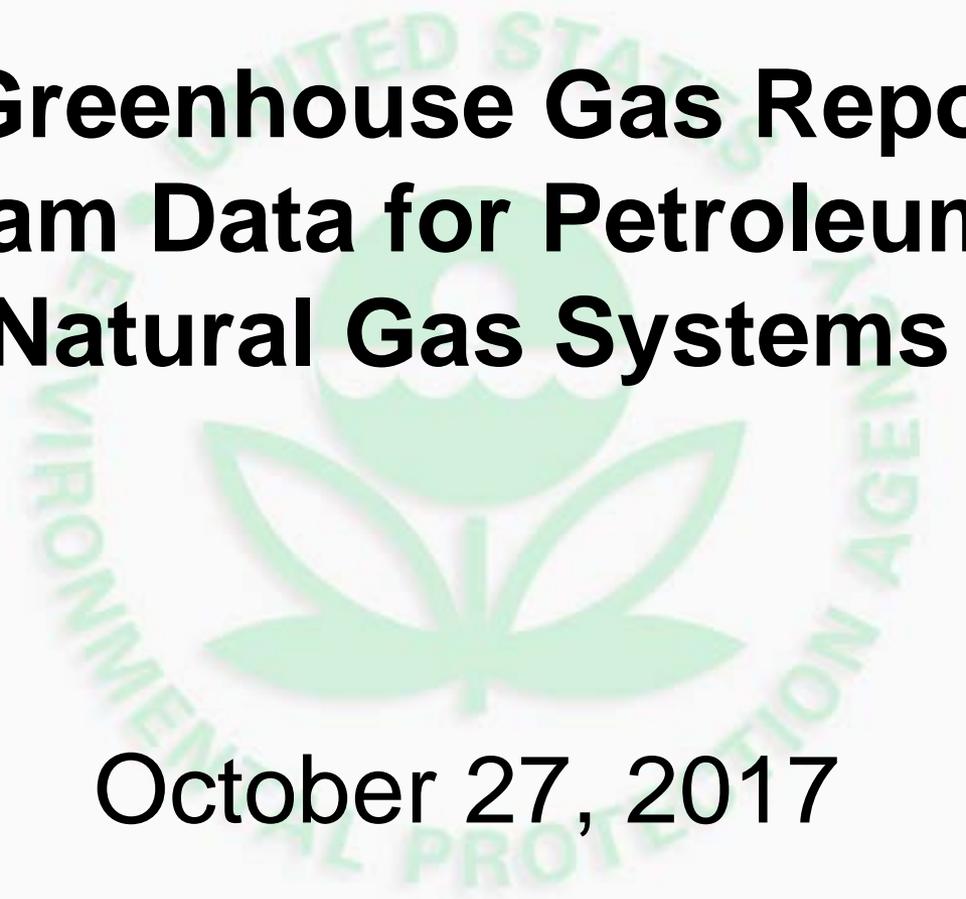




EPA Greenhouse Gas Reporting Program Data for Petroleum and Natural Gas Systems



October 27, 2017



- Background on Greenhouse Gas Reporting Program (GHGRP)
- GHGRP Petroleum and Natural Gas Systems (Subpart W): Reporting Year 2016 Data Summary



Background on GHGRP

Overview of GHGRP



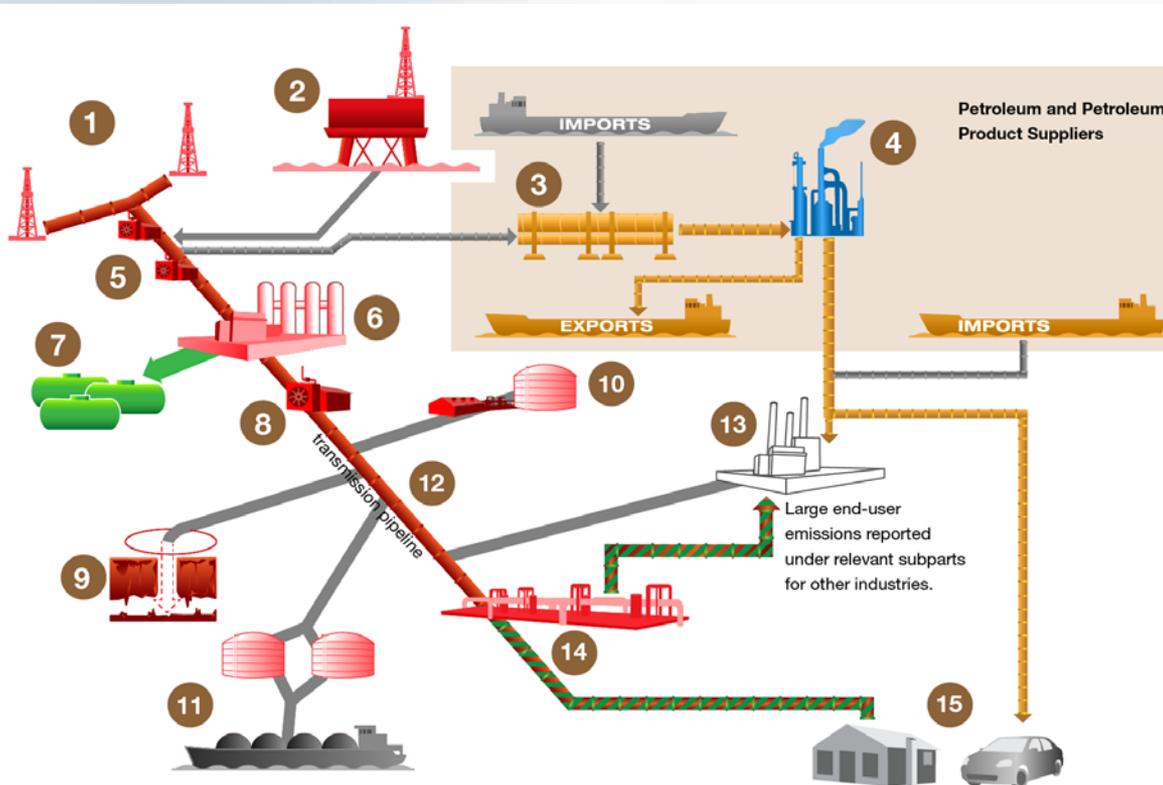
- Launched in response to FY 2008 Consolidated Appropriations Act
- Annual reporting of GHGs by 41 source categories
 - Generally: 25,000 metric ton CO₂e reporting threshold
- Facilities use uniform methods prescribed by the EPA to calculate GHG emissions, such as direct measurement, engineering calculations, or emission factors derived from direct measurement
 - In some cases, facilities have a choice of calculation methods for an emission source
- Direct reporting to EPA electronically
- EPA verification of GHG data

