



EPA Greenhouse Gas Reporting Program: Petroleum and Natural Gas Systems

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*Transportation Research Board Annual Meeting
January 17, 2013*

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Overview



- Background on GHG Reporting Program (GHGRP)
- Petroleum and Natural Gas Systems in GHGRP
- Reporting requirements
- Data collection, verification, and publication
- Looking ahead

Key Elements of GHG Reporting Program



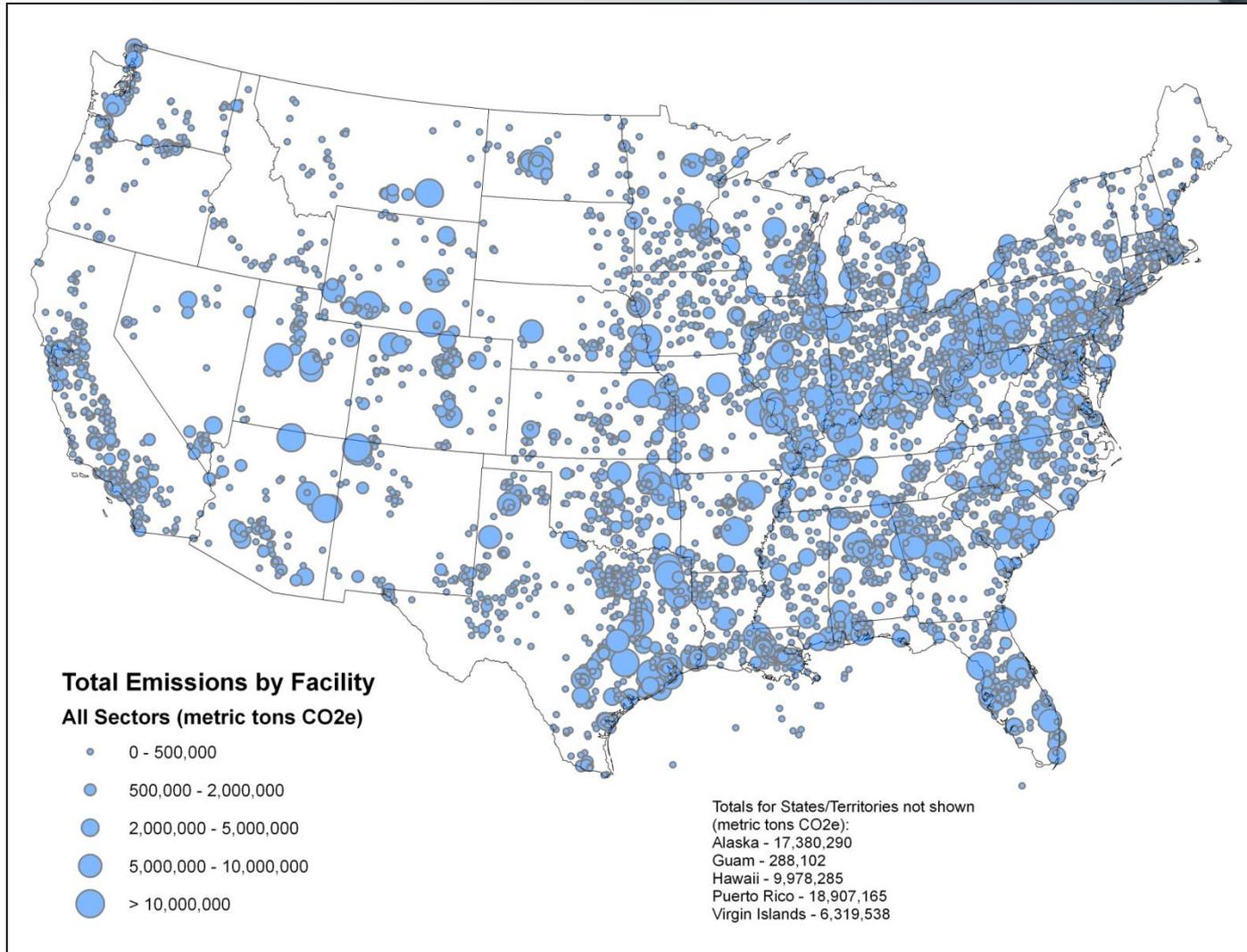
- Program launched in response to FY 2008 Consolidated Appropriations Act
- Annual reporting of GHGs by 41 source categories
 - 33 types of direct emitters
 - 6 types of suppliers of fuel and industrial GHGs
 - Facilities that inject CO₂ underground for geologic sequestration, enhanced oil recovery, or any other purpose
- 25,000 metric tons CO₂ equivalent (CO₂e) or more per year reporting threshold for most sources
- Most source categories began collecting data in 2010, with first annual reports submitted to EPA in September 2011
 - An additional 12 source categories began collecting data in 2011, with first annual reports submitted to EPA in September 2012
- Reporting only, no control or use requirements

