

Overview and Progress to Date

U.S. Greenhouse Gas Reporting Program



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International Emissions Inventory Conference (NEI)
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Baltimore



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Overview




- Overview
- Timeline, GHG Reporting Progress since San Diego
- GHG Reporting Program key data and programmatic attributes
- Spotlight on Oil & Gas Sector
- State-EPA collaboration on GHG Reporting
- International engagement on GHG Reporting and Data management
- RY 2016 Data Milestones
- Q&A

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US GHGRP Timeline

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U.S. GHGRP and The International Emissions Inventory Conference

April, 2009
18th Emissions Inventory Conference, Baltimore
 - proposed mandatory greenhouse gas reporting rule

September, 2010
19th Emissions Inventory Conference, San Antonio
 - final rule (first 29 sources), technical revisions

August, 2012
20th Emissions Inventory Conference, Tampa
 - launched e-GGRT, collected data, added 12 more sources
 - set-up State GHG data service via CDX and Envirofacts

April, 2015
21st Emissions Inventory Conference, San Diego
 - collected and published 4 years of data
 - launched the Inputs Verifier Tool

U.S. GHGRP Progress since San Diego



August, 2017

22nd Emissions Inventory Conference, Baltimore

- Published 6 years of data (RY2010 - 2015)
- Collected RY2016 data (publication coming soon!)
- Major changes/improvements since San Diego include:
 - Additional regulatory revisions covering Reporting Years 2016, 2017 and 2018 (including Oil and Gas systems data)
 - Improved bulk XML functionality for reporters with large numbers of facilities
 - Launched Verification/Validation database to improve management of thousands of data quality checks
 - Expanded implementation of critical errors (pre-submittal data quality)
 - Added facility specific color codes to published FLIGHT data
 - Added 5 year reporting "sunset" to program

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U.S. GHGRP Basics



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US GHG Reporting Program



- Annual **mandatory** reporting of facility and supplier GHG Data :
 - 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 CO₂ underground for geologic sequestration, enhanced oil recovery, or any other purpose.
 - Over **8,000** facilities report annually
- **25,000 MTCO₂e** threshold for some sources
- 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**
- **2010 to 2015** (6 years) GHG data now publicly available

Electronic Reporting Workflow



EPA GHG Data System



EPA EnviroFacts:
Serviceable, searchable and
separately hosted copy of non-CBI
dataset.

Improve data quality *before* it is
submitted to EPA

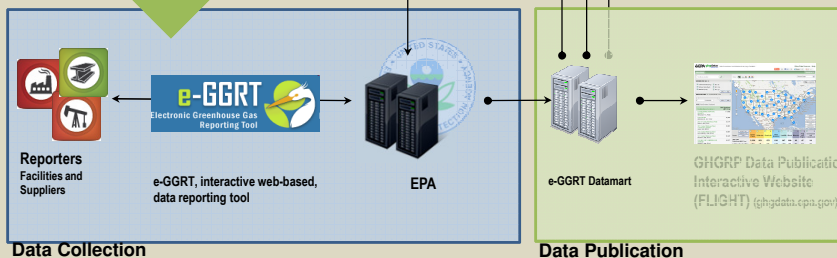
- Intuitive Interface
- Comprehensive Help
- Real-Time Data Quality
Feedback

