US EPA Mandatory GHG Reporting Program Overview
美国环境保护署温室气体报告规则概述

US-China Workshop: MRV

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Overview: U.S. EPA Mandatory GHG Reporting Rule

Goal of is to collect accurate and timely data on GHG information to inform future policy decisions.

- Monitoring began in 2010 for most emission sources with first reports submitted to EPA in September, 2011.
- An additional 12 source categories began collecting data in 2011 (reporting in 2012).
- Rule covers 41 source categories for reporting, accounting for 85-90% of total U.S. GHG emissions.
- Reporting only, no control or use requirements.



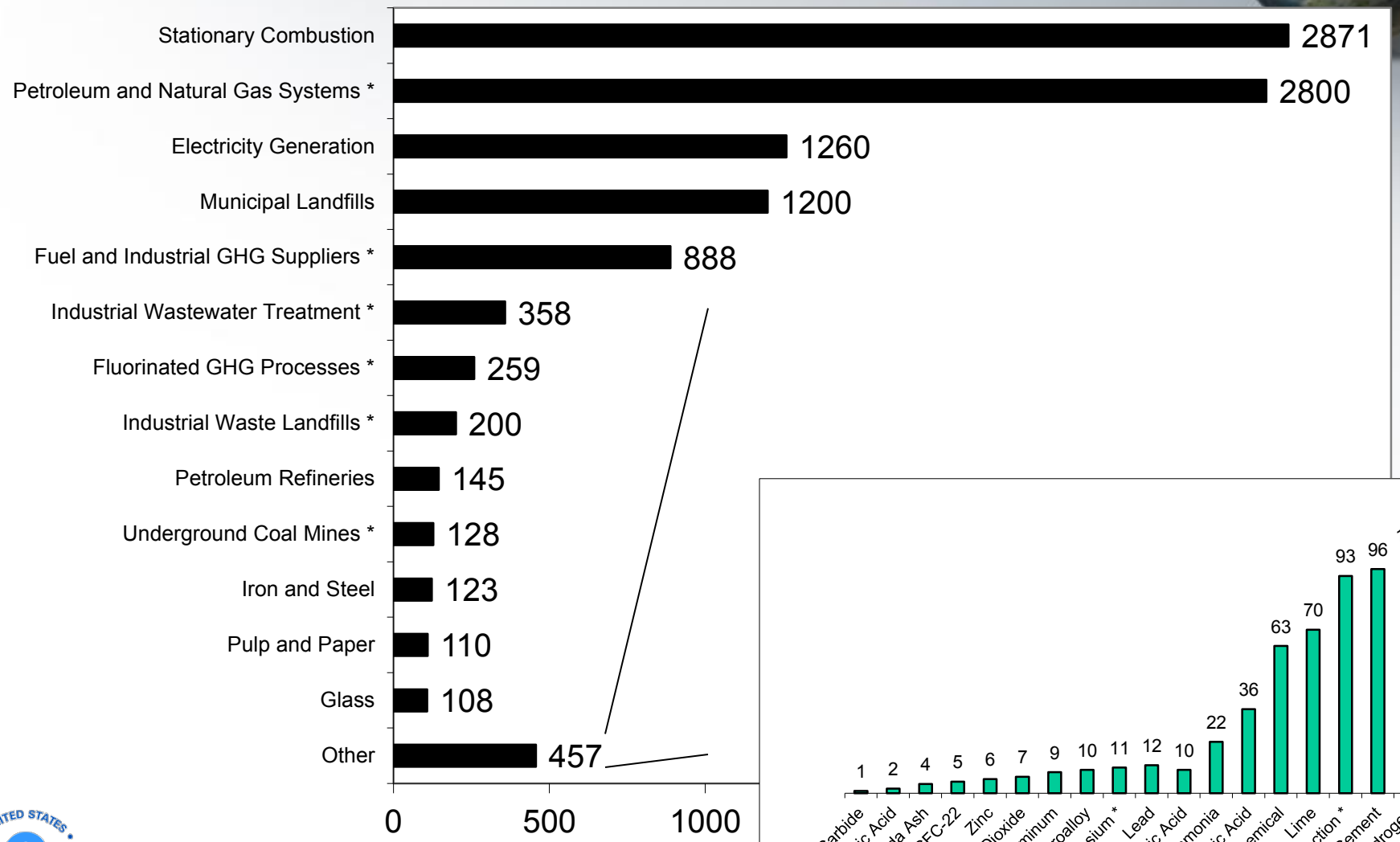



GHGRP vs. U.S. GHG Inventory

- 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)

Reporting Applicability

All-In Category:

Any source category listed under Table A-3 of rule, including:

- Adipic Acid, Aluminum, Cement, Lime, EGUs (Part 75), Petroleum Refineries etc…

Threshold Category:

Any facility that emits 25,000 metric tons CO_2e or more per year from:

