

## CHAPTER 8: ELECTRICITY GENERATING FACILITIES, RETAIL PROVIDERS, AND MARKETERS (Guidance for Regulation Section 95111)

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This chapter discusses the mandatory reporting requirements specified for operators of electric generating facilities, retail providers, and the California Department of Water Resources. There are other general requirements that pertain to all entities that are required to submit a greenhouse gas emissions data report to the ARB. Chapters 1 through 6 discuss reporting and verification schedules, reporting de minimis emissions, data verification, and other topics pertaining to all reporters. Entities in the electricity sector are referred to these other chapters for guidance on general reporting requirements.

### 8.1 Applicability

Section 95111 applies to operators of electric generating facilities that are located inside California, retail providers who sell retail electricity to California end-users only (California-only retail providers), multi-jurisdictional retail providers who sell retail electricity to both California and non-California end users, marketers who import or export electric power across California's borders, the California Department of Water Resources, and the Western Area Power Administration, a federal agency that serves certain California retail customers. Applicability extends to out-of-state generating facilities if they are operated by a California-only retail provider or a multi-jurisdictional retail provider.

A generating facility is any facility that generates electricity and includes one or more generating units at the same location. Operators of generating facilities are subject to mandatory reporting only if the facility has a nameplate capacity greater than or equal to 1 MW and the facility also emits greater than or equal to 2,500 metric tonnes of CO<sub>2</sub> per calendar year. The emissions threshold is based on stationary combustion of both fossil fuels and biomass-derived fuels, along with process emissions, if any.

Operators of nuclear, hydroelectric, wind, or solar generating facilities are not required to report; however, California-only retail providers and multi-jurisdictional retail providers that operate these facilities are required to report certain non-emissions information. The reason for this is to provide ARB with information needed to calculate an emission factor specific to each retail provider should it be needed for inventory or regulatory purposes in the future.

Retail provider is defined as an entity that provides electricity to retail end users in California and is an electric corporation, electric service provider, public owned

*The purpose of this chapter is to provide guidance on the requirements of section 95111 of the mandatory GHG reporting regulation. As described more specifically in Chapter 1 of this document, this guidance does not add to, substitute for, or amend the regulatory requirements as written in these or other sections of the regulation [Subchapter 10, Article 2, sections 95100 to 95133, title 17, California Code of Regulations].*

electric utility, community choice aggregator (all as defined in California Public Utilities Code), or the Western Area Power Administration. Requirements for retail providers apply to multi-jurisdictional retail providers unless otherwise stipulated. The retail provider definition in the regulation does not extend to retail providers whose retail sales of electricity are limited to end users located outside California (non-California retail providers). Thus, non-California retail providers are not subject to the regulation unless they meet the definition of marketer.

A marketer is the purchasing/selling entity at the first point of delivery in California for power imported into the state, or is the purchasing/selling entity at the last point of receipt in California for power exported from California. The purchasing/selling entity at the first point of delivery in California is referred to as the first deliverer of the power.

California-only retail providers and multi-jurisdictional retail providers who sell to California customers may act like marketers; however, the regulation distinguishes marketers from California-only and multi-jurisdictional retail providers by separately itemizing the requirements that apply to each. Retail providers report all the information required of marketers if applicable to them. In contrast, a non-California retail provider that imports or exports power across California borders is required to report as a marketer under the regulation. Power suppliers may also be required to report as marketers when they are the purchasing/selling entity importing or exporting power. In these instances, the supplier must meet the requirements assigned to marketers as well as to operators of generating facilities, if applicable.

There may be occasion when power is delivered to a point of delivery that is on the border between California and another state. A point of delivery on the border is not inside California and the purchasing/selling entity at that point is not the first deliverer to California. Instead, the entity that receives the power at the border and delivers it to the first point of delivery inside California is the first deliverer and responsible for reporting the transaction.

### 8.1.1 Voluntary Reporting

The regulation allows for operators of generating facilities located outside California to voluntarily report to ARB. Operators that choose to do so must meet the same requirements that pertain to California operators. Operators must contact ARB to obtain access to the on-line mandatory reporting tool. ARB encourages out-of-state operators to report so that emission factors assigned to power imported to California will be accurate and updated regularly. This is important to the accuracy of California's statewide emissions inventory and becomes particularly important in the future if a regional trading scheme is implemented. It will also be important should there be a need to calculate emissions associated with each retail provider's load.

The regulation also provides opportunity for certain asset owning or controlling suppliers located inside or outside California to report and be assigned a supplier specific emission factor. Asset owning/controlling suppliers operate or control specific fleets of generating facilities. If a supplier does not have a fleet specific emission factor assigned by ARB, then power purchased from the supplier's fleet will be considered to be from an unknown source. ARB will assign the purchase a default

emission factor. Thus, suppliers with clean fleets may benefit from voluntarily applying for a fleet specific emission factor.

The option to request a fleet emission factor is offered only to suppliers with generating fleets that are cleaner than average or to suppliers whose emissions are well defined because they make few purchases of power from unspecified sources. The regulation stipulates that 50 percent or more of the total electric power that the supplier sells must be from renewable energy, or that the supplier does not purchase electric power from unspecified sources in amounts that exceed 20 percent of their total electric power sales for the report year.

Suppliers that choose this option must contact ARB for a supplier identification number (ARB ID number) and for access to the on-line mandatory reporting tool. Then the supplier must report information to ARB that is required in the regulation and discussed in more detail later in this chapter. ARB will calculate the emission factor based on the information reported and inform the supplier of the results. The supplier has the responsibility to provide their ARB ID number to those who purchase power from them. The buyer of the power will report the supplier's ID to ARB when reporting their purchase. Since the buyer will be reporting transactions in MWh only and not emissions, ARB will assign the supplier's emission factor to the purchase.

## 8.2 Reported Information: Operators of Generating Facilities

The information that operators of generating facilities must report is identified in section 95111(a). This section applies to independent power producers, asset owning/controlling suppliers, retail providers who operate generating facilities, and DWR.

The regulation lists certain information that must be provided at the generating facility level and also at the generating unit level. This list is provided in the data dictionary shown in Table 8.2. Since the on-line reporting tool will be customized for each sector, an operator of an electric generating facility will enter the data identified in the data dictionary into the appropriate data fields included in the reporting tool. In some cases, there may be an option to have the tool calculate certain information for the reporter. Or the reporter may override the calculating tool and enter the data directly.

Table 8.2 Data Dictionary

<b>Electricity Generating Facilities</b>		
<b>Field Name</b>	<b>Units</b>	<b>Notes</b>
Facility Name		
Facility Identification Number	ARB ID number	Asset Owning/Controlling Supplier ID number
Ownership Share		Retail Providers Only
Nameplate Generating Capacity	megawatts	
Net Power Generated	MWh	

Wholesale sales exported out-of-state (if known)	MWh	
If also the operator of co-generation facility $\geq$ 1MW and $\geq$ 2,500 metric tonnes CO <sub>2</sub> per year, then also meet requirements for co-generation facilities (see Chapter 9). If co-generation is < 1MW or < 2500 metric tonnes of CO <sub>2</sub> , then report as a combustion source only.		
<b>Facility Level Totals</b>		
Facility Total CO <sub>2</sub> Emissions	metric tons	facility sum all sources
CO <sub>2</sub> Emissions from Biomass	metric tons	facility sum all sources
Facility Total N <sub>2</sub> O Emissions	metric tons	facility sum all sources
Facility Total CH <sub>4</sub> Emissions	metric tons	facility sum all sources
Facility Total SF <sub>6</sub> Emissions	metric tons	facility sum all sources
Facility Total HFC Emissions by gas	metric tons	facility sum all sources
<b>Stationary Combustion Emissions at Facility Level</b>		
Fuel Type		
Co-fired		yes or no
Fuel Consumption	scf or gallons or tons or bone dry tons/year	by fuel type(multiple)
Average High Heat Value by Fuel Type	MMBtu per unit of mass or volume	
Average Carbon Content by Fuel Type	percent	
Steam	MMBtu	
Boiler Efficiency	percentage	
Facility specific emission factors (if applicable) for CO <sub>2</sub> , N <sub>2</sub> O, and CH <sub>4</sub>	kg CO <sub>2</sub> /unit, N <sub>2</sub> O /unit, CH <sub>4</sub> /unit	
CEMS if applicable	are process emissions included (yes or no)	O <sub>2</sub> or CO <sub>2</sub>
Total Stationary Combustion CO <sub>2</sub> Emissions	metric tons	by fuel type(multiple)
CO <sub>2</sub> Emissions from Biomass	metric tons	by fuel type(multiple)
Total Stationary Combustion N <sub>2</sub> O Emissions	metric tons	by fuel type(multiple)
Total Stationary Combustion CH <sub>4</sub> Emissions	metric tons	by fuel type(multiple)
<b>Process Emissions at Facility Level</b>		
CO <sub>2</sub> Emissions from Acid Gas Scrubbers/Acid Gas Reagent	metric tons	
Total Process Emissions	metric tons	by greenhouse gas
<b>Fugitive Emissions at Facility Level</b>		
CH <sub>4</sub> Emissions from Coal Storage	metric tons	
Fugitive HFC from Cooling Units by type of HFC	kilograms	
Fugitive CO <sub>2</sub> Emissions from Geothermal Facilities	metric tons	
Site specific emission factor for Geothermal Facilities	kg per MWh	

SF <sub>6</sub> for facility equipment	kilograms	may be aggregated at entity level, facility level, for group of units or single unit
<b>Total Fugitive Emissions</b>		<b>by greenhouse gas</b>
<b>Information on Generating Units</b>		
Generating Unit/Group of Units Identification Number	ARB ID number	
Facility Identification Number	ARB ID number	Asset Owning/Controlling Supplier ID number
Ownership Share		Retail Providers Only
Nameplate Generating Capacity	MW	
Net Power Generated	MWh	
Fuel Consumption	scf or gallons or tons or bone dry tons/year	by fuel type(multiple)
CO <sub>2</sub> Emissions from Fuel Combustion	metric tons	by fuel type(multiple)
CO <sub>2</sub> Emissions from Biomass	metric tons	by fuel type(multiple)
N <sub>2</sub> O Emissions from Fuel Combustion	metric tons	by fuel type(multiple)
CH <sub>4</sub> Emissions from Fuel Combustion	metric tons	by fuel type(multiple)
Wholesale sales exported out-of-state (if known)	MWh	
Additional Information from Retail Providers, DWR, and Asset Owning/Controlling Suppliers for nuclear, hydroelectric, wind, or solar energy facilities they operate		
Facility Name		
Facility Identification Number	ARB ID number	
Ownership share		Retail Providers Only
Type of Energy Used		hydro, wind, solar, or nuclear
Nameplate Generating Capacity	MW	
Net Power Generated	MWh	
Additional Information from Retail Providers and DWR Only for Fully or Partially Owned Facilities or Units Not Already Reported Above		
At Facility Level		
Facility Name		if not already reported above
Facility Identification Number	ARB ID number	if not already reported above
Ownership share		if not already reported above
Net Power Generated	MWh	if not already reported above
At Unit Level		
Facility Name		if not already reported above

Facility Identification Number	ARB ID number	if not already reported above
Generating Unit/Group of Units Identification Number	ARB ID number	if not already reported above
Ownership share of Unit/Group of Units		if not already reported above
Net Power Generated	MWh	if not already reported above

To begin with, operators must report nameplate generating capacity, net generation, CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> emissions from fuel combustion. Retail providers also report ownership share for all generating facilities they operate including nuclear, hydro, wind, and solar. Operators report fuel consumption even if they intend to calculate their emissions using a CEMS-based methodology.

If an operator is using a fuel-based methodology to calculate emissions and the methodology requires the operator to measure fuel content or carbon content, then the operator must report the annual average of the heat or carbon content measurements taken. Typically, this would be an average of twelve monthly measurements; however, the required number of measurements varies by fuel type. The operator must select a methodology from those specified in section 95125(c)(1) to determine heat content, and from section 95125(d) to determine carbon content. The operator also has the option to obtain heat or carbon content from the fuel supplier provided the fuel supplier uses one of the prescribed methods.

If the operator does not measure the heat content of the fuel combusted, the operator is required to report steam produced in MMBtu units. The regulation provides an optional method for converting pounds of steam into MMBtu in section 95125(h)(1)(B), but other conversion methods may be used including conversion tables. The operator may optionally report boiler efficiency. Providing this information enables ARB to use reported data rather than assumed efficiencies when conducting statewide analyses.

If the operator does measure high heat value using one of the methods in section 95125(c)(1)(A)-(C) but is not using a fuel-based methodology to calculate emissions, the operator has the option to report either annual average high heat value or steam production but does not need to report both.

### 8.2.1 Aggregating Generating Units

As can be seen in the data dictionary, some information is to be reported not only at the facility level, but also at the generating unit level. This includes nameplate generating capacity, net power generated, fuel consumption, and combustion emissions. However, the regulation stipulates that if the facility lacks metering or monitoring equipment that would enable the operator to determine this information at the unit level, the operator may aggregate units that combust the same fuel type, and report information for the group of units rather than by each individual unit.

### 8.2.2 Cogeneration Units

If the reporter operates a cogeneration unit or group of units that is greater than or equal to 1 MW and has greater than or equal to 2,500 metric tonnes of CO<sub>2</sub> emissions

from combustion and process sources (including fossil and biomass-derived fuels), then the reporter must also meet the requirements under section 95112 for cogeneration facilities. Section 95112 stipulates that operators of certain self-generation facilities less than 10 MW may submit an abbreviated report. This option is not available to operators whose primary business is generating electricity. Thus, an operator referred to section 95112 from section 95111 may not submit an abbreviated report and is required to calculate and report distributed emissions for each of their cogeneration systems.

If the cogeneration unit or group of units is less than 1MW or less than 2,500 metric tonnes of CO<sub>2</sub>, then the operator will report emissions from the unit/units according to the requirements in section 95111, and is relieved of additional reporting in section 95112. Operators of cogeneration units should review the chapter in this document devoted to reporting requirements for cogeneration.

### 8.2.3 Process Emissions

Some electric generating facilities may have acid gas scrubbers. The CO<sub>2</sub> emissions from acid gas scrubbers are called process emissions. If an operator calculates CO<sub>2</sub> emissions for his facility using a method based on a continuous emissions monitoring system (CEMS), the process emissions from acid gas scrubbers will be reflected in the CO<sub>2</sub> concentrations used in the CEMS methodology. In this case, the operator is not required to report process emissions separately from total CO<sub>2</sub> emissions for the facility based on the CEMS analysis.