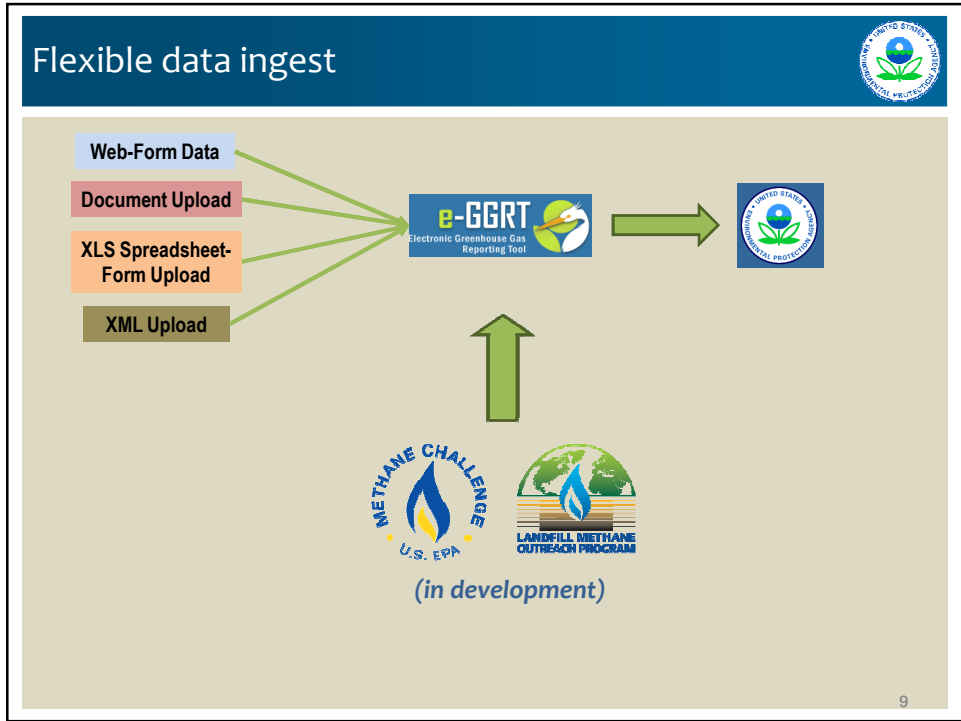


Data Verification (EPA)