- All applicable source categories (Table A-4) at single facility (i.e Ferroalloy production, Glass production, Iron & Steel etc…)
- Stationary fuel combustion units
- Miscellaneous use of carbonates

Suppliers:

Any supplier listed under A-5, including: Petroleum products, Coal-Based Liquids, Industrial GHGs

Table A-3: All-in Source Categories

Applies in 2010

- Electricity Generation if report CO_2 year-round through Part 75
- Adipic Acid Production
- Aluminum Production
- Ammonia Manufacturing
- Cement Production
- HCFC-22 Production/ HFC-23 Destruction Processes
- Lime Manufacturing
- Nitric Acid Production
- Petrochemical Production
- Petroleum Refineries
- Phosphoric Acid Production
- Manure Management Systems*
- Silicon Carbide Production
- Soda Ash Production
- Titanium Dioxide Production
- Municipal Solid Waste Landfills that generate CH4 ≥ 25,000 metric tons CO_2e per year

Applies in 2011

- Carbon Dioxide Injection
- Electrical Equipment Use
- Electrical Equipment Manufacturing
- Geologic Sequestration
- Underground Coal Mines that liberate 36.5 million actual cubic feet CH4 per year

Table A-4: Threshold Source Categories*

Applies in 2010

Ferroalloy Production
Glass Production
Hydrogen Production
Iron and Steel Production
Lead Production
Pulp and Paper Manufacturing
Zinc Production

Applies in 2011

Electronics Production
Fluorinated GHG Production
Industrial Wastewater Treatment
Industrial Waste Landfills
Magnesium Production
Petroleum and Natural Gas Systems

** >25,000 metric tons CO_2e per year from all source categories, combustion units, and miscellaneous use of carbonates.*

Key Elements of the GHG Reporting Rule

- Annual reporting of GHG by:
  - 41 source categories, which includes:
    - 33 types of direct emitters
    - 6 types of suppliers of fuel and industrial GHG
  - Facilities that inject CO_2 underground for geologic sequestration, enhanced oil recovery, or any other purpose.
- Direct reporting to EPA electronically
- EPA verification of emissions data

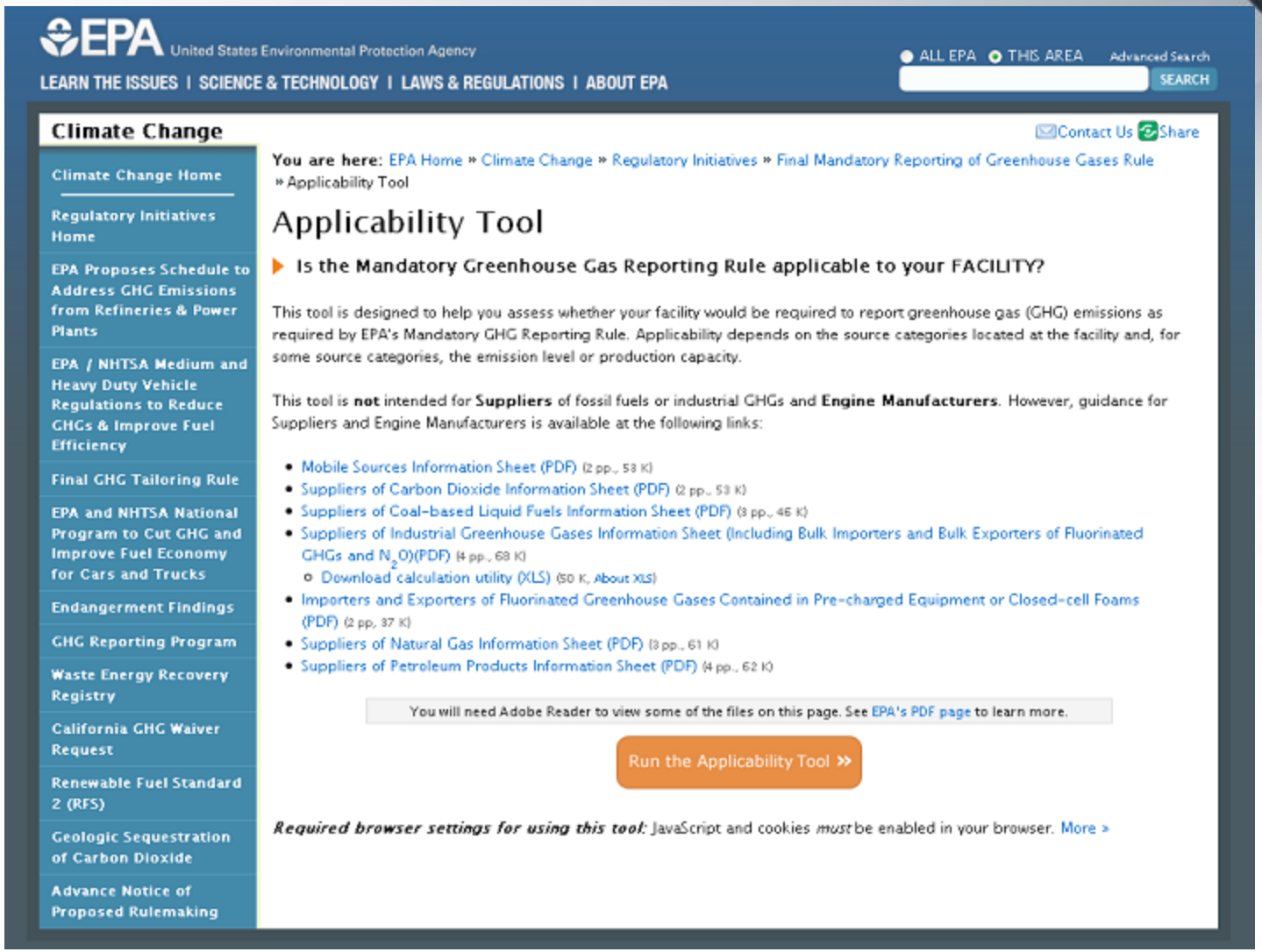
What GHGs Are Reported?

