2012 GHGRP Data Highlights

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GHGRP 2012: Reported Data

For reporting year (RY) 2012, over 8,000 facilities and suppliers reported to the greenhouse gas reporting program. Among these reporters,

- 7,809 facilities in nine industry sectors reported direct emissions.
- Emissions totals 3.13 billion metric tons carbon dioxide equivalent (CO_2e), about half of total U.S. greenhouse gas emissions.

All values and graphics presented here were last updated on September 1, 2013. To review the most recent 2012 data reported by each facility, download summary GHG data, explore FLIGHT, or download facility-specific data through Envirofacts.

Greenhouse Gas Reporting Program Background

As directed by Congress, EPA's Greenhouse Gas Reporting Program (GHGRP) collects annual greenhouse gas information from the top emitting sectors of the U.S. economy (Table 1). The GHGRP is the only dataset containing facility-level greenhouse gas (GHG) emissions data from major industrial sources across the United States. With three years of reporting for most sectors, GHGRP data are providing important new information on industrial emissions—showing variation in emissions across facilities within an industry, variation in industrial emissions across geographic areas, and changes in emissions over time at the sector and facility level. EPA is using this facility-level data to improve estimates of national greenhouse gas emissions, including using it to improve the U.S. Greenhouse Gas Inventory. The data are also being used to inform regulatory actions and voluntary emission reduction efforts.

This document summarizes national industrial sector emissions and trends.

Table 1: GHGRP Sector Classifications

Industry Sector	Number of Reporters	Emissions (million metric tons CO_2e)
Power Plants	1,611	2,090
Petroleum and Natural Gas Systems	2,058	217
Onshore Petroleum & Nat. Gas Prod.	497	88
Offshore Petroleum & Nat. Gas Prod.	106	6.5
Natural Gas Processing	394	60
Natural Gas Trans./Compression	462	23
Underground Natural Gas Storage	49	1.3
Natural Gas Local Distribution Co.	174	13
Liquefied Natural Gas Imp./Exp. Eq.	8	0.6
Liquefied Natural Gas Storage	4	**
Other Petroleum & Nat. Gas Systems	381	24

Industry Sector	Number of Reporters	Emissions (million metric tons CO_2e)
Refineries	144	173
Chemicals	463	170
Non-Fluorinated Chemicals		
Adipic Acid Production	3	7.4
Ammonia Manufacturing	22	25
Hydrogen Production	106	39
Nitric Acid Production	36	11
Petrochemical Production	65	52
Phosphoric Acid Production	12	2.1
Silicon Carbide Production	1	0.1
Titanium Dioxide Production	7	2.1
Other Chemicals Production	219	19
Fluorinated Chemicals		
Fluorinated GHG Production	16	7.4
HCFC-22 Prod./HFC-23 Dest.	5	4.3
Waste	1,611	100
Industrial Waste Landfills	176	8.2
Municipal Landfills	1,217	79
Solid Waste Combustion	69	10
Wastewater Treatment	155	3
Metals	297	107
Aluminum Production	10	6.5
Ferroalloy Production	10	2.4
Iron and Steel Production	125	84
Lead Production	14	1.1
Magnesium Production	10	1.7
Zinc Production	6	1.0
Other Metals Production	122	9.7

