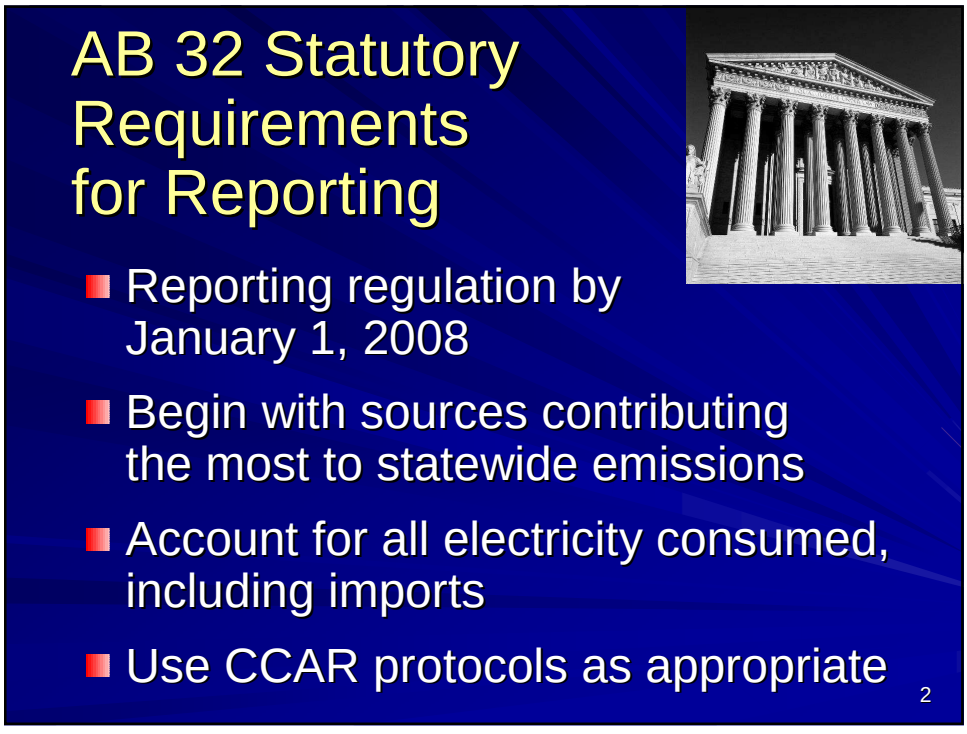

California Global Warming Solutions Act of 2006
Mandatory Reporting of California GHG Emissions
Draft Regulation to Implement AB 32 Requirements
California Air Resources Board
August 29, 2007 - Cal/EPA Headquarters


AB 32 Statutory Requirements for Reporting
Reporting regulation by January 1, 2008
Begin with sources contributing the most to statewide emissions
Account for all electricity consumed, including imports
Use CCAR protocols as appropriate
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Regulation Organization

- Applicability – Who has to report
- Subarticle 1 – General Requirements
  - Definitions
  - General reporting requirements
  - Reporting and verification schedule
  - Record keeping, confidentiality, enforcement
- Subarticle 2 – Sector Specific Requirements
  - Cement, electric generating, retail providers, cogeneration, refineries, hydrogen plants, large stationary combustion sources

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Regulation Organization (continued)

- Subarticle 3 – Calculation Methods for Multiple Sectors
  - CO_2 emissions from combustion using emission factors, heat content, carbon content, CEMS, etc.
  - Fugitive CH_4 emissions from coal storage
  - Indirect energy use
- Subarticle 4 – Verification Requirements
- Appendices – Detailed data reporting, SF_6 and HFC reporting

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Applicability (§95101) Reporting Facilities

- Cement plants
- Oil refineries
- Hydrogen plants ≥ 25,000 MT CO_2/yr
- Electric generating facilities and electric retail providers
- Cogeneration facilities
- Stationary combustion sources emitting ≥ 25,000 MT CO_2/yr

94% of point source CO2 emissions

Major GSC Sectors Affected

(only if ≥ 25,000 metric tonnes/yr CO_2 from combustion)

- Natural gas transmission
- Industrial gases
- Paperboard manufacture
- Colleges and universities
- Oil production
- Food processing
- Steel foundries
- Mineral processes
- Glass container
- Malt beverages

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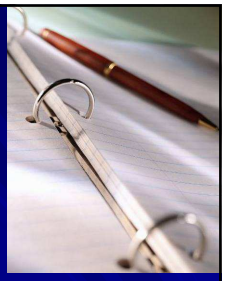
Reporting: General Requirements (§95103(a))