- CO_2
- CH_4 (methane)
- N_2O (nitrous oxide)
- Fluorinated GHGs
  - HFCs (hydrofluorocarbons)
  - PFCs (perfluorocarbons)
  - SF_6 (sulfur hexafluoride)
  - Other fluorinated gases (except CFC and HCFC and gases <1 mm Hg @25° C)

What Is Not Reported?

- Indirect emissions (e.g., electricity use)
- Mobile source emissions (e.g., fleet emissions, off-road equipment)
- Emission offsets

Applicability Tool Screenshot



Methodologies

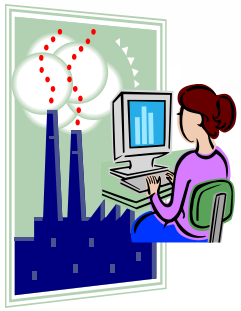
- Methodologies develeoped from extensive review of existing GHG programs
- Tiering approach used in many sub parts (lower order to higher order)
- Example: Stationary Combustion employs 4 Tier Approach
- In addition to calculation methodologies, the GHG Rule Requires:
    - Adherence to and reference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

Methodologies (Stationary Combustion)

Tier	Method	Usage
1	Fuel / Mass Bal	Company Records for Fuel Use (e.g. tank drop measurements, billing records etc…) and default HHV & CO2 emission factor
2	Fuel / Mass Bal	Company Records for Fuel Use and HHV (high heating value of fuel) plus default CO2 emission factor. HHV minimum sampling frequency of weekly, monthly, quarterly, biannual depending on fuel type.
3	Fuel / Mass Bal	Company Records* for Fuel Use and Carbon Content Carbon content has minimum fuel sampling frequency depending on fuel type.
4	Direct Measurement	Monitor CO2 emissions with CEMS (Continuous Emissions Monitoring System) Install CO2 and volumetric flow rate monitor

Collecting, Verifying, Publishing GHG Data

- Electronic Reporting Only



Reporter (Facility or Supplier)

