Overview of Potential Burden Reduction Opportunities for GHGRP Petroleum and Natural Gas Systems

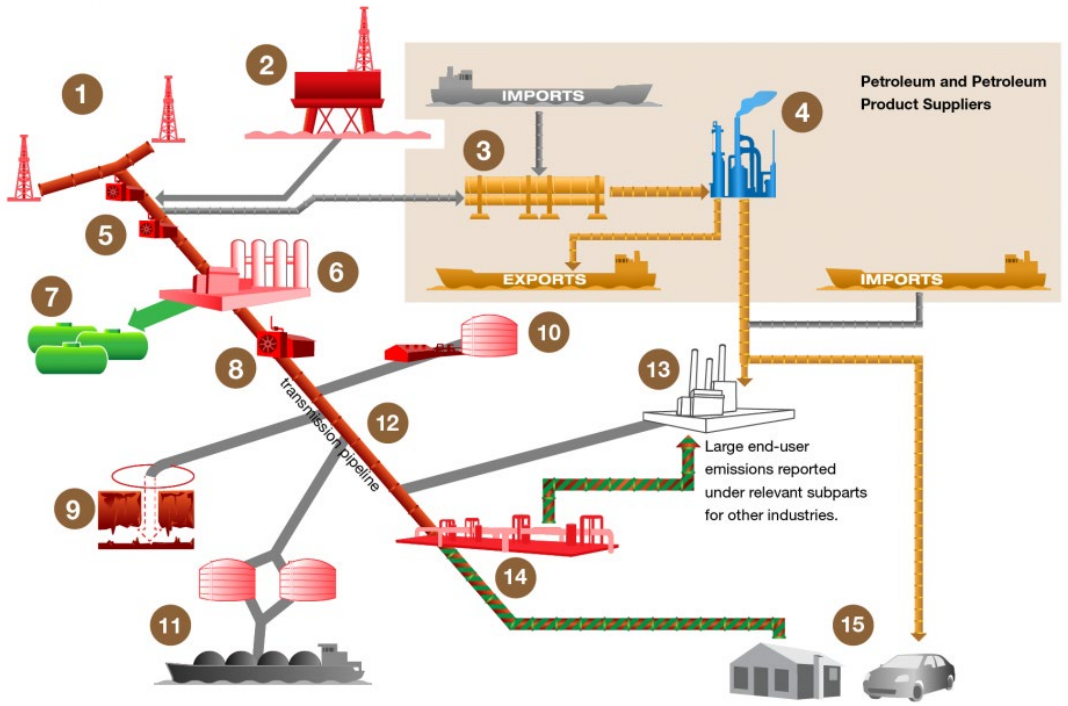
October 17, 2018

Background

- GHGRP has collected and published seven years of petroleum and natural gas systems data for most industry segments
  - Now is an appropriate time to apply lessons learned and inform potential burden reduction opportunities
- GHGRP has been evaluating:
  - number of applicable facilities;
  - magnitude of annual emissions and trends;
  - calculation methodologies;
  - data use;
  - communications with facilities during data verification activities;
  - reporting support by the GHGRP Help Desk;
  - reporting costs and burden; and
  - docket comments (e.g., EPA and Commerce dockets on burden reduction)

Petroleum and Natural Gas Systems in the GHGRP

- Petroleum and Natural Gas Systems (Subpart W) is one of the most complex GHGRP source categories
  - Covers a number of different emission sources
  - Technical complexity
- A number of historical rulemakings
- The diagram at right illustrates portions of the oil and gas value chain that report under the GHGRP
  - Most industry segments have collected data since 2011
  - Two industry segments began collecting data in 2016
- Some oil and gas operations are covered by other GHGRP subparts
- Burden reduction opportunities
  - Addressing overlapping reporting requirements (Subpart NN and Subpart W)