State-Specific Service
Oriented data flow using
EnviroFacts API

Downloadable XLS, XML &
HTML Data Files & highlights





Leveraging EPA IT Systems

- *CDX- CROMERR*
- *FRS*
- *Paperless ESAs**
- *Envirofacts APIs*

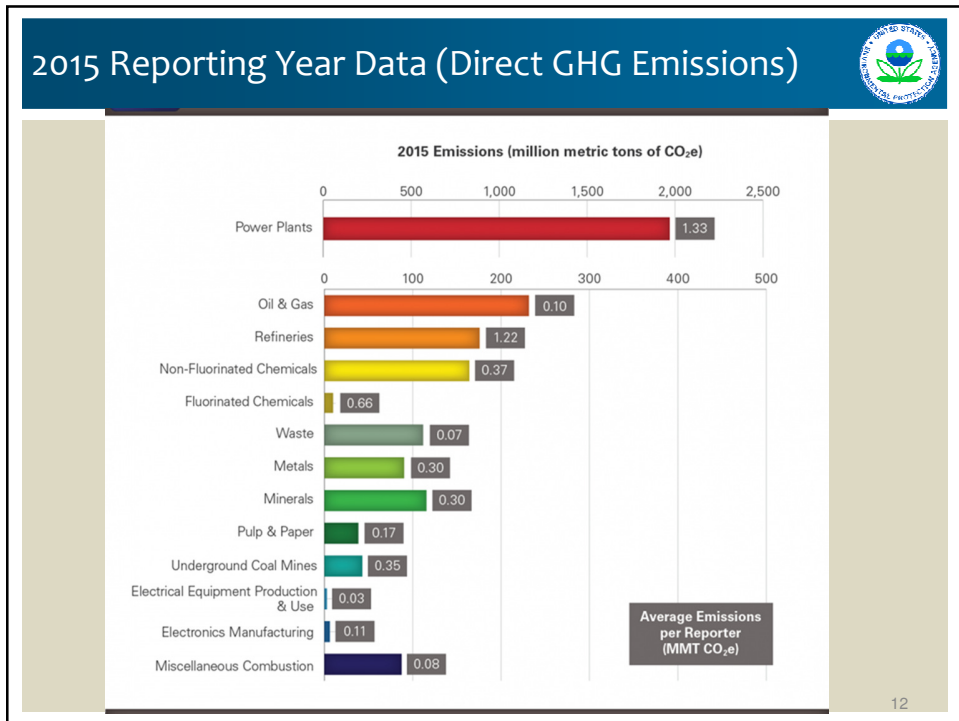
**Under development*

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US GHGRP Data Snippets

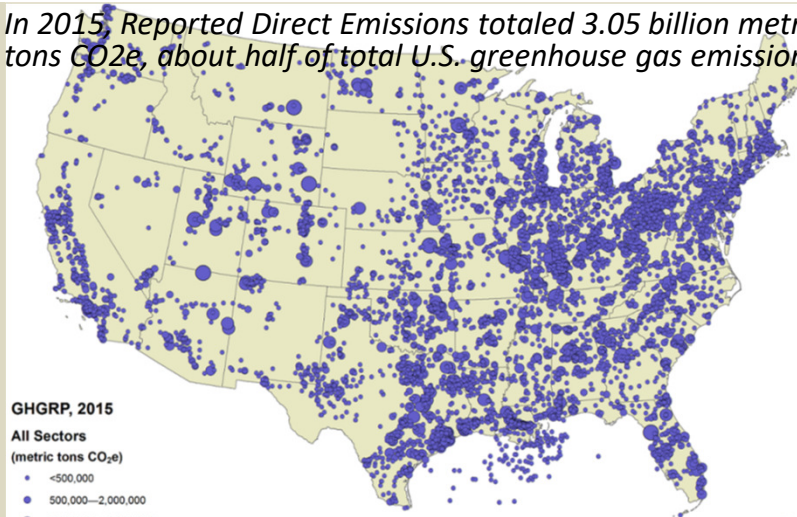
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GHGRP Coverage – Direct Emissions



- *In 2015, Reported Direct Emissions totaled 3.05 billion metric tons CO₂e, about half of total U.S. greenhouse gas emissions.*



GHGRP, 2015

All Sectors (metric tons CO₂e)

- <500,000
- 500,000—2,000,000
- 2,000,000—5,000,000
- 5,000,000—10,000,000
- >10,000,000

Data Source: 2015 Greenhouse Gas Reporting Program
As of: 08/13/2016



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U.S. GHGRP and U.S. GHG Inventory (GHGI)

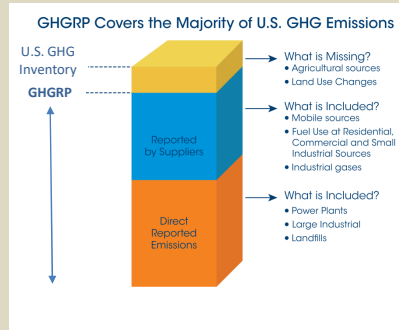


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GHG Reporting Program vs. U.S. GHG Inventory



- Inventory of U.S. Greenhouse Gas Emissions and Sinks (GHG Inventory) tracks total annual U.S. emissions across all sectors of the economy using national-level data
- GHGRP collects detailed emissions data from large greenhouse gas emitting facilities in the United States
 - GHGRP covers most, but not all, U.S. GHG emissions
 - GHGRP does not include agriculture, land use, and small sources



Task	Inventory of U.S. GHG Emissions and Sinks	Greenhouse Gas Reporting Program
Find total U.S. emissions	✓	
Review trend data for the past 20 years	✓	
Browse a map to find largest emitters in your area		✓
Compare facility emissions across an industrial sector		✓
Find <u>reported</u> emissions by state		✓

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Using GHG Reporting Program Data: Examples from U.S. GHG Inventory



Direct Use <i>Replace the estimate</i>	Indirect Use <i>For Calculations</i>	Indirect Use <i>For QA/QC</i>
<ul style="list-style-type: none"> • Semiconductor Manufacture • Magnesium Production and Processing • Refineries • Electrical Transmission and Distribution • Several other Industrial Processes and Product Use categories (IPPU) 	<p>Develop updated emission factors and/or activity data based on GHGRP data:</p> <ul style="list-style-type: none"> • Landfills • Natural Gas Systems • Petroleum Systems <p>Disaggregate national estimates to show more detail:</p> <ul style="list-style-type: none"> • Industrial sector fossil fuel combustion 	<p>General QA/QC on estimate (e.g. national estimate or at sub-category level)</p>

View the Data! (FLIGHT and GHGI Data Explorer)



<https://ghgdata.epa.gov>

Greenhouse Gas Inventory Data Explorer

The Data Explorer is an interactive tool that provides access to data from EPA's annual Inventory of U.S. Greenhouse Gas Emissions and Sinks. You can follow the instructions on the right and use the options below to create customized graphs, examine trends over time, and download the data. You can visit other EPA pages to learn more about EPA's national inventory, and how it relates to EPA's Greenhouse Gas Reporting Program.