- Annual reporting for each facility subject to regulation
- Responsible party with facility "operational control" must report
- Report emissions for specified facility sources and gases
- Report all purchased energy use

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Reporting Requirements

- Report CO_2, N_2O, CH_4 from stationary source combustion
  - Report GHGs separately for each fuel used and each process unit (where feasible)
  - Use methods specified in regulation
  - Biomass emissions separately identified

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Reporting Requirements (continued)

- Report process emissions as specified
- Report fugitive emissions as specified
- Report purchased energy consumption

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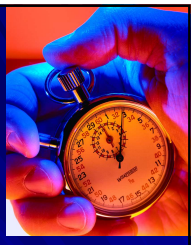
Reporting and Verification Schedule (§95103(b))



- Generating Facilities and Cogeneration Facilities not operated by other reporters
  - Emissions reports due by April 30
  - Verification complete by August 31
- Retail Providers, and all other facilities
  - Emissions reports due by August 31
  - Verification complete by December 31

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GHG Emissions Data Report
(§95104)

- Facility identification info
- Facility contacts
- Emissions data
- Energy consumption
- Efficiency metrics as required
- Statement of compliance with requirements and certification of accuracy

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Document Retention
(§95105)

- Maintain procedures for document retention and record keeping
- ARB may request data used to generate emission estimates
- ARB may request full verification report and data
- Maintain all data used for emission calculations for seven years

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Confidentiality
(§95106)

- Not Confidential
  - Reported GHG emissions at facility level
  - Reported energy use data
  - Reported performance metrics
- Other data may be claimed as confidential during reporting

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Enforcement
(§95107)

- Late submittal or false information would be a violation
- We will work closely with stakeholders to ensure compliance
- ARB will provide training for reporters and verifiers to assist with compliance

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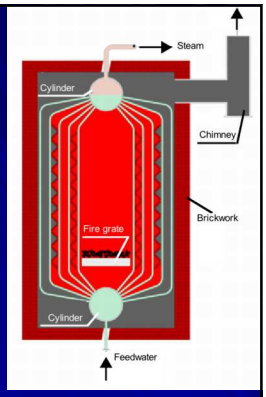
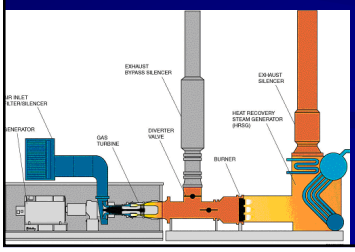
General Stationary Combustion Sources (GSCs)
(§95115)





Defining a General Stationary Combustion (GSC) Source

- Proposed facility threshold:

  25,000 metric tonnes CO_2 per year

- Requirements separate from refineries, power and cement sectors
- Threshold consistent with EU reporting

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GSC Requirements

- Calculate CO_2 from stationary source fuel combustion using ARB provided emission factors
  - Oil and gas production sources would conduct fuel tests must use more stringent method
- Report production/use of high GWP compounds
- Report indirect energy use
- Cogeneration facilities would use cogeneration methods for estimates

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Calculating GSC Emissions

- Non-mobile sources:
  - Turbines, boilers, internal combustion engines, flares, any backup generators or auxiliary equipment, etc.
- Basic methodology:
  - Fuel use calculation

    *Total annual emissions = emission factor * amount of annually consumed fuel*
  - ARB will provide emission factors for various fuels

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Verification
(§95130-33)

- Requirements
- Accreditation
- Conflict of Interest

Verification

- Annual third-party verification for:
  - Refineries
  - Hydrogen plants
  - Oil and gas production facilities
  - Retail providers
  - Fossil-fueled power plants and cogeneration facilities ≥ 10 MW (if selling power)
- Triennial third-party verification for other sources

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Third Party Verification

- Consistent with existing standards, including ISO
  - Already required for CCAR members
- Third party verifiers will assure data quality and reduce enforcement burdens
- Verifiers to be trained under ARB approved curriculum
  - Demonstrate expertise
  - Consistency in verification

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Verification Activities

- Site visits, Identify sources, and review data management systems
- Focus on most significant and uncertain sources
- Differences exceeding 5 percent considered significant
- Verification products
  - Detailed report to facility
  - Verification opinion to both facility and ARB

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Conflict of Interest

- Term Limit
  - Verifiers to be changed after 6 years of conducting verification activities
  - Allowed to resume with client after 1 year off cycle for verification
- Conflict of Interest Policy
  - Must agree not to act on behalf of reporting facility as both consultant and verifier concurrently or within any 3 year period