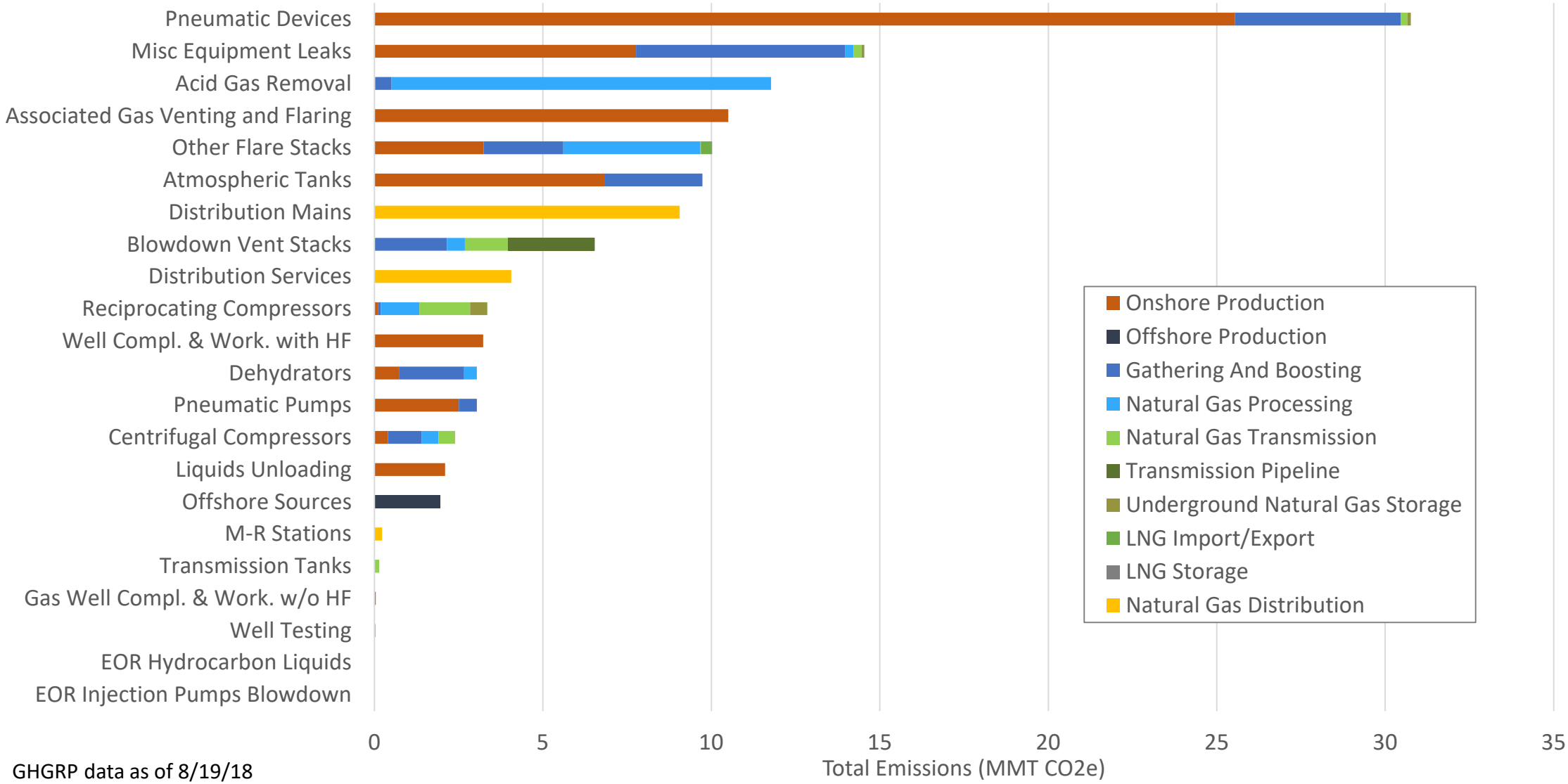
2017 Number of Reporters and Reported Emissions

- EPA received annual reports from 2,253 facilities
- Reported emissions totaled 284 Million Metric Tons (MMT) CO_2e
- Largest segments in terms of reported GHG emissions were onshore production, gathering and boosting, and natural gas processing

Segment	Number of Facilities	2017 Reported Emissions (Million Metric Tons CO_2e)
Onshore Production	497	94
Offshore Production	141	7
Gathering and Boosting	321	75
Natural Gas Processing	449	56
Natural Gas Transmission Compression	529	24
Natural Gas Transmission Pipeline	33	3
Underground Natural Gas Storage	48	1
LNG Import/Export	6	4
LNG Storage	6	<1
Natural Gas Distribution	169	13
Other Oil and Gas Combustion	79	7
Total	**2,253**	**284**

