

## Mandatory Reporting of Greenhouse Gas Emissions for the Electricity Sector

California Global Warming Solutions Act of 2006 (AB 32)

December 4, 2008  
Sacramento, California




## Participation Information

- Workshop materials and Guidance:  
<http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm>
- Regulation and Final Statement of Reasons:  
<http://www.arb.ca.gov/regact/2007/GHG2007/GHG2007.htm>
- Webinar information for Electricity Sector:  
<https://www2.gotomeeting.com/register/714591691>  
Phone Dial-In: 773-945-1011 Access Code: 672-802-908



## Agenda

- Mandatory reporting implementation
- Review of general requirements
- Reporting in the electricity sector
- Reporting electric power transactions



## Mandatory Reporting Rulemaking Process

- Regulation approved by Board December 2007
- Modifications released for comment
- Final Statement of Reasons (FSOR) completed October 2008
- OAL approval December 2, 2008



## Coordination with Future Regulations

- ARB Scoping Plan
- U.S. EPA Mandatory Reporting
- WCI Regional Reporting

## ARB Instructional Guidance for Reporting

- Instructional guidance document available at  
<http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm>
- Provides explanatory detail and examples, suggested best practices
- Not a substitute for the regulation

## ARB's GHG Reporting Tool

- ARB providing web-based platform for GHG reporting
  - Available January 2009
- Reporting tool demonstration workshop
  - December 19, 2008, 10:00 – 1:00

## Review of General Reporting Requirements

## Who's Responsible for Reporting?

- At facilities, the entity with operational control
- For electricity transactions, a retail provider, marketer, or facility operator

## Exempt from Reporting

- Primary and secondary schools
- Hospitals
- Nuclear, hydroelectric, wind and solar power plant (except hybrids)
- Portable equipment
- Backup or emergency generators (permitted by air districts)

## What Sources Are Reported

- Stationary combustion
- Process and fugitive emissions when specified
- Mobile emissions optional

## What Gases Are Reported

- CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O
- CO<sub>2</sub> from biomass fuels tracked separately
- HFCs, SF<sub>6</sub>, PFCs where specified

## Preparing for 2009 Reports

- Must report 2008 emissions in 2009
- 2009 reports should be complete
- Emissions calculations may be based on best available data and methods
  - Regulation methods preferred
- Verification is optional for 2009 emissions reports

## Preparing for 2010 Reports

- 2010 emissions data report must meet full requirements of the regulation
- Monitoring equipment should be in place by January 1, 2009
- Everyone must verify their 2009 emissions data reports in 2010

## Reporting Schedules

- Power and cogen plants within larger facilities/entities are on the larger facility/entity schedule
- Other power and cogen plants and most general combustion facilities report by April 1
- Other facilities (including oil & gas) and entities report by June 1

## Fuel Analytical Data Capture

- Data collected to support calculations of GHG combustion emissions
  - Mass, volume, flow rate, heat content, carbon content
- Need 80% capture rate for source verification
- For <20% missing data:
  - Use 40 CFR Part 75/60 if applicable
  - Use mean of data captured if not

## Fuel Use Measurement Accuracy

- Measurement procedures must assure fuel use is quantified within  $\pm 5\%$  accuracy
- Maintain and calibrate devices to achieve  $\pm 5\%$  accuracy
- Quarterly calibrations of operators' solid fuel scales
- Keep records for verification

## Interim Data Collection Procedure

- ARB EO can approve interim procedure if fuel monitoring equipment breaks down
- When breakdown will result in  $>20\%$  data loss for report year
- Limitations and procedure in section 95103

## Reporting *de minimis* emissions

- Sources  $\leq 3\%$  of facility emissions, not to exceed 20,000 MT CO<sub>2</sub>e
- Still reported, but may be estimated using alternative methods

## Data Completeness, Record Keeping

- Retain documents on GHG inventory design, development and maintenance for five years
- Implement internal audit and QA for reporting program
- Log changes in accounting methods, instrumentation
- Specifications in sections 95104-95105

## Third Party Verification

- Optional for 2009 emissions reports
- Required beginning in 2010
- Verification opinion due 6 months after report submittal

## Verification Key Steps

- Reporter contacts ARB-accredited verification body (VB)
- VB submits COI assessment to ARB
- Verification conducted following ARB OK
- Verification results discussed with reporter
- Reporter may revise report if time permits
- Verification body submits verification opinion to ARB and reporter

## Verification Oversight

- ARB will provide training and accredit verifiers and verification bodies in 2009
- Verification process will assist compliance efforts and assure quality data
- Targeted review of submitted data and verifiers
- ARB responsible for enforcing regulation