1. Choose a sector: All sectors
 2. Greenhouse gas: All gases
 3. Break out by: Economic sector
 4. Year(s): All years

Date range: 1990-2015

U.S. Greenhouse Gas Emissions by Economic Sector, 1990-2015*

Percent change** 1990-2015

- Agriculture ▲ 6.3%
- Commercial ▲ 4.0%
- Industry ▲ 13.2%
- Residential ▲ 8.1%
- Electric generation ▲ 4.2%
- Transportation ▲ 10.5%
- Total ▲ 3.5%**

**There was a change in methods between 2010 and 2012 for estimating the share of gasoline used in the transportation, industrial, and

<https://www3.epa.gov/climatechange/ghg-emissions/inventoryexplorer>

Spotlight on Petroleum and Natural Gas (Subpart W)



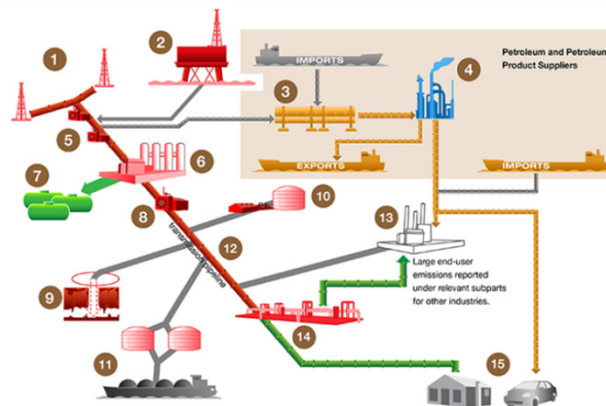
Oil and Gas GHG Reporting Program (GHGRP) Data



- Oil and Gas GHG estimates available in U.S. GHG Inventory (national/regional-level) and GHGRP (facility-level)
- Beginning with Reporting Year 2016, new GHGRP data collection for:
 - Oil well completions and workovers with hydraulic fracturing (previously only gas wells)
 - Well identification reporting for onshore petroleum and natural gas production
 - Gathering and boosting systems
 - Blowdowns of natural gas transmission pipelines

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Petroleum and Natural Gas Systems in GHGRP (Subpart W and others)



Production & Processing

1. Onshore Petroleum & Natural Gas Production
2. Offshore Petroleum & Natural Gas Production
3. Total Crude Oil to Refineries
4. Petroleum Refining
5. Gathering and Boosting
*Data collection will begin in FY16
6. Gas Processing Plant
*May contain NGL Fractionation equipment
7. Natural Gas Liquids (NGL) Supply