GHGRP data as of 8/19/18

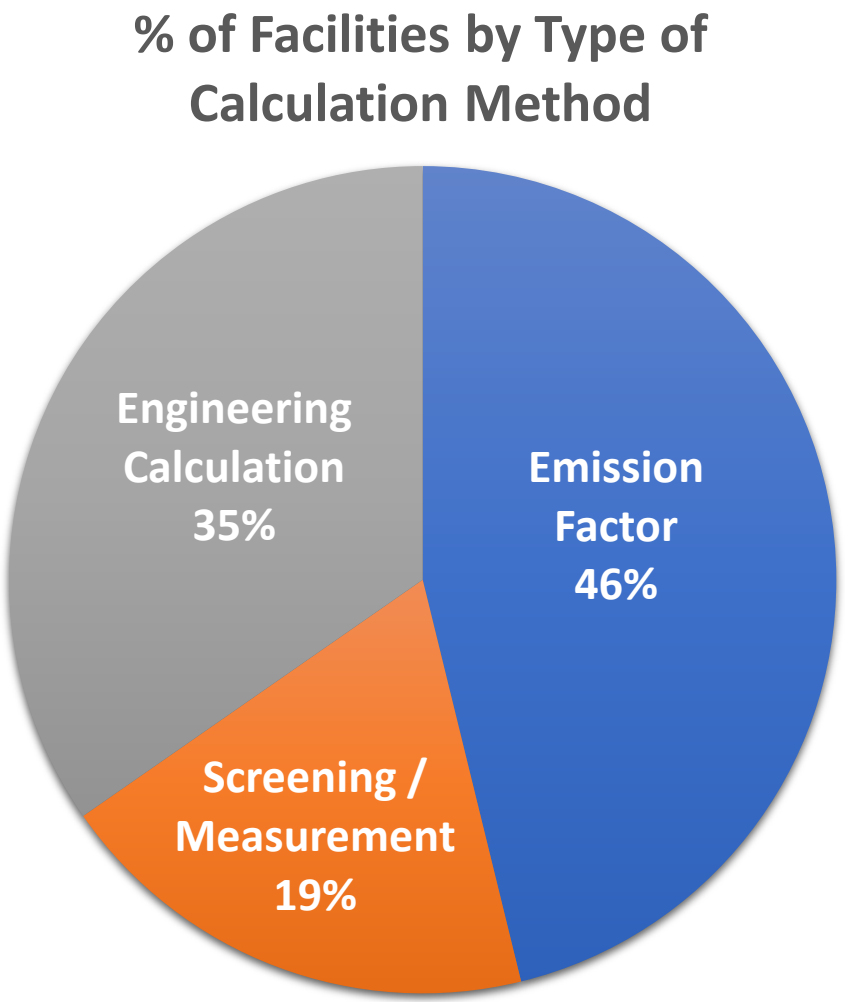
2017 Reported Emissions by Process Emission Source



GHGRP data as of 8/19/18

Subpart W Calculation Methods

- Most reporters use facility-specific calculation methods, such as engineering calculations and emission factors
- Some reporters conduct screening / measurement
- Burden reduction opportunities
  - Analyzing GHGRP data to develop representative emission factors, which could be used in lieu of measurement
    - Reciprocating compressors
    - Centrifugal compressors
    - Equipment leaks (e.g., T-D stations)
  - Evaluating use of engineering calculations in lieu of measurement
  - Providing an option to use measurement where not currently provided



