

# US EPA Mandatory GHG Reporting Program Update: *Measuring, Reporting and Verifying GHG Data*

20<sup>th</sup> International Emissions Inventory  
Conference

*August 14<sup>th</sup> 2012, Tampa, FL*

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U.S. Environmental Protection Agency



# Outline



- **Overview of the Mandatory GHG Reporting Rule**
  - GHGRP vs GHG Inventory
  - Coverage
  - Methodologies
  - Data Flow: Collecting, Verifying, Publishing GHG Data
- **Electronic Reporting Tool (e-GGRT)**
- **EPA - State Collaboration**
- **Verifying GHG Data**
- **Publishing GHG Data**
- **RY 2010 Highlights**

# **GHGRP Milestones & The Emissions Inventory Conference**



3

**April, 2009**

***18<sup>th</sup> Emissions Inventory Conference, Baltimore***

- proposed mandatory reporting rule

**September, 2010**

***19<sup>th</sup> Emissions Inventory Conference, San Antonio***

- final rule, technical corrections, began data system development

**August, 2012**

***20<sup>th</sup> Emissions Inventory Conference, Tampa***

- successfully collected, verified and published data

# Overview: U.S. EPA GHG Reporting Rule

4



- Annual reporting of GHG by:
  - Rule covers 41 source categories for reporting, accounting for 85-90% of total U.S. GHG emissions:
    - 33 types of direct emitters
    - 6 types of suppliers of fuel and industrial GHG
  - Facilities that inject CO<sub>2</sub> underground for geologic sequestration, enhanced oil recovery, or any other purpose.
- Direct reporting to EPA electronically
- EPA verification of emissions data
- Monitoring began in 2010 for most emission sources with first reports submitted to EPA in September, 2011