Natural Gas Transmission & Storage

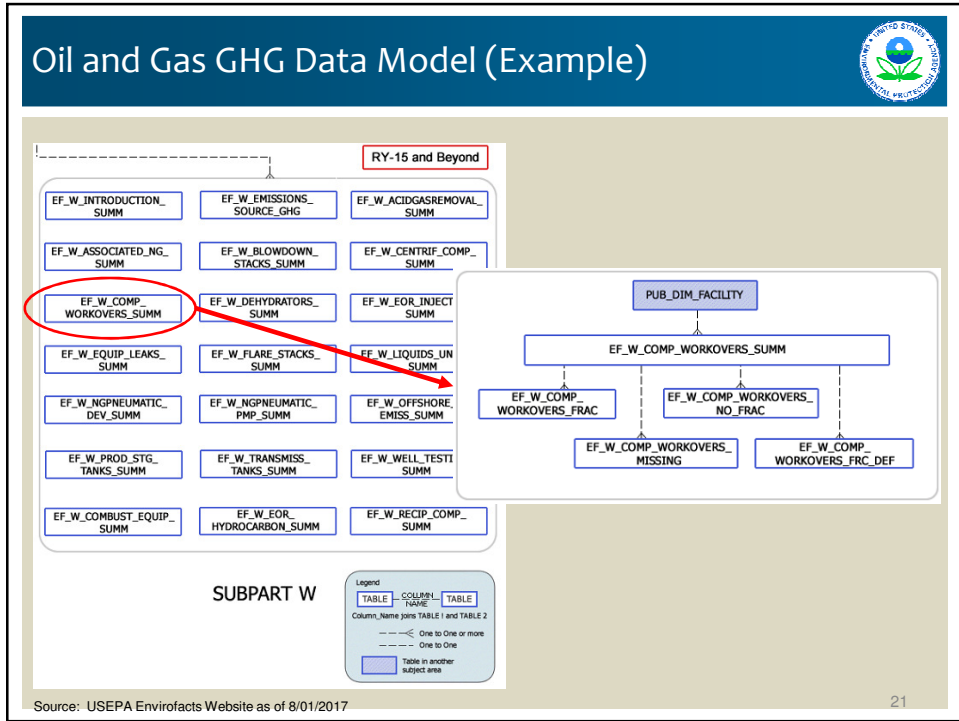
8. Transmission Compressor Stations
9. Underground Storage
10. Liquefied Natural Gas (LNG) Storage
11. LNG Import-Export Equipment
*Data collection will begin in FY16

Distribution

12. Natural Gas Transmission Pipeline
*Data collection will begin in FY16
13. Large End Users
14. Natural Gas Distribution
15. Natural Gas & Petroleum Supply to Small End Users

- Red: Subpart W: Emissions from petroleum & natural gas systems
- Blue: Subpart Y: Emissions from petroleum refineries
- Yellow: Subpart MM: CO₂ associated with supplies of petroleum products
- Green: Subpart NN: CO₂ associated with supplies of natural gas & natural gas liquids
- Grey: Not reported under GHGRP

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Reported GHG Emissions by Industry Segment

- EPA received annual reports from over 2,400 facilities
- Reported emissions totaled 231 Million Metric Tons (MMT) CO₂e
- Largest segments in terms of reported GHG emissions were onshore production, natural gas processing, and natural gas transmission

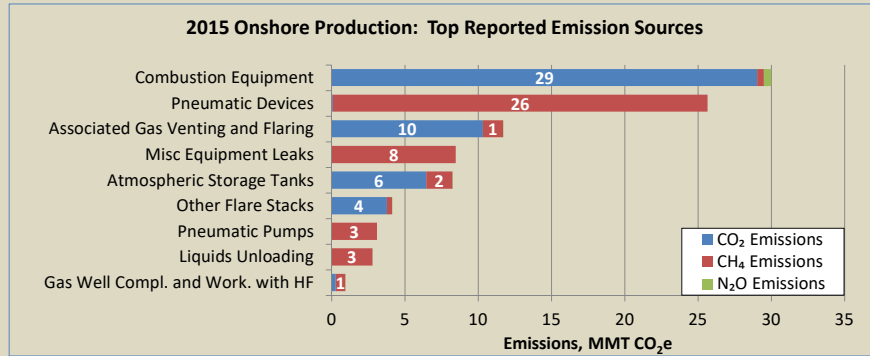
Segment	Number of Facilities	2015 Reported Emissions (Million Metric Tons CO ₂ e)
Onshore Production	534	97
Offshore Production	133	7
Natural Gas Processing	467	58
Natural Gas Transmission	521	23
Underground Natural Gas Storage	53	2
Natural Gas Distribution	177	14
LNG Import/Export	7	1
LNG Storage	7	< 1
Other Oil and Gas Combustion	541	29
Total	2,413	231