Source Categories Covered by GHG Reporting Program



Power	Refining & Petrochem	Other Chemicals	Combustion	Waste	Metals	Minerals	Pulp & Paper	High GWP Gases
<ul style="list-style-type: none"> - Electricity Generation - Electrical Equipment Mfg. - Electrical Equipment Use 	<ul style="list-style-type: none"> - Petroleum Refineries - Petrochem. Production 	<ul style="list-style-type: none"> - Adipic Acid - Ammonia - Hydrogen Production - Nitric Acid - Phosphoric Acid - Titanium Dioxide 	<ul style="list-style-type: none"> - Stationary Combustion 	<ul style="list-style-type: none"> - Industrial Waste Landfills - Industrial Wastewater Treatment - MSW Landfills 	<ul style="list-style-type: none"> - Aluminum - Ferroalloy - Iron & Steel - Lead - Magnesium - Silicon Carbide - Zinc 	<ul style="list-style-type: none"> - Cement - Glass - Lime - Misc. Carbonate Use - Soda Ash 	<ul style="list-style-type: none"> - Pulp & Paper 	<ul style="list-style-type: none"> - Electronics Mfg. - Fluorinated GHG Production - HCFC-22 Prod./HFC-23 Destruction - Pre-Charged Equipment Import/Export - Industrial Gas Suppliers
Petroleum & Natural Gas Systems			Fuel Suppliers			Carbon Capture & Sequestration		Mining
<ul style="list-style-type: none"> - Onshore Production - Offshore Production - Natural Gas Processing - Natural Gas Transmission/Compression - Natural Gas Distribution - Underground Natural Gas Storage - Liquefied Natural Gas Storage - Liquefied Natural Gas Import/Export 			<ul style="list-style-type: none"> - Coal-Based Liquid Fuels Suppliers - Natural Gas and Natural Gas Liquids Suppliers - Petroleum Product Suppliers 			<ul style="list-style-type: none"> - Geologic Sequestration of CO₂ - Injection of CO₂ - CO₂ Suppliers 		<ul style="list-style-type: none"> - Underground Coal Mines <div style="border: 1px solid black; padding: 5px; text-align: center;"> Direct Emitters Suppliers CO₂ Injection </div>

GHGRP Reporting Year 2010: Locations of Direct Emitting Facilities



Reporting Year 2010 data presented here reflect data reported to the GHGRP as of April 6, 2012

Petroleum and Natural Gas Systems in GHGRP (Subpart W)



Production & Processing

1. Drilling and Well Completion
2. Producing Wells
 - a. Onshore Wells
 - b. Offshore Wells
3. Gathering and Boosting (not covered by Subpart W)
4. Gas Processing Plant