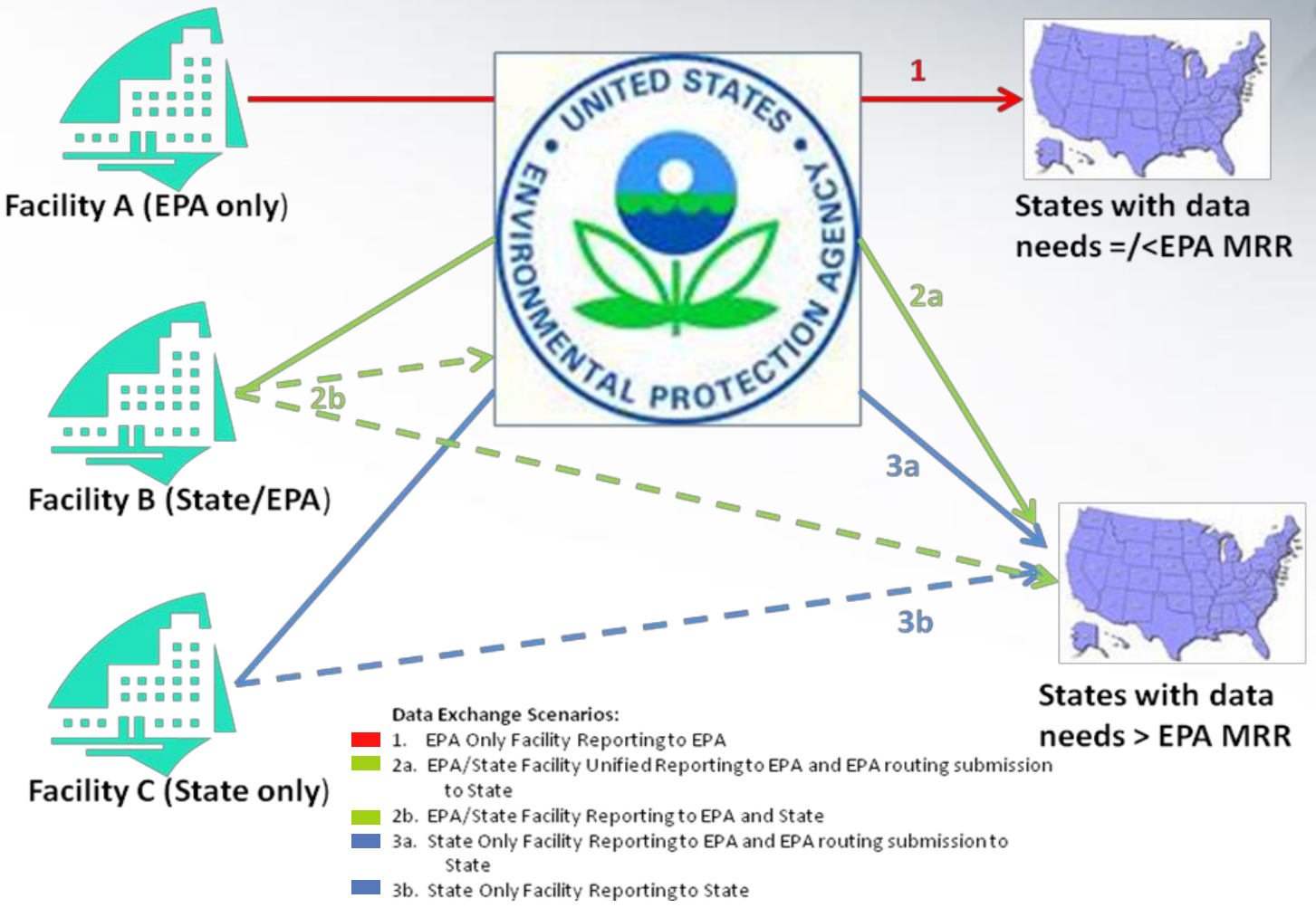
e-GGRT Electronic Greenhouse Gas Reporting Tool

Web Form or Bulk XML Upload

EPA Web & Oracle DB Servers

EPA Verifies & Publishes GHG Data

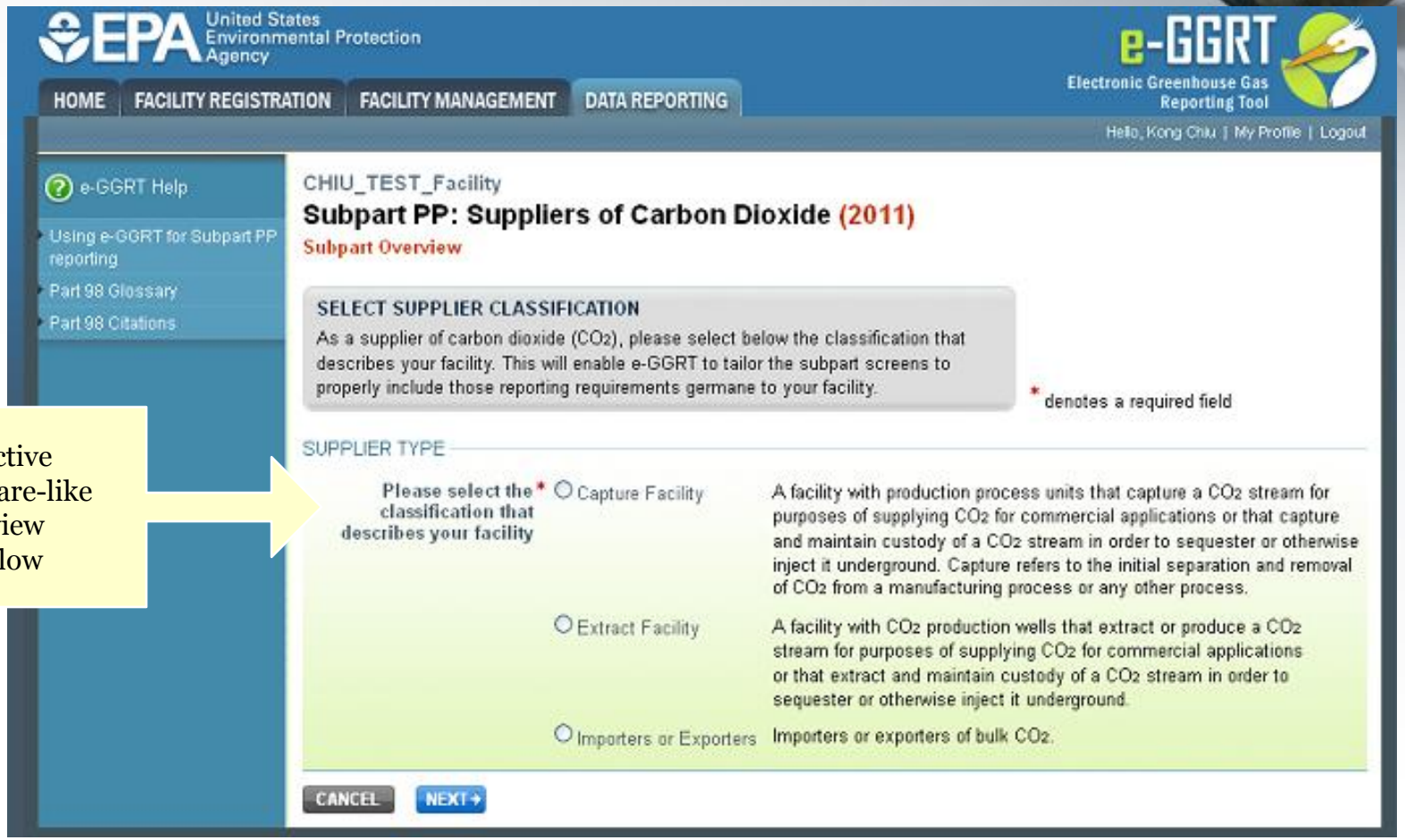
Coordinating with States (GHG Data Collection & Exchange)