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Cement Plants

(§95110)



Reporting Requirements

- Report CO_2, CH_4, and N_2O Emissions
- Direct Process Emissions
  - Clinker-Based Methodology
  - Total Organic Carbon (TOC) in Raw Materials
- Stationary Combustion
- Fugitive Emissions from Fuel Storage
- Indirect Energy Use
- Cogeneration
- Efficiency Metric

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CO_2 Process Emissions Clinker Based Methodology

- Consistency with other Protocols
  - California Climate Action Registry
  - WBCSD Protocol
  - U.S. EPA Climate Leaders
- Plant-specific emission factors
  - Clinker
  - Cement Kiln Dust (CKD)



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Efficiency Metric

- CO_2 emissions per metric tonne of cementious product
- Direct CO_2 emissions
  - Process-related
  - Stationary combustion
- Cementious Product
  - Clinker consumed or added to stock
  - Clinker sold
  - Gypsum, limestone, CKD, and clinker substitutes
  - Cement substitutes

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Petroleum Refining, Hydrogen Plants, Oil and Gas Production

(§95113, 95114, 95115(b))

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Refineries – Reporting Basics

- Annual reporting and verification for each facility
- Stationary combustion, process, fugitives
- Indirect energy usage (steam/heat, electricity, hydrogen)
- No mobile source requirements
- Gases as specified in the regulation
  - CO_2, CH_4, N_2O, HFCs

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Stationary Combustion – CO_2

- Refinery Fuel Gas
  - Calculate a fuel specific EF
    - Hourly average HHV, CC daily
    - Use EF and daily average HHV to calculate CO_2 emissions
- Natural Gas
  (Regulation to be updated to reflect the following)
  - Stationary combustion - CO_2 monthly HHV when HHV range is 975-1100 Btu/scf
  - Outside Pipeline range – monthly carbon content to calculate CO_2 emissions

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Oil and Gas Exploration and Production Sector

- Subject to reporting as a major source under the 25,000 metric ton threshold
  - Combustion sources only (CO_2, CH_4, N_2O)
  - Process, fugitives may be added later
- Methods and fuel sampling requirements would be identical to refinery sector
  - Associated gas also highly variable
- Cogeneration emissions per section 95112
  - Facility-specific efficiency values
- Hydrogen Plant emissions per section 95114

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Hydrogen Production Facilities

- Report if combustion + process emissions ≥ 25,000 metric tonnes
- Operational control determines whether hydrogen plants report as:
  - Part of a refinery or a stand-alone facility
- Report
  - Stationary combustion emissions – CO_2, CH_4, N_2O
  - H_2 Plant Process Emissions
    - weekly carbon test if natural gas only
    - daily carbon test if feedstock mixture
  - Hydrogen sales

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Electric Generating Facilities and Electric Retail Providers

(§95111)

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Who Would Report

- Generating Facilities ≥ 1 MW
  - Fossil Fuels, Landfilll Gas, Biogas, Biomass, Municipal Solid Waste, Geothermal (excludes hydro, solar, wind, and nuclear)
- Retail Providers
  - IOUs, POUs, ESPs, CCAs, WAPA

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Generating Facilities Would Report

- Nameplate Generating Capacity (MW)
- Annual Net Power Generation (MWh)
- Annual Fuel Consumption by Fuel Type
- Annual CO_2, N_2O, CH_4 from Fuel Combustion
- CO_2 from Acid Gas Scrubbers
- CH_4 from Coal Storage
- HFCs from Cooling that supports power generation
- CO_2 from Geothermal
- Wholesale Sales Exported Out-of-State (MWh) when known

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Generating Units Would Report

- Nameplate Generating Capacity (MW)
- Annual Net Power Generation (MWh)
- Annual Fuel Consumption by Fuel Type
- Average Annual High Heat Value or Annual Steam Production
- Average Annual Carbon Content (if known)
- Annual CO_2, N_2O, CH_4 from Fuel Combustion

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Retail Providers

- Facility Level and Generating Unit Information
  - Add Requirement to report Facility ID for hydro, wind, solar, nuclear?
- Fugitive SF_6 from Transmission and Distribution facilities maintained by Retail Provider
- Power Purchases (MWh)
  - Specified Sources Scaled to Reflect T&D
  - T&D Losses Also Reported as Subset (MWh)
  - Unspecified Sources by PNW, PSW, CAISO Markets, Other In-state, Unknown