If an operator calculates CO<sub>2</sub> emissions for the facility using a fuel-based methodology, then a separate calculation is needed to calculate and report CO<sub>2</sub> emissions from acid gas scrubbers, as discussed in subsection 8.8.1.

### 8.2.4 Fugitive Emissions

In addition to fuel combustion and process emissions, operators must report fugitive emissions. Fugitive emissions for electric generating facilities include emissions of SF<sub>6</sub> from circuit breakers and other equipment, HFCs from cooling units, and CH<sub>4</sub> from coal storage.

The operator must report fugitive SF<sub>6</sub> emitted from equipment located at the facility that the operator is also responsible for maintaining in proper working order. If the same operator is responsible for multiple facilities, the operator may aggregate SF<sub>6</sub> emissions for all sources or any subset of sources.

California-only retail providers, multi-jurisdictional retail providers, marketers, asset owning/controlling suppliers, and DWR are required to report fugitive SF<sub>6</sub> emissions from transmission and distribution systems, substations, and circuit breakers located inside California for which they have responsibility for maintaining in proper working order. These entities may or may not be the operator of the systems. SF<sub>6</sub> emissions may be aggregated at the discretion of the reporting entity.

Many entities share the use of transmission and distribution systems in California. The responsibility to reduce fugitive SF<sub>6</sub> emissions goes beyond the scope of this regulation

and will need to be addressed in a public process during the development of future emission reduction regulations.

Next, operators of generating facilities that have cooling units directly related to power production are required to report fugitive HFC by compound. The operator may use the same methodology required for SF<sub>6</sub> or select the single unit methodology discussed later in this chapter.

Last, operators who combust coal must report fugitive CH<sub>4</sub> emitted from coal storage, as addressed in subsection 13.10.

#### 8.2.5 Facility Totals

In response to stakeholder requests, the reporting tool will allow the operator to report facility totals as a direct entry. The operator will also have the option to tag individual data entries at unit or subunit levels to be included in the facility totals. The reporting tool will then calculate facility totals by summing the tagged data fields.

#### 8.2.6 Wholesale power exported directly out-of-state

An operator of a generating facility (who is not a retail provider) is not required to report power transactions with one exception. The regulation requires that the operator report wholesale power sales that the operator directly exports across the California border, if known. If the operator does not know whether the power sold crossed the California border, he or she is relieved of this requirement. Also, the requirement only applies to facilities that are located inside California. When reporting exports, the operator should report at the generating unit level if the transaction is associated with a specific generating unit.

If the definition for retail provider or for marketer also applies to the operator of a generating facility, then the operator must report not only as an operator of a generating facility, but also as a retail provider or marketer as applicable. If the operator is a retail provider or marketer, the operator will be required to report many or all of their power transactions and should not duplicate the reporting of any exported power transaction. Thus, whether reporting the export at the facility level or at the entity level, the export should be reported only once. ARB will combine the power reported as exports directly from generating facilities with other exports reported by retail providers and marketers to account for all power exported from California.

#### 8.2.7 ARB ID Numbers

A list of regional generating facilities and generating units, including their associated ARB ID numbers, will be made available at ARB's mandatory reporting website. If a facility, generating unit, or unit group is not represented in the list, then the operator must contact ARB so that ID numbers can be assigned suitable to the operator's needs. ARB requests that operators contact ARB as soon as possible when revisions to the list are needed, so that ARB can update the list on the website. This is important because retail providers and asset owning/controlling suppliers must include facility or unit ID numbers when reporting power transactions.

### 8.3 Wholesale Power Transactions – Specifications for All Reporting Entities

The regulation specifies in section 95111(b)(1) general requirements for reporting wholesale power transactions. These basic specifications apply to all entities that are required to report power transactions.

#### 8.3.1 Specified and Unspecified Sources of Power

All electricity transactions are reported in MWh. Entities must report separately power from specified sources and power from unspecified sources. A specified source means a particular generating unit or facility for which electricity generation can be confidently tracked due to full or partial ownership or due to its identification in a power contract. California eligible renewable resources are considered specified sources.

The amount of power for the transaction from a specified source must be specified as measured from the busbar of the facility. The reason for this is to meet the requirement in AB32 to account for all transmission line losses. By measuring from the busbar, transmission losses are included in the amount of power reported. It is important to include the ARB ID number so that when ARB determines emissions associated with the transaction the emission factor corresponding to the source is selected.

Electricity from unspecified sources is measured from the first point of receipt for which the reporting entity has information. The point of receipt is the point on an electric system where an entity receives electricity from a supplier. The point may be an interconnection with another system or a generator busbar.

#### 8.3.2 Regions of Origin and Destination

Reporting entities must identify a region of origin or destination for the transaction as specified in the regulation. The reporting entity should use their point of delivery for power sold to determine the region of destination.

The regions include the Pacific Northwest (PNW), the Southwest region (SW), California, California Independent System Operator (CAISO) Integrated Forward Market, CAISO Real-Time Market, and unknown.

The PNW region includes Washington, Oregon, Idaho, Montana, and British Columbia. The SW region includes Arizona, Nevada, Utah, Colorado, and western New Mexico. While there may be transactions originating beyond the PNW or SW regions, the amount of electricity is thought to be small and beyond the scope of the regulation.

The CAISO Integrated Forward Market (IFM), also called the day-ahead market, is the market conducted by CAISO that determines the best use of resources available while finding the least cost method of procuring required components. The IFM will not be operational until 2009. As a result, no power transactions associated with the IFM will be reported for calendar year 2008. In calendar year 2009, entities will be able to schedule transactions through the IFM. Power provided to the entity at bid will be finalized by CAISO. The entity will identify the IFM as the region associated with these

power transactions finalized by CAISO. Entities that conduct self-scheduled, bilateral purchases through the IFM will report those purchases like any other bilateral transaction. The entity identifies the counterparty and the region of origin relates to the counterparty's location.

The CAISO Real-Time Market (RTM), also a market conducted by CAISO, is where power is quickly bought or sold to accommodate power use moments before it occurs. The RTM is roughly one hour ahead or five-minute intervals. The transactions reported for the RTM are additional to those already reported for the IFM. Thus, there should be no duplication when reporting IFM and RTM transactions. When reporting power purchased from or sold to the RTM, the reporting entity should net its hourly interchange with the CAISO to determine whether the reporting entity had a net sale to the RTM or a net purchase from the RTM for that hour. Then the reporting entity sums up hourly power purchases and hourly sales over each 24 hour period to get daily totals. The daily totals should be summed to get monthly totals. Monthly totals should be summed to get annual totals. The annual total MWh purchased from and sold to the RTM must be reported to ARB.

And the last region, unknown, is stipulated when the region of origin cannot be documented.

### 8.3.3 Aggregating Transactions

Entities should aggregate wholesale power sold by the counterparty that received the power and aggregate by the supplier for power purchased. Entities that play the role of middle party, usually marketers, should aggregate by the supplier. Transactions may occur where the counterparty is a balancing authority. An example is a power exchange made to relieve transmission congestion.

ARB will make available Excel spreadsheet files with formats for aggregating power transactions so that reporting entities can upload transaction information directly into the on-line reporting tool. There are customized files for each kind of reporting entity: California-only retail provider, multi-jurisdictional retail provider, marketer, asset owning/controlling entity, and DWR.

### 8.3.4 Renewable Energy Transactions

Entities must identify transactions that are null power. Null power is defined as electricity produced by a renewable energy generating facility from which a Western Renewable Energy Generation Information System (WREGIS) or a Nevada Tracks Renewable Energy Credits (NVTREC) certificate has been unbundled and sold separately. The mandatory reporting regulation does not require entities to report their purchases and sales of WREGIS or NVTREC certificates. Assigning emissions to null power transactions is not addressed in the mandatory reporting regulation, but will be addressed in future emission reduction control regulations.

When entities have contracts with renewable energy resources that require firming power to back up the contracts, the entity reports the total amount of renewable power generated for the contract over the report year as from a specified source. It is not necessary to report power transactions related to firming power provided the amount of firming power and the excess deviation in renewable energy are net zero at

the end of the year. Excess firming power is reported like other typical power transactions identifying the source of the firming power.

When reporting power transactions associated with exchange agreements, the entity should report electricity received under an exchange agreement as a power purchase, and electricity delivered under an exchange agreement as a wholesale power sale. Thus, even if the transaction has no exchange of money, it should be reported in the same way as if it were a purchase or sale. Similarly, if power is generated to pay back line losses to a balancing authority, the transaction should be reported as a sale to the balancing authority. This approach supports the regulatory purpose to track emissions rather than money.

### 8.3.5 Wheeled Power

Retail providers and marketers are required to report power wheeled through California. For the purposes of this reporting regulation, wheeled power is wholesale power imported into California that terminates in a location outside of California. It should be measured at the first California point of delivery, aggregated by the supplier, specifying the region of origin as PNW or SW. NERC E-tags, settlements data, or other information can be retained for purposes of verifying these transactions. Entities should exclude any wheeled power from the amount of power reported as either imports or exports.

### 8.3.6 Documenting Transactions for Verification

Power transactions may be documented with NERC E-tags, settlements data, power contracts, and information and reports prepared for other regulatory agencies.

## **8.4 Reported Information: Marketers**

Reporting requirements specific to markets are located in section 95111(b)(2). Marketers are required to report fugitive SF<sub>6</sub> from transmission and distribution systems, substations, and circuit breakers located inside California that they have responsibility to maintain in proper working order. In addition, they must report electric power transactions in MWh for power imported to, exported from, or wheeled through California. The reporting of imported and exported power is limited to transactions for which the marketer is the purchasing/selling entity at the first point of delivery in California or at the last point of receipt in California.

Marketers are not required to report emissions from generating facilities they operate unless the facility is located inside California. In that case, the entity must report all information required of an operator of a California generating facility and also of a marketer. Non-California retail providers who are first deliverers of power to California will report as marketers only since they do not operate generating facilities located inside California.

### 8.4.1 Wholesale Power Transactions for Marketers

Charts 8a, 8c, and 8d at the end of this chapter show the kinds of electricity transactions that must be reported by marketers. Chart 8a specifies how power imported to California should be reported. Marketers only report imports for which they are the purchasing/selling entity at the first point of delivery inside California.

The transactions must be reported as specified or unspecified sources of power with null power designations if applicable, including the region of origin, and aggregated by supplier. The regions of origin for imports include either PNW or SW. Power imported from unspecified sources may also be reported from an unknown region if necessary.

Similarly, Chart 8c specifies that power exported from California should be reported as having either specified or unspecified sources of power, with null power designations if applicable, including the region of destination (PNW, SW, or unknown), and aggregated by supplier.

Chart 8d shows that marketers must report the region of origin (PNW or SW) for power wheeled through California aggregated by supplier.

## 8.5 Reported Information: Retail Providers

Reporting requirements for retail providers (i.e., California-only, multi-jurisdictional, and WAPA) are specified in section 95111(b). Retail providers are required to report their wholesale power transactions; retail sales; emissions and other information related to generating facilities they operate; fugitive SF<sub>6</sub> emissions from transmission and distribution systems, substations, and circuit breakers located inside California that they maintain; and additional non-emissions information on facilities they fully or partially own. They may voluntarily report native load designations, certain information related to wholesale sales, "green" retail sales programs, and power used in the electrification of shipping ports, truck stops, and motor vehicles.

### 8.5.1 Retail Providers as Operators of Generating Facilities

Retail providers are required to report information for all generating facilities they operate regardless of the location of the facility. Retail providers should refer back to the discussion on operators of generating facilities to better understand the requirements they must meet when reporting information about their generating facilities.

The regulation exempts nonretail provider operators of generating facilities that are solely powered by nuclear, hydroelectric, wind, or solar energy from preparing a greenhouse gas data report. However, retail providers who operate facilities of this type are required to report the ARB ID number, nameplate capacity, and net power generated in the report year.

### 8.5.2 Retail Providers as Marketers

Retail providers must also meet all the requirements applicable to marketers. As discussed in previous paragraphs, these requirements include the reporting of fugitive emissions of SF<sub>6</sub> and transaction information for power imported, exported, or wheeled through California. Multi-jurisdictional retail providers, though required to report imports and exports the same as other California retail providers and marketers, are exempt from section 95111(b)(2)(B)-(F) because they are subject to other sections of the regulation that provide language customized to address the unique perspective of multi-jurisdictional retail providers. The transactions specific to multi-jurisdictional retail providers are discussed later in this document. The requirement in section 95111(b)(2)(G) to report power wheeled through California

applies to multi-jurisdictional retail providers as well as California-only retail providers and marketers.

Chart 8c pertaining to power exported from California that was discussed above under marketers also applies to nonmulti-jurisdictional retail providers. One difference is that retail providers aggregate exports by counterparty. A second difference is that if a nonmulti-jurisdictional retail provider is reporting an export, the retail provider must also report that the power was first purchased/taken by the retail provider.

**Important Relationship:  
Power Purchases to Sales by Retail Providers**

*For both nonmulti-jurisdictional and multi-jurisdictional retail providers, the total power reported as purchased/taken must account for all power used to serve load as well as all power sold wholesale. Thus, retail providers must report power purchased or taken before they can report a transaction to sell that power. Similarly, even though retail sales are reported as total MWh and are not reported as transactions, power used to serve load must be reflected in the transactions reported by the retail provider as wholesale power purchased or taken.*

Chart 8d on power wheeled through California applies to all California retail providers as well as to marketers.

There are additional requirements related to imported power that apply to retail providers and not to marketers. Chart 8b shows the imported power transactions that apply to nonmulti-jurisdictional retail providers. Chart 8b is similar to Chart 8a for marketers; however, it also includes the additional requirement identified in section 95111(b)(2)(D) to report power imported into California even when the retail provider is not the first deliverer of that power. In other words, if the retail provider's contract indicates that the source of the power purchased is located outside California, then even though the power is delivered to California via a third party, the retail provider will report the transactions as an import indicating that the retail provider is not the purchasing/selling entity at the first point of delivery. This type of transaction is in contrast to one where the retail provider receives power from a marketer who is the first deliverer to California and the retail provider is uncertain where the power came from. In the latter situation, the retail provider will report the purchase as inside California because the retail provider has no further knowledge about the source of the power beyond receiving it from the marketer.