Natural Gas

Transmission & Storage

5. Transmission Compressor Stations
6. Underground Storage
7. LNG or Propane/Air Plant
8. LNG Import-Export Equipment

Distribution

9. Distribution Mains/Services
10. Regulators and Meters

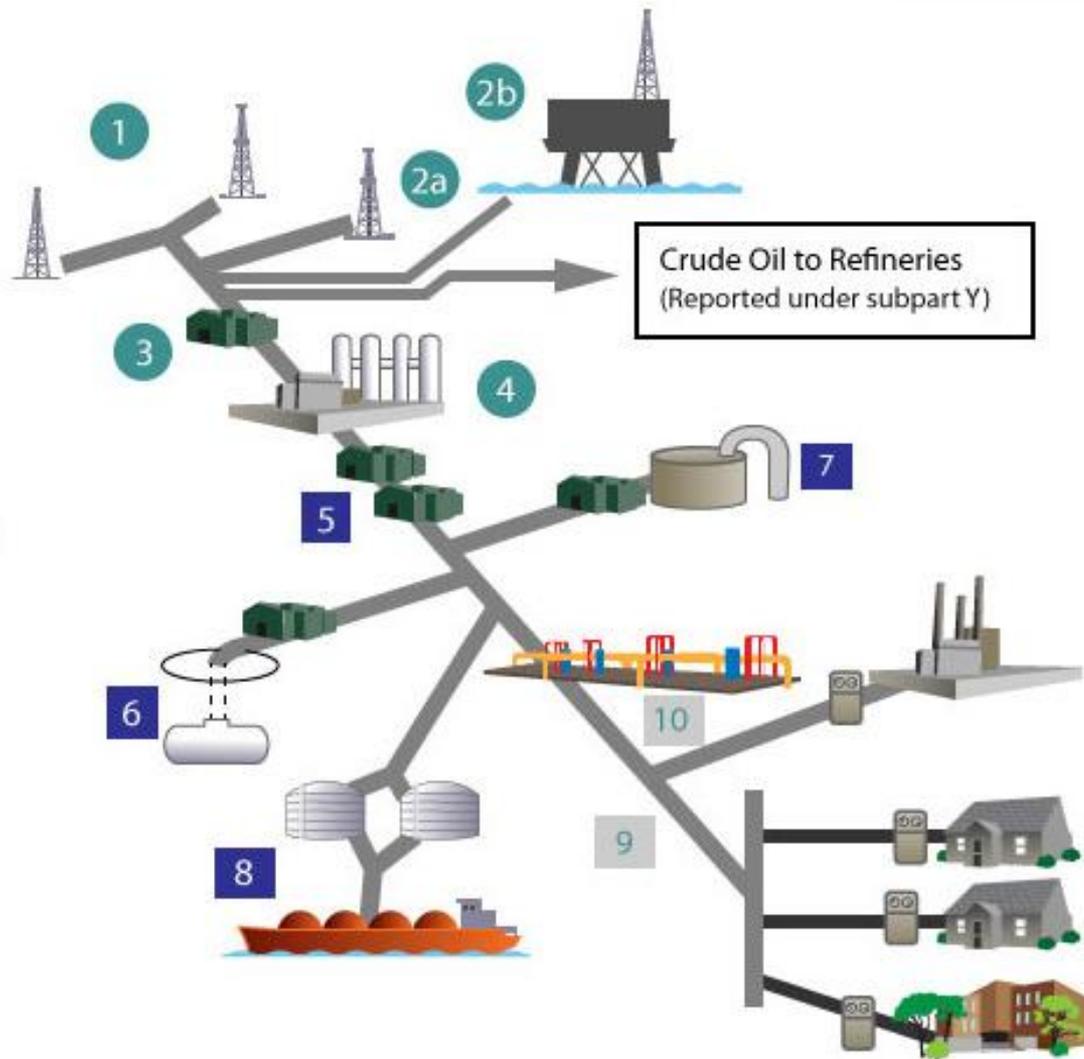
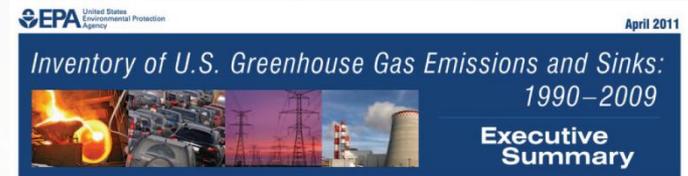


Figure adapted from American Gas Association and EPA Natural Gas STAR Program

How Does GHG Reporting Program Relate to US GHG Inventory?



- Inventory of GHG Emissions and Sinks – annual report submitted to UNFCCC
 - “Top Down” approach: aggregated national data by sectors
 - Limited geographic distribution
 - Estimates based on data from variety of sources
 - Sectors defined by UNFCCC
 - Covers 100% of US GHG emissions and sinks
- Greenhouse Gas Reporting Program
 - “Bottom Up” approach: facility-level data above threshold
 - Geographic data collected
 - Calculated emissions from different group of industry sectors
 - Additional data collected on facilities
 - Covered 80% of US GHG emissions in Reporting Year 2010

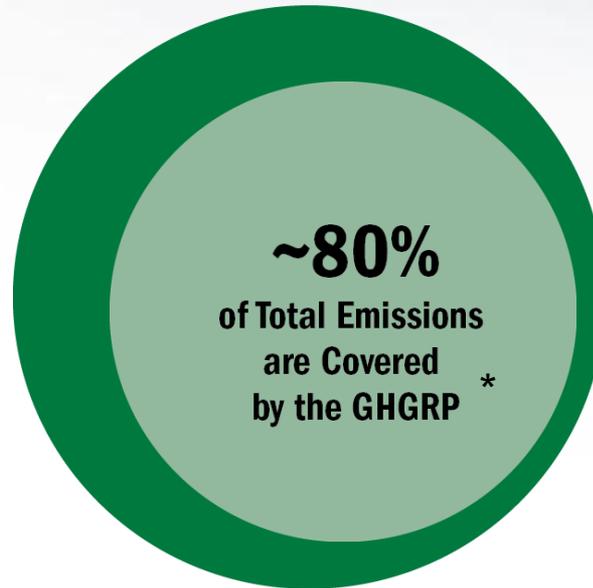


ghgdata

GHG Emissions Coverage: 2010



6,822
Million Metric Tons CO₂e
(from the Inventory)