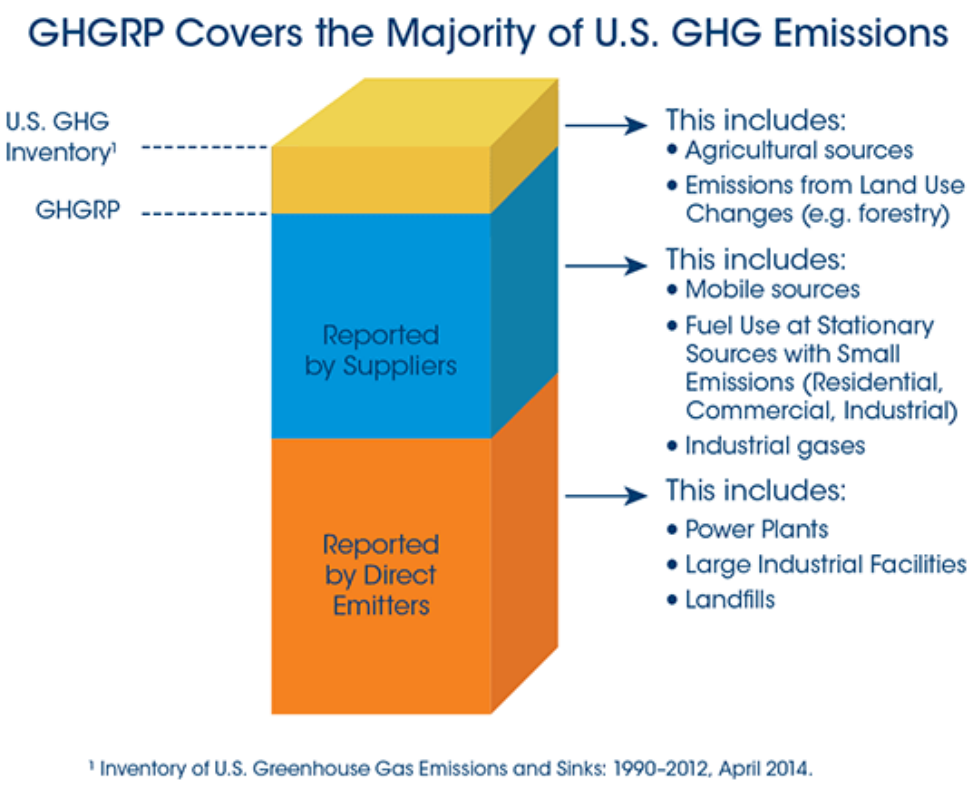
Industry Sector	Number of Reporters	Emissions (million metric tons CO_2e)
Minerals	369	107
Cement Production	96	60
Glass Production	107	8.2
Lime Manufacturing	74	30
Soda Ash Manufacturing	4	5.2
Other Minerals	89	3.8
Pulp and Paper	232	42
Pulp and Paper Manufacturing	110	30
Other Paper Producers	122	12
Other	1,419	123
Food Processing	31	30.8
Ethanol Production	166	17
Manufacturing	285	16
Universities	113	8.9
Military	44	2.6
Other	166	11
Underground Coal Mines	151	28
Electronics Manufacturing	53	5.1
Electrical Equipment Manufacturers	6	0.2
Electrical Equipment Use	123	3.4

** Total reported emissions are less than 0.05 million metric tons CO_2e.

Note: Biogenic emissions are NOT included in the total emissions.

The GHGRP does not represent total U.S. GHG emissions, but provides facility level data for large sources of direct emissions, thus including the majority of U.S. GHG emissions. The GHGRP data collected from direct emitters represent about half of all U.S. emissions. When including greenhouse gas information reported by suppliers to the GHGRP, emissions coverage reaches approximately 85–90% (See Figure 1). The Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012 contains information on all GHG emissions sources and sinks in the United States.

Learn more about the differences between the Inventory and the GHGRP.



[1] Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2012, April 2014.

Suppliers are those entities that supply products into the economy that, if combusted, released, or oxidized, would emit GHGs into the atmosphere. Emissions associated with these fuels and industrial gases do not occur at the supplier's facility but instead occur throughout the country, wherever they are used. An example of this is gasoline, which is supplied into the U.S. economy by a relatively small number of entities and consumed by many individual vehicles throughout the country. The majority of GHG emissions associated with the transportation, residential, and commercial sectors are accounted for by these suppliers. This document focuses on data reported by direct emitters. Data reported by suppliers can be viewed through the suppliers section of the Facility Level Information on GreenHouse gases Tool (FLIGHT).

Table 2: Overview of GHG Data Reported (2012)

Direct emitters	
Number of facilities reported	7,809
Reported direct emissions (billion metric tons CO_2e)	181
Suppliers of fuel and industrial gases	
Number of suppliers	883
Underground injection of carbon dioxide	
Number of carbon dioxide injection facilities	87

Who Reports?

