Stakeholder Workshop on EPA GHG Data on Natural Gas and Petroleum Systems: Agenda and GHGI Overview

November 7, 2019
• Overview of GHGI and GHGRP, EPA
• Update on GHGRP and Reporting Year 2018 Data, EPA
• Field Measurement Study: Equipment Leak Detection and Quantification, API
• Atmospheric Constraints on Methane Inventories: How Much Do We Know and How do We Know It? Penn State
• Offshore Oil and Gas Update Under Consideration for GHGI EPA
• Field Measurement Study: Pneumatic Controllers API
• Overview of Recent Compressor Station Measurements and High Flow Testing Colorado State
• Gathering and Boosting Update Under Consideration EPA
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, as directed by the Clean Air Act.
- GHGRP covers most, but not all, U.S. GHG emissions.
- GHGRP does not include agriculture, land use, and small sources.

<table>
<thead>
<tr>
<th>Task</th>
<th>Inventory of U.S. GHG Emissions and Sinks</th>
<th>Greenhouse Gas Reporting Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find total U.S. emissions</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>Review trend data for the past 20 years</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>Browse a map to find largest emitters in your area</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>Compare facility emissions across an industrial sector</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>Find reported emissions by state</td>
<td></td>
<td>✅</td>
</tr>
</tbody>
</table>
• Official U.S. estimate of greenhouse gas emissions for reporting to United Nations Framework Convention on Climate Change (UNFCCC)
  – Annual national-level inventory submissions to the UNFCCC since 1994
  – Emission estimates begin in 1990; most current inventory covers 1990-2017
• EPA leads Inventory development, working with several other agencies (e.g., agriculture, energy) to prepare estimates and provide activity data
• Sectors Covered
  – Energy, Industrial Processes, Agriculture, Land-Use Change and Forestry, and Waste
• Gases Covered
  – CO₂, CH₄, N₂O, HFCs, PFCs, NF₃, SF₆
  – Reported in mass of each gas, and as global warming potential (GWP)-weighted CO₂e emissions
• Record of emissions trends over time
• Each year, Inventory undergoes expert review, public review, and UNFCCC review
Calculating U.S. GHG Emissions from Oil and Gas

• Inventory is stratified into natural gas and petroleum pathways of the industry
  – Natural gas - offshore production, onshore production, gas processing, gas transmission, underground gas storage, LNG storage, LNG import and export terminals, and gas distribution
  – Petroleum – offshore production, onshore production, oil transportation, and refineries

• Oil and gas in inventory covers hundreds of types of sources

• Basic approach is to multiply national activity data by emission factors, e.g.:
  – Miles cast iron pipeline x CH$_4$ per mile cast iron pipeline
  – # residential meters x CH$_4$ per residential meter
• Large amount of data and information newly available
• Opportunity to re-evaluate and make updates to GHG Inventory
• Stakeholder process
  – Webinar
  – Memos
• Public review draft and memo comments
## Overview of Methane Revisions in 2019 GHGI

<table>
<thead>
<tr>
<th>Segment</th>
<th>Last year’s 2016 GHGI Estimate</th>
<th>Updates in the 2019 GHGI</th>
<th>Updated 2016 GHGI Estimate</th>
</tr>
</thead>
</table>
| Oil Exploration          | 2.1 MMT CO₂e                    | • Use of GHGRP data for HF completions  
• Use of Drilling Info data for wells drilled                                           | 0.5 MMT CO₂e              |
| Gas Production           | 106.8 MMT CO₂e                   | • Use of GHGRP data for gathering pipelines                                              | 107.1 MMT CO₂e            |
| Transmission and Storage | 32.8 MMT CO₂e                    | • Use of GHGRP data for transmission pipeline blowdowns  
• Use of GHGRP data for LNG sources                                                     | 34.5 MMT CO₂e             |
| Other Segments           | 60.4 MMT CO₂e                    | • No revisions (only activity data refreshes)                                             | 61.8 MMT CO₂e             |
| Total                    | 202.1 MMT CO₂e                   |                                                                                          | 203.9 MMT CO₂e            |
• Series of webinars and workshops
• EPA and stakeholder presentations with new data or analyses that could be used to update the GHG Inventory
• EPA invites stakeholder feedback on updates under consideration
Resources


• GHG Inventory: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

• Additional detail on natural gas and petroleum systems in the GHG Inventory: https://www.epa.gov/ghgemissions/natural-gas-and-petroleum-systems

• Relationship of GHGRP and GHG Inventory: https://www.epa.gov/ghgreporting/greenhouse-gas-reporting-program-and-us-inventory-greenhouse-gas-emissions-and-sinks