## Reporting in the Electricity Sector

## Applicability for Electric Sector

- Operators of electric generating facilities  $\geq 1$  MW that emit  $\geq 2,500$  MT of CO<sub>2</sub> per year
- CA Retail providers (and WAPA)
- Multi-jurisdictional retail providers
- Entities who deliver power to FPOD in CA (Marketers)
- DWR



## Information Reported in the Electricity Sector

- Operators of Electric Generating Facilities
  - Direct emissions
  - Wholesale exports (MWh)
- Retail Providers
  - Direct emissions of operated facilities
  - Wholesale power purchases and sales (MWh)
  - Other non-emissions data

## Information Reported in the Electricity Sector (cont'd.)

- Marketers
  - Direct emissions of SF<sub>6</sub> inside CA
  - Wholesale power purchases and sales (FPOD)
- Asset Owning/Controlling Suppliers (Voluntary)
  - Direct emissions
  - Wholesale power purchases and sales

## Data Dictionary for Operators of Electric Generating Facilities

Electricity Generating Facilities		
Field Name	Units	Notes
Facility Name		
Facility Identification Number	ARB ID number	Asset
Ownership Share		Owning/Controlling Supplier ID number
Nameplate Generating Capacity	megawatts	Retail Providers Only
Net Power Generated	MWh	
Wholesale sales exported out-of-state (if known)	MWh	

See ARB Guidance,  
Data Dictionary, Table 8.2



## Electric Generating Units

- Can be aggregated if facility lacks metering/monitoring equipment to determine information at unit level
- Aggregations to be reported to ARB and assigned unit ID number
- Types of generating units
  - Combined cycle
  - Combustion turbine engine
  - Boilers combined with steam turbines
  - Reciprocating engines


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## Cogeneration

- Additional reporting for cogeneration  $\geq 1$  MW and  $\geq 2,500$  MT CO<sub>2</sub> per year (section 95112)
- ARB guidance, Chapter 9
- Workshop today from 1:30 to 4:00


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## Emission Calculation Methodologies

	Electrical Generating Facilities & Retail Providers	Cogeneration
<i>Reporting Requirements Section in Regulation</i>	95111	95112
<i>CO<sub>2</sub> Emissions From Combustion (of fuel)</i>		
Associated Gas		95125(c)-(e) or (g)
Biogas and Landfill Gas		95125(c)-(d) or (g)
Biomass Fuels	if not then (c)-(d) or (g)-(h)	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 C); if not then 95125(d) or (g)	40 CFR Part 75 if applicable (includes App C); 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 Gas (LPG)	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)

See ARB Guidance, Matrix of Methodologies, Table 8.8


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## Source/Site Specific Emission Factors Based on Source Tests

- Regulation provides specific source test options
  - CH<sub>4</sub> and N<sub>2</sub>O combustion emissions (§95125(b)(4))
  - CO<sub>2</sub> from the combustion of biomass solid fuels, waste-derived fuels, or municipal solid waste (§95125 (h)(3))
  - CO<sub>2</sub> from geothermal generating facilities (§95111(i)(2))
  - Sulfur recovery process emissions at refineries (§95113(b)(5)(B))


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## Source Test Option Language

- “operators of facilities that combust biomass solid fuels, waste-derived fuels, or municipal solid waste may elect to calculate CO<sub>2</sub> emissions using ARB approved source specific emission factors derived from source tests conducted at least annually under the supervision of ARB or the local air pollution control district or air quality management district.”
- Similar requirement for other pollutants and situations shown on previous slide

## Source Test Process

- Prepare source test plan
  - See ARB guidance for template
  - Include test methods, schedule, sampling locations, QA/QC, etc.
- Submit plan to ARB for approval
- On approval, perform testing, providing ARB and air district notification of test dates for possible agency participation
- Using valid test data, develop appropriate emission factor(s)

## Planning for Source Testing

- Schedule enough time for test plan preparation, approval, on-site testing, and data analysis
- GHG reporting deadlines cannot be delayed if source test data are not ready
  - Use other specified estimation methods in regulation if source test data not available
- ARB staff is providing written guidance and resources