ARB anticipates that retail providers will report relatively few imports where they are not the first deliverer. ARB also recognizes that these transactions will duplicate the transactions already reported by entities who are the first deliverers of the power. The requirement to capture imported power in both ways refers back to ARB's commitment to gather all information that may be needed to serve a trading program. If a load-based trading scheme is implemented in the future or if it becomes necessary to determine load-based emissions for retail providers for other purposes, then information on all power imported by retail providers may be needed whether or not they are the first deliverer. When analyzing data, ARB will avoid double counting imports by analyzing imports reported by first deliverers separately from imports

reported by retail providers. As ARB develops and implements future emission reduction regulations, unnecessary reporting requirements will be eliminated.

Chart 8b shows that retail providers must report power imported from specified or unspecified sources with null power designations if applicable, including the region of origin, and aggregated by counterparty. Section 95111(b)(3)(H)-(I) of the regulation requires retail providers to provide certain information on large hydroelectric or nuclear power transactions and they may optionally designate power associated with native load. These specifications are represented in Chart 8b as well.

### 8.5.3 Designating Native Load

Section 95111(b)(3)(I) gives retail providers (including multi-jurisdictional) the option to designate the power taken from certain generating facilities partially or fully owned or operated by the retail provider as well as power purchased or taken from other specified sources, as serving their own native load.

Native load designations provide information used to calculate load-based emissions responsibilities for retail providers. The retail provider can claim cleaner resources as serving native load while assigning dirtier resources to characterize emissions associated with their wholesale power sales. If ARB later determines that load-based emissions calculations are not essential to evaluations or regulations, retail providers will be relieved of reporting native load designations. For now, retail providers can indicate in the reporting tool which transactions are to be assigned to native load.

In order for power taken or purchased from a certain generating facility to be designated as serving native load, the facility must meet one of the following criteria:

1. The generating facility is a California eligible renewable resource and, prior to the reporting date, the reporting entity has retired the WREGIS or NVTREC certificates associated with the power received from the facility during the report year.
2. The generating facility is a hydroelectric generation facility. There are no additional stipulations for this criterion. Power taken from any hydroelectric facility regardless of size can be designated.
3. The generating facility is partially or fully owned by the retail provider, operated by the retail provider, or under a long term power contract. There is a stipulation that accompanies this criterion. If a facility is designated under this criterion, then all generating facilities from which the retail provider purchases or takes specified power that run at the same or greater average annual capacity factor must also be designated as serving native load. Capacity factor means the amount of energy that the generating facility actually generates compared to its maximum rated output over a given period of time, in this case, one year.
4. The generating facility is a qualifying facility whose generation the reporting entity purchases under power contract. A qualifying facility is a cogeneration or small power production facility that meets ownership, operating, and efficiency criteria established by the Federal Energy

Regulatory Commission (FERC) pursuant to the Public Utility Regulatory Policies Act.

#### 8.5.4 Large Hydroelectric or Nuclear Power Transactions

Section 95111(b)(3)(H) specifies that retail providers (including multi-jurisdictional) need to provide certain additional information when reporting wholesale power transactions associated with hydroelectric facilities greater than 30 MW (and not a California eligible renewable resource) or from nuclear facilities.

During the development of the mandatory reporting regulation, the California Public Utilities Commission and the California Energy Commission raised concerns that the effectiveness of a future greenhouse gas trading scheme could be negatively affected by contract shuffling. Contract shuffling is the term applied when a retail providers who owns or contracts with dirtier generating facilities opts to sell off the dirtier power and claim cleaner resources to serve their native load. The result is that power to serve California is characterized as cleaner on paper, but greenhouse gases are not reduced overall.

The collection of additional information on contracts with hydroelectric and nuclear facilities may be helpful in preventing possible contract shuffling in future regulations. If western states are successful in implementing a regional trading scheme, this additional information may no longer be needed. For now, the regulation requires retail providers to associate power taken or purchased from large hydroelectric and nuclear facilities with one of the following parameters:

1. Power purchased with a contract in effect prior to January 1, 2008 that remains in effect or has been renegotiated for the same facility within one year of contract expiration.
2. Power purchased that does not have such a contract and is not associated with an increase in the facility's generating capacity.
3. Power that does not have such a contract but is associated with an increase in the facility's generating capacity as a result of increased efficiencies or other capacity increasing actions.
4. Power purchased from hydroelectric generating facilities during a "spill or sell" situation where power not purchased is lost.
5. Power that does not have such a contract due to federal power redistribution policies for federally owned resources and is not related to price bidding.

The first parameter indicates there is no contract shuffle because a contract has been in place or is a continuation of an established contract. The second parameter indicates there could be a contract shuffle because the contract is new. Parameters 3 through 5 indicate no contract shuffle because there were justifiable reasons for a new contract. The reporting tool will enable the reporting entity to select a parameter from 1 through 5 to associate with the power transactions from large hydroelectric and nuclear facilities.

### 8.5.5 Wholesale Power Transactions Inside California

Section 95111(b)(3) includes requirements for retail providers (including multi-jurisdictional) to report wholesale power purchases and sales that occur inside California. The requirement to report these transactions are included in the regulation so that ARB can calculate emissions associated with retail provider load. At any point that ARB determines the information is no longer critical, retail providers will be relieved of these reporting requirements. For now, they are required and are expected to provide useful information during the initial years of reporting.

Chart 8e shows power purchased or taken from in-state resources. For all purchases or power taken from specified sources, the region of origin must be reported as California. Power purchased or taken from unspecified sources can be reported with the origin being CAISO Real Time market, CAISO Integrated Forward Market, or California. For nonmulti-jurisdictional retail providers, if a purchase is from an unknown origin, then the transaction must be reported as an import into California. Multi-jurisdictional retail providers must report transactions from unknown origins under section 95111(b)(3)(G), to be discussed in the next subsection.

Purchases or power taken from inside California must also include designations for null power and native load, as well as large hydro/nuclear contract stipulations as applicable. All these transactions are aggregated by counterparty.

Retail providers must be sure that the transactions reported as purchased/taken power account for all power to serve load as well as wholesale power sales. This is because wholesale sales can only be reported for power that has already been reported as purchased/taken.

Chart 8f shows wholesale power sales delivered to California by nonmulti-jurisdictional and multi-jurisdictional retail providers. A sale is considered inside California if the point of delivery is inside California. If a nonmulti-jurisdictional retail provider cannot document that the point of delivery for a sale was inside California, then the retail providers must report the transaction as an export. Multi-jurisdictional retail providers would report this type of transaction under section 95111(b)(3)(O), to be discussed later.

Retail providers must report wholesale sales from specified sources and from unspecified sources. For sales of power from specified sources, the retail providers must indicate which sales are of power purchased or taken from facilities they operate and which sales are from resources they do not operate. Wholesale sales from facilities they do not operate include "take or pay" transactions.

The retail provider must specify that the destination of the sale is the CAISO Real Time market, the CAISO Integrated Forward Market, or California. Retail providers must also indicate if the sales are null power and aggregate the sales by counterparty.

Multi-jurisdictional retail providers who report wholesale sales delivered to California must also indicate if they were the deliverer at the first point of delivery in California.

#### 8.5.6 Additional Wholesale Power Transactions for Multi-jurisdictional Retail Providers Only

Section 95111(b)(3)(G) and section 95111(b)(3)(O) include customized language to describe certain wholesale power transactions that multi-jurisdictional retail providers must report. Chart 8g pertains to 95111(b)(3)(G) and shows wholesale power purchased or taken from resources outside California. Multi-jurisdictional retail providers must report these transactions from specified sources including native load, null power, and large hydro/nuclear contract stipulations. The origin designation will be PNW or SW. Multi-jurisdictional retail providers must also report purchases from unspecified sources of power indicating the origin as PNW, SW, or unknown. All transactions are aggregated by counterparty.

Chart 8h pertains to section 95111(b)(3)(O) and shows wholesale power that multi-jurisdictional retail providers sold and delivered to counterparties outside California. Again, the transactions must be reported as sales from specified or unspecified sources with null power designations as applicable and aggregated by counterparty. The region of destination must be reported as PNW, SW, or unknown.

The transactions described above, in combination with the wholesale power transactions identified in previous sections of this guidance document applicable to multi-jurisdictional retail providers, constitute all of the wholesale power transaction information needed to determine load based emissions for a multi-jurisdictional retail provider.

For California inventory purposes, it may be necessary to designate certain multi-jurisdictional power transactions as imports or exports. A wholesale sale made to a point of delivery inside California will be considered an import, and a wholesale purchase taken from a resource located inside California will be considered an export.

#### 8.5.7 Other Special Reporting for Retail Providers

As can be seen in Chart 8i, section 95111(b)(3) requires retail providers (including multi-jurisdictional) to report other special information that includes ARB ID numbers and names for generating facilities or generating units fully or partially owned by the retail provider, the ownership share for the generating facilities or generating units, if applicable, and the associated net power generated. In another section of the regulation they are already required to report net power generated for generating facilities/units they operate. (Since they may own and operate a facility there can be an overlap in these requirements, but the reporting tool is being designed so that there will be no duplicate reporting of the same information.) The regulation stipulates that if the retail provider holds a contract that entitles them to a specified percentage of a facility/unit electricity generation for the report year, then the retail provider must consider that facility/unit as being fully or partially owned by the retail provider for the report year.

Also shown in Chart 8i, if a retail provider fully or partially owns a facility that emits greater than 1,100 pounds of CO<sub>2</sub> per MWh, they may optionally report some additional information related to sales from that facility that may be of benefit to them in future emission reduction or trading regulations. The use of this information will be determined through future regulatory processes.

The emissions rate must be based on either the most recent greenhouse emissions data report that received a positive verification or on CO<sub>2</sub> emissions reported to U.S. EPA under 40 CFR Part 75.

The retail provider may report MWh associated with wholesale sales made by the retail provider or on behalf of the retail provider from the facility or unit to counterparties located outside California, provided the sales meet one of the following stipulations:

1. The power could not be delivered to the reporting retail provider during the hours it was sold due to congestion in the transmission and distribution system or similar issues, or
2. The retail provider did not need the power during the hours it was sold for reasons not related to reducing the retail provider's greenhouse gas emissions responsibility. Reasons may include, but are not limited to, the retail provider's own load was met by resources that were less expensive than the specified facility (excluding any value associated with greenhouse gas mitigation).

The retail provider may also report the amount of power in MWh that was reduced from the facility or unit as a result of the reduced demand for power by the retail provider. In this case, the retail provider must retain documentation that associates reduced generation from the facility/unit with the retail provider's reduced demand for power.

#### 8.5.8 Retail Sales

Chart 8j shows that retail providers are also required to report in MWh the amount of their retail sales to their customers for the report year. Multi-jurisdictional retail providers must report retail sales for their service territory on the whole as well as the portion (MWh) that is designated to California customers. Information on retail sales will be needed if ARB needs to provide an emissions rate associated with electric power retail sales to California customers.

Also shown in Chart 8j, retail providers have the option to report information pertaining to "green" retail sales programs where customers can pay a premium for electric power provided by a specified clean resource. The retail provider may report the retail sales (MWh) that are associated with each specified clean facility along with the ARB facility ID number and name and a general description of the program.

Last, retail providers may elect to report the subset of retail sales (MWh) associated with the electrification of shipping ports, truck stops, and motor vehicles. In order to report retail sales related to electrification, retail providers must have metering capabilities that separately track these sales from other retail sales of power.

### **8.6 Reported Information: Asset Owning or Controlling Suppliers**

The section on applicability explains that asset owning or controlling suppliers (AO/C Suppliers) have the option to voluntarily provide a greenhouse gas emissions data report to ARB for the purpose of establishing a supplier specific emission factor that

would be associated with all their electric power wholesale sales. To qualify for this option, 50 percent or more of the total electric power that the supplier sells must be from renewable energy, or the supplier must not purchase electric power from unspecified sources in amounts that exceed 20 percent of their total electric power sales for the report year.

First and foremost, the supplier is required to report the same kind of information for the facilities they own or control that California operators report. Thus, all of the requirements explained in the section on information reported by operators of electric generating facilities apply to suppliers.

In addition, suppliers that operate generating facilities that are solely powered by nuclear, hydroelectric, wind, or solar energy must report the ARB ID number, facility name, nameplate capacity, and net power generated in the report year the same as California retail providers. ARB will use the information on all of the facilities in the supplier's fleet to calculate fleet average emission factors.

Suppliers who purchase more than 10 percent of the total power they sell for the report year must also report their wholesale power purchased from specified and unspecified sources and wholesale power sold from specified resources. Emissions associated with their wholesale power transactions will be added to the calculation of their fleet average emission factors.

Chart 8k shows the wholesale power transactions that must be reported. The supplier must report wholesale power purchased from specified sources including the ARB facility ID number, null power designations if applicable, and the region of origin as the PNW, SW, or California. They must report purchases from unspecified sources and designate the region of origin as PNW, SW, the CAISO Real Time market, the CAISO Integrated Forward Market, California, or unknown. The chart also shows they must report wholesale power they sold from specified resources, including ARB facility ID number, null power designations if applicable, and the region of destination as PNW, SW, CAISO Real Time market, the CAISO Integrated Forward Market, California, or unknown. All transactions are to be aggregated by counterparty.

## **8.7 Reported Information: California Department of Water Resources**

Even though the California Department of Water Resources (DWR) does not directly deliver power to serve California's load, and therefore is not a retail provider, they are a significant supplier of wholesale power to the state and they are also a significant user of electric power in California. DWR is required to provide ARB with all necessary information to develop supplier specific emission factors. These emission factors will be used when assigning emissions to wholesale power purchased from DWR. DWR is the only entity in the electric power sector of the reporting regulation that is also required to report their power usage. They will be reporting usage in MWh for each of the water pumps they operate.

Thus, DWR will refer back to the requirements that apply to operators of generating facilities and the requirements that apply to nonmulti-jurisdictional retail providers. Because DWR resources are hydroelectric many of the reporting requirements for facility operators will not be applicable to them.

In addition to reporting information on facilities they operate, Chart 8I and Chart 8m show wholesale power transactions and other information that DWR will report. These charts are customized to DWR activities. DWR will report wholesale power imported into California and identify when they are the first deliverer. They will report wholesale power purchased or taken from inside California and wholesale power sold and delivered to points inside California. They will report all the same specifications for their wholesale power transactions that are required of retail providers. DWR does not export electric power out of California and so has no exports to report. They will also report information related to the facilities fully or partially owned.