Data Collection: e-GGRT

- EPA's **e**lectronic **G**reenhouse **G**as **R**eporting **T**ool (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 4th, 2012 at: sandbox.ccdsupport.com

Electronic Reporting Tool



Interactive
Tax software-like
Interview
workflow

Reporting Tool, continued

Tab Navigation

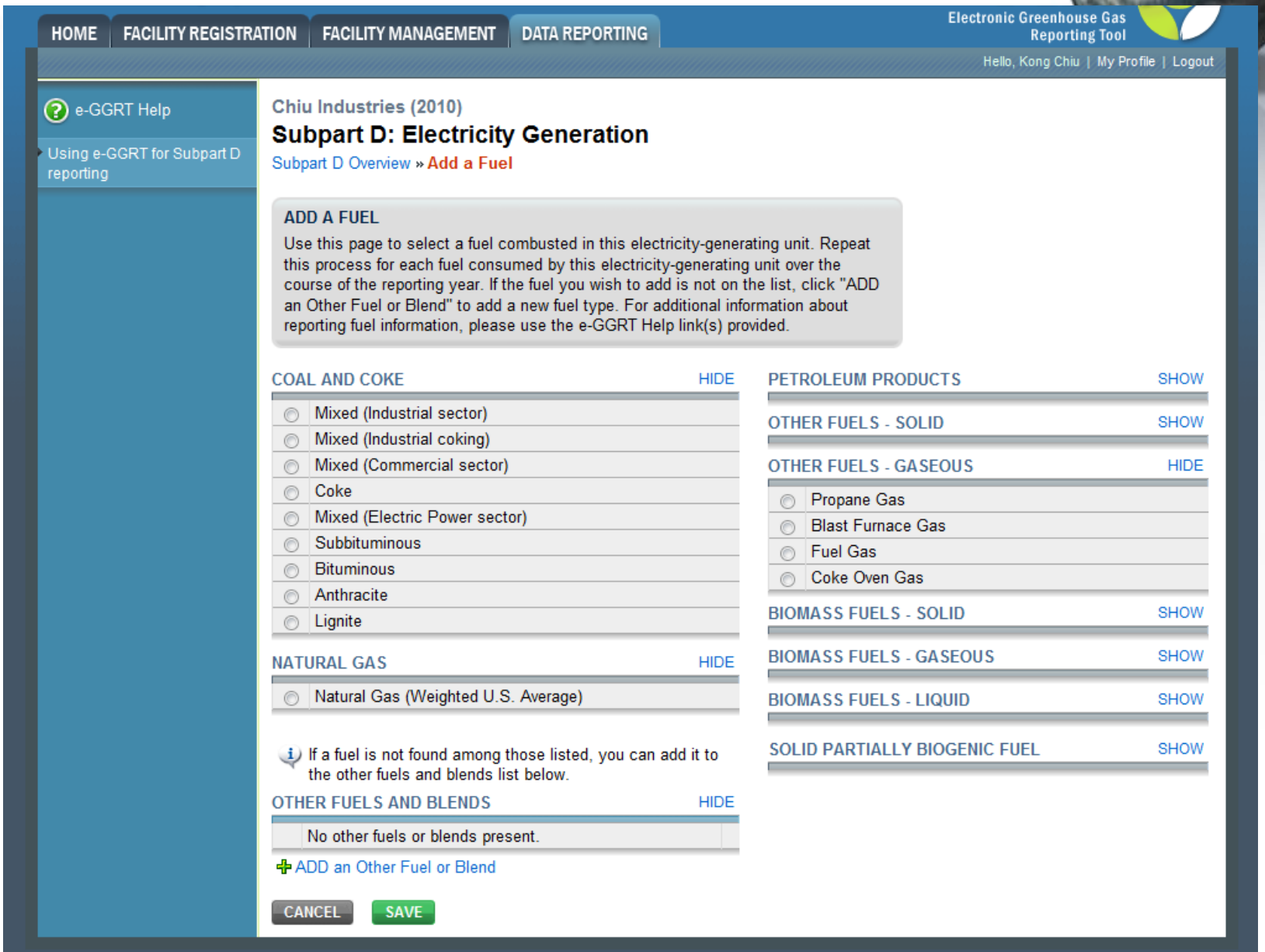
Context-Sensitive Help

Rolling "tax refund" style GHG Calculator

Real-time Data Quality Feedback

Part 98 Rule Equations

Fuel Selection Screenshot



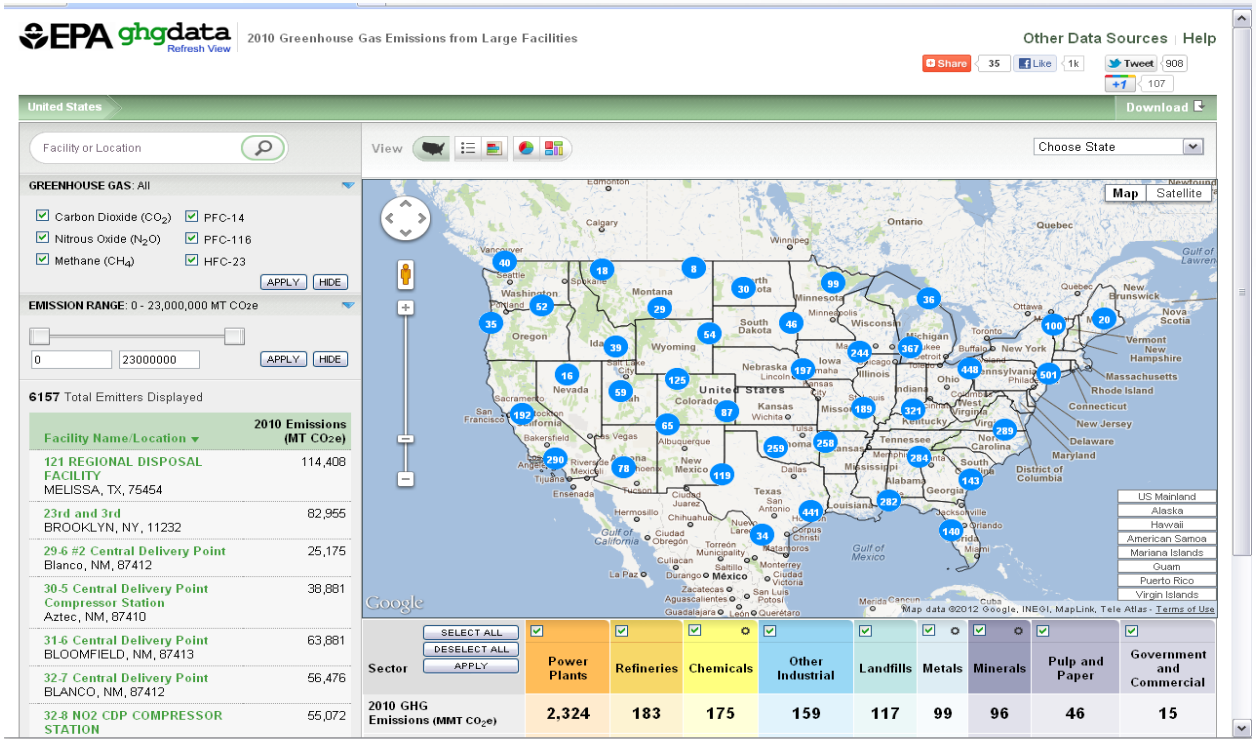