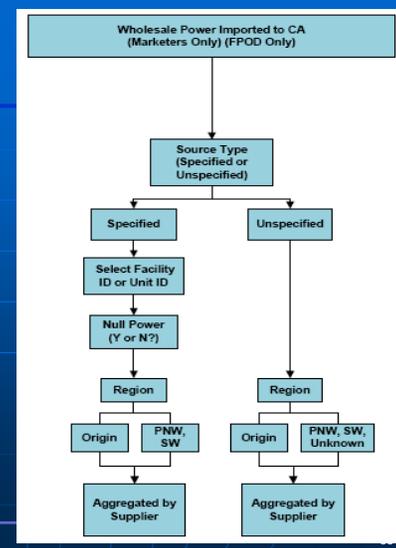
## Reporting Electric Power Transactions

## Reporting Electric Power Transactions

- Marketers
- Retail Providers
- Asset Owning/Controlling Suppliers
- Examples of Power Transactions
- Uploading aggregated transactions to reporting tool

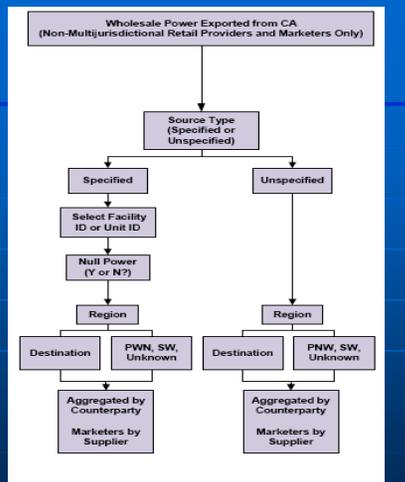
## Marketers Transactions: Imports

See ARB Guidance, Chart 8a



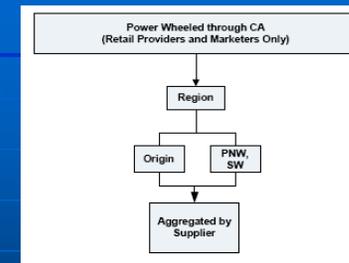
## Marketers Transactions Exports:

See ARB Guidance, Chart 8c



## Marketers Transactions: Wheeled Through CA

See ARB Guidance, Chart 8d



## Retail Providers Transactions: Imports

See ARB Guidance, Chart 8b

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## Retail Providers Transactions: Exports

See ARB Guidance, Chart 8c

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## Retail Providers Transactions: Wheeled Through

See ARB Guidance, Chart 8d

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## Retail Providers Transactions: Instate Wholesale Purchases/Takes

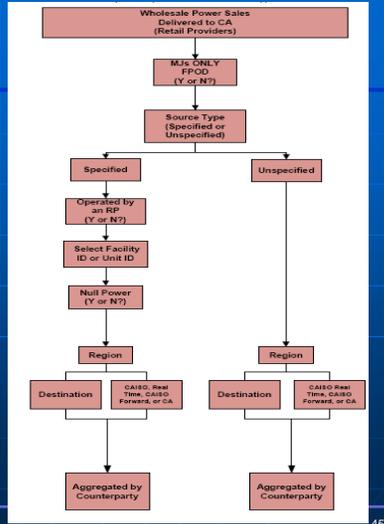
See ARB Guidance, Chart 8e

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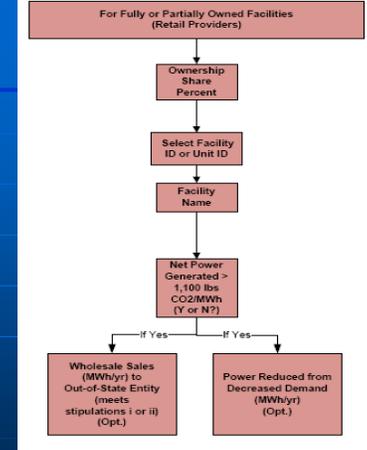
## Retail Providers Transactions: Instate Wholesale Sales

See ARB Guidance,  
Chart 8f



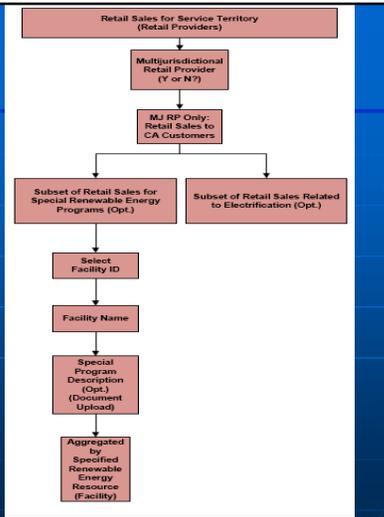
## Retail Providers Transactions: Additional Reporting