Source Categories Covered by GHGRP



Power	Refining & Petrochem	Other Chemicals	Combustion	Waste	Metals	Minerals	Pulp & Paper	High GWP Gases
<ul style="list-style-type: none"> - Electricity Generation - Electrical Equipment Mfg. - Electrical Equipment Use 	<ul style="list-style-type: none"> - Petroleum Refineries - Petrochem. Production 	<ul style="list-style-type: none"> - Adipic Acid - Ammonia - Hydrogen Production - Nitric Acid - Phosphoric Acid - Titanium Dioxide 	<ul style="list-style-type: none"> - Stationary Combustion 	<ul style="list-style-type: none"> - Industrial Waste Landfills - Industrial Wastewater Treatment - MSW Landfills 	<ul style="list-style-type: none"> - Aluminum - Ferroalloy - Iron & Steel - Lead - Magnesium - Silicon Carbide - Zinc 	<ul style="list-style-type: none"> - Cement - Glass - Lime - Misc. Carbonate Use - Soda Ash 	<ul style="list-style-type: none"> - Pulp & Paper 	<ul style="list-style-type: none"> - Electronics Mfg. - Fluorinated GHG Production - HCFC-22 Prod./HFC-23 Destruction - Pre-Charged Equipment Import/Export - Industrial Gas Suppliers
Petroleum & Natural Gas Systems			Fuel Suppliers			Carbon Capture & Sequestration		Mining
<ul style="list-style-type: none"> - Onshore Production - Offshore Production - Gathering and Boosting (as of 2016) - Natural Gas Processing - Natural Gas Transmission Compression - Natural Gas Transmission Pipeline (as of 2016) - Natural Gas Distribution - Underground Natural Gas Storage - Liquefied Natural Gas Storage - Liquefied Natural Gas Import/Export 			<ul style="list-style-type: none"> - Coal-Based Liquid Fuels Suppliers - Natural Gas and Natural Gas Liquids Suppliers - Petroleum Product Suppliers 			<ul style="list-style-type: none"> - Geologic Sequestration of CO₂ - Injection of CO₂ - CO₂ Suppliers 		<ul style="list-style-type: none"> - Underground Coal Mines
							<div style="border: 1px solid black; padding: 5px; text-align: center;"> Direct Emitters Suppliers CO₂ Injection </div>	

GHGRP and the Oil and Gas Industry



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 began in RY 2016
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
12. Natural Gas Transmission Pipeline
*Data collection began in RY 2016

Distribution

13. Large End Users
14. Natural Gas Distribution
15. Natural Gas & Petroleum Supply to Small End Users

■	Subpart W: Emissions from petroleum & natural gas systems
■	Subpart Y: Emissions from petroleum refineries
■	Subpart MM: CO ₂ associated with supplies of petroleum products
■	Subpart NN: CO ₂ associated with supplies of natural gas & natural gas liquids
■	Not reported under GHGRP

Petroleum and Natural Gas Systems: What's New for RY 2016?