For 2012, 7,809 direct emitters submitted a GHG report. The Petroleum and Natural Gas Systems sector had the largest number of reporting facilities, followed by the Power Plants Sector and the

Waste Sector. Among suppliers, Suppliers of Natural Gas and Natural Gas Liquids had the largest number of reporting facilities.

Table 3: Number of Direct Emitters that Reported (2012)

Industry Sector	Number of Reporters[1]
Power Plants	1,611
Petroleum and Natural Gas Systems	2,058
Refineries	144
Chemicals	463
• *Fluorinated Chemicals*	16
• *Non-fluorinated Chemicals*	447
Waste	1,611
Metals	297
Minerals	369
Pulp and Paper	232
Other	1,419
• *Underground Coal Mines*	151
• *Electrical Equipment Production & Use*	129
• *Electronics Manufacturing*	53
• *Other Combustion*	1,090

Table 4: Number of Suppliers that Reported (2012)

Supply Sector	Number of Reporters[2]
Suppliers of Coal-Based Liquid Fuels	1
Suppliers of Petroleum Products	234
Suppliers of Natural Gas and Natural Gas Liquids	
• *Natural Gas Distribution*	365
• *Natural Gas Liquids Fractionation*	119
Suppliers of Industrial GHGs	
• *Industrial GHGs*	58
• *Imports and Exports of Equipment Pre-charged with Fluorinated GHGs or Containing Fluorinated GHGs in Closed-cell Foams*	44
Suppliers of Carbon Dioxide	137

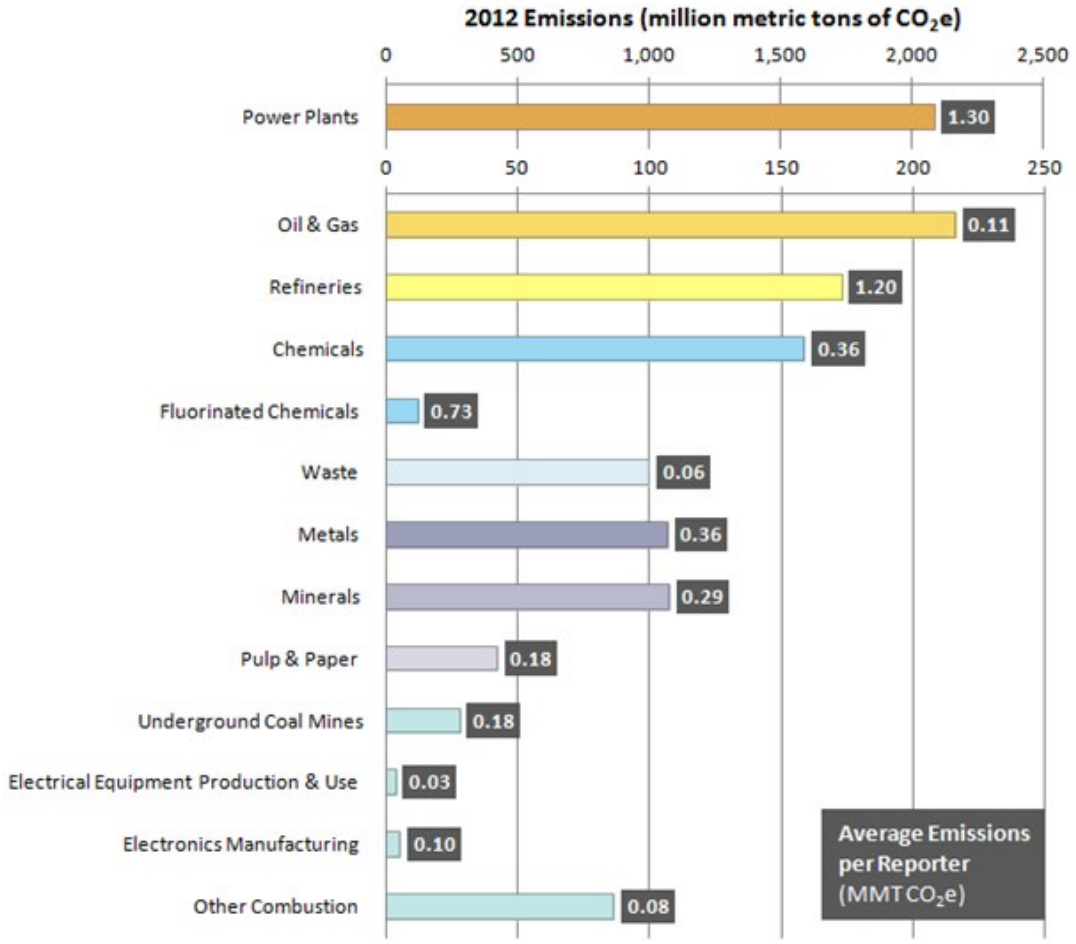
[1] Totals sum to more than 7,809 because facilities with production processes in more than one sector are counted multiple times.
[2] Totals sum to more than 883 because suppliers that fall into more than one sector are counted multiple times.

