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## The United States Breaks Ground with Its First National GHG Reporting Program

The U.S. Environmental Protection Agency's (EPA) Greenhouse Gas Reporting Program finalized in December 2009, is the first and only national greenhouse gas (GHG) reporting program to require facilities to report emissions and other relevant data from multiple sectors in the economy. EPA developed the program to collect data from the largest emitters across the economy of the United States.

The Greenhouse Gas Reporting Program (GHGRP) will capture approximately 85%<sup>1</sup> of total U.S. emissions. Reporters from nearly 30 source categories are collecting data for 2010, and additional source categories will start monitoring in 2011. The majority of reporters will submit their first annual reports to EPA in March 2011. EPA is now developing an innovative online electronic reporting tool that will allow timely data entry, data verification, and public release of emissions data.

These data will provide answers to a large array of questions such as: How much carbon dioxide (CO<sub>2</sub>) does the U.S. cement industry emit annually? How much methane (CH<sub>4</sub>) is emitted from

landfills in Texas? And, what are the GHG emissions from an ammonia manufacturing facility in your town? The data provided through this program will be critical as the U.S. government develops policies and programs to address climate change. These data will help us better understand emissions from specific industries, emissions from individual facilities, and factors that influence GHG emission rates, as well as the actions that facilities can take to reduce emissions.

Until the development of the GHGRP, there was no centralized or consistent way in which to obtain GHG emissions data from large emitters in the United States. Although some GHG emissions



data are already available from individual facilities, corporations, and industry groups through voluntary and state-level reporting programs, data were not consistently available for facilities nationwide. In addition, the data that are currently available are of limited use for comparing facilities because the methods for measuring GHG emissions have not always been consistent across the range of reporting programs.

The most reliable national-level information is EPA's Annual Inventory of U.S. Greenhouse Gas Emissions and Sinks,<sup>2</sup> which is prepared and submitted annually to the United Nations Framework Convention on Climate Change. The inventory estimates GHG emissions using energy data and other national statistics. However, the data sources used to develop the inventory often do not allow for emission estimates to be further broken down to geographic or facility levels.

In late 2007, Congress directed EPA to develop a rule to require the mandatory reporting of GHG emissions above appropriate emissions thresholds across all sectors of the economy. Based on Congress' direction, EPA designed the reporting program so that the data could inform a wide variety of policy options rather than one specific policy or program. EPA's stated goal in developing this program was to gather accurate and timely data, while minimizing the burden to reporters. A regulatory framework for the GHGRP is now in place (see Figure 1).

### The GHG Reporting Program

In general, the GHGRP requires certain fossil fuel and industrial gas suppliers and large direct emitting industrial facilities with emissions of 25,000 metric tons or more per year of CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) to report their GHG emissions and other relevant data annually to EPA. The reporting threshold of 25,000 metric tons CO<sub>2</sub>e is roughly the equivalent of burning 10,800 tons of coal, 2.3 million gallons of fuel oil, or 460 million cubic feet of natural gas on a 24 hr/day, 7 day/week basis.

Entities that will report their GHG emissions include fossil fuel and industrial suppliers, as well as facilities that directly emit GHGs from stationary fuel combustion and process emission source categories. Figure 2 shows the breakdown of the

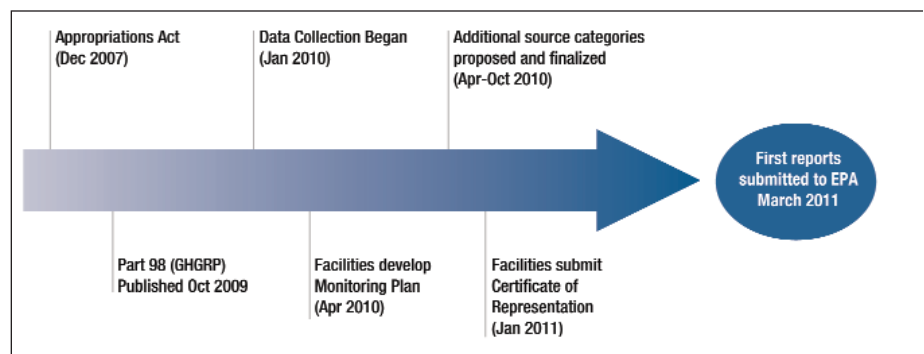
number of facilities that are expected to report by source category. EPA expects that stationary fuel combustion facilities will be the largest group of reporters, with municipal landfill facilities a close second. Other source categories, including petroleum and natural gas systems and other sources of fluorinated gases, are expected to be finalized in 2010 and will increase the total number of reporters and GHG emissions coverage of the program.