- Addition of requirements for monitoring, calculation and reporting of emissions for:
 - Oil well completions and workovers with hydraulic fracturing
 - Gathering and boosting systems
 - Blowdowns of natural gas transmission pipelines
- Addition of reporting requirements for well identification numbers
- Where can I find more information?
 - Federal Register: 80 FR 64262 (October 22, 2015, <https://www.gpo.gov/fdsys/pkg/FR-2015-10-22/pdf/2015-25840.pdf>)
 - Docket ID No. EPA-HQ-OAR-2014-0831 (www.regulations.gov)
 - GHGRP Subpart W website: <http://www.epa.gov/ghgreporting/subpart-w-petroleum-and-natural-gas-systems>



Subpart W Reporting Year 2016 Data Summary

Reported GHG Emissions by Industry Segment

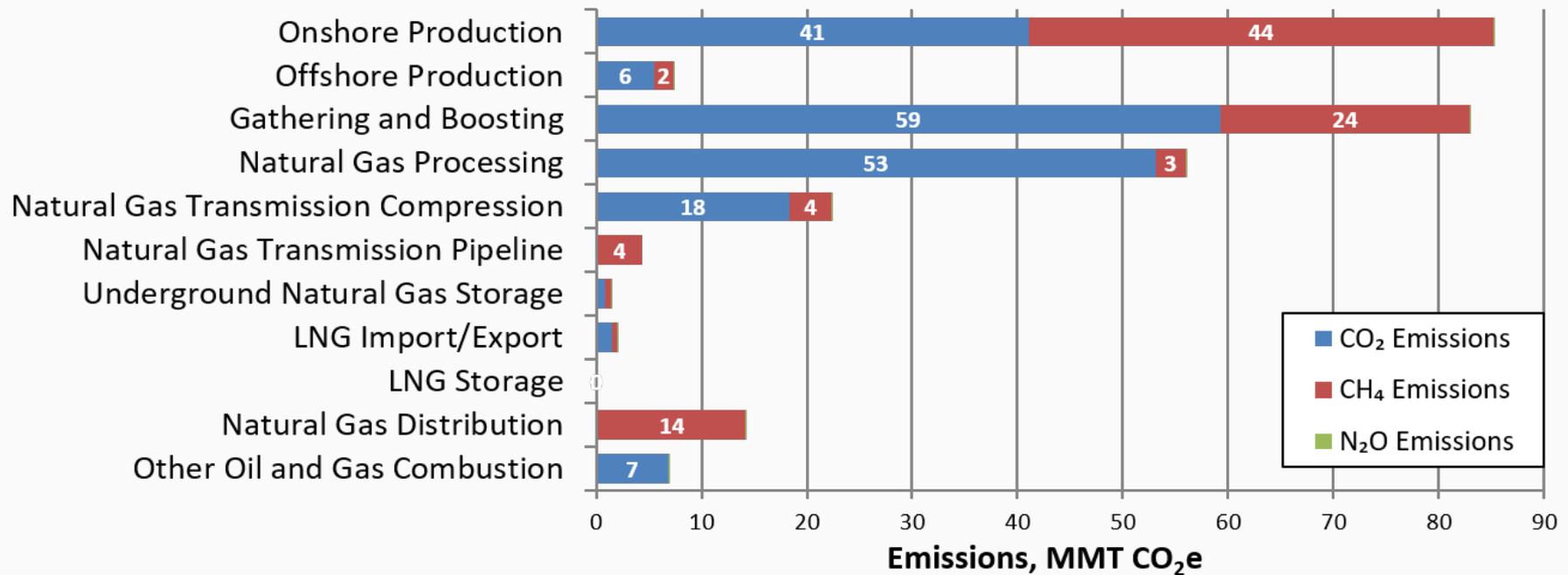


Segment	Number of Facilities	2016 Reported Emissions (Million Metric Tons CO ₂ e)
Onshore Production	512	85
Offshore Production	134	7
Gathering and Boosting	299	83
Natural Gas Processing	447	56
Natural Gas Transmission Compression	525	22
Natural Gas Transmission Pipeline	27	4
Underground Natural Gas Storage	53	2
LNG Import/Export	6	2
LNG Storage	6	<1
Natural Gas Distribution	169	14
Other Oil and Gas Combustion	92	7
Total	2,248	283