Reported Emissions

All GHG emissions data, displayed in units of carbon dioxide equivalent (CO_2e) reflect the global warming potential (GWP) values from the Intergovernmental Panel on Climate Change (IPCC), Climate Change 1995: The Science of Climate Change (Second Assessment Report (SAR), Cambridge, United Kingdom: Cambridge University Press). The SAR values also can be found in the version of Table A-1 to 40 CFR part 98, published in the Federal Register on October 30, 2009 (74 FR 56395).

In 2012, 3.13 billion metric tons CO_2e were reported by direct emitters. The largest emitting sector was the Power Plant Sector with 2.09 billion metric tons CO_2e, followed by the Petroleum and Natural Gas Systems Sector with 217 million metric tons (MMT) CO_2e and the Petroleum Refinery Sector with 173 MMT CO_2e. This information, as well as average emissions per reporter, is shown in the following chart.

Table 4: Direct GHG Emissions Reported by Sector (2012)



View this information in FLIGHT.

Emissions Trends

National level trends in greenhouse gas emissions are available through the *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012*. The Greenhouse Gas Reporting Program collects information from the largest stationary sources in the U.S. and provides nearly complete emissions coverage for many of the largest emitting industries. Discussion of the trend in reported emissions

from 2010 (or in some cases 2011) to 2012 from individual industries that report to the GHGRP is included in the industry specific reports.

While total U.S. emissions decreased by 1.8% from 2010 to 2011, emissions *reported to the GHGRP* increased over this period (Table 5). The increase occurred because 12 source categories were required to begin reporting for the first time in 2011. For these industries, 2011 is the appropriate base year for determining trends in reported emissions. Trends for other sectors can be determined using GHGRP data beginning in 2010 (Figure 3).

Total U.S. emissions decreased by 3.4% from 2011 to 2012 based on the *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012* (April 2014). For facilities that *reported to the GHGRP* in 2011 and 2012, emissions declined by 4.5% (Table 5). This decline was driven by a 4.7% decline in emissions from power plants. In the two years since reporting began, emissions from power plants have decreased 10 percent.

Table 5: Emissions Trends for U.S. GHG Inventory and GHGRP (2010-2012)

Industry Sector	2010	2011	2012
U.S. GHG Inventory			
Total emissions (million metric tons CO_2e)	6,848.6	6,726.6	6,501.5
Percent change in emissions from previous year	—	-1.8%	-3.4%
GHGRP			
Number of direct emitting facilities	6,267	7,612[3]	7,809
Direct emissions (million metric tons CO_2e)	3,180	3,275[3]	3,129
Percent change in emissions from previous year	—	—	-4.5%

Table 6: Emissions Trends by Sector (2010-2012)