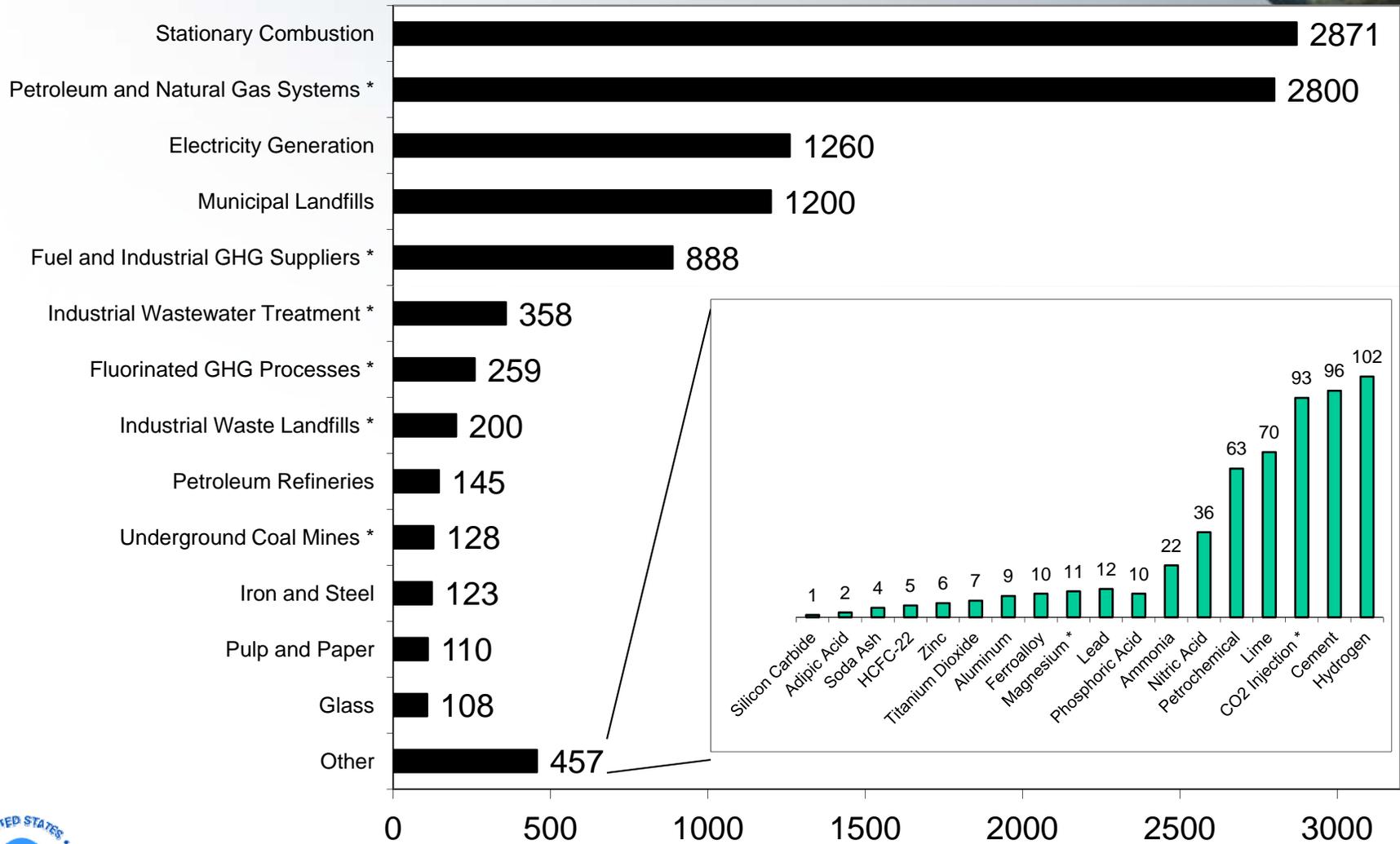
# **GHGRP vs. U.S. GHG Inventory**



- **The U.S. GHG Inventory is a comprehensive top-down assessment of national GHG emissions and removals which presents emissions across multiple years starting in 1990.**
  - U.S. GHG emissions calculated using internationally-accepted methods and nationally appropriate statistics
  - Emissions estimates not provided at the geographic or facility level
  - Includes small industrial emitters, residential and commercial sectors
  - Includes agriculture and land-use/forestry sectors
- **When compared in aggregate, some of the summary emissions totals for specific industries appear different in the Inventory and GHGRP.**
  - Different Source Category Definitions
  - Reporting Threshold
  - Lack of Disaggregated Data to Represent Certain Industries
  - Use of Continuous Emissions Monitoring Technologies
  - Differences in use of Default International Factors from Facility-Specific Methods



# Approximately 10,000 U.S. Facilities & Suppliers Covered



\* Approximate (first reports due Sep 2012)



# What GHGs Are Reported?



- CO<sub>2</sub>
- CH<sub>4</sub> (methane)
- N<sub>2</sub>O (nitrous oxide)
- Fluorinated GHGs
  - HFCs (hydrofluorocarbons)
  - PFCs (perfluorocarbons)
  - SF<sub>6</sub> (sulfur hexafluoride)
  - Other fluorinated gases (except CFC and HCFC and gases <1 mm Hg @25° C)



# Methodologies (Measuring GHGs)



8

- Methodologies developed from extensive review of existing GHG programs
- Tiering approach used in many sub parts (lower order to higher order)
- Example: Stationary Combustion employs 4 Tier Approach
- In addition to calculation methodologies, the GHG Rule Requires:
  - Adherence to and reference of Standards (ASTM, ISO etc...)
  - Calibration requirements
  - Missing data procedures
  - Extensive recordkeeping requirements



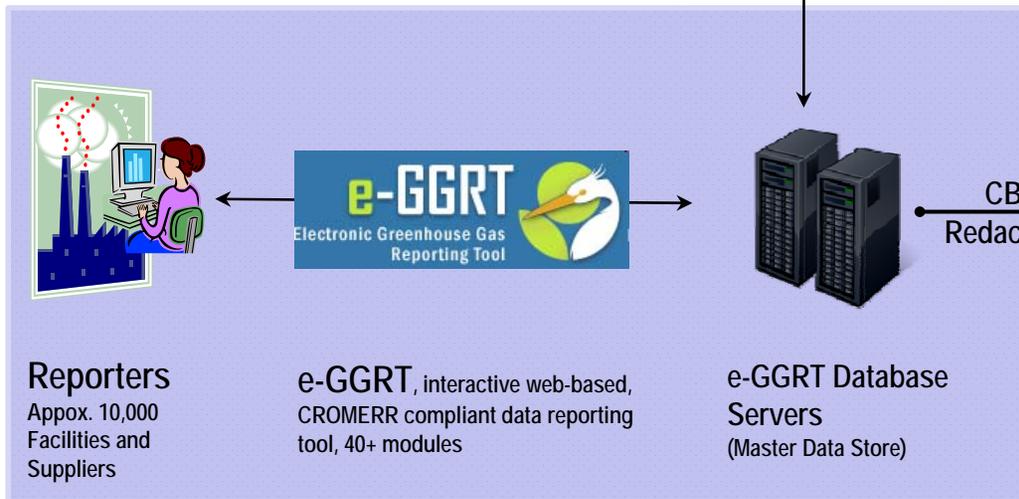


# Collecting, Verifying, Publishing GHG Data

EPA GHG Data System



Data Verification (EPA)



Collection (e-GGRT XML Reporting Schema)



**EPA EnviroFacts:** (Under Development)  
Serviceable, searchable and separately hosted copy of non-CBI dataset. Open Access to Public



**State-Specific Service**  
Oriented data flow over State-EPA Exchange Network (e-GGRT XML Reporting Schema)



**Downloadable XLS, XML & HTML Data Files,** all non-CBI data (e-GGRT XML Reporting Schema). Open Access to Public

CBI Redaction



e-GGRT Datamart



**GHGRP Data Publication Website**  
(ghgdata.epa.gov)  
GUI with open-source APIs.

Publication (Datamart XML Schema)

# Data Collection: e-GGRT



- EPA's **electronic Greenhouse Gas Reporting Tool** (e-GGRT)
- Web-based application for facilities/suppliers to report directly to EPA
- For Reporting Year 2010, includes 29 individual sub-part modules, each with self-guided web forms
- Additional 12 Source Category modules available in mid-2012
- Also includes option for direct data upload via XML
- Annual Reports are electronically submitted and CROMERR Compliant
- Publicly accessible “beta” version available June 4<sup>th</sup>, 2012 at: [sandbox.ccdsupport.com](http://sandbox.ccdsupport.com)





# Electronic Reporting Tool

**EPA** United States Environmental Protection Agency

**e-GGRT** Electronic Greenhouse Gas Reporting Tool

HOME FACILITY REGISTRATION FACILITY MANAGEMENT DATA REPORTING

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e-GGRT Help

- Using e-GGRT for Subpart PP reporting
- Part 98 Glossary
- Part 98 Citations

CHIU\_TEST\_Facility

### Subpart PP: Suppliers of Carbon Dioxide (2011)

**Subpart Overview**

**SELECT SUPPLIER CLASSIFICATION**

As a supplier of carbon dioxide (CO<sub>2</sub>), please select below the classification that describes your facility. This will enable e-GGRT to tailor the subpart screens to properly include those reporting requirements germane to your facility. \* denotes a required field