Reported Emissions by Greenhouse Gas



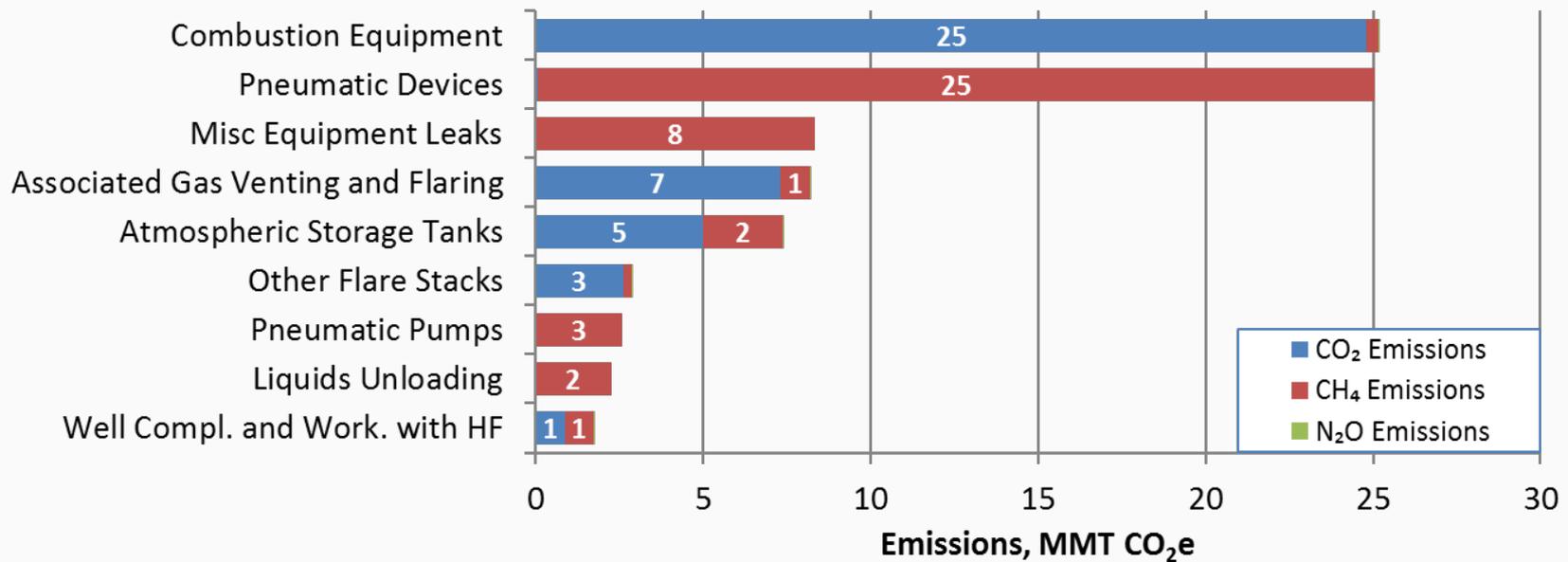
2016 Reported Emissions by Greenhouse Gas



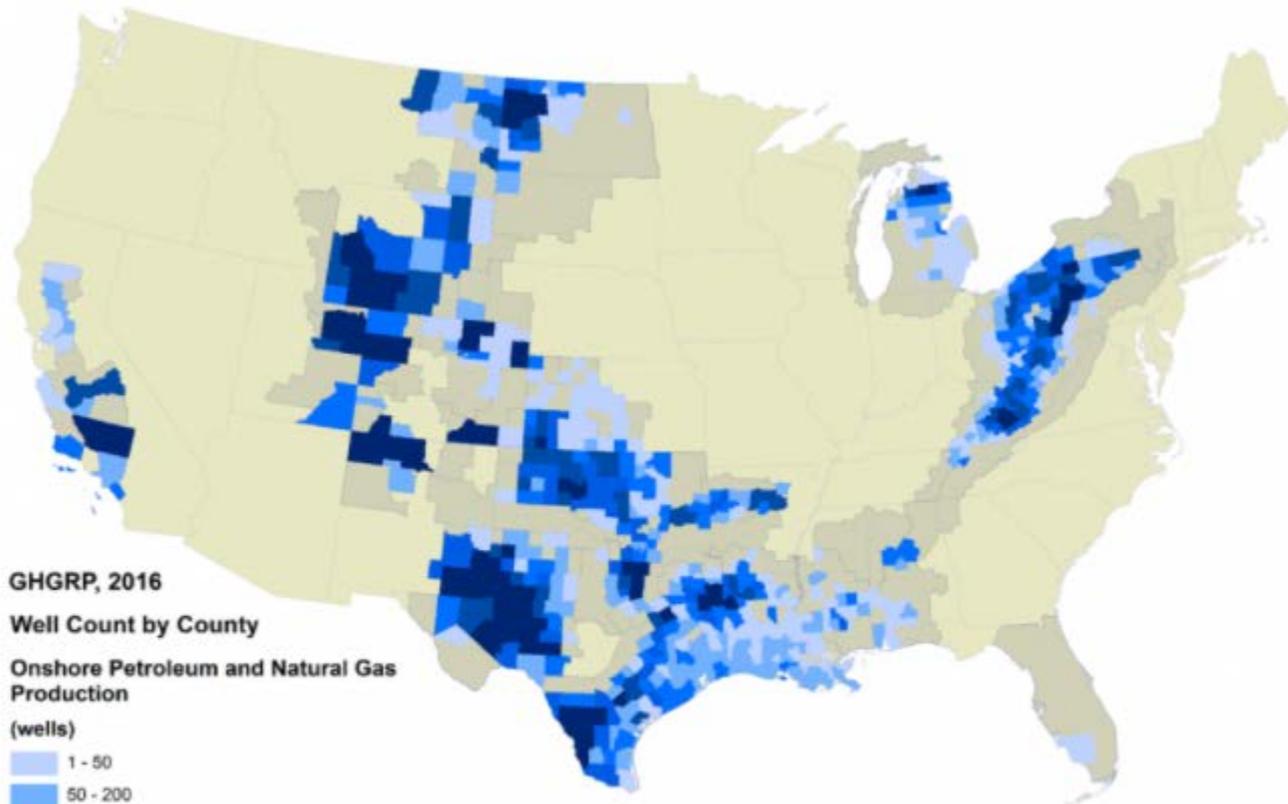
Onshore Production



2016 Onshore Production: Top Reported Emission Sources



Well Count By County



GHGRP, 2016

Well Count by County

Onshore Petroleum and Natural Gas Production

(wells)

- 1 - 50
- 50 - 200
- 200 - 500
- 500 - 1,000
- 1,000 - 2,000
- > 2,000

Total from counties in Alaska:
2,850 (wells)