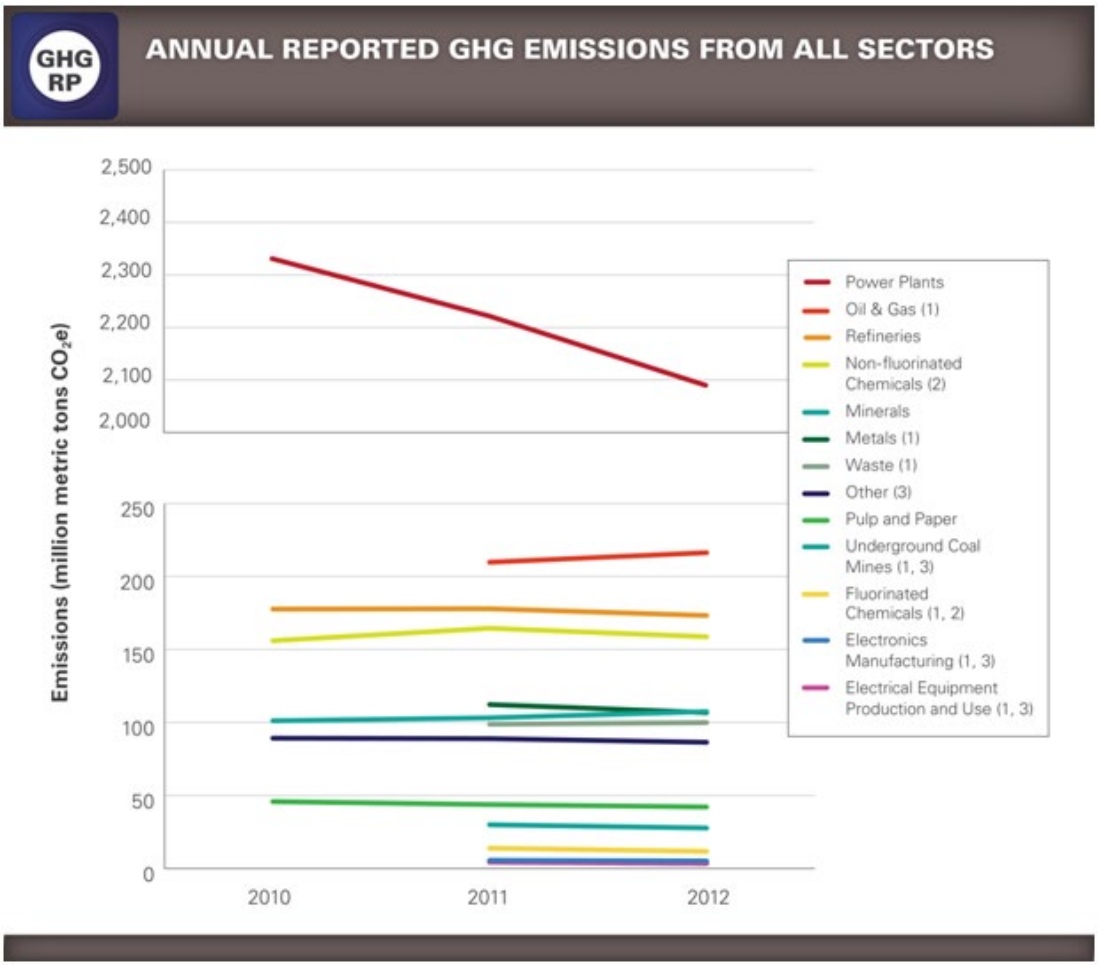
Sector	2010 Emissions (MMT CO_2e)	2011 Emissions (MMT CO_2e)[3]	2012 Emissions (MMT CO_2e)
Power Plants	2,330.8	2,221.9	2,090.0
Petroleum and Natural Gas Systems	NR	209.8	217.1
Refineries	177.7	177.9	173.3
Chemicals	NR	178.4	170.4
• *Fluorinated Chemicals*	NR	13.9	11.7
• *Non-fluorinated Chemicals*	156.0	164.5	158.7
Waste	NR	98.8	99.9
Metals	NR	112.3	106.8
Minerals	101.1	103.2	107.5
Pulp and Paper	45.8	43.8	42.1
Other	NR	128.9	122.8
• *Underground Coal Mines*	NR	29.9	27.7
• *Electrical Equipment Production & Use*	NR	4.5	3.6
• *Electronics Manufacturing*	NR	5.6	5.1

[3] Twelve additional source categories began reporting in 2011.

Sector	2010 Emissions (MMT CO_2e)	2011 Emissions (MMT CO_2e)[3]	2012 Emissions (MMT CO_2e)
• *Other Combustion*	89.2	88.9	86.4

NR means that emissions are not shown for the 2010 reporting year for sectors in which emissions from some source categories in the sector were not required to be reported in 2010.