See ARB Guidance,  
Chart 8i



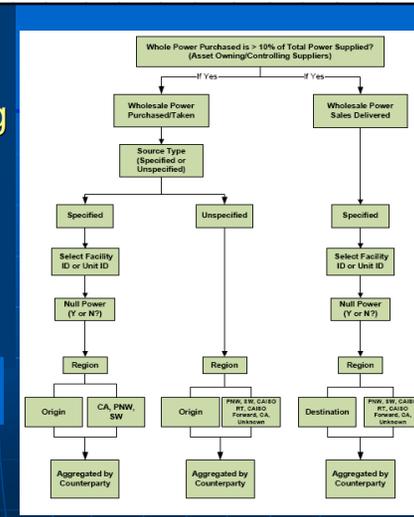
## Retail Providers Transactions: Additional Reporting

See ARB Guidance,  
Chart 8j



## Asset Owning/Controlling Supplier Transactions (Optional)

See ARB Guidance,  
Chart 8k



## Power Transactions

**RULE of THUMB:**  
*Retail providers must report power purchased/taken before they can report a transaction to sell that power.*

The diagram shows a central teal circle labeled "Retail Provider Bubble". An arrow labeled "Power In" points into the bubble from the left, and an arrow labeled "Power Out" points out of the bubble to the right. To the left of the bubble is the text "Purchases/Takes (Imports or Instate)", and to the right is "Wholesale Sales (Exports or Instate)".

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## Examples of Power Transactions: California Utility as Deliverer

See ARB Guidance, Example 8.9a, Type 1

The diagram shows a horizontal line representing the border between "PNW" (above) and "California" (below). A box labeled "Cool Utility" is positioned in the PNW region. An arrow points from the Cool Utility box down to a box labeled "Peach Utility" which is positioned in the California region.

Peach is selling/purchasing entity at FPOD means Peach reports import to ARB. Cool does not report.

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## Examples of Power Transactions: Out-of-state Entity is Deliverer

See ARB Guidance, Example 8.9a, Type 2

The diagram shows a horizontal line representing the border between "PNW" (above) and "California" (below). A box labeled "Cool Utility" is positioned in the PNW region. An arrow points from the Cool Utility box down to a box labeled "Peach Utility" which is positioned in the California region.

Cool is selling/purchasing entity at FPOD means Cool reports import to ARB

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## Examples of Power Transactions: Out-of-state Entity is Deliverer

See ARB Guidance, Example 8.9a, Type 3

The diagram shows a horizontal line representing the border between "PNW" (above) and "California" (below). A box labeled "AA Corp" is positioned in the PNW region. An arrow points from the AA Corp box to a box labeled "Perry Pinch Marketers" which is positioned in the California region. Below this, another box labeled "Peach Utility" is also in the California region, with an arrow pointing from the Perry Pinch Marketers box down to it.

Perry Pinch is selling/purchasing entity at FPOD means Perry Pinch reports import to ARB

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### Examples of Power Transactions: CA RP is Importer but NOT Deliverer

See ARB Guidance, Example 8.9a, Type 4

Perry Pinch Marketers ← AA Corp

PNW  
California

Peach Utility

Peach is NOT the selling/purchasing entity at FPOD. Perry Pinch is. Peach knows power is from AA Corp. Both Perry Pinch and Peach report the import to ARB

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### Example of Power Transaction: Power Taken

See ARB Guidance, Example 8.9b

Peach Utility

Treetop Generating Facility

Apple Utility

Peach operates Treetop, takes 800 MWh and sells 200 MWh to Apple. Peach reports take from Treetop of 1000 MWh and sale to Apple of 200 MWh.

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### Example of Power Transaction: Purchase from CA Eligible Renewable Resource

See ARB Guidance, Example 8.9e

Windy Day Power Farm

Orange Blossom Utility

Wind Power

Firming Power

Peach Utility

Peach has a contract for 1000 MWh from Windy Day. Windy Day is able to deliver 800 MWh over the course of the year. Orange Blossom provides 200 MWh of firming power to Peach. Peach reports 800 MWh from Windy Day and 200 MWh from Orange Blossom.

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### Uploading transactions to on-line reporting tool

- Power transaction templates  
(Use one or two if applicable)
  - Marketer
  - Non multi-jurisdictional retail provider
  - Multi-jurisdictional retail provider
  - Asset owning/controlling supplier
  - DWR
- Aggregate by counterparty before upload

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## Next Steps

- Examine ARB final regulation and Instructional Guidance
- Attend or monitor reporting tool workshop December 19
- Consult with ARB staff on questions
- Join e-mail list serves on reporting, verification, watch for additional training opportunities


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**GHG Mandatory Reporting Website**  
<http://www.arb.ca.gov/cc/ccei/ccei.htm>


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