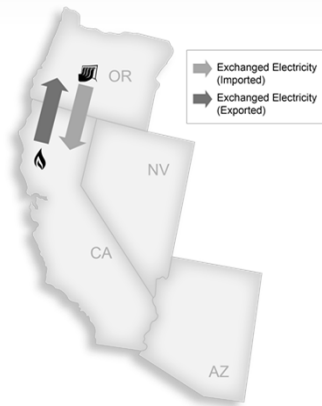
Specified, unspecified, imported, and exported electricity – Detailed



Definitions – Exchanged and Wheeled Electricity

- Exchanges are reported as separate imports and exports—no netting:
 - Electricity that is swapped between electricity market participants
 - Exchange transactions:
 - Do not involve transfers of payment or receipts of money for the full market value of energy being exchanged
 - May include payment for net differences due to market price differences between the two parts of the transaction or to settle minor imbalances
- Wheeled electricity is reported separately:
 - Electricity that is “wheeled” through CA: generated outside CA, delivered into and passed through CA, with a final point of delivery outside CA

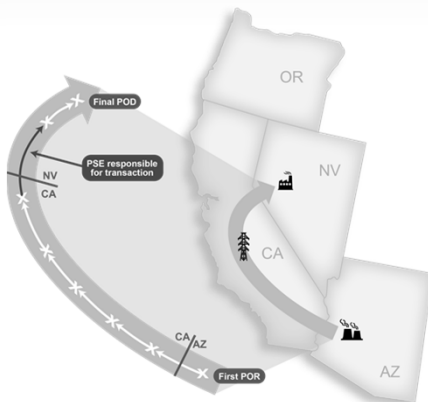
Exchanged electricity



Wheeled electricity



Wheeled electricity – Detailed



Who is subject to § 95111 and § 95112?

- Electric power entities as defined in § 95101(d)
- Subject to § 95111:
 - Electricity importers and exporters
 - Retail providers (including multi-jurisdictional retail providers)
 - Other entities:
 - CA Department of Water Resources (DWR)
 - Western Area Power Administration (WAPA)
 - Bonneville Power Administration (BPA)
- Subject to § 95112:
 - Entities that operate EGUs or cogeneration units in CA must also report
 - Operators/owners of EGUs or cogeneration units outside of CA may choose to report

What must be reported by electric power entities?

- Delivered electricity (MWh):
 - Electricity distributed from a PSE and received by a PSE, **OR**
 - Electricity that was generated, transmitted, and consumed per §95102(a)
- Emissions (MT CO₂e) for the following delivered electricity categories:
 - From unspecified sources – §95111(b)(1)
 - From specified facilities or units – §95111(b)(2)
 - Imported supplied by specified asset-controlling suppliers – §95111(b)(3)
 - Imported by multi-jurisdictional retail providers (MJRP) – §95111(b)(4)
 - Covered emissions – §95111(b)(5), includes Renewables Portfolio Standard (RPS) adjustments and qualified exports (QE)

Reporting requirements for covered emissions from electric power entities (Continued)

Equation Variable	Variable Definition
CO ₂ e _{unspecified}	Annual emissions from unspecified imported electricity
CO ₂ e _{specified}	Annual emissions from specified imported electricity
CO ₂ e _{specified-not covered}	Annual emissions from specified imported electricity not covered (i.e., without compliance obligation) per §95852.2
CO ₂ e _{RPS_adjustment}	Annual emissions adjustments from eligible renewable energy sources located outside of CA, but not directly delivered (must meet requirements of §95852(b)(4))
CO ₂ e _{QE_adjustment}	Annual emissions adjustment for qualified exports (must meet requirements of §95852(b)(5))
CO ₂ e _{linked}	Annual emissions recognized by ARB pursuant to linkage under Subarticle 12 of cap-and-trade regulation

How to report electricity and emissions

- Emissions disaggregated by delivered electricity categories
- Delivered electricity (MWh) disaggregated by first point of receipt (POR) or final point of delivery (POD):
 - Imported from unspecified sources (POR)
 - Imported from specified facilities or units (POR)
 - Imported supplied by asset-controlling suppliers (POR)
 - Exported (specified, unspecified, qualified exports are subset) (POD)
 - Wheeled (POR)
 - Exchange agreements (treat as imported and exported) (POR/POD)

General reporting requirements

- Emissions (MT of CO₂e) must be calculated using equations in § 95111(b)(1) through (b)(5)
- Delivered electricity (in MWh) must be disaggregated:
 - First point of receipt (POR) – imports and wheels
 - Final point of delivery (POD) – exports

Imported electricity from Unspecified sources Report Requirements

- Calculate emissions using equation in § 95111(b)(1)
- CO₂e emissions and electricity must include transmission losses
- Electricity as measured at first point of delivery in CA
- Indicate whether first point of receipt is located in a linked jurisdiction (built into reporting template)
- Distinguish between Specified and Unspecified

Imported electricity from Specified sources Report Requirements

- Calculate emissions using equation in § 95111(b)(2)
- CO₂e emissions and electricity must include transmission losses
 - CO₂e emissions and electricity disaggregated by facility/unit and by first point of receipt
 - Total CO₂e emissions and electricity from specified sources
 - Sum of specified sources explicitly listed as not covered pursuant to cap-and-trade regulation - §95852.2
 - Report claims of specified sources of electricity

Imported electricity from Specified sources Report Requirements (cont'd)

- Report *substitute electricity* received from specified and unspecified sources
- Report if any of the following conditions applies for deliveries:
 - Deliveries previously reported as consumed in CA
 - Deliveries from existing federally owned hydroelectricity facility by exclusive marketers
 - Deliveries from existing federally owned hydroelectricity facilities allocated by contract
 - Deliveries from new facilities
 - Deliveries from existing facilities with additional capacity