## 8.8 Emissions Calculation Methods

The methodologies required for use when calculating greenhouse gas emissions from electric generating facilities are specified in section 95111(c). These methods are dependent on the greenhouse gas and the type of fuel being combusted. They were selected with the goal of achieving a level of accuracy that would be acceptable in future trading programs whether statewide, regional, national, or international. The matrix of methodologies provided in Table 8.8 maps the greenhouse gas and fuel type to the appropriate suite of methods.

Table 8.8 Matrix of Methodologies

	<i>Electrical Generating Facilities &amp; Retail Providers</i>	<i>Cogeneration</i>
<b>Reporting Requirements Section in Regulation</b>	95111	95112
<b>CO<sub>2</sub> Emissions From Combustion (by fuel type)</b>		
Associated Gas	95125(c)-(e) or (g)	95125(c)-(e) or (g)
Biogas and Landfill Gas	95125(c)-(d) or (g)	95125(c)-(d) or (g)
Biomass Fuels	95125(g) CO <sub>2</sub> CEMS if available; if not then (c)-(d) or (g)-(h)	95125(g) CO <sub>2</sub> CEMS if available; if not then (c)-(d) or (g)-(h)
Coal and Petroleum Coke	40 CFR Part 75 if applicable (includes App G); if not then 95125(d) or (g)	40 CFR Part 75 if applicable (includes App G); if not then 95125(d) or (g)
Flexigas	95125(d)(3)(A) or (g)	95125(d)(3)(A) or (g)
Middle Distillates, Gasoline, Residual Oil, or Liquefied Petroleum Gas (LPG)	40 CFR Part 75 if applicable; if not then 95125(c)-(d) or (g)	40 CFR Part 75 if applicable; if not then 95125(c)-(d) or (g)
Municipal Solid Waste	95125 (g) CO <sub>2</sub> CEMS if available; if not then or 95125 (h)	95125 (g) CO <sub>2</sub> CEMS if available; if not then or 95125 (h)
Natural Gas ( $\geq 975$ and $\leq 1100$ Btu)	40 CFR Part 75 if applicable; if not then 95125 (c)-(d) or (g)	40 CFR Part 75 if applicable; if not then 95125 (c)-(d) or (g)
Natural Gas ( $< 975$ or $> 1100$ Btu)	40 CFR Part 75 if applicable; if not then 95125 (d) or (g)	40 CFR Part 75 if applicable; if not then 95125 (d) or (g)
Refinery Fuel Gas	95125(d)-(e) or (g)	95125(d)-(e) or (g)
Co-Fired Fuels	95111(c)(7)	95111(c)(7)
Start-Up Fuels (Biomass Facilities)	95125 (a) or (c)-(e)	95125 (a) or (c)-(e)
<b>N<sub>2</sub>O and CH<sub>4</sub> Emissions From Combustion (for all fuel types)</b>	95125(b)	95125(b)
<b>Methods Which May Combine Process and Combustion Emissions</b>		
Continuous Emissions Monitoring Method	95125(g)	95125(g)

<b>Methods to Estimate Process Emissions</b> CO <sub>2</sub> From Acid Gas Scrubbers	95111(e)	95111(e)
<b>Methods to Estimate Fugitive Emissions</b> CH <sub>4</sub> Emissions from Coal Storage	95125(j)	95125(j)
Fugitive SF <sub>6</sub> Emissions	95111(f)	95111(f)
Fugitive HFC Emissions	95111(g)	95111(g)
Fugitive CO <sub>2</sub> Emissions from Geothermal Generating Facilities	95111(i)	95111(i)
<b>Secondary Emissions Accounting Methods: Indirect Energy Usage, Electricity Transactions</b> Indirect Energy Usage Estimation Methods Indirect Electricity Usage		95125(k)
<b>Cogeneration Plant Efficiency and Distributed Emissions</b> Emissions Distributed to Thermal or Electrical Energy Production		95112(b)

The methods contained in section 95125 are explained in detail in a separate chapter that also includes working examples. The methods contained in section 95111(c) and Appendix A of the regulation are explained in a later section of this chapter.

Operators of generating facilities subject to the national Acid Rain Program report CO<sub>2</sub> emissions along with many other pollutants to U.S. EPA under 40 CFR Part 75. The Acid Rain Program is considered a model program for submitting data used in emissions trading programs. U.S. EPA is developing a national greenhouse reporting regulation and there are efforts to implement either a Western Regional or national greenhouse gas trading program. The ARB reporting regulation requires that facilities report their Acid Rain CO<sub>2</sub> data to ARB so that California will be poised to participate in these programs without concern that California data will be inconsistent with data reported by other states.

Coal and petroleum coke are fuels that produce particularly high CO<sub>2</sub> emissions relative to other fuel types. As a result, operators of generating facilities that combust these fuels and are not subject to the Acid Rain program must use methods in either 95125(d) or (g) in order to maintain a high level of accuracy when reporting greenhouse gases. Operators who combust natural gas with a high heat value less than 975 or greater than 1,100 Btu per scf are also limited to these two methodologies for the same reason.

Biomass and municipal solid waste fuels, though "green" fuels in total or in part, are variable in carbon content. As a result, it is difficult to characterize their emissions. For this reason, operators of these types of facilities that have the capability to measure CO<sub>2</sub> concentrations and flue gas flow rates using CEMS are required to calculate their CO<sub>2</sub> emissions using the CO<sub>2</sub> CEMS methodology identified in 95125(g). If not, they are provided other methodology options.

Operators not subject to the Acid Rain Program who combust fossil fuels considered to be more homogeneous have the option to select one of the following methods: 95125(c) that requires periodic measurements of the heat content in fuels combusted, 95125(d) that requires measuring the carbon content of fuels combusted, or 95125(g) that requires the use of a continuous emissions monitoring system (CEMS).

The regulation states that emissions are to be reported for each fuel combusted using one of the methods specified in 95111(c) by fuel type even if fuels are co-fired. This requirement also applies if an operator co-fires one or more fossil fuels with a biomass-derived fuel and uses a CO<sub>2</sub> CEMS methodology to calculate CO<sub>2</sub> emissions. In this case, the operator must calculate the fossil fuel first using a fuel-based methodology and then subtract that result from the total CO<sub>2</sub> emissions determined from the CEMS methodology. The remaining difference is the CO<sub>2</sub> emissions that can be assigned to the biomass-derived fuel. The fossil fuel is calculated first because the fuel-based calculations for fossil fuels are apt to be more accurate. The one exception to this requirement is that operators of generating facilities that combust only fossil fuels and report using a CEMS methodology are not required to report CO<sub>2</sub> emissions by fuel type.

Operators of biomass generating facilities that combust fossil fuels for start-up, shut-down, or malfunction operating periods only, have the option to use the methods in 95125(a) based on default emission factors to determine CO<sub>2</sub> emissions from their start-up fuels.

The matrix also shows the methods required when reporting process and fugitive emissions as well as methods used to report information for cogeneration generating units. The methodologies in regulation section 95112(b), used to distribute CO<sub>2</sub> emissions from cogeneration systems to thermal and electrical production, are explained in Chapter 9 on Cogeneration Facilities.

#### 8.8.1 CO<sub>2</sub> Process Emissions Calculation Methodology for Acid Gas Scrubbers

Operators that use acid gas scrubbers or add an acid gas reagent to the combustion source will likely emit CO<sub>2</sub> during the SO<sub>2</sub> scrubbing process. As a result, operators are required to calculate and report CO<sub>2</sub> emissions from these processes if these emissions are not already captured in CO<sub>2</sub> emissions calculations based on a CEMS methodology. If the operator has CEMS and uses a CEMS based methodology to determine CO<sub>2</sub> emissions from fuel combustion, he is not required to separately calculate the CO<sub>2</sub> emissions from acid gas scrubbers. The operator will note in his greenhouse gas data report that these emissions are accounted for in the total CO<sub>2</sub> emissions reported from fuel combustion.

The regulation provides the following equation for the operator to use when calculating CO<sub>2</sub> emissions from the acid gas processes:

$$\text{CO}_2 = S * R * (\text{CO}_2_{\text{MW}} / \text{Sorbent}_{\text{MW}})$$

Where:

CO<sub>2</sub> = CO<sub>2</sub> emitted from sorbent for the report year, metric tonnes;

S = Limestone or other sorbent used in the report year, metric tonnes;

R = Ratio of moles of CO<sub>2</sub> released upon capture of one mole of acid gas;

CO<sub>2</sub><sub>MW</sub> = molecular weight of carbon dioxide (44);

Sorbent<sub>MW</sub> = molecular weight of sorbent (if calcium carbonate, 100).

The operator must determine the amount of limestone (CaCO<sub>3</sub>) or sorbent used during the report year. This can be done by identifying total sorbent inventory at the beginning of the year, adding the total sorbent purchases during the year, and then

subtracting the total sorbent inventory at year end. The operator will need to make the necessary conversions in order to express total sorbent used for the report year as metric tonnes for the year.

The variable "R" is the ratio of the number of moles of CO<sub>2</sub> released upon capture of one of mole of SO<sub>2</sub>. Variable "R" is dependent on the type of sorbent used in the scrubbing process. If limestone is the sorbent, R is equal to 1.0.

**Example 8.8.1 CO<sub>2</sub> Emissions from Acid Gas Scrubber**

The operator of a coal-fired generating facility has an SO<sub>2</sub> scrubber that uses limestone as the sorbent for the scrubber. The operator calculates his CO<sub>2</sub> emissions from coal combustion using the fuel-based methodology in section 95125(d) of ARB's mandatory reporting regulation. Since this methodology does not account for the CO<sub>2</sub> emitted from the SO<sub>2</sub> scrubber, he must also calculate CO<sub>2</sub> emissions from the acid gas scrubber and report the emissions to ARB in addition to the CO<sub>2</sub> emissions he reports from fuel combustion. To do so, the operator gathers the following information:

2,000 tons = Inventory of limestone at beginning of report year  
 11,000 tons = Limestone purchased during the report year  
 3,000 tons = Inventory of limestone at the end of the report year  
 1 = R for limestone  
 44 = molecular weight of CO<sub>2</sub>  
 100 = molecular weight of limestone (CaCO<sub>3</sub>)

Thus, the amount of limestone used in the scrubber during the year was 10,000 tons. (2,000 + 11,000 – 3,000). The operator converts the 10,000 short tons of limestone used into 9,072 metric tonnes (10,000 \* 0.9072). Then the operator substitutes values into the formula to determine CO<sub>2</sub> emissions.

$$\text{CO}_2 = S * R * (\text{CO}_2 \text{ MW} / \text{Sorbent MW})$$

$$\text{CO}_2 = 9,072 * 1 * (44/100) = 3992 \text{ metric tonnes}$$

**8.8.2 SF<sub>6</sub> Fugitive Emissions Calculation Methodology**

SF<sub>6</sub> is used for electrical insulation. It can escape into the atmosphere during normal operations of generating facilities and electrical transmission and distribution systems, or when it is being added to or extracted from equipment.

Operators of generating facilities are required to report fugitive SF<sub>6</sub> emitted from equipment at their facility that they maintain in proper working order. Retail providers and marketers are required to report fugitive SF<sub>6</sub> emissions from transmission and distribution systems, substations, and circuit breakers located inside California that they maintain.

Reporting entities are required to use the mass-balance methodology provided by the U.S. EPA SF<sub>6</sub> Emission Reduction Partnership for Electric Power Systems to determine fugitive SF<sub>6</sub> emissions. This methodology is included in the regulation in Appendix A, and is titled, "Method for Calculating Emissions for High Global Warming Potential Compounds." The following text is taken from Appendix A and includes a discussion of the methodology to determine SF<sub>6</sub> emissions, explanations of the terminology used in the method, and a worksheet used to calculate SF<sub>6</sub> emissions. The ARB reporting tool will also include this information. Reporting entities are required to report SF<sub>6</sub> emissions as kilograms for the report year. Conversion to metric tonnes CO<sub>2</sub> equivalent emissions will be handled by the reporting tool.

**Text Taken From Regulation, Appendix A:**

This worksheet is based on the **mass-balance method**. The mass-balance method works by tracking and systematically accounting for all operator uses of SF<sub>6</sub> during the reporting year. The quantity of SF<sub>6</sub> that cannot be accounted for is then assumed to have been emitted to the atmosphere. The method has four subcalculations (A-D), a final total (E), and an optional emission rate calculation (F) as follows:

**A. Change in Inventory.** This is the difference between the quantity of SF<sub>6</sub> in storage at the beginning of the year and the quantity in storage at the end of the year. The “quantity in storage” includes SF<sub>6</sub> gas contained in cylinders (such as 115-pound storage cylinders), gas carts, and other storage containers. It does not refer to SF<sub>6</sub> gas held in operating equipment. The change in inventory will be negative if the quantity of SF<sub>6</sub> in storage increases over the course of the year.

**B. Purchases/Acquisitions of SF<sub>6</sub>.** This is the sum of all the SF<sub>6</sub> acquired from other entities during the year either in storage containers or in equipment.

**C. Sales/Disbursements of SF<sub>6</sub>.** This is the sum of all the SF<sub>6</sub> sold or otherwise disbursed to other entities during the year either in storage containers or in equipment.

**D. Change in Total Nameplate Capacity of Equipment.** This is the net increase in the total volume of SF<sub>6</sub>-using equipment during the year. Note that “total nameplate capacity” refers to the full and proper charge of the equipment rather than to the actual charge, which may reflect leakage. This term accounts for the fact that if new equipment is purchased, the SF<sub>6</sub> that is used to charge that new equipment should not be counted as an emission. On the other hand, it also accounts for the fact that if the amount of SF<sub>6</sub> recovered from retiring equipment is less than the nameplate capacity, then the difference between the nameplate capacity and the recovered amount has been emitted. This quantity will be negative if the retiring equipment has a total nameplate capacity larger than the total nameplate capacity of the new equipment.

**E. Total Annual Emissions.** This is the total amount of SF<sub>6</sub> emitted over the course of the year, based on the information provided above. The amount is presented both in pounds of SF<sub>6</sub> and in metric tonnes of CO<sub>2</sub>-equivalent, that is, the quantity of carbon dioxide emissions that would have the same impact on the climate as the quantity of SF<sub>6</sub> emitted. Because SF<sub>6</sub> has 23,900 times the ability of carbon dioxide to trap heat in the atmosphere on a pound-for-pound basis, 1 pound of SF<sub>6</sub> is equivalent to nearly 11 metric tonnes of carbon dioxide.