Uses of Data by GHG Inventory

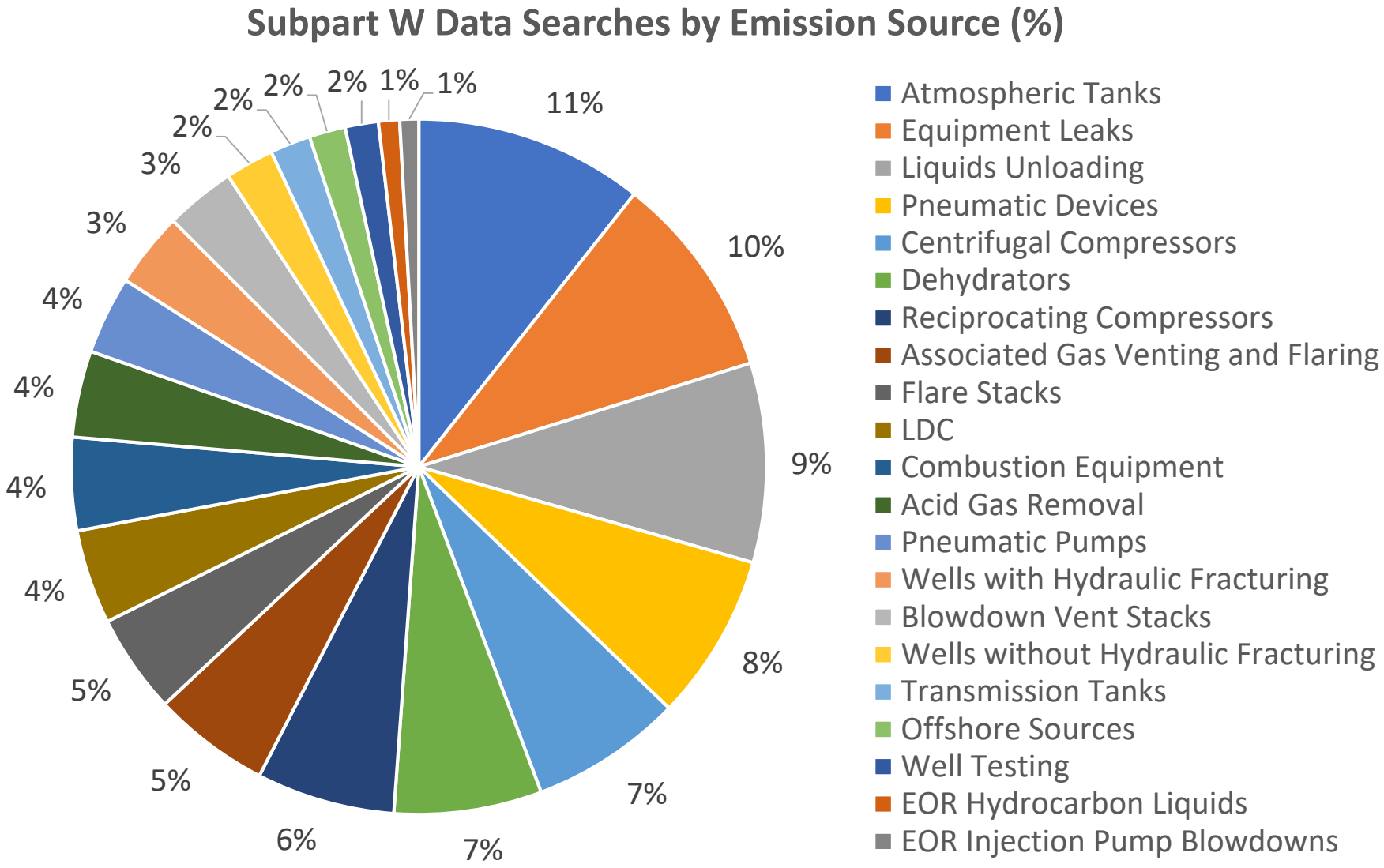
- Subpart W data serves an important role and resource for the GHG Inventory
  - Serves as a key input for many oil and gas emission sources
  - Allows GHG Inventory to reflect annual changes in industry practices and emissions
- Stakeholders have supported the use of Subpart W data in the GHG Inventory and have encouraged EPA to make additional uses of the Subpart W data
- Burden reduction opportunities
  - Removing certain data elements pending analysis of potential future use in GHG Inventory

GHGRP Emission Source	GHG Inventory Use: Emission Factor	GHG Inventory Use: Activity Data	GHG Inventory Use: QA/QC, Uncertainty
Pneumatic Devices	Yes	Yes	Yes
Atmospheric Tanks	Yes	Yes	Yes
Equipment Leaks	Yes	Yes	Yes
Acid Gas Removal	Yes	Yes	Yes
Flare Stacks	Yes	Yes	Yes
Blowdown Vent Stacks	Yes	Yes	Yes
Associated Gas	Yes	Yes	Yes
Pneumatic Pumps	Yes	Yes	Yes
Reciprocating Compressors	Yes	Yes	Yes
Dehydrators	Yes	Yes	Yes
Centrifugal Compressors	Yes	Yes	Yes
Liquids Unloading	Yes	Yes	Yes
Well Completions and Workovers with Hydraulic Fracturing	Yes	Yes	Yes
Well Completions and Workovers without Hydraulic Fracturing	Yes	Yes	Yes
Well Testing	Yes	Yes	Yes
Transmission Tanks	Potential Future Use	Potential Future Use	Yes
EOR Hydrocarbon Liquids	Potential Future Use	Potential Future Use	Potential Future Use
EOR Injection Pump Blowdowns	Potential Future Use	Potential Future Use	Potential Future Use
Offshore Production	Potential Future Use	Potential Future Use	Potential Future Use