Reporting requirements for exported electricity

- Calculate emissions using equations in §95111(b)
- CO₂e emissions and electricity disaggregated by each final point of delivery outside CA for both unspecified and specified sources
- CO₂e emissions and electricity must not include transmission loss factor

Reporting requirements for exported electricity (Continued)

- Exported electricity should be measured at the last point of delivery located in CA, if known
 - If unknown, report as measured at the final point of delivery outside CA
- Indicate whether final point of delivery is located in a linked jurisdiction (built into reporting template)
- Separately report qualified exports (defined in §95802(a) of cap-and-trade regulation)

Reporting requirements for exchange agreements

- Electricity delivered into CA under exchange agreements must be reported as imported electricity
- Electricity delivered out of CA under exchange agreements must be reported as exported electricity

Reporting requirements for wheeled electricity

- Separately report wheeled electricity aggregated by first point of receipt outside CA
- Exclude wheeled electricity from reported imports and exports
- Report wheeled electricity as measured at the first point of delivery inside CA

Reporting requirements for WAPA and DWR

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

Reporting requirements for retail providers (excluding multi-jurisdictional retail providers)

- Must report CA retail sales
- May elect to report subset of retail sales attributed to electrification of shipping ports, truck stops, and motor vehicles if metering is available to separately track these sales from other retail sales
- If reporting as electricity importer, must separately report electricity imported from specified and unspecified source by other electric power entities to server their load, designating the electricity importer

Case Studies

Case Study 1: RPS Adjustments

- RPS adjustments reduce the amount of covered emissions reported by electric power entities.
 - Requirements of the RPS adjustments
 - Pursuant to Cap and Trade 95852(b)(3) and (4)

Case Study 1: RPS Adjustments – Solution

- The renewable energy portfolio standard adjustment is an *adjustment* in the covered emissions equation from electricity purchased to meet RPS standard, but not directly delivered to California. This allows the responsible party to be credited for purchasing renewable power even though it's not used to serve load and therefore other electricity with a compliance obligation is used
- MRR § 95111(b)(5)

Case Study 2: Covered Emissions

- Calculate the total covered CO₂e emissions in metric tons for a retail provider with the following transactions:
 - Transaction #1: 500,000 MWh imported electricity from unspecified sources, aggregated at various points of receipt, as measured at the first points of delivery in California.
 - Transaction #2: 150,000 MWh imported electricity from a specified facility, measured at the busbar. The ARB-calculated facility-specific emission factor is 0.300 MT CO₂e/MWh.
 - Transaction #3: 10,000 MWh purchased under contract from an eligible renewable energy resource outside of California to meet RPS requirements, but does not meet the definition of *directly delivered electricity* in section 95102(a). RECs are *not* retired.
 - Transaction #4: 15,000 MWh geothermal directly delivered from Nevada and measured at the busbar.
 - Transaction #5: 20,000 MWh electricity from verified biomass fuels directly delivered from Oregon and measured at the busbar.
 - Transaction #6: 250,000 MWh electricity directly scheduled from and delivered through CAISO.

Case Study 2: Covered Emissions – Solution

- Transaction 1: Unspecified Transaction 500,000 MWh x 0.428 MT CO₂e/MWh x 1.02 = 218,280 MT CO₂e
- Transaction 2: Specified Transaction 150,000 MWh x 0.300 MT CO₂e/MWh = 45,000 MT CO₂e
- Transaction 3: Not a part of the covered emissions equation
- Transaction 4: Specified-Not Covered 15,000 x 0.00 = 0 MT CO₂e
- Transaction 5: Specified-Not Covered 20,000 x 0.00 = 0 MT CO₂e
- Transaction 6: In-state electricity purchase does not fall under covered emissions
- Covered Emissions Equation:
218,280 MT + 45,000 MT = 263,280 MT CO₂e

Example of Order of Operations for Assembling Reporting Data

Example of Order of Operations for Reporting Entity:

Source Data → Reported Data (1 of 5)

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

Example of Order of Operations for Reporting Entity:

Source Data → Reported Data (2 of 5)

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

Example of Order of Operations for Reporting Entity:

Source Data → Reported Data (3 of 5)

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

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

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

Example of Order of Operations for Reporting Entity:

Source Data → Reported Data (4 of 5)

6. For specified imports, reporting entity
 - Substitute MWh on NERC e-Tags with metered data measured at busbar (TLF = 1.00)
 - If not measured at busbar, keep MWh from e-Tags and include reason (TLF = 1.02)
7. For specified exports, reporting entity
 - Use MWh from e-Tags (TLF = 1.00; transmission losses not included for exports)

Example of Order of Operations for Reporting Entity:

Source Data → Reported Data (5 of 5)

8. Aggregate specified imports for emissions data year by facility or unit
9. Aggregate unspecified transactions:
 - Imports by first POR shown on the physical path
 - Exports by final POD shown on the physical path
 - Wheels by first POR shown on the physical path

For More Information

- GHG Reporting Website
 - <http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm>
- See website for:
 - Regulation reporting guidance and fact sheets
 - Reporting tool information
 - “Clean” copy of the regulation (no underline/strikeout)
 - Sector specialist contacts
- Email reporting tool questions to: ghgreport@arb.ca.gov

GHG Reporting Contacts

Subject Matter	Contact
GHG Mandatory Reporting (General)	Dave Edwards, Manager 916.323.4887
Reporting Requirements, Stationary Combustion, Other Sectors (cement, glass, pulp and paper, etc.)	Patrick Gaffney 916.322.7303
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Electricity Generation and Cogeneration Facilities	Anny Huang 916.323.8475
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Thank You