Figure 3: Trends in Direct GHG Emissions (2010-2012)



View this information in FLIGHT.

[1] In reporting year 2011, emissions for some processes in this sector were reported for the first time.

[2] Non-fluorinated Chemicals and Fluorinated Chemicals are components of "Chemicals" in FLIGHT.

[3] Other Combustion, Underground Coal Mines, Electronics Manufacturing and Electrical Equipment Production & Use comprise "Other" in FLIGHT.

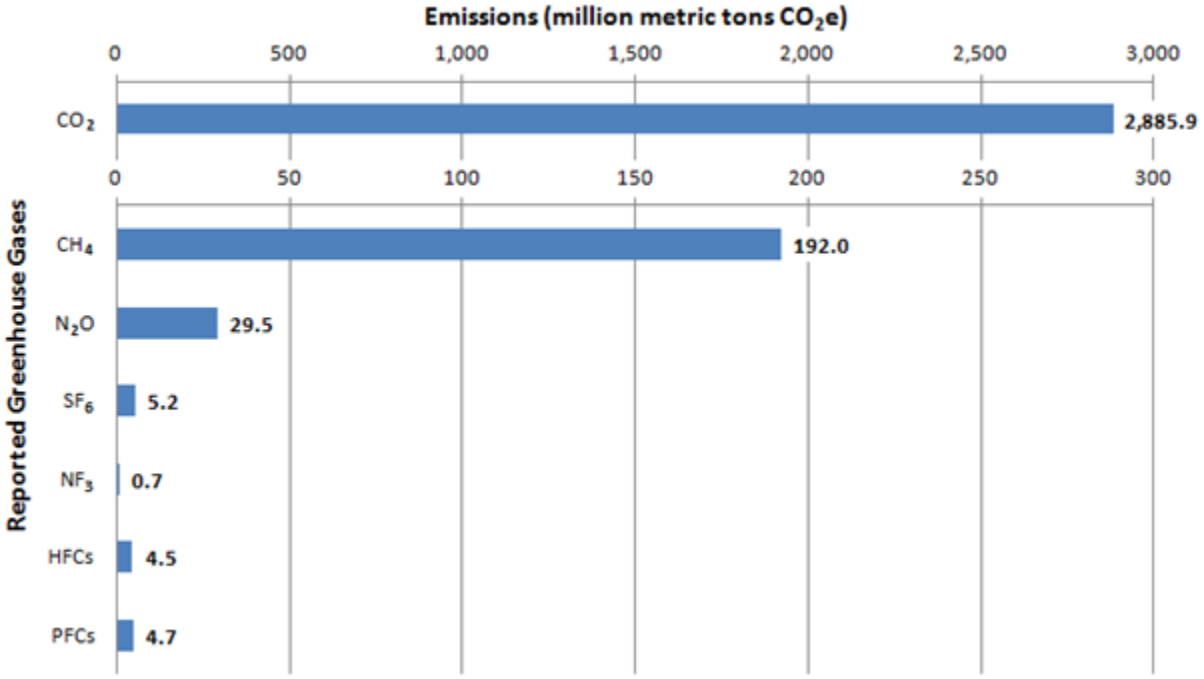
Emissions by GHG

Carbon dioxide represented 92.2% of the GHGs reported in 2012. The reported 2.89 billion metric tons represents about 54% of total U.S. CO_2 emissions. Reported methane emissions were 192.0 MMT CO_2e of methane, representing about 34%[4] of total U.S. methane emissions. Facilities reported

[4] Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012 (April 2014)

29.5 MMT CO_2e of N_2O, representing about 7%[4] of total U.S. N_2O emissions. Finally, reported emissions of fluorinated gases (HFCs, PFCs, SF_6) represent about 13%[4] of U.S. emissions of these compounds.

Figure 3: Direct Emissions by GHG (2010-2012)



The table below lists the primary sectors emitting each GHG.