State Coordination: CARB

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
- Staff review and direct follow-up
    - Staff review electronic verification results
    - Phone/email follow-up
    - Targeted site visits as necessary

Data Publication

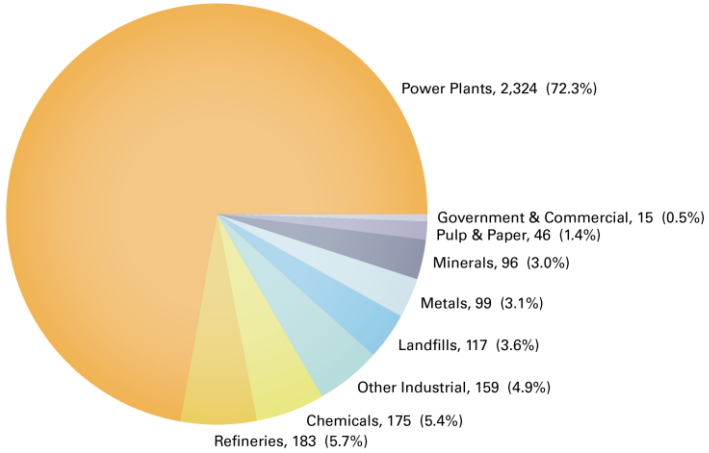
- http://GHGdata.epa.gov/ghgp/main.do
- Data publication tool allows stakeholders and the public to access the key data elements quickly and easily and to sort data by location, sector, and by gas.
- 2010 data published in January 2012.