**SUPPLIER TYPE**

Please select the classification that describes your facility \*

- Capture Facility  
A facility with production process units that capture a CO<sub>2</sub> stream for purposes of supplying CO<sub>2</sub> for commercial applications or that capture and maintain custody of a CO<sub>2</sub> stream in order to sequester or otherwise inject it underground. Capture refers to the initial separation and removal of CO<sub>2</sub> from a manufacturing process or any other process.
- Extract Facility  
A facility with CO<sub>2</sub> production wells that extract or produce a CO<sub>2</sub> stream for purposes of supplying CO<sub>2</sub> for commercial applications or that extract and maintain custody of a CO<sub>2</sub> stream in order to sequester or otherwise inject it underground.
- Importers or Exporters  
Importers or exporters of bulk CO<sub>2</sub>.

CANCEL NEXT →

**Interactive  
Tax software-like  
Interview  
workflow**





# Reporting Tool, continued

Tab Navigation

Context-Sensitive Help

Rolling "tax refund" style GHG Calculator

Real-time Data Quality Feedback

Part 98 Rule Equations

United States Environmental Protection Agency

HOME FACILITY REGISTRATION FACILITY MANAGEMENT DATA REPORTING

e-GGRT Electronic Greenhouse Gas Reporting Tool

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e-GGRT Help  
Using e-GGRT for Subpart NN reporting

CHI\_TEST\_Facility  
**Subpart NN: Suppliers of Natural Gas and Natural Gas Liquids (2011)**  
Subpart Overview » Natural Gas » Eq. NN-6 » Eq. NN-1

**CO<sub>2</sub> QUANTITIES CALCULATION**  
Equation NN-6 will calculate CO<sub>2</sub> quantities associated with the combustion or oxidation of natural gas supplied to end-users that receive less than 460,000 mscf per year and not used for deliveries by the LDC within the reported year from the total CO<sub>2</sub> that would result from natural gas received at transmission pipelines or other LDCs, natural gas delivered to end-users that receive a supply greater than or equal to 460,000 mscf per year and the net natural gas that is liquefied and/or stored and not used for deliveries by the LDC within the reported year from the total CO<sub>2</sub> associated with the natural gas received at the city gate(s) and from local production. For additional information about the CO<sub>2</sub> quantities calculations, please use the e-GGRT Help link provided.

▶ **Equation Summary (NN-6)**

- ▶ **CO<sub>2</sub>: (NN-1) Potential CO<sub>2</sub> Quantities associated with Natural Gas Received at the City Gate(s)**
  - ▶ **Fuel:** Annual Volume of Natural Gas Received at the City Gate(s)
  - ▶ **HHV and EF:** Higher Heating Value and Emission Factor
- ▶ **CO<sub>2</sub>: (NN-3) Potential CO<sub>2</sub> Quantities associated with Natural Gas delivered to Transmission Pipelines or Other LDCs**
- ▶ **CO<sub>2</sub>: (NN-4) Potential CO<sub>2</sub> Quantities associated with Natural Gas Received by End-users that Receive a Supply ≥ 460,000 Thousand scf per Year**
- ▶ **CO<sub>2</sub>: (NN-5) Potential CO<sub>2</sub> Quantities associated with product received that bypassed the city gate(s) such as natural gas received from local production and the Net Natural Gas that is Liquefied and/or Stored/Removed from storage by the LDC within the Reported Year**

**(Eq. NN-1) Total CO<sub>2</sub> quantities that would result from the complete combustion or oxidation of the annual supply of the natural gas received at the city gate(s).**

Eq. NN-1: View Validation

**SUMMARY**

**Equation NN-1**  $CO_{2i} = 1 \times 10^3 * Fuel * HHV * EF$

Hover over an element in the equation above to reveal a definition of that element.

Year	Product	Fuel	HHV	EF	Calculated Result
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# Fuel Selection Screenshot

HOME
FACILITY REGISTRATION
FACILITY MANAGEMENT
DATA REPORTING
Electronic Greenhouse Gas Reporting Tool

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? e-GGRT Help

Using e-GGRT for Subpart D reporting

**Chiu Industries (2010)**

**Subpart D: Electricity Generation**

[Subpart D Overview](#) » [Add a Fuel](#)

**ADD A FUEL**

Use this page to select a fuel combusted in this electricity-generating unit. Repeat this process for each fuel consumed by this electricity-generating unit over the course of the reporting year. If the fuel you wish to add is not on the list, click "ADD an Other Fuel or Blend" to add a new fuel type. For additional information about reporting fuel information, please use the e-GGRT Help link(s) provided.