* GHGRP data does not include emissions from agricultural and land use changes and sources less than 25,000 mtCO₂e.

12 source categories required to submit annual data to GHGRP starting with reporting year 2011. These additions will bring emissions coverage to ~85-90%.

Methodologies



- GHG calculation methods for petroleum and natural gas systems
 - Monitor process parameters
 - Calculate GHGs using equations in rule
 - Examples of calculation methods
 - Direct measurement
 - Emission factors
 - Engineering calculations
- In addition to monitoring, the GHGRP includes:
 - Calibration requirements
 - Missing data procedures
 - Recordkeeping requirements

What Is Not Reported?

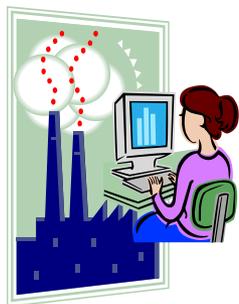


- Indirect emissions (e.g., electricity use)
- Emission offsets

Overview of GHG Data Collection, Verification and Publication



- Electronic reporting to EPA



**Reporter (Facility
or Supplier)**



**Web Form or
Bulk XML Upload**



**EPA Database
Servers**



**EPA Verifies &
Publishes GHG Data**

Data Collection: e-GGRT



- Data collection through EPA's electronic Greenhouse Gas Reporting Tool (e-GGRT)
- Web-based application for facilities/suppliers to report directly to EPA
- Individual subpart modules, each with self-guided web forms or reporting forms
 - Also includes option for direct data upload via XML
- Annual reports are electronically submitted and CROMERR compliant

Electronic GHG Reporting Tool



The screenshot shows the EPA e-GGRT interface for a facility named 'CHIU_TEST_Facility'. The main heading is 'Subpart NN: Suppliers of Natural Gas and Natural Gas Liquids (2011)'. The interface includes a navigation menu with 'HOME', 'FACILITY REGISTRATION', 'FACILITY MANAGEMENT', and 'DATA REPORTING'. A sidebar on the left contains 'e-GGRT Help' and 'Using e-GGRT for Subpart NN reporting'. The main content area is titled 'CO₂ QUANTITIES CALCULATION' and explains that Equation NN-6 will calculate CO₂ quantities. A callout box on the right provides a definition for '(Eq. NN-1) Total CO₂ quantities that would result from the complete combustion or oxidation of the annual supply of the natural gas received at the city gate(s)'. Below this, a warning icon indicates 'Eq. NN-1: View Validation'. The 'e-GGRT Help link(s) provided' section lists several equations: Equation Summary (NN-6), CO₂: (NN-1) Potential CO₂ Quantities associated with Natural Gas Received at the City Gate(s), CO₂: (NN-3) Potential CO₂ Quantities associated with Natural Gas delivered to Transmission Pipelines or Other LDCs, CO₂: (NN-4) Potential CO₂ Quantities associated with Natural Gas Received by End-users that Receive a Supply ≥ 460,000 Thousand scf per Year, and CO₂: (NN-5) Potential CO₂ Quantities associated with product received that bypassed the city gate(s). At the bottom, the 'SUMMARY' section shows 'Equation NN-1' with the formula $CO_{2i} = 1 \times 10^3 * Fuel * HHV * EF$. A callout box explains that hovering over an element in the equation reveals its definition. A table at the very bottom has columns for 'Year', 'Product', 'Fuel', 'HHV', 'EF', and 'Calculated Result'.