**F. Emission Rate (optional).** By providing the total nameplate capacity of all the electrical equipment in the facility at the end of the year, the operator can obtain an estimate of the emission rate of the facility’s equipment (in percent per year). The emission rate is equal to the total annual emissions divided by the total nameplate capacity.

## SF<sub>6</sub> Emissions Reduction Partnership for Electric Power Systems

### Annual Reporting Form

Name: _____	Company Name: _____
Title: _____	Report Year: _____
Phone: _____	Date Completed: _____

#### Decrease in Inventory (SF<sub>6</sub> contained in cylinders, not electrical equipment)

Inventory (in cylinders, <b>not</b> equipment)	AMOUNT (lbs.)	Comments
1. Beginning of Year		
2. End of Year		
<b>A. Decrease in Inventory (1 - 2)</b>	-	

#### Purchases/Acquisitions of SF<sub>6</sub>

	AMOUNT (lbs.)	Comments
3. SF <sub>6</sub> purchased from producers or distributors in cylinders		
4. SF <sub>6</sub> provided by equipment manufacturers with/inside equipment		
5. SF <sub>6</sub> returned to the site after off-site recycling		
<b>B. Total Purchases/Acquisitions (3+4+5)</b>	-	

#### Sales/Disbursements of SF<sub>6</sub>

	AMOUNT (lbs.)	Comments
6. Sales of SF <sub>6</sub> to other entities, including gas left in equipment that is sold		
7. Returns of SF <sub>6</sub> to supplier		
8. SF <sub>6</sub> sent to destruction facilities		
9. SF <sub>6</sub> sent off-site for recycling		
<b>C. Total Sales/Disbursements (6+7+8+9)</b>	-	

#### Increase in Nameplate Capacity

	AMOUNT (lbs.)	Comments
10. Total nameplate capacity (proper full charge) of new equipment		
11. Total nameplate capacity (proper full charge) of <u>retired</u> or <u>sold</u> equipment		
<b>D. Increase in Capacity (10 - 11)</b>	-	

#### Total Annual Emissions

	lbs. SF <sub>6</sub>	kgs. SF <sub>6</sub>	Tonnes CO <sub>2</sub> equiv.
<b>E. Total Emissions (A+B-C-D) (lbs.)</b>	-	-	-

#### Emission Rate (optional)

	AMOUNT (lbs.)	Comments
Total Nameplate Capacity at End of Year		
	PERCENT (%)	
<b>F. Emission Rate (Emissions/Capacity)</b>	-	

**Example 8.8.2 Fugitive SF<sub>6</sub> Emissions**

A retail provider is responsible for maintaining a portion of the transmission and distribution system located inside California. In order to report fugitive SF<sub>6</sub> emissions the retail provider makes the following calculations based on maintenance logs.

5,000 pounds = SF<sub>6</sub> inventory in cylinders at beginning of report year

9,000 pounds = SF<sub>6</sub> inventory in cylinders at the end of the year

-4,000 pounds = Decrease in inventory (5,000 – 9,000)

3,000 pounds = Purchases of SF<sub>6</sub> in cylinders

7,000 pounds = Provided by manufacturers inside new equipment purchased

5,000 pounds = Recovered from retired equipment

15,000 pounds = Total purchases (3,000 + 7,000 + 5,000)

0 = Sales/disbursements of SF<sub>6</sub>

7,000 pounds = Capacity of new equipment (full charge)

6,000 pounds = Capacity of retired equipment (full charge)

1,000 pounds = Increase in capacity (7,000 – 6,000)

10,000 pounds = SF<sub>6</sub> emissions for the report year (-4,000 + 15,000 – 0 – 1,000)

Conversion: 10,000 pounds \* 0.45359 kg/pound = 4,536 kg.

**8.8.3 HFC Compounds Fugitive Emissions Calculation Methodology**

Operators of generating facilities are required to calculate fugitive HFC emissions separately for each HFC compound used in cooling units that support power generation or are used in heat transfers to cool stack gases. Operators must use the same mass-balance methodology provided in the regulation in Appendix A for reporting SF<sub>6</sub>, unless reporting for an individual cooling unit. In order to convert the SF<sub>6</sub> method to an HFC method, the operator is instructed to substitute HFC for SF<sub>6</sub> in the methodology. The operator is required to report fugitive emissions for each HFC compound separately, as applicable, and to convert pounds of HFCs into kilograms, if necessary. This requirement does not apply to air or water cooling systems or condensers that do not contain HFCs.

**8.8.4 HFC Fugitive Emissions Calculation Methodology for an Individual Cooling Unit**

Operators who are reporting for an individual cooling unit may use an alternative method to calculate fugitive HFC emissions using service logs to document HFC usage and emissions. HFC emissions must be reported separately for each HFC compound as applicable. The service logs should document all maintenance and service performed on the unit during the report year, including the quantity of HFCs added to or removed from the unit, and include a record at the beginning and end of each report year. The regulation provides the following simplified material balance equations to quantify fugitive HFCs from unit installation, servicing, and retirement, as applicable. Total fugitive HFC emissions are the sum of HFC emissions from each of the three applicable equations.

$$\text{HFC}_{\text{Install}} = R_{\text{new}} - C_{\text{new}}$$

$$\text{HFC}_{\text{Service}} = R_{\text{recharge}} - R_{\text{recover}}$$

$$\text{HFC}_{\text{Retire}} = C_{\text{retire}} - R_{\text{retire}}$$

Where:

$\text{HFC}_{\text{Install}}$  = HFC emitted during initial charging/installation of the unit, kilograms;

$\text{HFC}_{\text{Service}}$  = HFC emitted during use and servicing of the unit for the report year, kilograms;

$\text{HFC}_{\text{Retire}}$  = HFC emitted during the removal from service/retirement of the unit, kilograms;

$R_{\text{new}}$  = HFC used to fill new unit (omit if unit was pre-charged by the manufacturer), kilograms;

$C_{\text{new}}$  = Nameplate capacity of new unit (omit if unit was pre-charged by the manufacturer), kilograms;

$R_{\text{recharge}}$  = HFC used to recharge the unit during maintenance and service, kilograms;

$R_{\text{recover}}$  = HFC recovered from the unit during maintenance and service, kilograms;

$C_{\text{retire}}$  = Nameplate capacity of the retired unit, kilograms;

$R_{\text{retire}}$  = HFC recovered from the retired unit, kilograms.

#### Example 8.8.4 Fugitive HFC From A Cooling Unit

An electric generating facility uses a chiller to cool input air for one of the electric generating turbines. The chiller uses HFC-134a refrigerant and was installed 5 years ago. The facility operator needs to determine fugitive HFC-134a emissions from the chiller for the report year. He compiled the information below from service logs:

$$\text{HFC}_{\text{Install}} = 0 \text{ kg (the chiller was not installed during the report year)}$$

$$\text{HFC}_{\text{Retire}} = 0 \text{ kg (the chiller was not retired during the report year)}$$

$$\text{HFC}_{\text{Service}} = R_{\text{recharge}} - R_{\text{recover}} = 23 \text{ kg} - 0 \text{ kg} = 23 \text{ kg}$$

Where:

$$R_{\text{recharge}} = (50 \text{ pounds HFC-134a}) \times (0.45359 \text{ kg/pound}) = 23 \text{ kg}$$

(the amount of HFC-134a added to the chiller during the report year)

$$R_{\text{recover}} = (0 \text{ pounds HFC-134a}) \times (0.45359 \text{ kg/pound}) = 0 \text{ kg}$$

(the amount of HFC-134a recovered from the chiller during the report year)

$$\begin{aligned} \text{Total fugitive HFC-134a} &= \text{HFC}_{\text{Install}} + \text{HFC}_{\text{Service}} + \text{HFC}_{\text{Retire}} \\ &= 0 \text{ kg} + 23 \text{ kg} + 0 \text{ kg} = 23 \text{ kg} \end{aligned}$$

### 8.8.5 CO<sub>2</sub> Fugitive Emissions Calculation Methodology for Geothermal Facilities

Operators of geothermal electricity generating facilities are required to calculate and report fugitive CO<sub>2</sub> emissions using one of the two methods included in section 95111(i) of the regulation. The first method is provided in the following equation:

$$\text{CO}_2 = \text{EF} * \text{Heat} * (0.001)$$

Where

CO<sub>2</sub> = CO<sub>2</sub> emissions, metric tonnes per year;

EF = Default fugitive CO<sub>2</sub> emission factor for geothermal facilities as specified in regulation Appendix A, kg per MMBtu;

Heat = Heat taken from geothermal steam and/or fluid, MMBtu per year.

The method uses a default factor for the carbon content of heat produced by geothermal facilities and the amount of heat taken from geothermal steam during the report year. The carbon content factor is provided in Appendix A of the regulation. The default factor for carbon content of steam from geothermal sites is taken from Energy Information Administration data and, therefore, is not California specific. As ARB collects information on CO<sub>2</sub> emissions from geothermal facilities located in California, there will be opportunity to develop a California-specific default factor.

#### **Example 8.8.5 Fugitive CO<sub>2</sub> Emissions from Geothermal Facility**

An operator of a geothermal facility needs to calculate and report fugitive CO<sub>2</sub> emissions associated with the facility. He knows that:

1,300,000 MMBtu = Heat taken from geothermal steam for report year

7.53 kg CO<sub>2</sub>/MMBtu = EF, the carbon content factor from Appendix A

Since  $\text{CO}_2 = \text{EF} * \text{Heat} * (0.001)$

Then:

Fugitive CO<sub>2</sub> emissions = 7.53 kg CO<sub>2</sub>/MMBtu \* 1,300,000 MMBtu \* (0.001)  
= 9,789 metric tonnes

A second methodology for calculating CO<sub>2</sub> emissions is provided in section 95111(i) that gives operators the option to develop their own site specific emission factors derived from site tests conducted at least annually. To use this method, operators must have ARB approved test plans and emission factors. Operators who choose to use site-specific emission factors to calculate CO<sub>2</sub> emissions are requested to review Appendix B of this guidance document. Appendix B provides detailed information on getting ARB approval for site test plans and emission factors and on methodologies for conducting sources tests and calculating emissions. In the absence of an ARB approved site-specific emission factor, the operators are required to calculate and report CO<sub>2</sub> emissions using the first methodology provided in section 95111(i).

## 8.9 Examples of Power Transactions

The following are examples of how to report various kinds of wholesale power transactions that may be conducted by entities subject to reporting under section 95111.

### **Example 8.9a First Deliverers**

#### *Type 1: California Utility as Deliverer.*

Peach Utility is a retail provider to California customers. In order to meet Peach's California load demands, Peach imports electricity from the PNW. Peach imported power from Cool Utility in the PNW and Peach was the purchasing/selling entity at the first point of delivery of the power into California (FPOD). A purchasing/selling entity is defined in the greenhouse gas mandatory reporting regulation as an entity that is eligible to purchase or sell energy or capacity and reserve transmission services. Peach reports the power as an import from an unspecified source in the PNW region of origin and flags the transaction to indicate that Peach was the purchasing/selling entity at the FPOD. The counterparty is Cool Utility.

#### *Type 2: Imports from Utilities Located Outside California*

Cool Utility located outside California does not report the power they sold to Peach in the Type 1 example because Peach is the first deliverer to California and not Cool. When Cool sells directly into California and is the purchasing/selling entity at the FPOD, Cool must report the transaction to ARB as an import. Cool sells power to other counterparties located outside California. Cool does not report these transactions to ARB.

#### *Type 3: Marketer as Deliverer*

Perry Pinch Marketers purchase power from an independent power producer named AA Corp located in the PNW. AA Corp operates several generating facilities. Perry Pinch is the purchasing/selling entity at the FPOD. Perry Pinch reports the transaction as an import from an unspecified source in the PNW region of origin and flags the transaction to indicate that Perry Pinch was the purchasing/selling entity at the FPOD. Perry Pinch identifies the supplier to be AA Corp.

#### *Type 4: California Utility as Importer but not Deliverer*

Peach holds a contract with Perry Pinch Marketers to purchase power for Peach from AA Corp in the PNW. AA Corp operates several generating facilities. Perry Pinch Marketers are the first deliverer of the power to California but when Peach receives the power from Perry Pinch, Peach knows the source of the power because of the contract stipulations. Peach must report the power purchased from Perry Pinch as an import from an unspecified source in the PNW region and flag the transaction to indicate that Peach is NOT the purchasing/selling entity at the FPOD. Peach identifies the counterparty as Perry Pinch Marketers. Naturally, Perry Pinch Marketers are also required to report the same import because Perry Pinch is the first deliverer to California. Peach must duplicate the reporting of this import because retail providers serving load to California are required to report all imports even if they are not the first deliverer.

#### *Type 5: Clarification when California Retail Providers do not know the source of an import*

Perry Pinch Marketers is the purchasing/selling entity at the FPOD in California. Peach purchases the power from Perry Pinch and does not know where the power came from. Peach does NOT report the transaction as an import. Instead, Peach reports the purchase from Perry Pinch as from an unspecified source with the region of origin California and Perry Pinch Marketers as the counterparty.

**Example 8.9b Power Taken and Sold from Facility Operated by Retail Provider**

Peach Utility operates a natural gas electric generating facility called the Treetop Generating Facility. Treetop has a net generation of 1000 MWh for the report year. Peach takes 800 MWh to serve Peach's load and sells 200 MWh to Apple Utility located in California. Peach reports 1000 MWh of power taken from Treetop as a purchase/take from a specified facility, namely Treetop, from the region of origin California with the counterparty being Peach itself. The transaction reported must include power taken to serve Peach's load as well as the power that Peach sells to Apple Utility because Peach can only report a wholesale sale for power it has already taken. Peach, then reports the wholesale sale of 200 MWh to Apple from the specified source, Treetop, to the destination region California indicating that the counterparty is Apple Utilities. Peach is also required to separately report total net generation of 1000 MWh from Treetop because Peach operates this facility.