Uses of Data: EPA Programs, States, Public

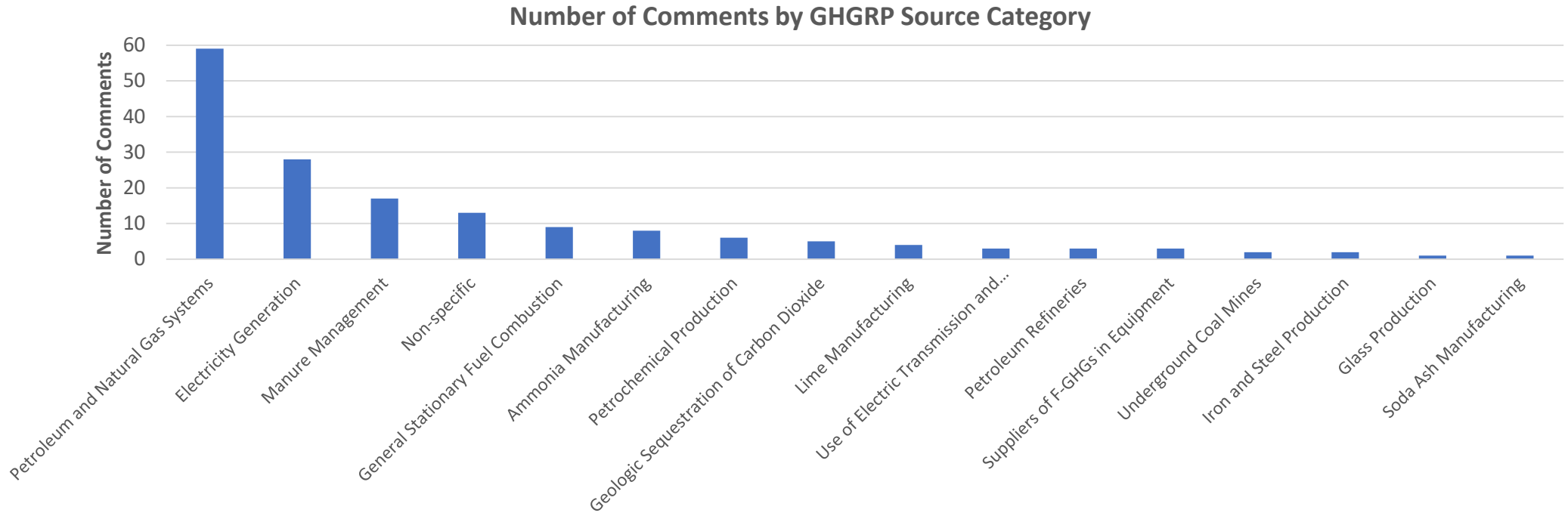
- Regulatory
  - Data were analyzed for white papers and used to update emission factors and activity data used for NSPS (as updated in GHG Inventory)
- Voluntary
  - Natural Gas STAR Methane Challenge Program is using Subpart W data to track partner progress in meeting commitments under Methane Challenge
- States
  - Subpart W data have been incorporated into the EPA Oil and Gas Emission Estimation Tool (NEI) to calculate state-level emissions of criteria air pollutants
  - A number of states have used Subpart W data as inputs for their criteria pollutant inventories, or directly or indirectly for state GHG inventories
- Other Uses
  - Data have been cited and applied in numerous studies and reports

Uses of Data: Envirofacts Data Searches by Public



October 2015 to April 2018

Burden Reduction Comments to EPA and Commerce Dockets



- Subpart W data was the most frequently referenced GHGRP subpart
- Majority of comments mentioned reporting using emission factors for compressors, addressing overlapping reporting with Subpart NN
- Numerous other comments, including some suggestions that do not necessarily relate to burden (e.g., updating emission factors for distribution mains)

Summary

- Subpart W data are being leveraged for a number of different emission sources and uses
- Potential burden reduction opportunities include:
  - Analyzing GHGRP data to develop representative emission factors for reporting in lieu of measurement
  - Expanding use of engineering calculations
  - Removing certain data elements from reporting
  - Addressing overlapping reporting requirements
  - Providing additional reporting flexibility where possible
- Note that most of the identified opportunities would require a rulemaking in accordance with the Administrative Procedure Act and other applicable laws such as the Clean Air Act

Questions for Stakeholder Discussion

- What feedback do you have on the identified potential burden reduction opportunities?
- Are there other provisions that should be added, replaced, or modified?
- In what other ways can the GHGRP reduce burden for the petroleum and natural gas systems reporting community while continuing to serve data needs?