<p><b>COAL AND COKE</b> <span style="float: right;"><a href="#">HIDE</a></span></p> <ul style="list-style-type: none"> <li><input type="radio"/> Mixed (Industrial sector)</li> <li><input type="radio"/> Mixed (Industrial coking)</li> <li><input type="radio"/> Mixed (Commercial sector)</li> <li><input type="radio"/> Coke</li> <li><input type="radio"/> Mixed (Electric Power sector)</li> <li><input type="radio"/> Subbituminous</li> <li><input type="radio"/> Bituminous</li> <li><input type="radio"/> Anthracite</li> <li><input type="radio"/> Lignite</li> </ul>	<p><b>PETROLEUM PRODUCTS</b> <span style="float: right;"><a href="#">SHOW</a></span></p> <p><b>OTHER FUELS - SOLID</b> <span style="float: right;"><a href="#">SHOW</a></span></p> <p><b>OTHER FUELS - GASEOUS</b> <span style="float: right;"><a href="#">HIDE</a></span></p> <ul style="list-style-type: none"> <li><input type="radio"/> Propane Gas</li> <li><input type="radio"/> Blast Furnace Gas</li> <li><input type="radio"/> Fuel Gas</li> <li><input type="radio"/> Coke Oven Gas</li> </ul>
<p><b>NATURAL GAS</b> <span style="float: right;"><a href="#">HIDE</a></span></p> <ul style="list-style-type: none"> <li><input type="radio"/> Natural Gas (Weighted U.S. Average)</li> </ul>	<p><b>BIOMASS FUELS - SOLID</b> <span style="float: right;"><a href="#">SHOW</a></span></p> <p><b>BIOMASS FUELS - GASEOUS</b> <span style="float: right;"><a href="#">SHOW</a></span></p> <p><b>BIOMASS FUELS - LIQUID</b> <span style="float: right;"><a href="#">SHOW</a></span></p> <p><b>SOLID PARTIALLY BIOGENIC FUEL</b> <span style="float: right;"><a href="#">SHOW</a></span></p>

If a fuel is not found among those listed, you can add it to the other fuels and blends list below.

**OTHER FUELS AND BLENDS** [HIDE](#)

No other fuels or blends present.

[+ ADD an Other Fuel or Blend](#)

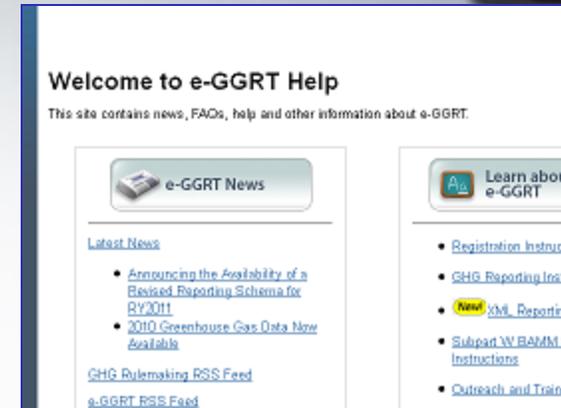
CANCEL
SAVE



# High Quality Data begins with High Quality Submissions



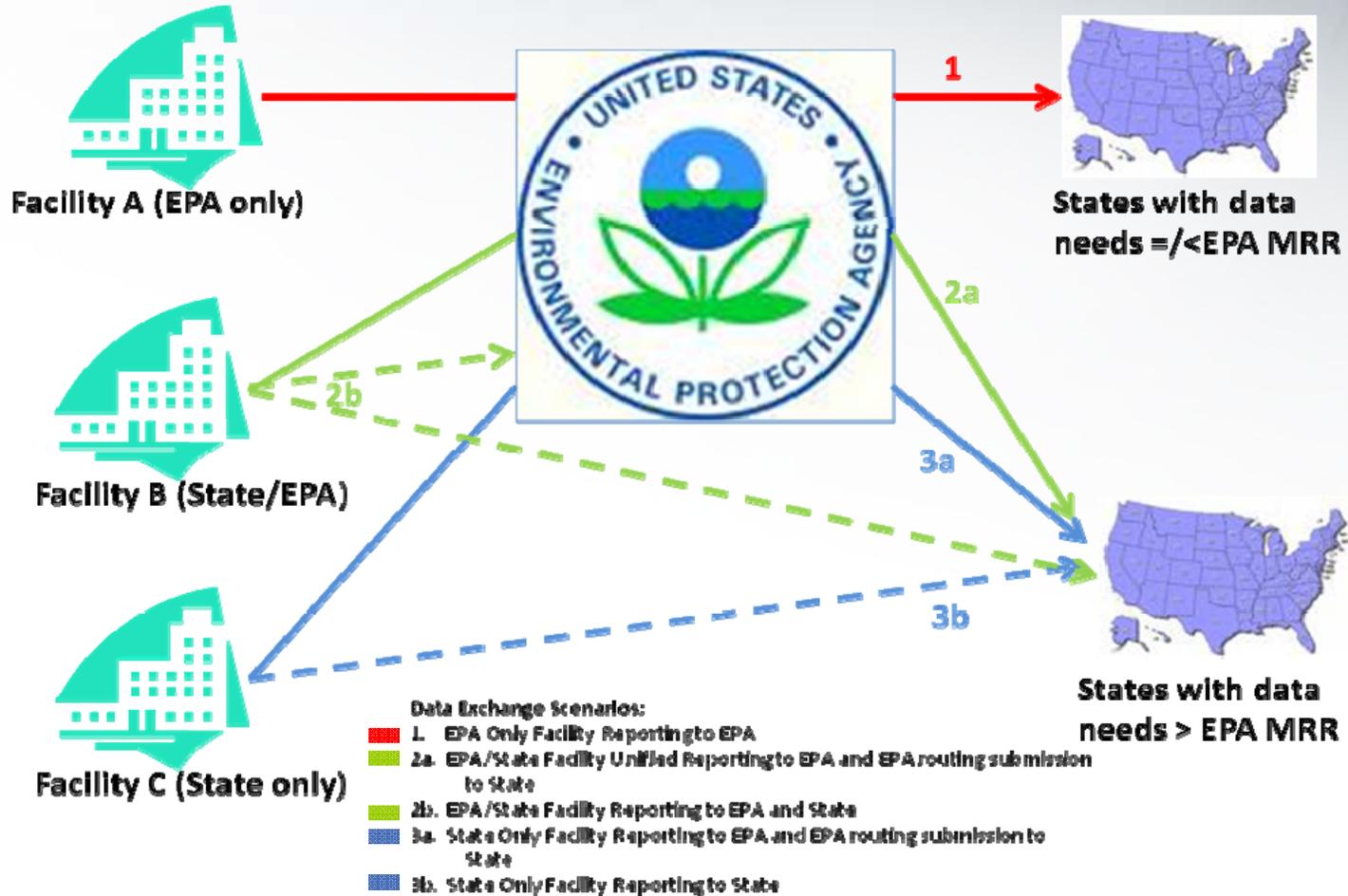
- Real Time Data Quality Feedback
- Comprehensive GHGRP Help Site
  - [www.ccdsupport.com](http://www.ccdsupport.com)
- Context-Sensitive Help within e-GGRT
- Staffed Help Desk
- Multi-Tier Ticket Triage
  - Received over 3,000 tickets during RY2010 Reporting Season
- Training Webinars
  - Part 98 overviews, e-GGRT overviews, registration, testing and subpart webinars
- Beta Testing
  - e-GGRT Sandbox