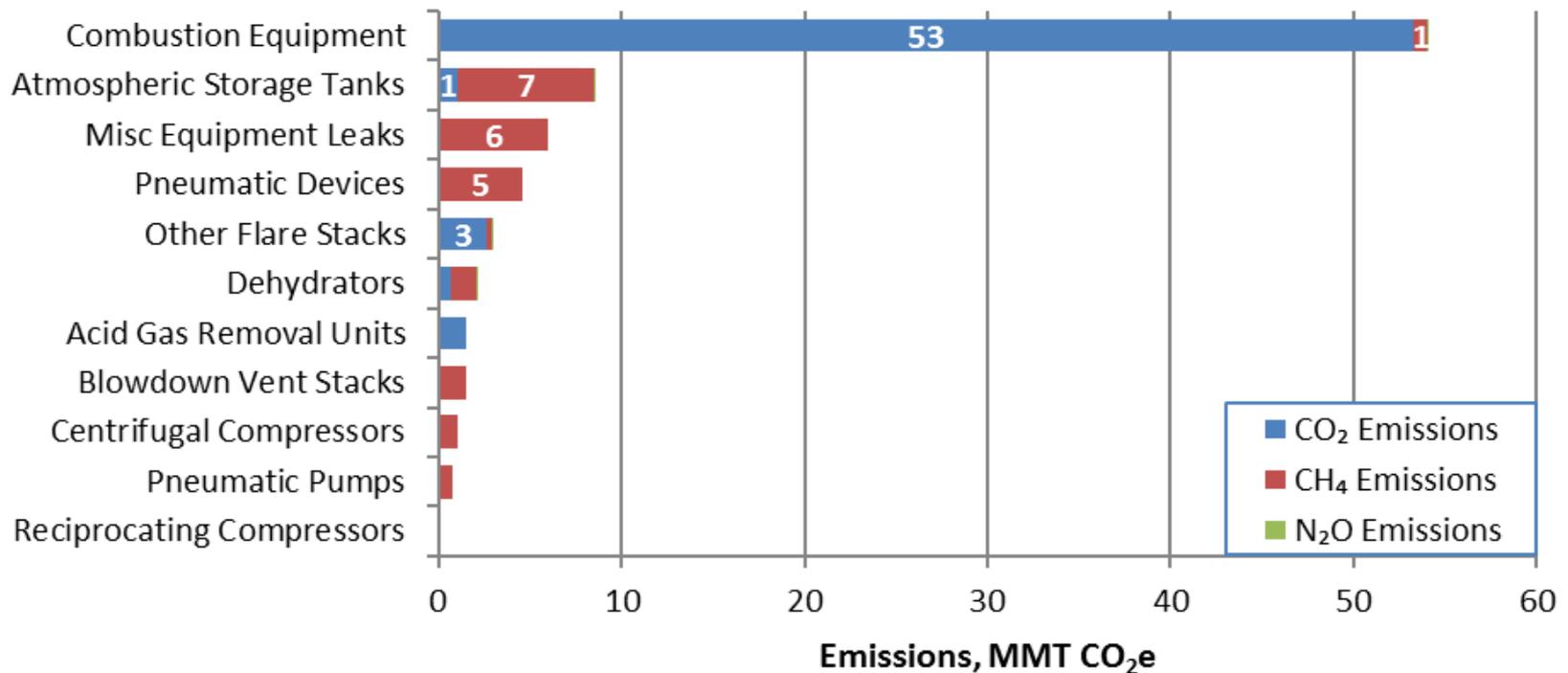
Data Source: 2016 Greenhouse Gas Reporting Program
As of 08/05/2017