Goals of GHG Data Publication

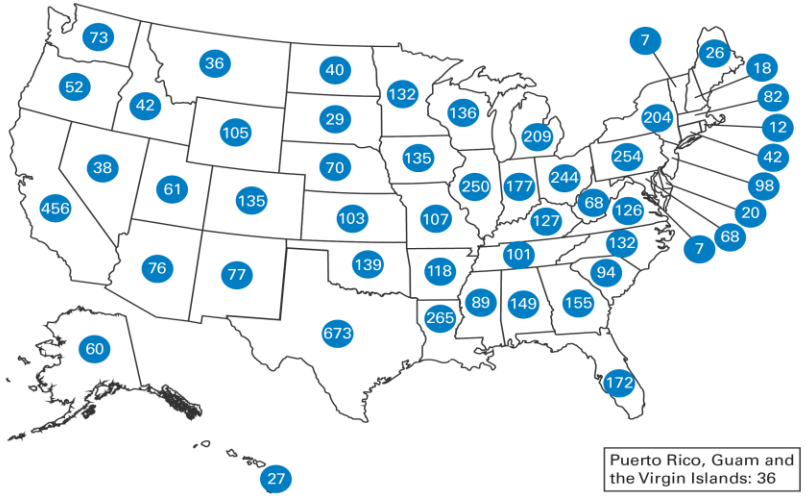
- Increase understanding of the sources of GHG emissions in the U.S. among the public
- Voluntary management (TRI)
- Improve quality of reported data
- Support regional, state, and local programs
- Provide a tool for schools, students, researchers and journalists
- Information displayed in a simple,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

Breakdown of Reported GHG Emissions (MMT CO2e) by Industry Type - 2010



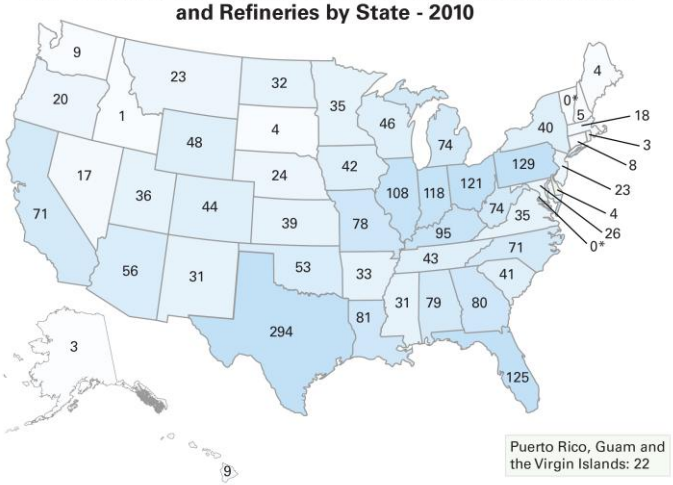
This figure shows total reported GHG emissions by industry type reported to the Greenhouse Gas Reporting Program (GHGRP) in 2010. Note this figure does not represent total U.S. emissions, and percentages only imply the percent of total emissions reported by facilities in the GHGRP. The GHGRP covers the 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 here.

Number of Facilities Reporting GHG Emissions by State - 2010



This figure shows the number of facilities in each state that reported GHG emissions in 2010. The Greenhouse Gas Reporting Program generally covers those facilities that emit more than 25,000 metric tons of carbon dioxide equivalent per year. Entities only reporting GHG quantities associated with products supplied are not included in this graphic.

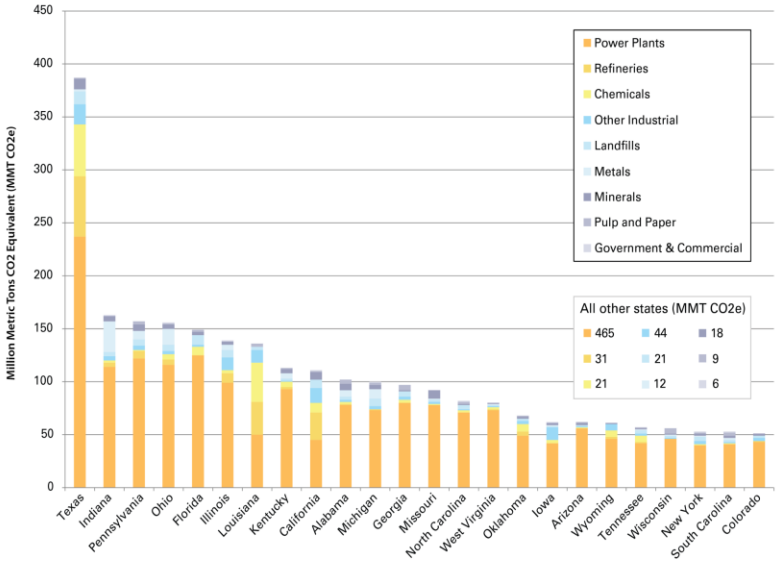
Total Reported GHG Emissions (MMT CO2e) by Power Plants and Refineries by State - 2010



*These states have less than 0.5 MMT CO2e emissions from power plants and refineries.