### Methodological Approach

In developing the GHGRP, EPA drew from the annual inventory reports, as well as many of the existing GHG reporting programs at the state (e.g., California and Massachusetts) and local levels, and incorporated additional elements to develop a comprehensive reporting program. A key objective was to require methods that would provide accurate data, while taking into account current practices at the various facilities. For this reason, the reporting program makes use of existing monitoring equipment (e.g., flow meters, weighing scales, continuous emissions monitoring systems [CEMS]) to the extent feasible and requires facilities to calibrate monitoring equipment to certain specifications. Where the appropriate infrastructure is not in place, the reporting program prescribes specific calculation methodologies for quantifying and reporting GHG emissions.

The majority of U.S. GHG emissions arise from fossil fuel combustion. Methods for estimating emissions from these sources can be quantified using approaches ranging from the use of emission factors to CEMS. Use of emission factors can result in reliable estimates of combustion-related GHG emissions from homogenous fuels such as natural gas, and in some cases, petroleum. CEMS may be more preferable for measuring GHG emissions from heterogeneous fuels such as coal.

Figure 1. GHGRP milestones.



The current monitoring methods included in the GHGRP provide accurate and reliable data for informing policy decisions and developing regulatory programs. As new legislation is enacted or new regulatory programs are developed, EPA plans to reevaluate the reporting program to ensure that the data collected are sufficient to meet the needs of any new program.

### Electronic GHG Reporting Tool

The GHGRP is one of the first EPA reporting programs to rely solely on electronic reporting of information from its inception. There are multiple benefits to this approach over traditional paper-based reporting, including reduced burden on the reporter, improved accuracy, enhanced ability to conduct electronic reviews to ensure data quality, consistent format to improve data comparability, and improved data availability. This approach will facilitate efficient and accurate data exchange among facilities, states, and the federal government, while providing the public with timely GHG emissions information.

EPA has been working over the past year to develop and test the electronic data system that will support reporting under the GHGRP. The electronic GHG reporting tool (e-GGRT)<sup>3</sup> will serve as

the sole mechanism for facilities to submit their annual GHG reports to EPA. The tool will support both online data entry, similar to a TurboTax-style data entry, as well as direct file uploads for large or multiple facility reporters. The tool will be “self-guided” with step-by-step instructions and user-friendly screens to assist reporters. User support for the reporting tool will be available through the Web, e-mail, and phone. Reporters using the direct or bulk file upload feature will do so via an extensible mark-up language (XML) reporting schema that will be released prior to the March 2011 reporting deadline. A bulk upload feature will enable facilities using their own electronic data systems that contain all the required data elements to easily and efficiently transmit their data to EPA.

Working closely with states has been an important aspect of EPA’s GHGRP. Through the Environmental Information Exchange Network, EPA held regular meetings with states on GHG data exchange issues related to the GHGRP. The 2010 reporting schema for bulk file uploads will include some data elements for states that have their own GHG reporting programs. This will assist bulk reporters in those states to satisfy both state and federal reporting requirements using a single electronic reporting tool.