# State Coordination

- State - EPA Workgroup on GHG Data Collection and Exchange
  - AZ , CA , CO (State co-chair), HI , IA , MA , MI, NC , NJ , NV , NM, OR , WA , WI

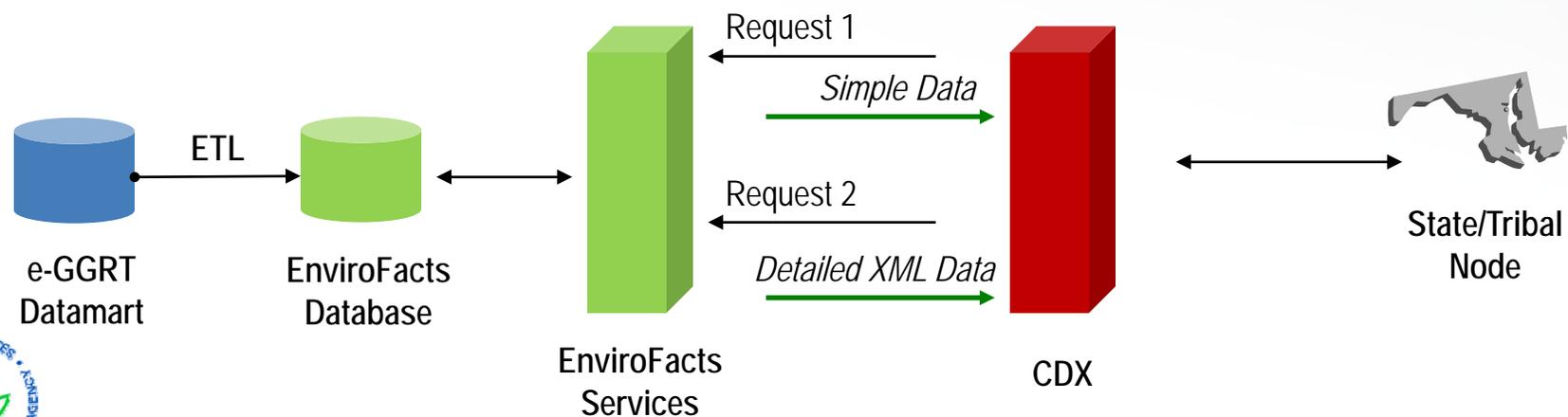


Courtesy of Rob Willis, Ross & Associates

# State Data Service



- Through State-EPA Workgroup, develop EPA to State flow for GHGRP Data
- Two – level query:
  - (1) State/Tribal Node, via service, requests GHG Data using basic parameters (i.e. State, Year, Zip etc ...)
  - (2) EPA returns facility list (including basic GHG data)
  - (3) State/Tribal Node, via service, requests facility-specific XML package