**Example 8.9c Power Taken and Sold from Facility NOT Operated by Retail Provider**

Peach Utility, located inside California, has a "take or pay" agreement with Stellar Generating Facility for 1000 MWh. Stellar is located inside California but is not operated by Peach. Peach cannot use all of the power in the contract. Peach receives only 800 MWh from Stellar and sells the excess 200 MWh directly to Orange Utility also located inside California. Peach reports a purchase of 1000 MWh from a specified source, Stellar, with the region of origin California and the counterparty is Stellar. As in example 8.9b, Peach must report taking the power before reporting the sale of the power. Peach then reports a wholesale sale of 200 MWh from a specified source, Stellar, to the region of destination, California, and designates Orange Utility as the counterparty. The transaction is identified as a wholesale sale from a facility not operated by Peach. This type of wholesale sale is described in regulation section 95111(b)(3)(L).

**Example 8.9d Purchase from Large Hydro-Electric Power Plant**

Peach has an ongoing contract to purchase power from the Waterworks Generating Plant, a 50 MW hydro-electric generating facility located in Oregon. The contract has been in effect since 2006. Peach reports the power purchased from Waterworks as an import from a specified source namely Waterworks Generating Plant with the region of origin as the PNW and the counterparty as Waterworks Generating Plant. Peach indicates that Peach is the purchasing/selling entity at the FPOD and checks the box in the reporting tool for stipulation number 1 indicating that Peach did have a contract in effect before January 1, 2008.

**Example 8.9e Purchase from California Eligible Renewable Resource**

Peach has a contract to purchase 1,000 MWh of power from the Windy Day Power Farm, a California eligible renewable resource located inside California that includes firming power from the Orange Blossom Utility, also located inside California.

When entities have contracts with renewable energy resources that require firming power to back up the contracts, the entity reports the total amount of renewable power generated for the contract over the report year as from a specified source. It is not necessary to report power transactions related to firming power provided the amount of firming power and the excess deviation in renewable energy are net zero at the end of the year. Excess firming power is reported like other typical power transactions identifying the source of the firming power.

In this example, Windy Day is only able to deliver 800 MWh of power over the report year. As a result, Orange Blossom provides the additional 200 MWh needed to complete the contract. Peach reports the 800 MWh of power purchased from Windy Day as from a specified source, namely the Windy Day Power Farm, with the region of origin as California and the counterparty as Windy Day Power Farm. Peach also indicates if the 800 MWh of power is null power or not. Peach reports the 200 MWh of power it received from Orange Blossom Utility as a purchase from an unspecified source with region of origin California and the counterparty Orange Blossom.

**Example 8.9f Purchase of Null Power**

Peach has a contract to purchase 1,000 MWh of power from the Wind Power Farm, a California eligible renewable resource located inside California. The Wind Power Farm sells Peach 1000 WREGIS certificates with the purchase. Peach retires 600 certificates. Peach sells the remaining 400 certificates separately to another buyer. Since Peach did not retire the certificates, 400 MWh of the power is null power. The greenhouse gas mandatory reporting regulation does not require Peach to report purchases or sales of WREGIS certificates. It only requires Peach to flag purchases or sales of power that are null power.

Peach reports 600 MWh of power purchased from Wind as from a specified source, namely the Wind Power Farm, with the region of origin as California and the counterparty as Wind Power Farm. Peach does not flag the transaction as null power. Peach reports another 400 MWh of power purchased and does flag the purchase as null power.

**Example 8.9g Transmission Congestion, Line Losses, etc.**

Sometimes Peach Utility is obligated to inject power into the transmission system or to receive power from it to accommodate transmission congestion, line loss paybacks, etc. Peach reports transactions as wholesale sales when injecting energy into the system and as power purchases when receiving an exchange payback. The fact that no money was exchanged is not relevant to reporting power transactions.

**Example 8.9h Seasonal Exchange**

Peach Utility arranges to deliver 25 MW (25 MWh x 24 Hrs x 31 Days = 18,600 MWh) from the Treetop Generating Facility around the clock in January to Green Power Producers in exchange for an equal amount of power delivered in May by Green's fleet of generating facilities. Peach is a California utility and Green is an Oregon power producer that elects to report to ARB as an asset owning supplier. Peach is the purchasing/selling entity at the last point of receipt (LPOR) inside California before power is exported to Oregon in January. Green is the purchasing/selling entity at the FPOD for power imported to California in May.

Peach will report a wholesale purchase of 18,600 MWh from an unspecified source, from the region of origin PNW with counterparty identified as Green, and Peach indicates that Peach is NOT the purchasing/selling entity at the FPOD. Peach also reports a wholesale sale of 18,600 MWh from the specified source, Treetop, to the region of destination PNW with the counterparty being Green. Peach indicates that Peach is the purchasing/selling entity at the LPOR or, in other words, the exporter of the power.

Green must report an import of 18,600 MWh from an unspecified source from the region of origin PNW with counterparty being Peach. Green indicates that Green is the first deliverer for this power.

If Green were not voluntarily reporting to ARB as an asset owning supplier, Green would not be obligated to report the purchase from Peach made in January. This is because Green is not the exporter from California. Peach is. And Green is located outside California, so is not subject to the same requirements as is Peach. However, Green is voluntarily reporting to ARB. If Green purchases more than 10 percent of the total power that Green sells for the report year, then Green must report the purchase from Peach.

At a later date, ARB will match the emission rate associated with the Treetop Generating Facility to the power sale made to Green. Green's fleet average emission factor will be matched with the sale made to Peach.

**Example 8.9i CAISO Markets**

Peach Utility is located in California and has a total forecasted load of 900 MWh for the peak hour of the next day. Peach agrees to purchase 600 MWh from Cool Utility, also located inside California. Peach self-schedules the purchase from Cool through the CAISO Integrated Forward Market (IFM). Peach will report the purchase from Cool Utility like any other bilateral transaction. Peach reports 600 MWh from an unspecified source, identifying Cool Utility as the counterparty and California as the region of origin.

Peach submits a bid for the remaining 300 MWh in the IFM. CAISO confirms that only 200 MWh are provided to Peach in the IFM at bid price. The next day, Peach buys 100 MWh from the CAISO Real Time Market (RTM) to meet its load.

Peach reports a power purchase of 200 MWh from an unspecified source, identifying CAISO as the counterparty and the IFM as the region of origin. Peach reports a purchase of 100 MWh from an unspecified source, identifying CAISO as the counterparty and the RTM as the region of origin.

**8.10 Power Transaction Charts**

This section of the chapter contains the power transactions flow charts that were referred to in previous sections of the chapter, where power transaction reporting requirements were discussed in detail.

Chart 8a Wholesale Power Imported by Marketers

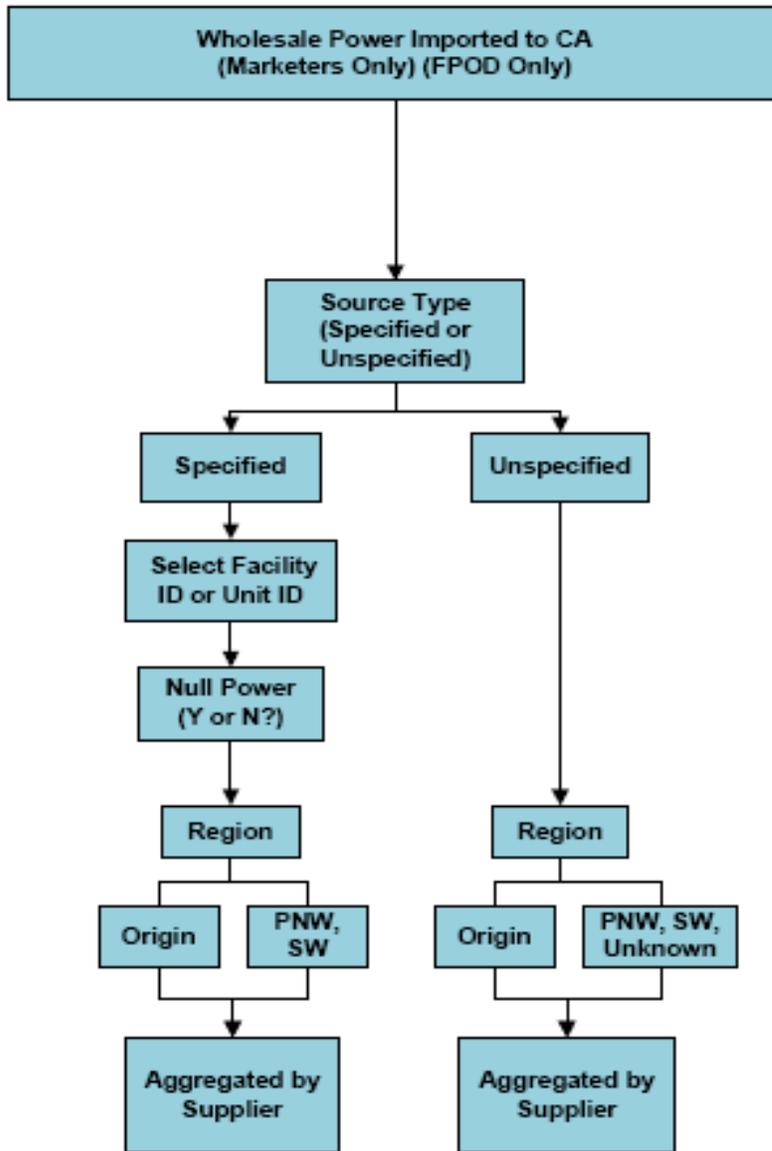


Chart 8b Wholesale Power Imported by  
Nonmulti-jurisdictional Retail Providers

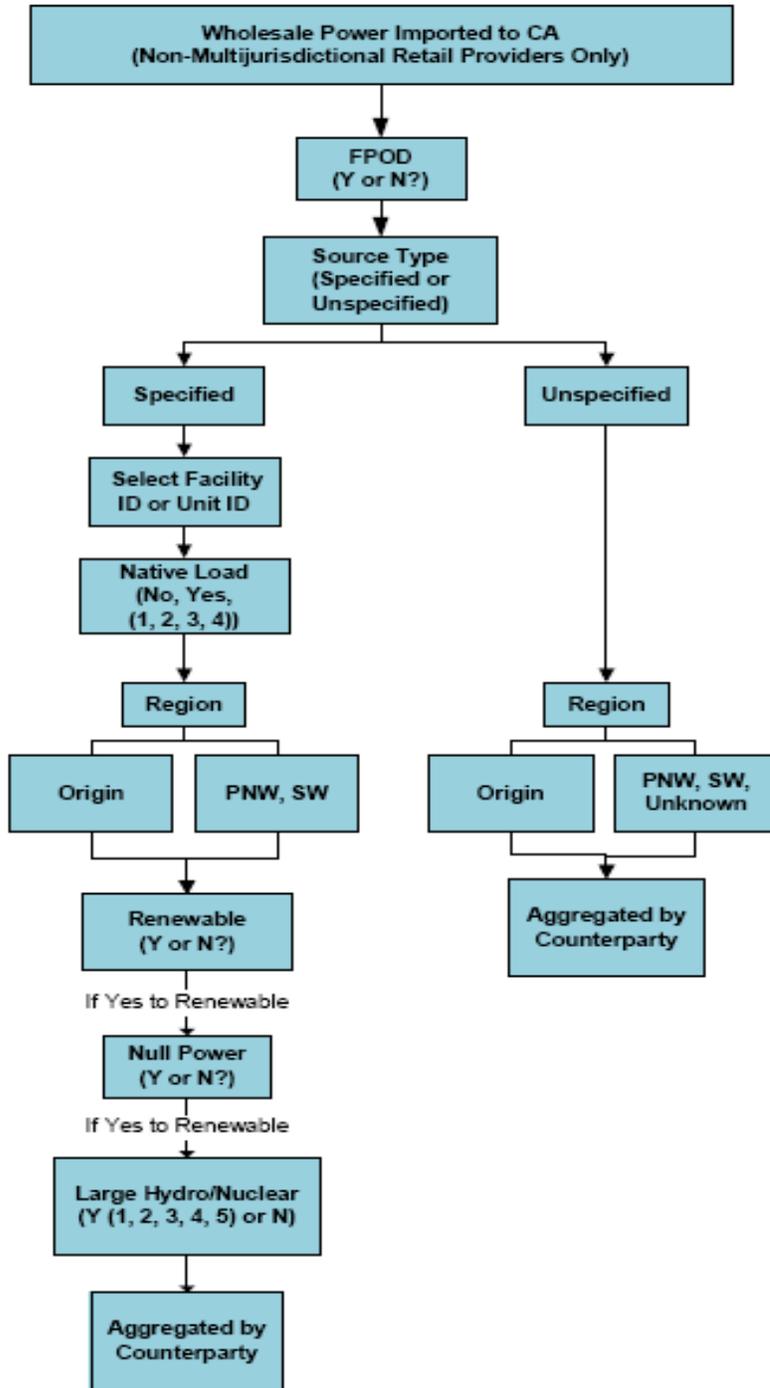


Chart 8c Wholesale Power Exported by  
Nonmulti-jurisdictional Retail Providers and Marketers