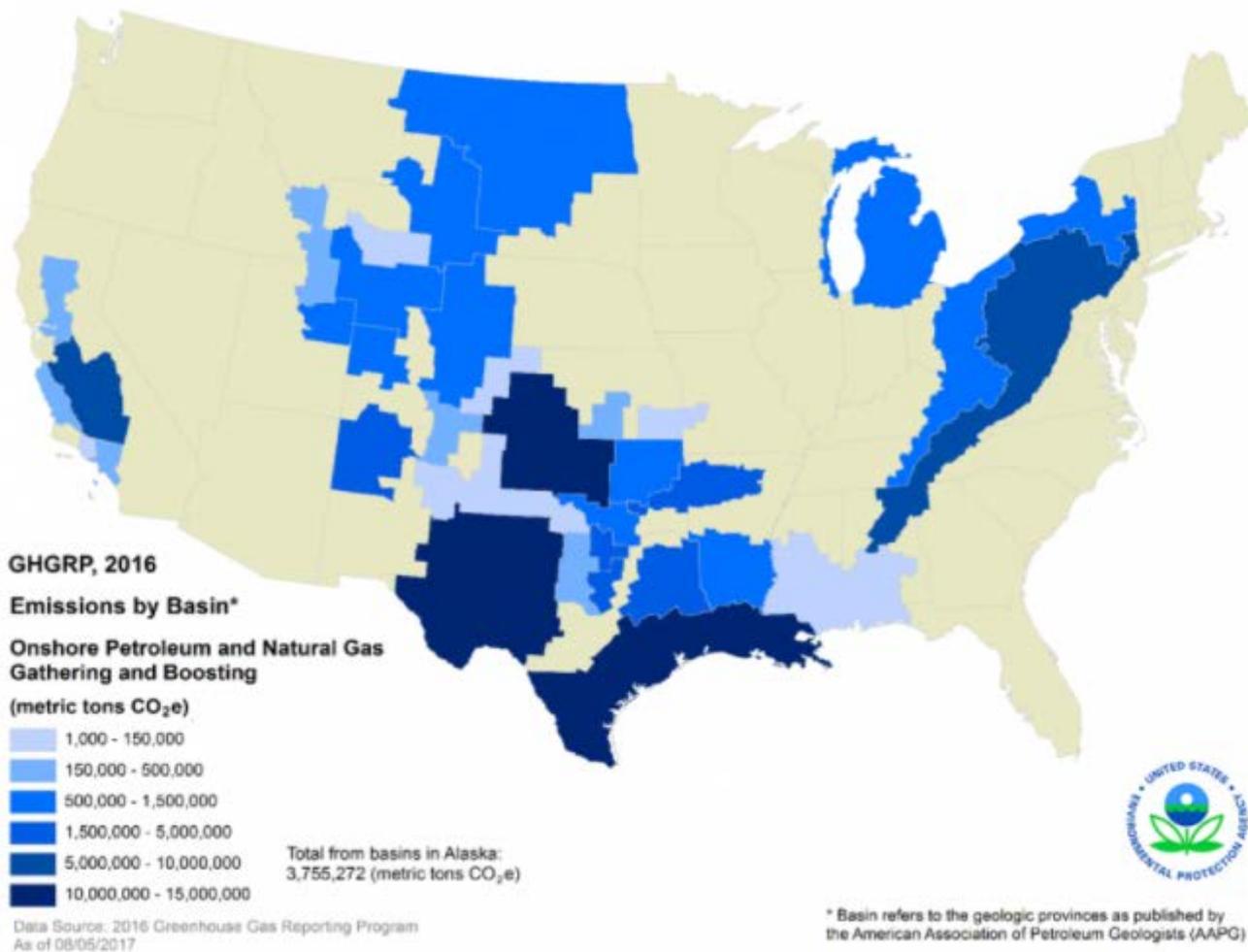
Gathering and Boosting



2016 Gathering and Boosting: Top Reported Emission Sources



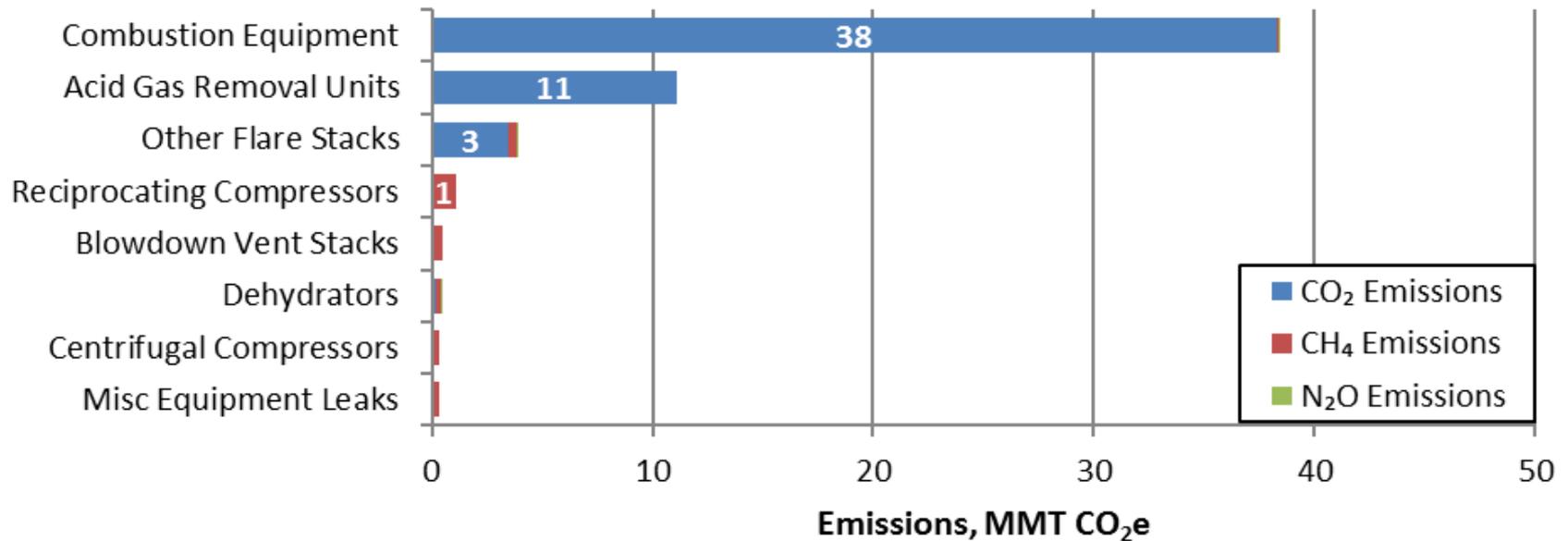