# Cal e-GGRT



# Data Verification



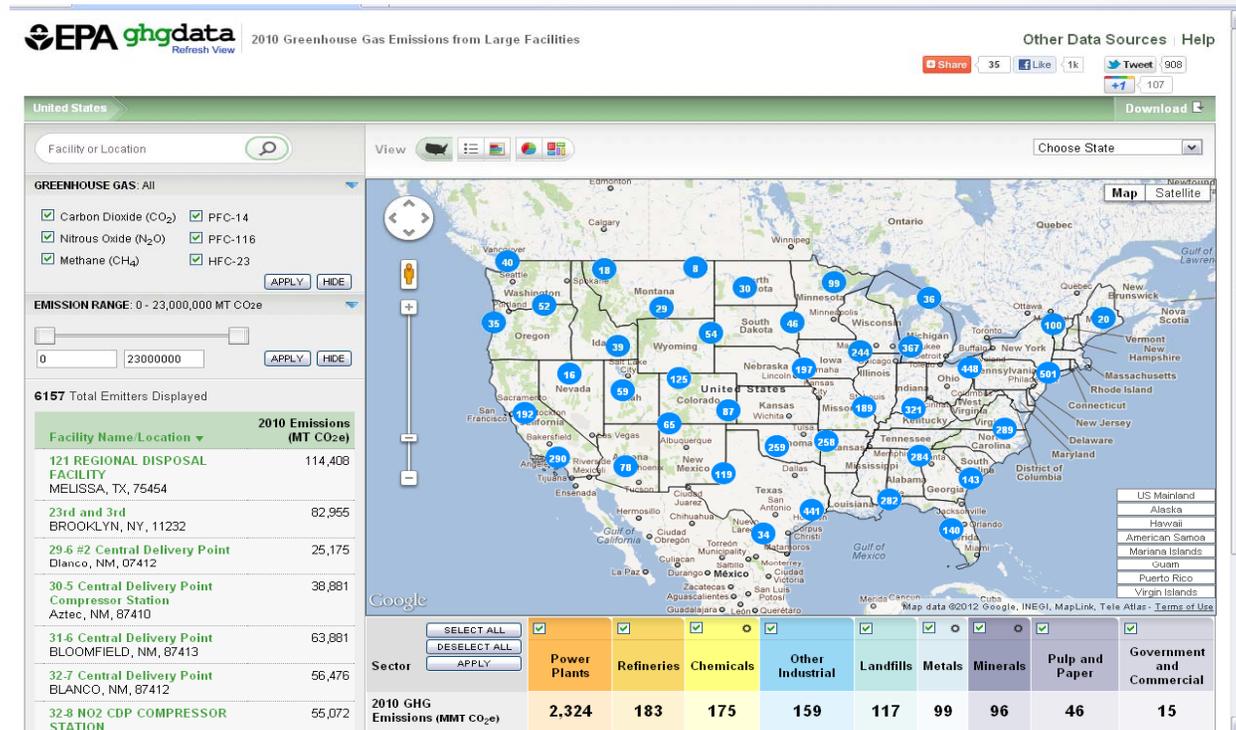
- Reporter Self-Certifies
- Electronic Verification
  - Pre-submittal warning for reporters entering data outside reasonable ranges or missing data
  - Post-submittal verification through logic checks, use of outside data sets, and statistical analyses across facilities
  - Improvements to ranges & algorithms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



# Data Publication



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



# Goals of GHG Data Publication



- Increase understanding of the sources of GHG emissions in the U.S. among the public
- Voluntary management (TRI)
- Improve quality of reported data
- Support regional, state, and local programs
- Provide a tool for schools, students, researchers and journalists
- Information displayed in a simple, transparent manner
  - Allows public to use data in creative ways