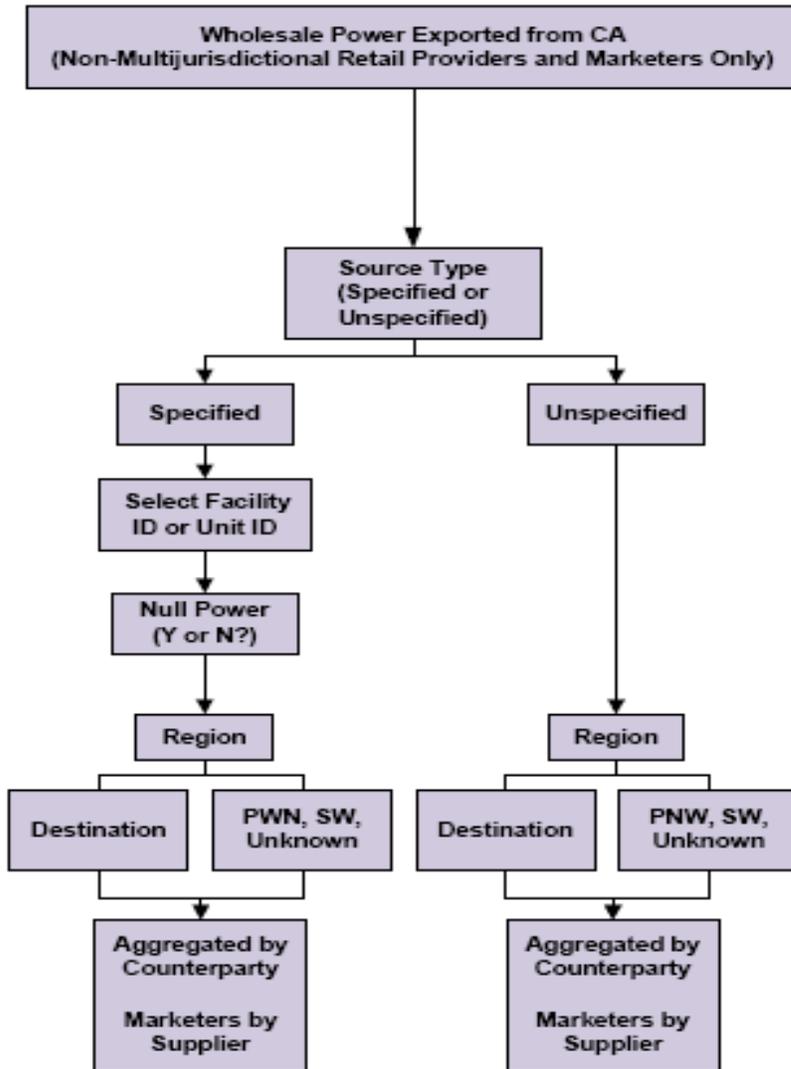


Chart 8d Wholesale Power Wheeled Through California by Retail Providers (Multi-jurisdictional and Nonmulti-jurisdictional) and Marketers

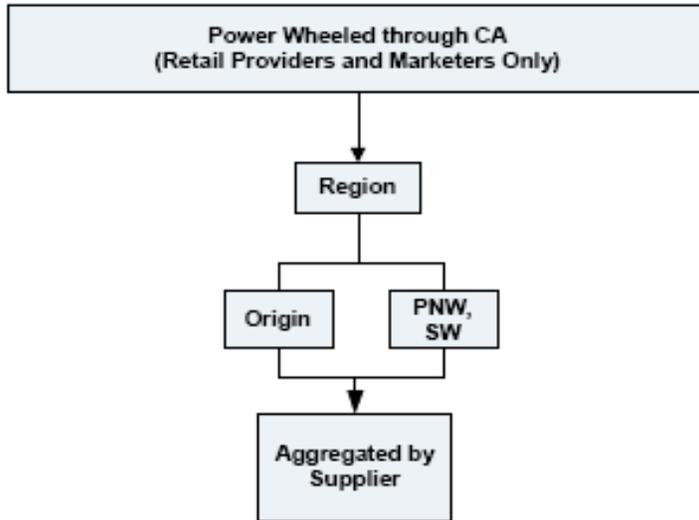


Chart 8e Wholesale Power Purchased/Taken From California by Retail Providers (Multi-jurisdictional and Nonmulti-jurisdictional)

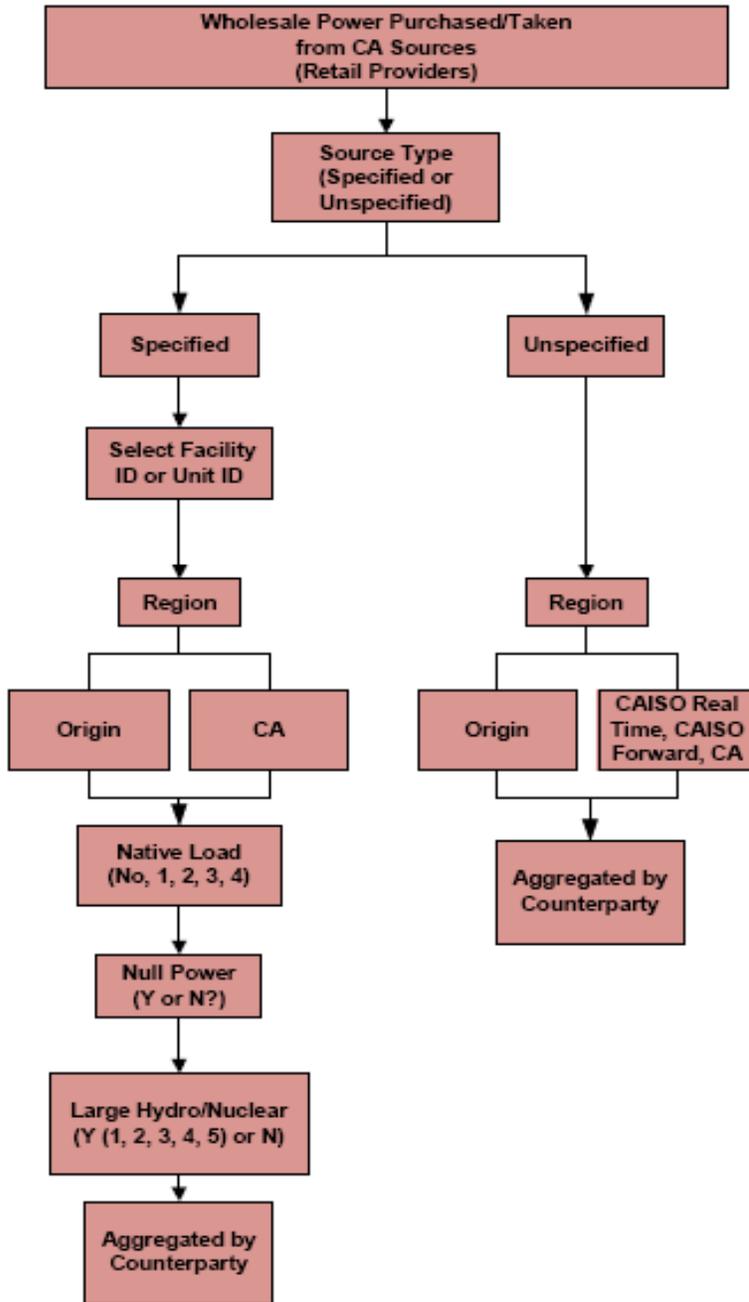


Chart 8f Wholesale Power Sold to California by Retail Providers (Multi-jurisdictional and Nonmulti-jurisdictional)

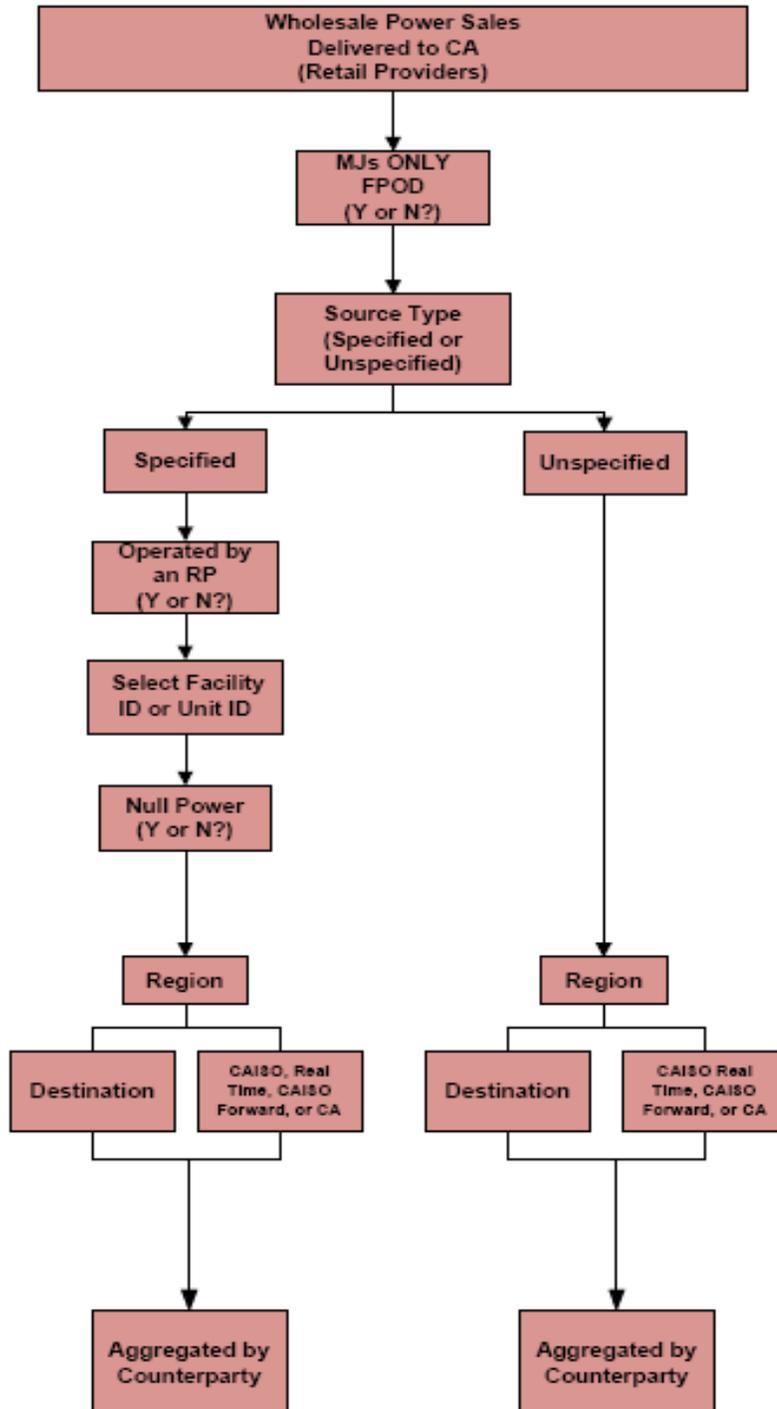


Chart 8g Additional Wholesale Power Purchased/Taken by Multi-jurisdictional Retail Providers

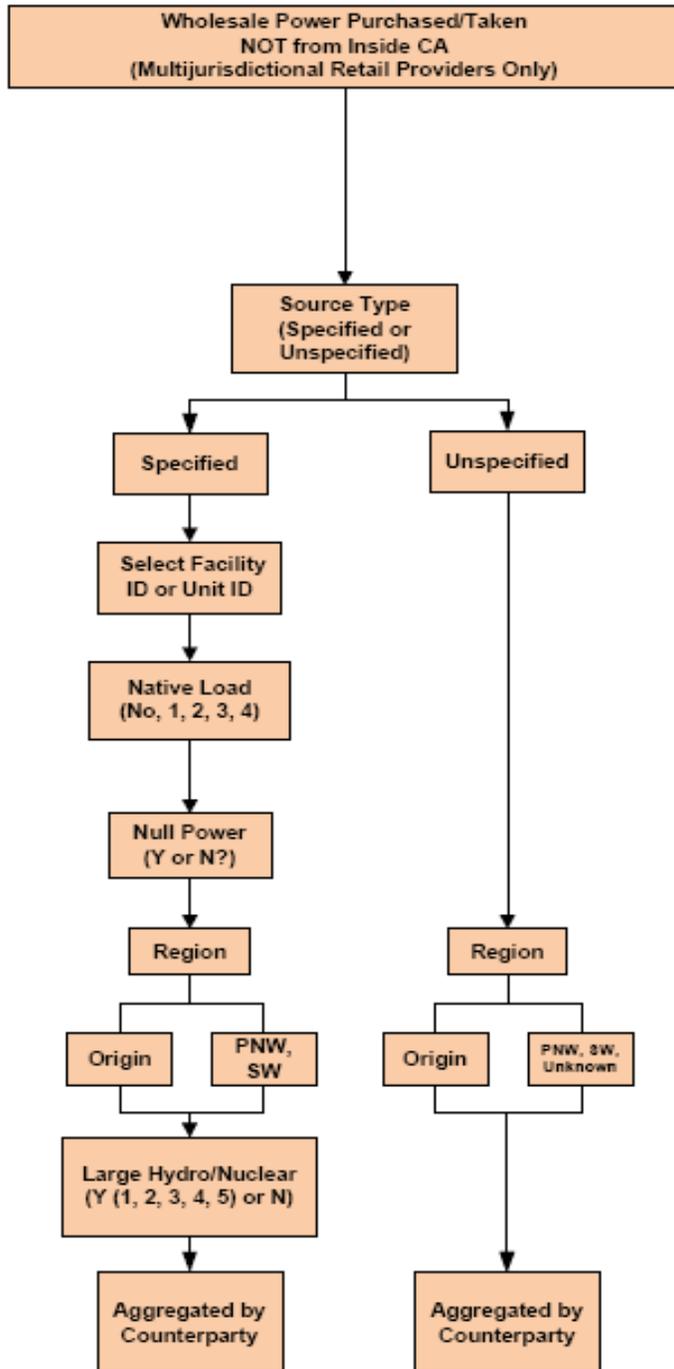


Chart 8h Additional Wholesale Power Sold by  
Multi-jurisdictional Retail Providers

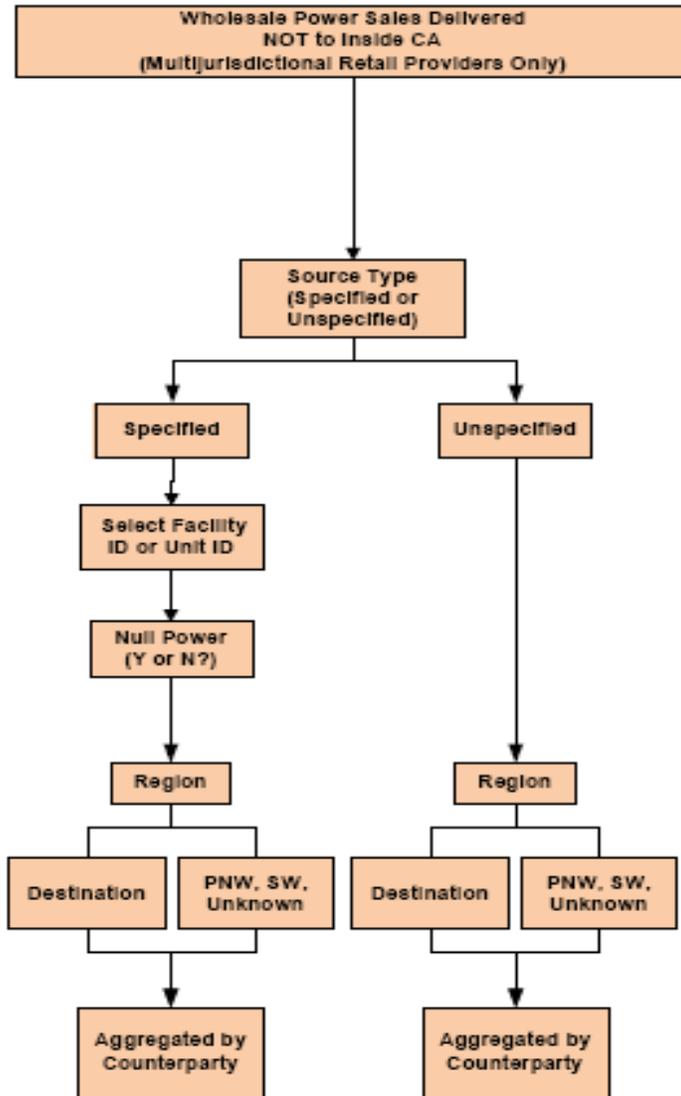


Chart 8i Additional Reporting for Retail Providers  
(Multi-jurisdictional and Nonmulti-jurisdictional)