Gathering & Boosting Emissions by Basin



Natural Gas Processing



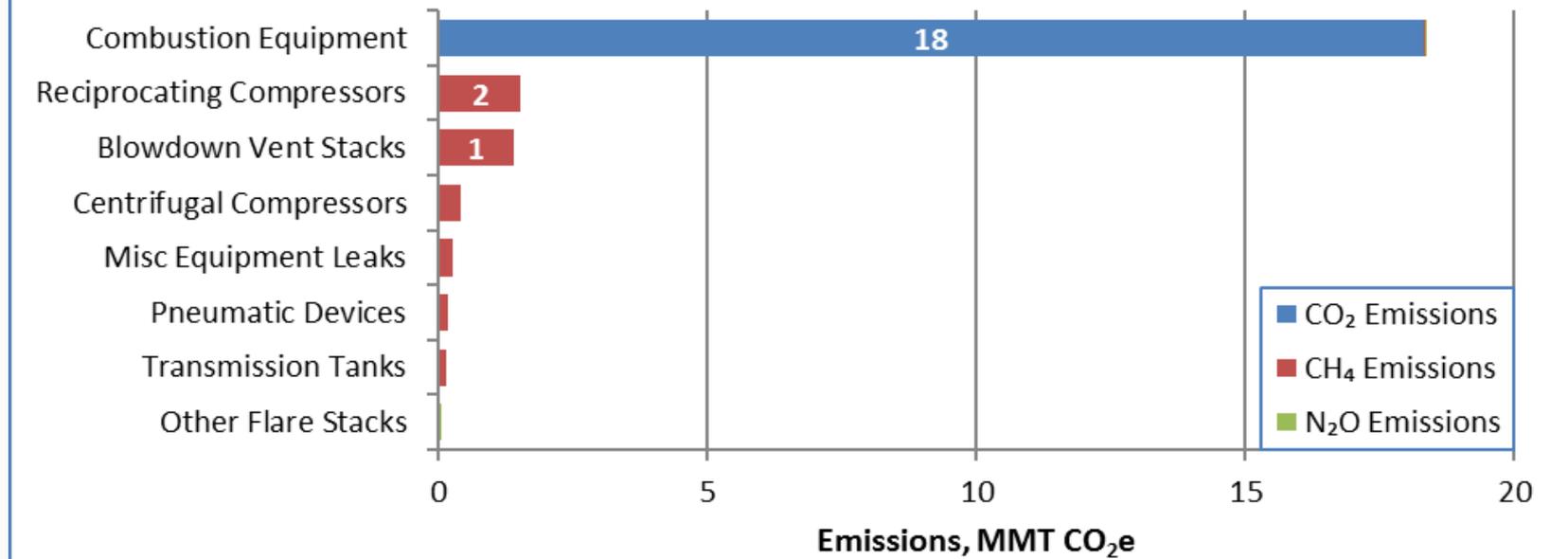
2016 Natural Gas Processing: Top Reported Emission Sources