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Retail Providers (continued)

- Power Sales (MWh)
  - Retail Sales
  - Specified Wholesale Sales by Counterparty
    - Add Requirement to Report Facility ID
  - Unspecified Wholesale Sales by Region
- Indirect Electricity and Thermal Energy Purchased & Consumed (MWh and MMBtu) for Buildings

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ARB Database Subroutines

- Match facility emissions to specified purchases and specified sales
- Match unspecified purchases to unspecified emission factors for
  - PNW, PSW, CAISO Markets, Other In-State, or Unknown
  - Description of how factors are determined to be included in regulation
- Calculate emission factors for each retail provider for
  - Unspecified Wholesale Sales and Exports
  - Retail Sales

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Cogeneration Facilities

(§95112)

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Reporting Requirements

- Report CO_2, CH_4, and N_2O Emissions
- Facility and Generating Unit Information
- Electricity Generation
- Thermal Energy Production
- Distributed Emissions
- Indirect Energy Use

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Distributed Emissions

- CO_2 Emissions from Fuel Combustion
  - Distributed between Thermal Energy and Electricity Generation
  - Distributed between Multiple Product Outputs
- Efficiency Method
  - Topping Cycle Plant
    - Facility-Specific Electricity Generation Efficiency
    - Default Value for Thermal Energy Efficiency
      - Option to calculate or use manufacturer rating
  - Bottoming Cycle Plant
    - ARB Request Comments for Requirements
- Detailed Efficiency Method
  - To Be Developed

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Other Comments Today?

- Schedule
- Verification
- Methods
- Others?
- Comments by phone, email, writing are also encouraged
- Comments by September 5 will be most effective for staff proposal

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Next Steps

- Collect comments on draft regulation language
- Prepare regulation proposal and staff report
- Release staff proposal for official 45 day comment period on October 19
- Board Hearing in December to receive public testimony and consider staff proposal

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ARB Contacts

Richard Bode – Chief
Emissions Inventory Branch
rbode@arb.ca.gov
(916) 323-8413

Doug Thompson – Manager
Climate Change Reporting Section
dthompson@arb.ca.gov
(916) 322-7062

Robert Jenne – Legal Counsel
rjenne@arb.ca.gov
(916) 322-3762

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

Staff Contacts

Reporting Regulation, Patrick Gaffney
pgaffney@arb.ca.gov (916) 322-7303

Stationary Combustion, Rajinder Sahota
rsahota@arb.ca.gov (916) 323-8503

Verification, Rajinder Sahota
rsahota@arb.ca.gov (916) 323-8503

Power/Retail Providers, Pamela Burmich
pburmich@arb.ca.gov (916) 323-8475

Cement & Cogeneration, Dana Papke
dpapke@arb.ca.gov (916) 323-2308

Refineries & Hydrogen Plants, Byard Mosher
bmosher@arb.ca.gov (916) 323-1185

Information

- Workshop materials:
  http://www.arb.ca.gov/cc/ccei/ccei.htm
- Draft regulation:
  http://www.arb.ca.gov/cc/ccei/reporting/reporting.htm

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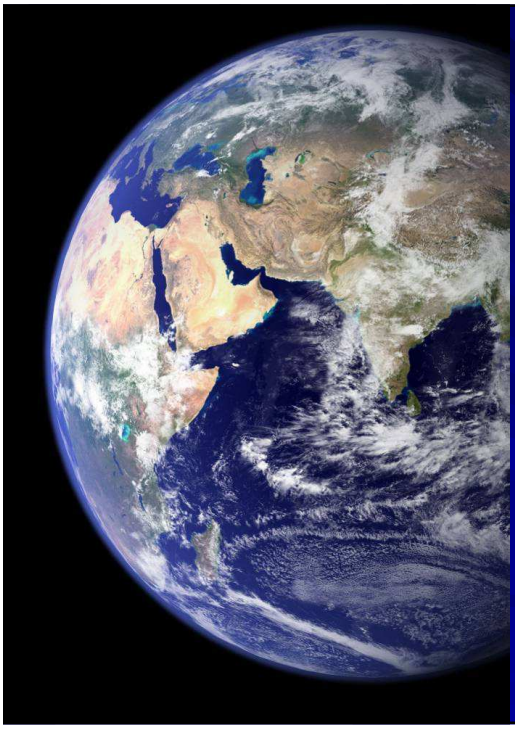

Thank you.

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