GHGRP data as of 8/13/16

Onshore Production



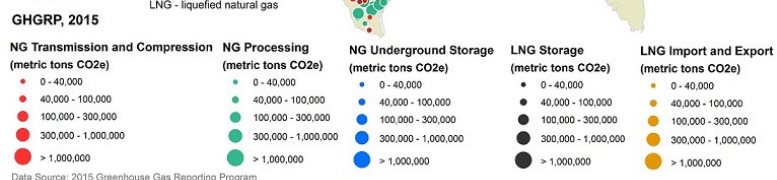
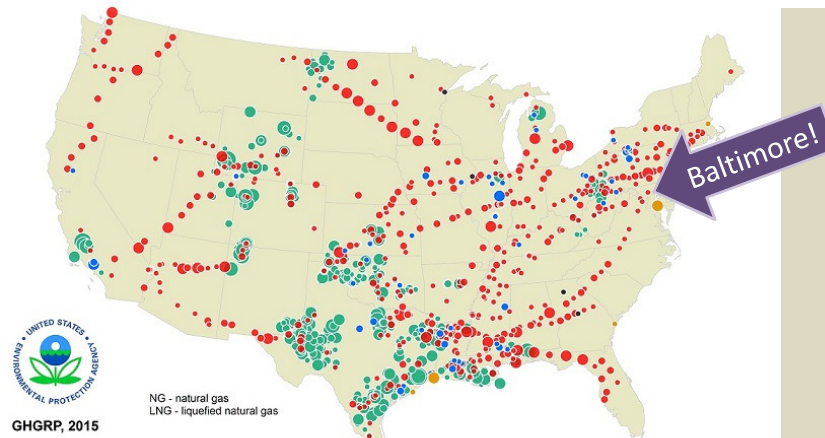
- Reported emissions in onshore production totaled 97 MMT CO₂e
- Methane emissions totaled 46 MMT CO₂e and carbon dioxide emissions totaled 51 MMT CO₂e
- Combustion equipment (30 MMT CO₂e) and pneumatic devices (25.7 MMT CO₂e) were the top reported emission sources in onshore production



GHGRP data as of 8/13/16

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NG Processing, Storage, Transmission, LNG



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Supporting State GHG Data Needs

The diagram illustrates the process of supporting state GHG data needs. It starts with four icons representing different data sources: a factory, a power plant, a wind turbine, and a solar panel. Arrows point from these icons to a central box labeled 'e-GGRT Electronic Greenhouse Gas Reporting Tool'. From this box, an arrow points to the U.S. Greenhouse Gas Reporting Program (GHGRP) logo. Another arrow points from the GHGRP logo to a box labeled 'States' with a map of the United States. A red arrow points from the 'States' box back to the e-GGRT tool, labeled 'Example: Washington State'. Below this, the 'SAW SecureAccess WASHINGTON' logo is shown.

Example of U.S. GHGRP collaboration with states to reduce burden

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International Capacity Building

- Improve greenhouse gas data measurement, reporting and verification through bilateral exchange

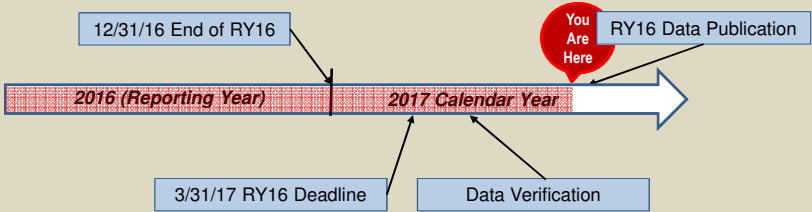
U.S.-China Climate Change Working Group GHG Data Initiative Study Tour 2016

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GHGRP Reporting Year (RY) 2016 Milestones




Milestone	Schedule
Facility Annual Reports due to EPA	March 31, 2017
EPA verification of submitted data	April – August 2017
2017 Data Publication	Early Fall 2017



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Thank you! For More Information...



- Part 98 (U.S. GHG Reporting Rule) Info:
 - www.epa.gov/ghgreporting
- Published Data (FLIGHT):
 - ghgdata.epa.gov
- Published RESTful Data and GUI (Envirofacts):
 - <http://www.epa.gov/enviro/facts/ghg/search.html>
- Published Data (Highlights):
 - <http://www.epa.gov/ghgreporting/ghgdata/reportingdata/sets.html>
- US Greenhouse Gas Inventory Data Explorer
 - <https://www3.epa.gov/climatechange/ghgemissions/inventoryexplorer>