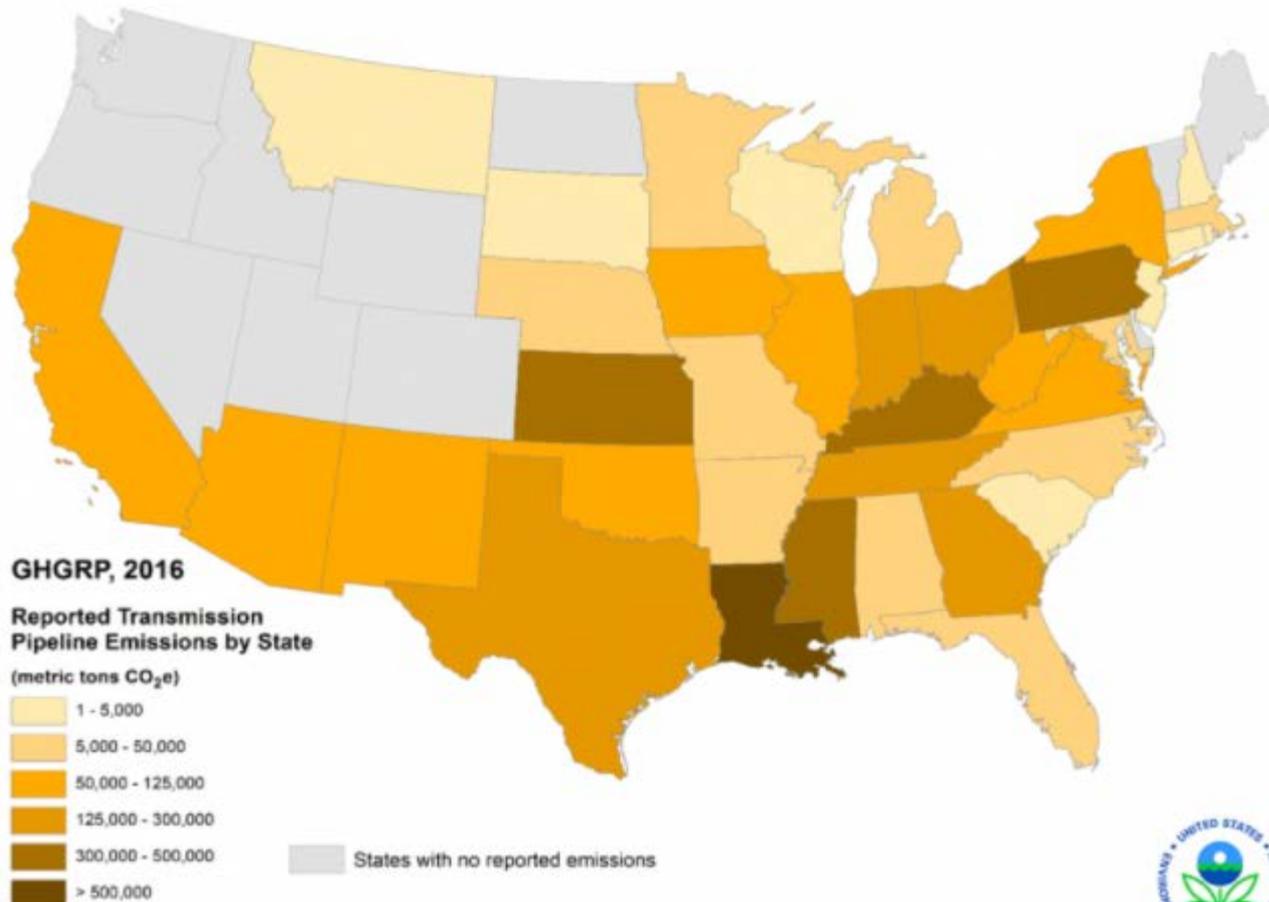
Natural Gas Transmission Compression



2016 Natural Gas Transmission Compression:
Top Reported Emission Sources



Transmission Pipeline Blowdown Emissions by State



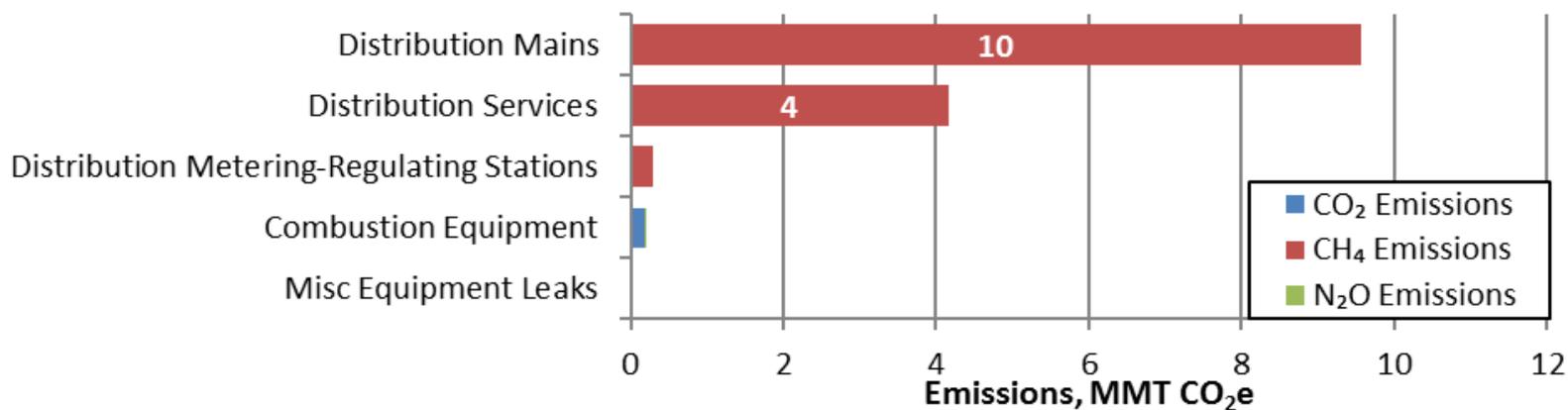
Data Source: 2016 Greenhouse Gas Reporting Program
As of 08/05/2017



Natural Gas Distribution



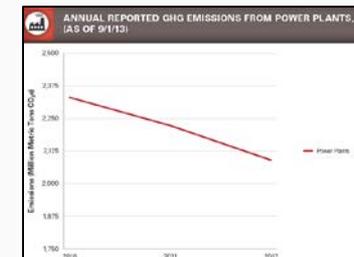
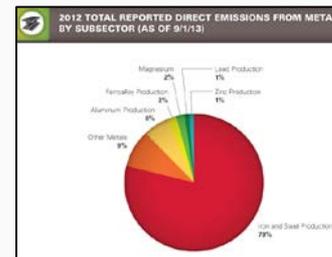
2016 Natural Gas Distribution: Top Reported Emission Sources



How to Access GHGRP Data



- EPA makes GHGRP data publicly available through several portals
- FLIGHT (<http://ghgdata.epa.gov>)
 - View data in a variety of ways
- Envirofacts (<https://www.epa.gov/enviro/greenhouse-gas-customized-search>)
 - Detailed non-CBI data
- Data Highlights (<https://www.epa.gov/ghgreporting/ghgrp-reported-data>)
 - Summary of data reported in each sector





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