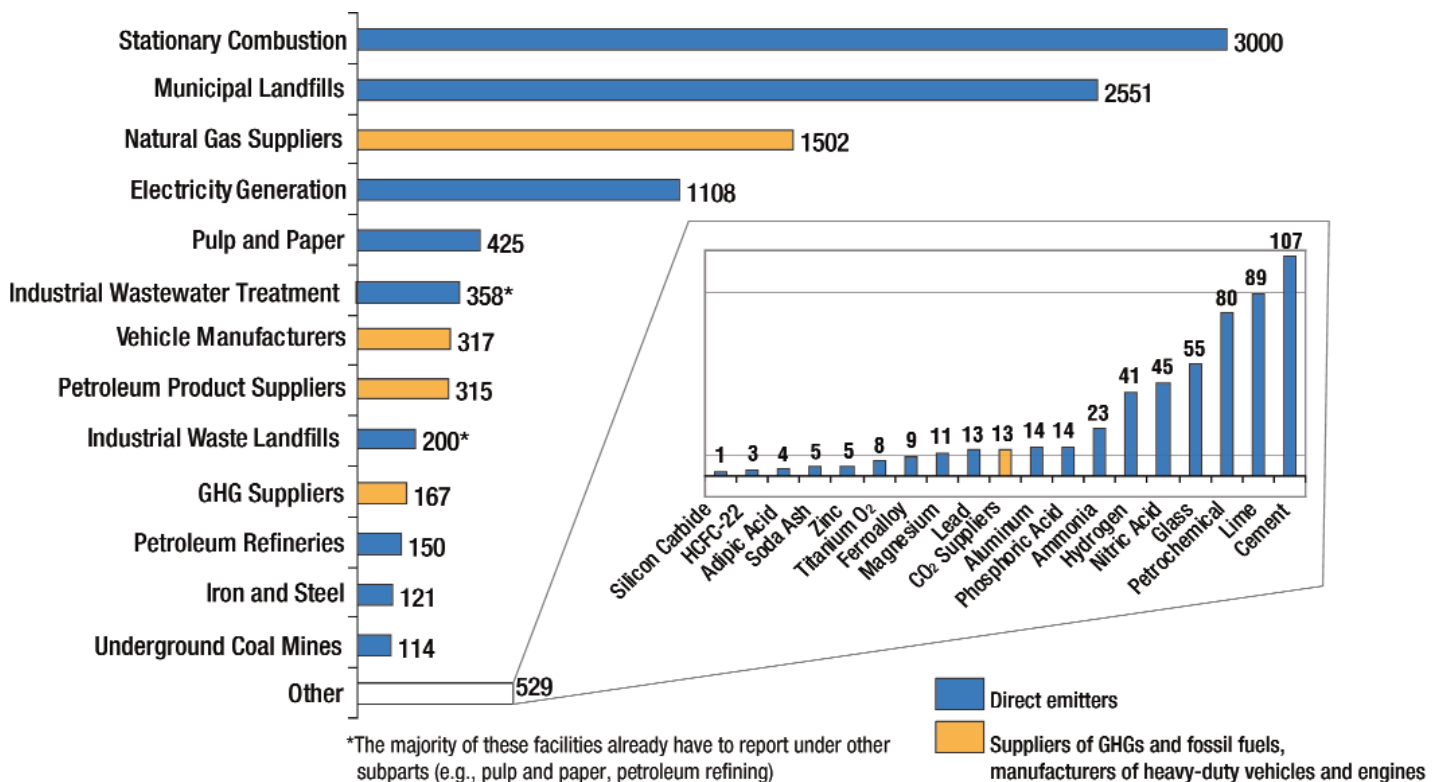


Figure 2. Estimated number of facilities and suppliers that must submit a GHG report. Note: Manure management, miscellaneous carbonates, and coal to liquid not included.

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Unfortunately, EPA was not able to include state functionality in the online data entry tool under development for reporting year 2010. EPA hopes to include state-specific reporting requirements in future versions of the federal electronic reporting tool. This will allow both bulk reporters and online reporters to use the EPA tool for both federal and state GHG emissions reporting in future reporting years.

### Verification

Similar to the electronic data verification process used in the Acid Rain Program, EPA will review the emissions data and supporting data submitted by reporters to verify that the GHG emission reports meet the reporting requirements using a multistep process. First, EPA will conduct an initial centralized review of the data, which will be largely automated. Second, EPA intends to follow up with facilities should potential errors, discrepancies, or questions arise through the review of reported data. Third,

EPA intends to conduct on-site audits of selected facilities. These verification steps will ensure accuracy and completeness. Because the data will be submitted electronically, EPA can analyze and verify the data centrally, quickly, and efficiently and at minimal cost to the reporters.

### Summary

The past decade has seen an increasing interest in the availability of timely and accurate facility-level GHG emissions data. The GHGRP is the first comprehensive, nationwide effort to obtain verified GHG emissions data. These data will be valuable to EPA and others as policy-makers consider effective approaches for reducing GHG emissions. This publicly available data will also enable facilities to track their own emissions and compare their emissions to other similar facilities. More information on the GHGRP can be found at [www.epa.gov/dimatchange/emissions/ghgrulemaking.html](http://www.epa.gov/dimatchange/emissions/ghgrulemaking.html). **em**

### References

1. 40 CFR Part 98, October 30, 2009.
2. See [www.epa.gov/climatechange/emissions/usgginventory.html](http://www.epa.gov/climatechange/emissions/usgginventory.html).
3. See [www.epa.gov/climatechange/emissions/data-reporting-system.html](http://www.epa.gov/climatechange/emissions/data-reporting-system.html).