# 2010 GHG Data Quick Summary

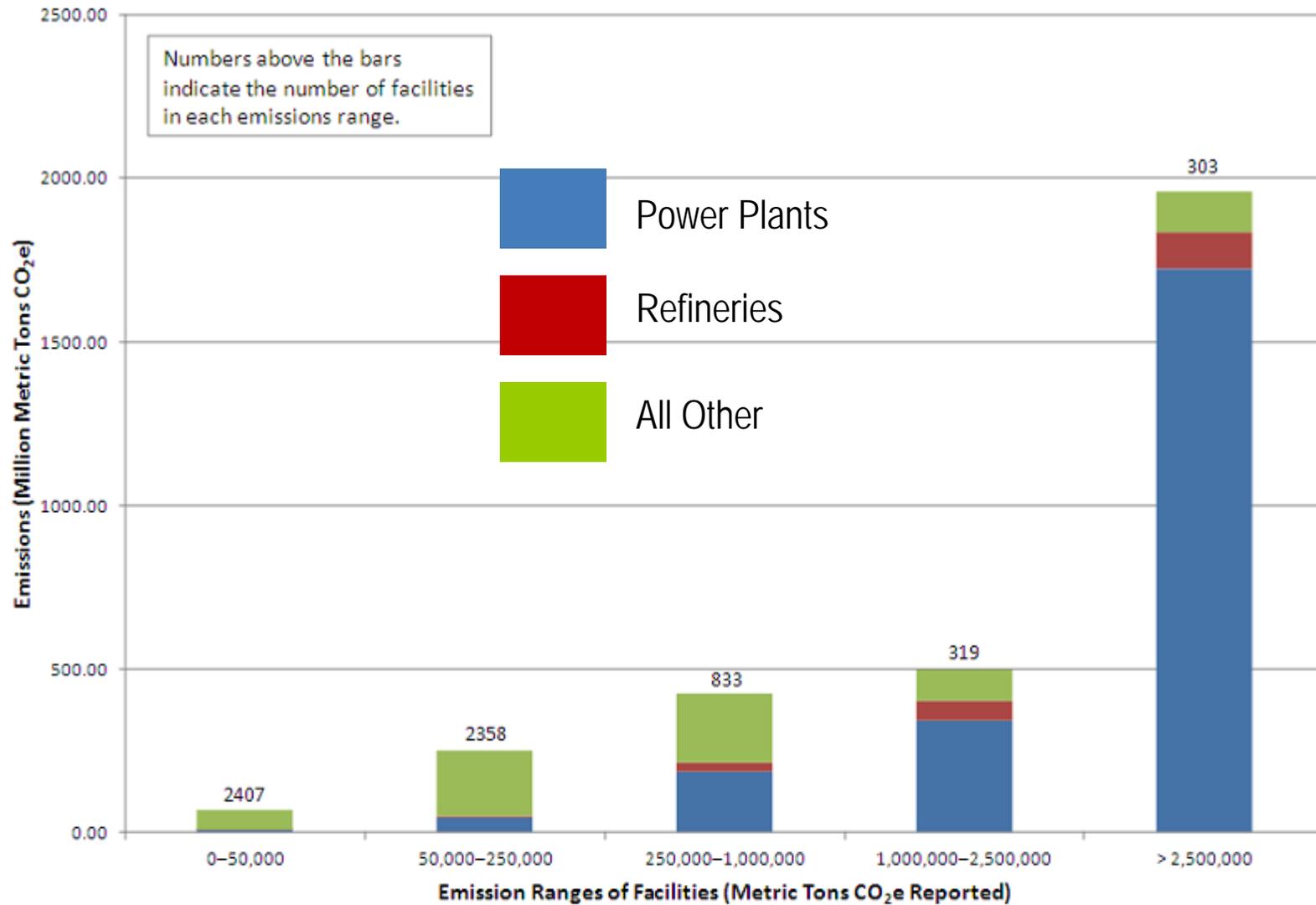


21

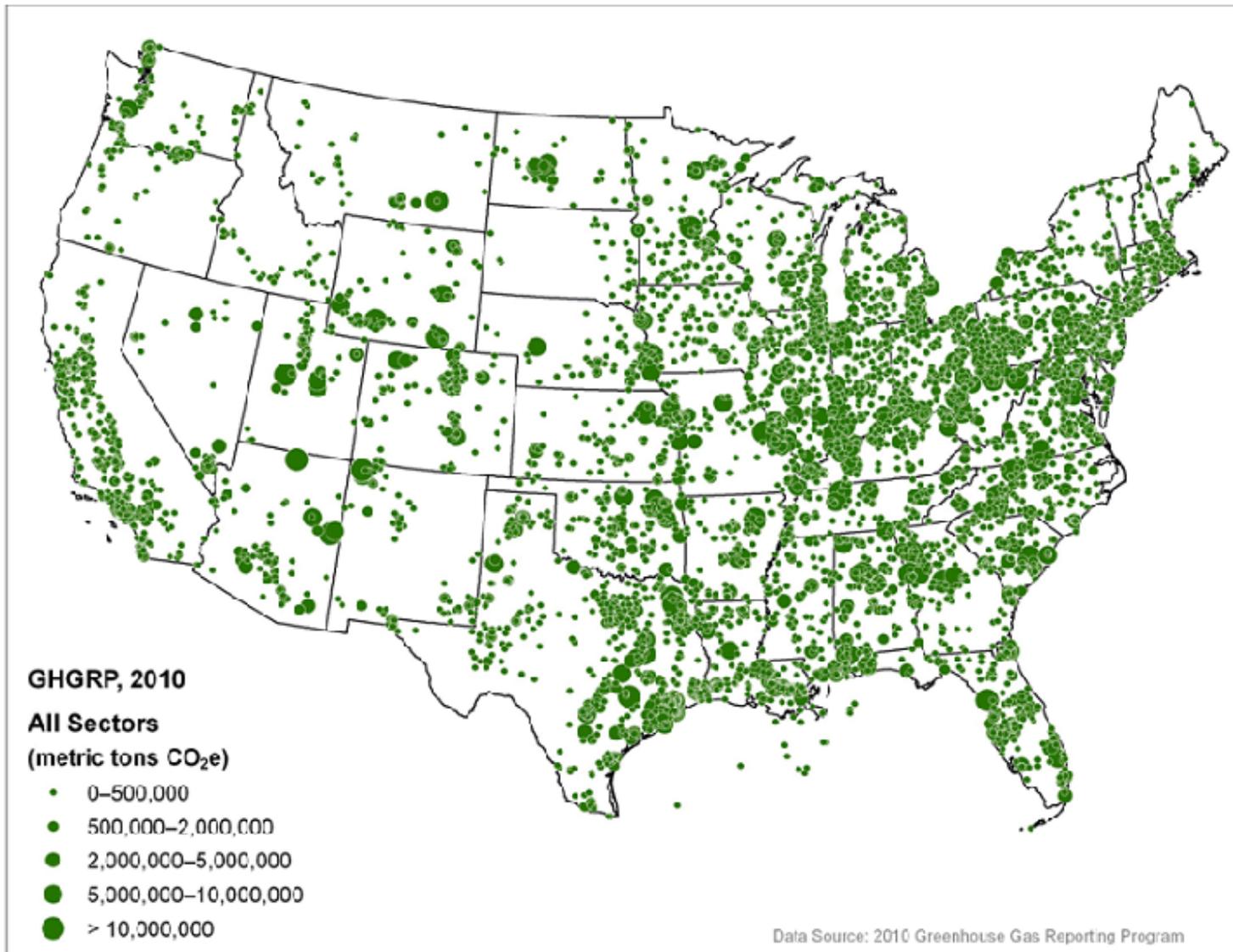
- Reports from over **6,700** entities
- Power plants are largest stationary source of direct emissions- **2,324** MMTCO<sub>2</sub>e
- Refineries are second at **183** MMTCO<sub>2</sub>e
- **100** facilities reported over **7** MMTCO<sub>2</sub>e including **96** power plants, **2** iron and steel mills, **2** refineries
- 2010 data accounts for roughly **80 percent** of total U.S. emissions.
  - This percentage reflects both upstream suppliers and direct emitters.
  - Among the data not covered are GHG emissions from smaller sources, and from agricultural and land-use activities.