Tab Navigation

Context-Sensitive Help

Rolling "tax refund" style GHG Calculator

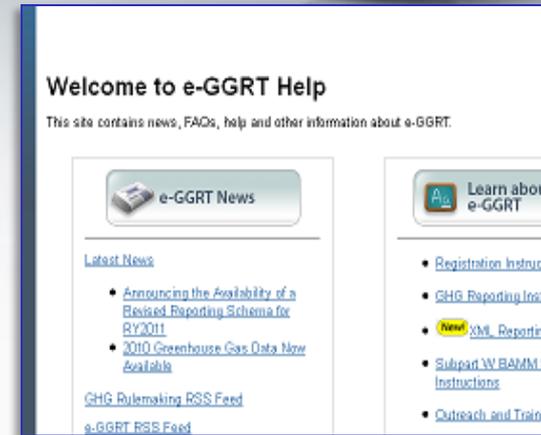
Real-time Data Quality Feedback

Part 98 Rule Equations

High Quality Data Begins with High Quality Submissions



- Comprehensive GHGRP Help Site
 - <http://www.ccdsupport.com>
- Context-Sensitive Help within e-GGRT
- Staffed Help Desk
 - Multi-tier ticket triage
 - Received over 3,000 tickets during RY2010 Reporting Season
- Training Webinars
 - Rule overviews, e-GGRT overviews, registration, testing and subpart webinars



Data Verification



- Reporter self certifies annual report
- Electronic verification
 - Pre-submittal warning for reporters entering data outside reasonable ranges or missing data
 - Post-submittal verification through logic checks, use of outside data sets, and statistical analyses across facilities
 - Improvements to ranges & algorithms over time with real data
- Staff review and direct follow-up
 - Staff review electronic verification results
 - Phone/email follow-up, as necessary
 - Built in secure communications via e-GGRT
- Resubmissions, as needed

Examples of Verification Checks

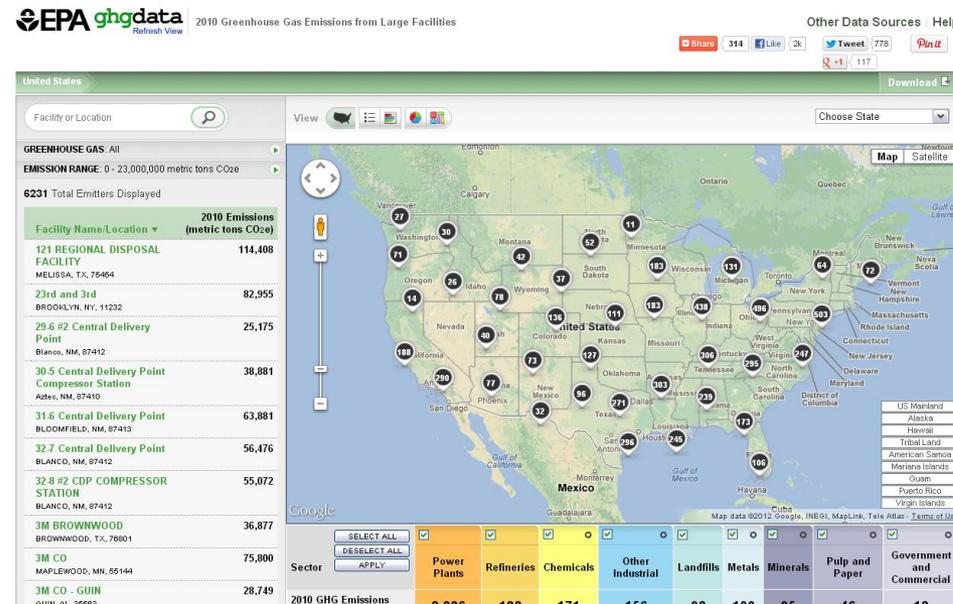


Type of Check	Example
Validation	The annual CH ₄ emissions for the subpart have not been reported
Range	Unit operating hours cannot exceed 8,784
Algorithm	$A + B = C$
Statistical	Annual emissions have been identified as a potential outlier as compared to similarly sized facilities

Data Publication



- 2010 data published in January 2012
- Data publication website allows stakeholders and the public to access the key data elements quickly and easily and to sort data by location, sector, and by gas
- Published data available at: <http://ghgdata.epa.gov>



Schedule



Milestone	Date
Reporting Year 2010 Publication	January 2012
Reporting Deadline for Reporting Year 2011 (most source categories)	April 2012
Reporting Deadline for Reporting Year 2011 (source categories reporting for the first time in 2012)	September 2012
Reporting Year 2011 Publication	Early 2013
Reporting Deadline for Reporting Year 2012 (all source categories)	April 1, 2013

For More Information



GHG Reporting Program:
<http://www.epa.gov/ghgreporting/>



Published Data:
<http://ghgdata.epa.gov>



Questions?
Email: GHGReporting@epa.gov