This figure shows total GHG emissions reported by power plants and refineries in each state in 2010 in million metric tons of carbon dioxide equivalent (CO2e). All U.S. refineries are required to report. All power plants who emit above above 25,000 metric tons of CO2e and select smaller power plants are required to report.

Reported GHG Emissions by State/Industry Type - 2010



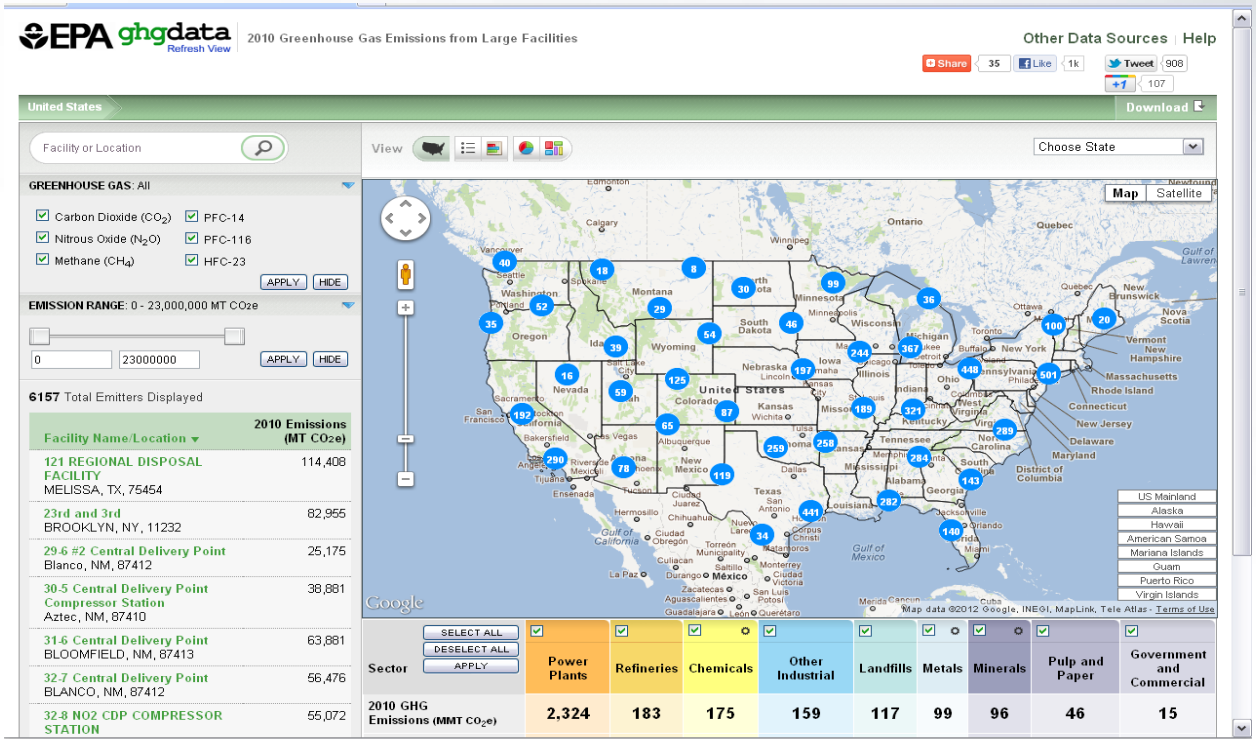
This figure shows GHG emission totals by state and industry type reported by facilities covered by the Greenhouse Gas Reporting Program in 2010. The GHGRP covers the vast majority of U.S. emissions from the electric power and industrial sectors. The transportation, residential, commercial and agriculture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

2010 GHG Data Quick Summary

- Reports from over 6,700 entities
- Power plants are largest stationary source of direct emissions- 2,324 MMTCO2e
- Refineries are second at 183 MMTCO2e
- 100 facilities reported over 7 MMTCO2e 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.

GHG Data Publication: Demo

- Time-permitting



Additional Information

- www.epa.gov/climatechange/emissions/ghgrulemaking.html
  - Preamble and rule
  - Technical background documents on source categories
  - Response to comment documents
  - Link to rulemaking docket
  - Technical assistance materials (e.g., Information Sheets, Monitoring Checklists, FAQs, optional forms)
  - Data reporting system information (e-GGRT)
  - On-line applicability tool