# RY 2010 Data: National



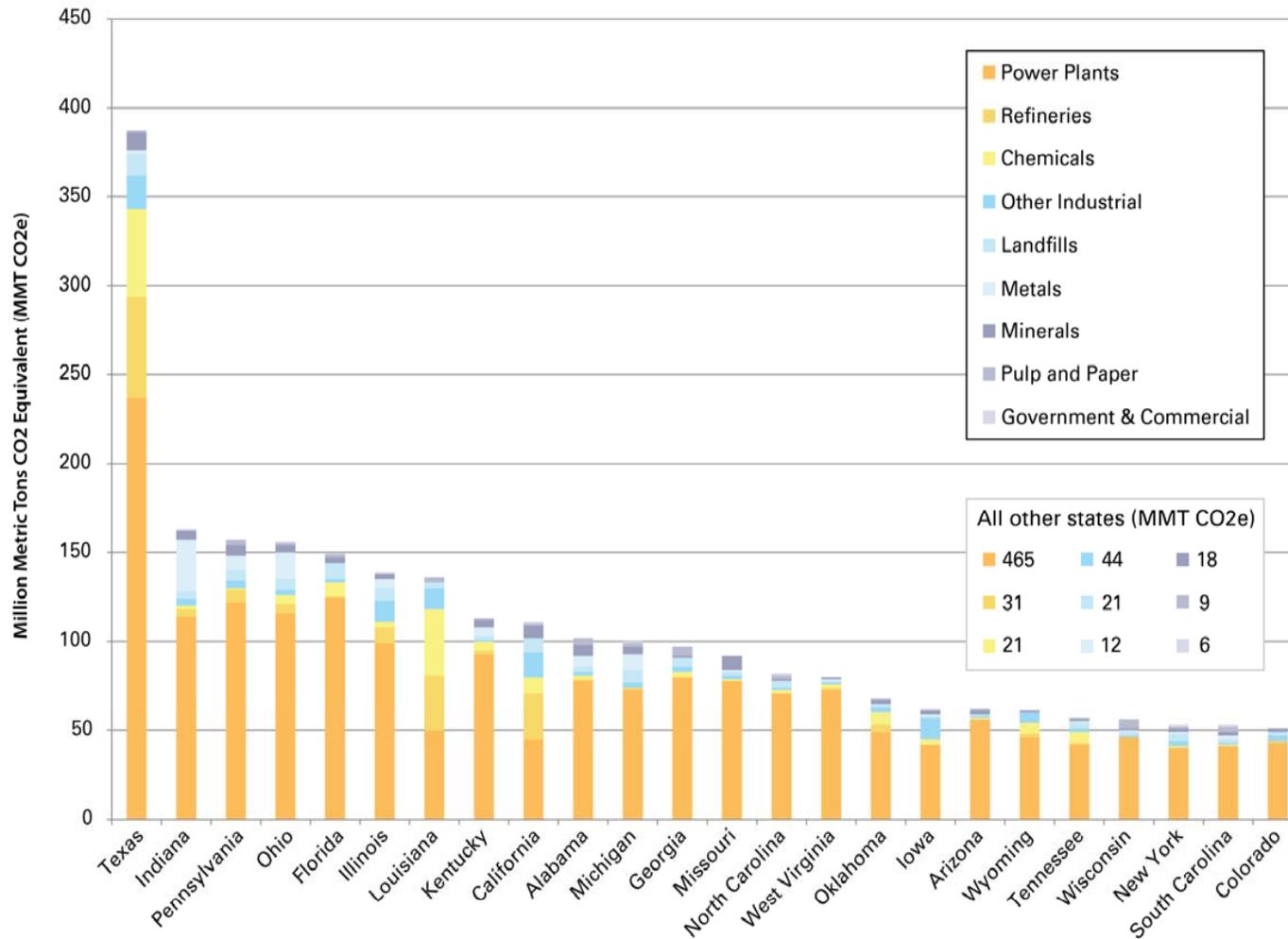
# RY 2010 Data: National



# RY 2010 Data: State Snapshot



Reported GHG Emissions by State/Industry Type - 2010



This figure shows GHG emission totals by state and industry type reported by facilities covered by the Greenhouse Gas Reporting Program in 2010. The GHGRP covers the vast majority of U.S. emissions from the electric power and industrial sectors. The transportation, residential, commercial and agriculture sectors emit a significant amount of GHGs, the majority of these emissions are not included in these state totals.

# GHG Data Publication: Demo



- Time-permitting



# Next Steps

## 2012

- August, 2012:
  - Launch e-GGRT for 12 new RY2011 Source Categories
- September 28th, 2012:
  - RY2011 Reporting Deadline for new RY2011 Source Categories
- Fall, 2012:
  - Refresh RY2010 Data & Release 1<sup>st</sup> Batch (29 sources) of RY2011 Data

## 2013

- Early 2013:
  - Collect RY2012 GHG Data for all 41 Source Categories
  - Release RY2011 Data (all 41 source categories, Data Tool Revision)



# Additional Information

- Part 98 Info:
  - [www.epa.gov/climatechange/emissions/ghgrulemaking.html](http://www.epa.gov/climatechange/emissions/ghgrulemaking.html)
- Electronic Reporting, General GHGRP Help:
  - [www.ccdsupport.com](http://www.ccdsupport.com)
- Published Data:
  - [ghgdata.epa.gov](http://ghgdata.epa.gov)
- e-GGRT:
  - <https://ghgreporting.epa.gov>