

The background features a large, faint watermark of the United States Environmental Protection Agency (EPA) logo. The logo is circular, with the text "UNITED STATES ENVIRONMENTAL PROTECTION AGENCY" around the perimeter and a stylized flower with three leaves in the center. The text of the slide is overlaid on this background.

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

November 7, 2019

11/7 Stakeholder Workshop Agenda



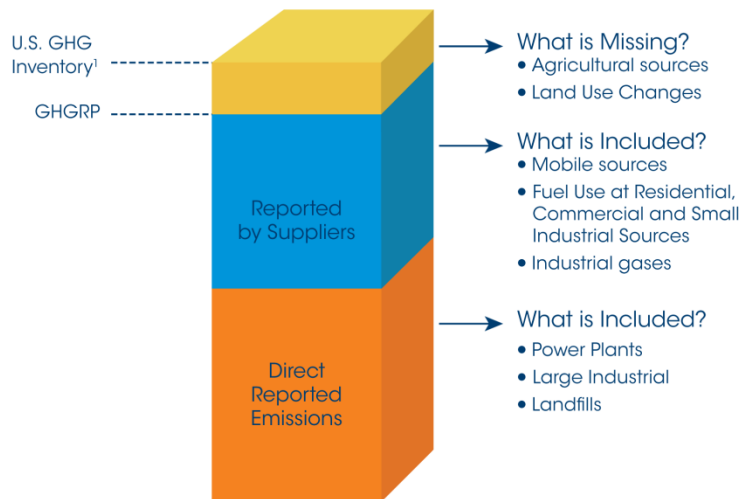
- *Overview of GHGI and GHGRP, **EPA***
- *Update on GHGRP and Reporting Year 2018 Data, **EPA***
- *Field Measurement Study: Equipment Leak Detection and Quantification, **API***
- *Atmospheric Constraints on Methane Inventories: How Much Do We Know and How do We Know It? **Penn State***
- *Offshore 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***

GHG Reporting Program and 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, 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

GHGRP Covers the Majority of U.S. GHG Emissions



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		✓

U.S. Greenhouse Gas Inventory Background



- 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

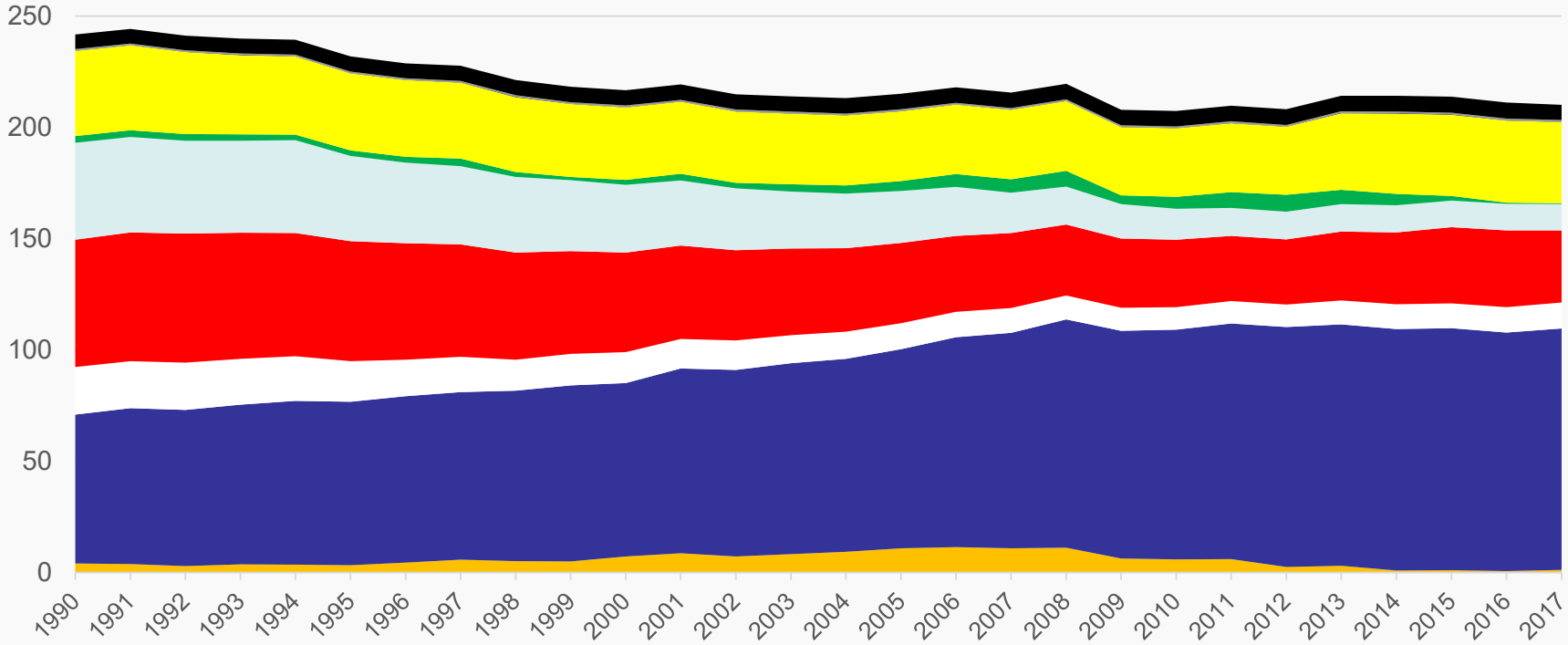


- Inventory is stratified into natural gas and petroleum pathways of the industry
 - Natural gas - offshore production, onshore production, gas processing, gas transmission, underground gas storage, LNG storage, LNG import and export terminals, and gas distribution
 - Petroleum – offshore production,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

Oil and Gas CH₄ Trends



Methane, MMT CO₂e



- Gas Exploration
- Gas Production
- Gas Processing
- Gas Distribution
- Gas Transmission and Storage
- Oil Exploration
- Oil Production
- Oil Transportation

Updating Oil and Gas CH₄ in the GHGI



- 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



Segment	Last year's 2016 GHGI Estimate	Updates in the 2019 GHGI	Updated 2016 GHGI Estimate
Oil Exploration	2.1 MMT CO ₂ e	<ul style="list-style-type: none"> • Use of GHGRP data for HF completions • Use of Drilling Info data for wells drilled 	0.5 MMT CO ₂ e
Gas Production	106.8 MMT CO ₂ e	<ul style="list-style-type: none"> • Use of GHGRP data for gathering pipelines 	107.1 MMT CO ₂ e
Transmission and Storage	32.8 MMT CO ₂ e	<ul style="list-style-type: none"> • Use of GHGRP data for transmission pipeline blowdowns • Use of GHGRP data for LNG sources 	34.5 MMT CO ₂ e
Other Segments	60.4 MMT CO ₂ e	<ul style="list-style-type: none"> • No revisions (only activity data refreshes) 	61.8 MMT CO ₂ e
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



- Stakeholder Process (including presentation slides and memos):
<https://www.epa.gov/ghgemissions/stakeholder-process-natural-gas-and-petroleum-systems-1990-2018-inventory>
- 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>