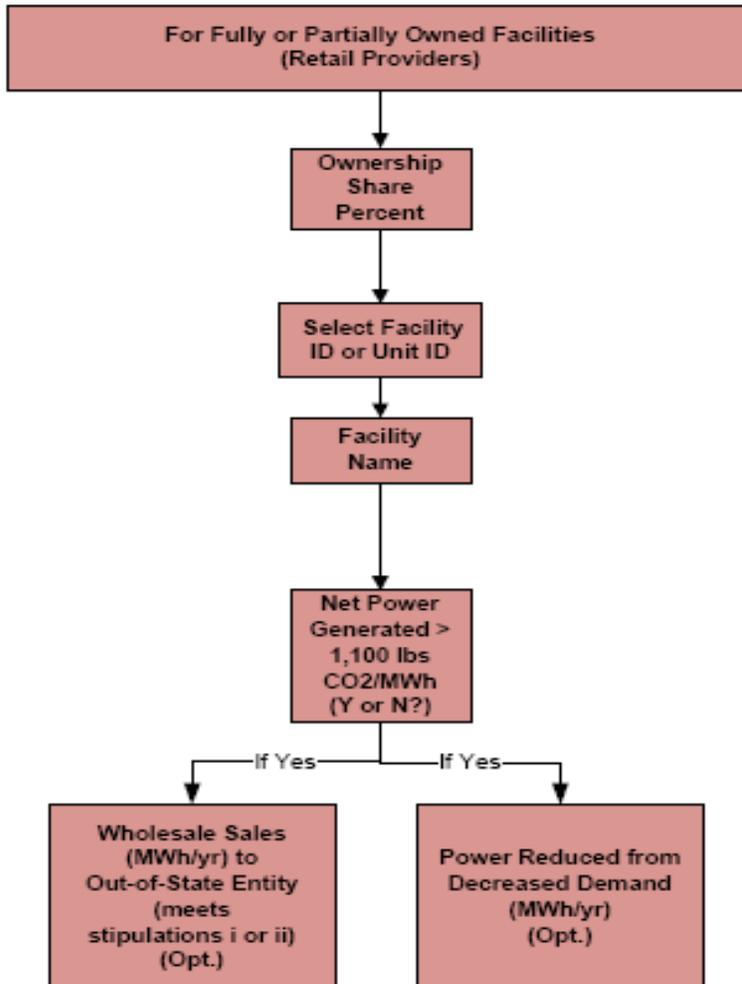


Chart 8j Retail Sales of Electricity by Retail Providers  
(Multi-jurisdictional and Nonmulti-jurisdictional)

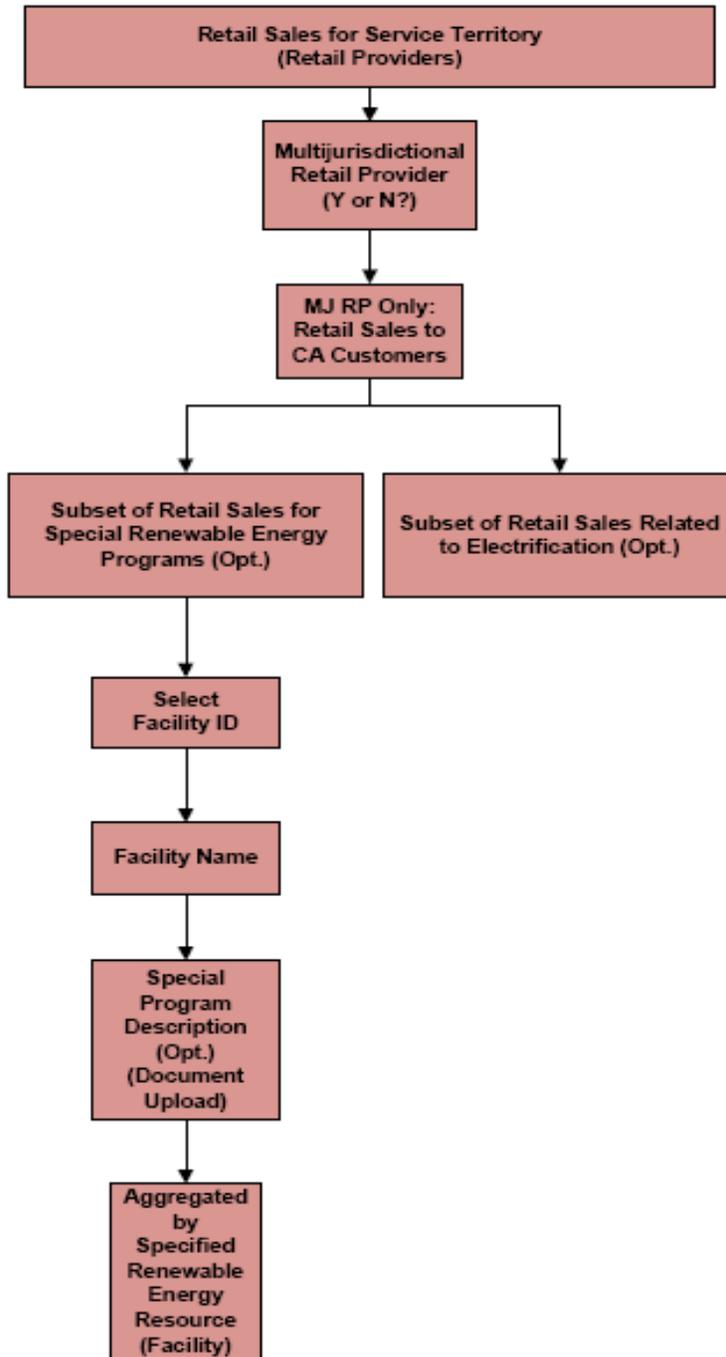


Chart 8k Wholesale Power Purchased and Sold by Asset Owning/Controlling Suppliers

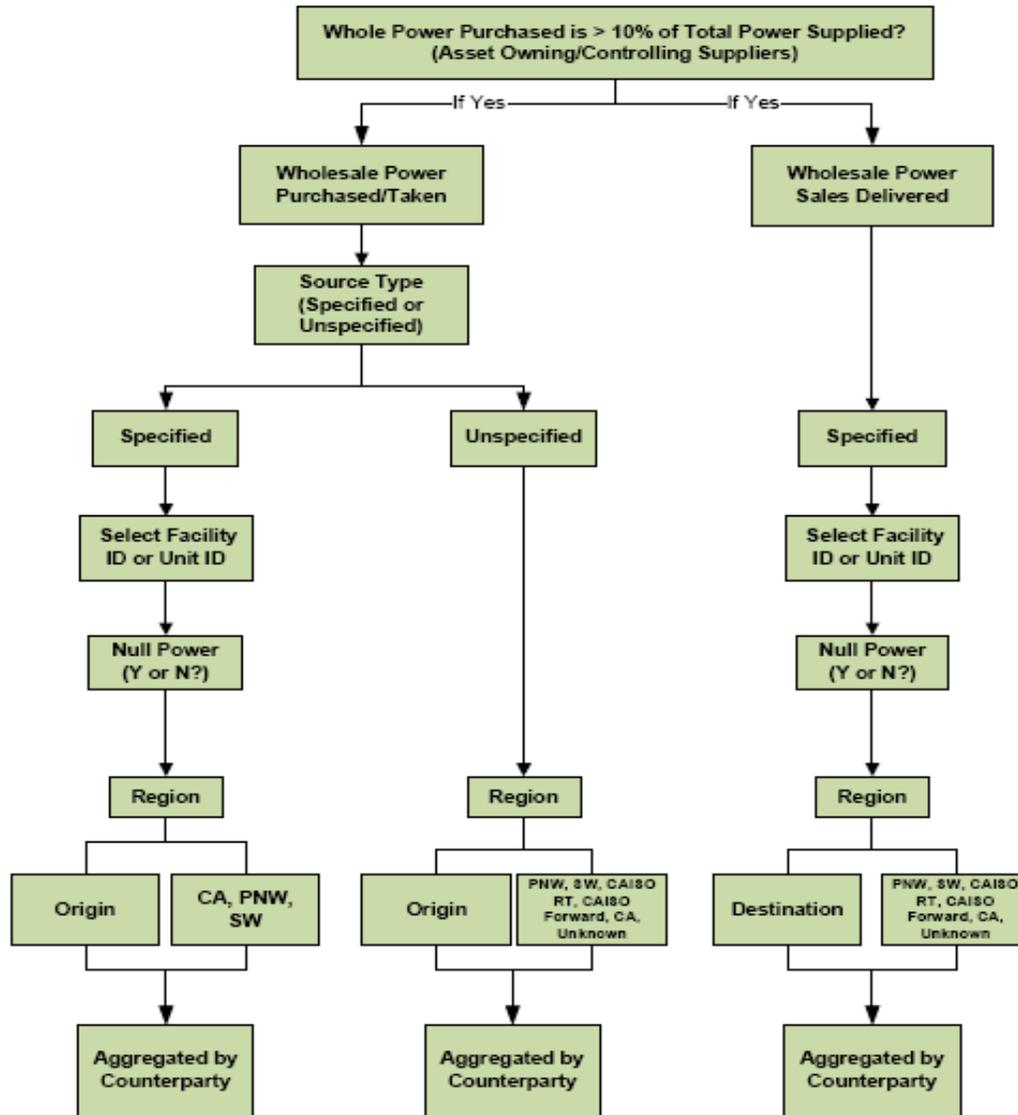


Chart 8I Wholesale Power Imported or Purchased by  
The California Department of Water Resources

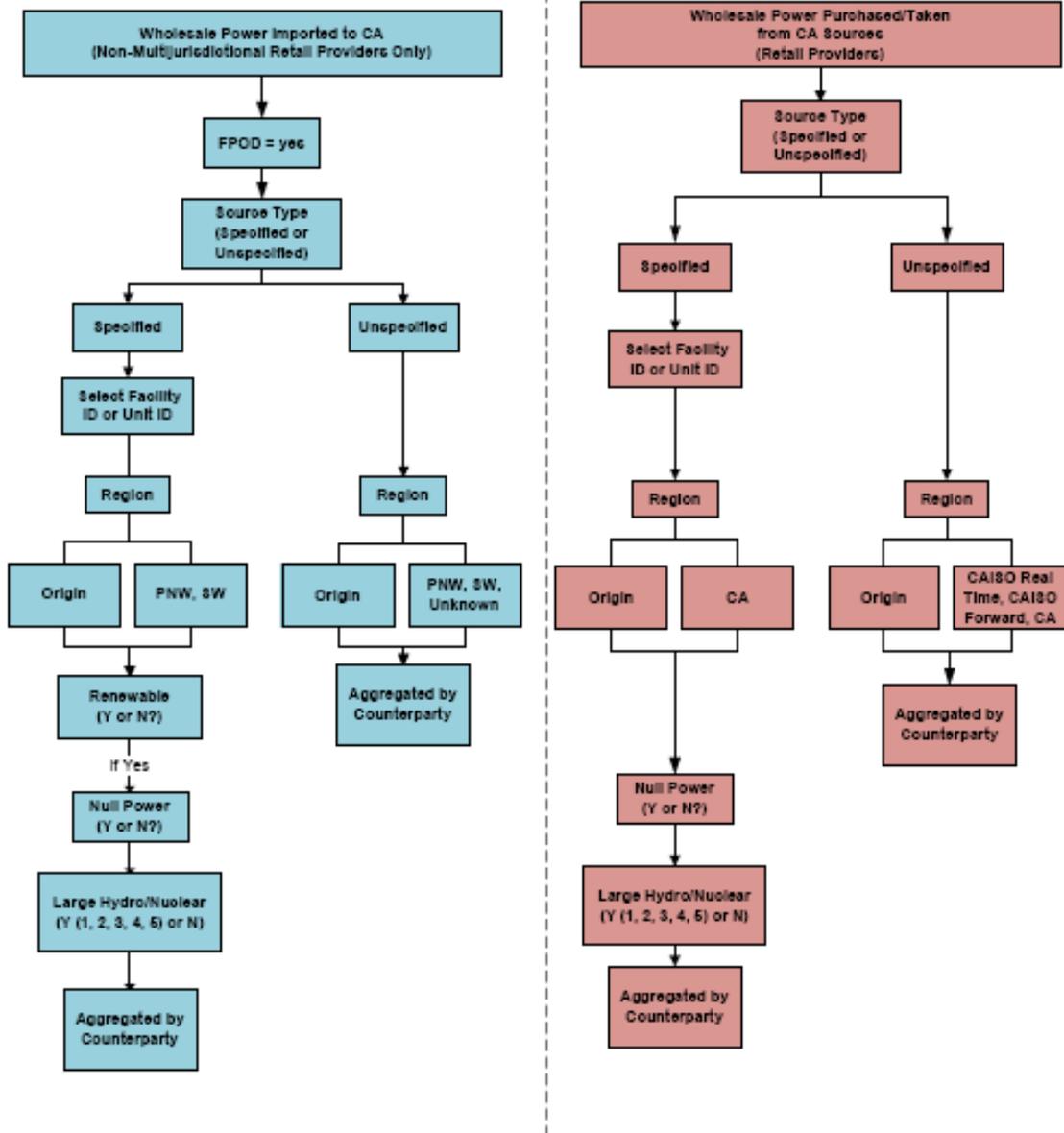


Chart 8m Wholesale Power Sold and Other Information for  
The California Department of Water Resources