Table 7: Largest Sources of GHG Emissions

Greenhouse Gas	Source Categories Contributing Most to Emissions[5]	Sectors Contributing Most to Emissions
CO_2	Electricity Generation (D), Stationary Combustion (C)	Power Plants
CH_4	Municipal Landfills (HH), Petroleum & Natural Gas Systems (W)	Waste, Petroleum & Natural Gas Systems
N_2O	Nitric Acid Production (V), Electricity Generation (D), Adipic Acid Production €	Chemicals, Power Plants
SF_6	SF_6 from Electrical Equipment (DD), Magnesium Production (T)	Other, Metals
NF_3	Electronics Manufacturers (I)	Other
HFCs	HCFC-22 Production and HFC-23 Destruction (O)	Chemicals

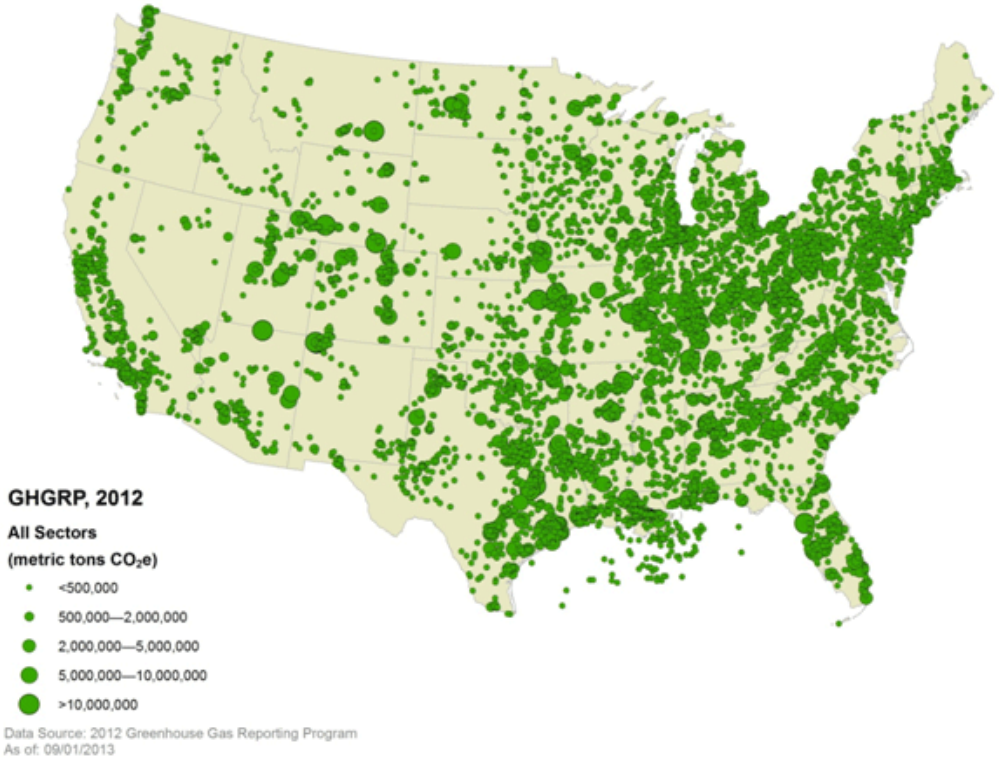
[5] These source categories account for 75 percent or more of the reported emissions of the corresponding GHG. The subpart under which the emissions were reported is shown in parentheses.

Greenhouse Gas	Source Categories Contributing Most to Emissions[5]	Sectors Contributing Most to Emissions
PFCs	Aluminum Production (F), Electronics Manufacturers (I)	Metals, Other

Geographic Distribution of Emissions

This map shows the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility. There are also facilities located in Alaska, Hawaii, Puerto Rico, the U.S. Virgin Islands, and Guam.

Figure 5: Location and Total Reported Emissions from GHGRP Facilities (2012)



Readers can identify facilities in their state, territory, county, or city by visiting FLIGHT.

Because it generally applies to facilities that emit greater than 25,000 metric tons CO_2e per year, the GHGRP provides total reported emissions from large stationary sources in each state. Figure 6 shows the reported emissions in each state broken out by industrial sector.

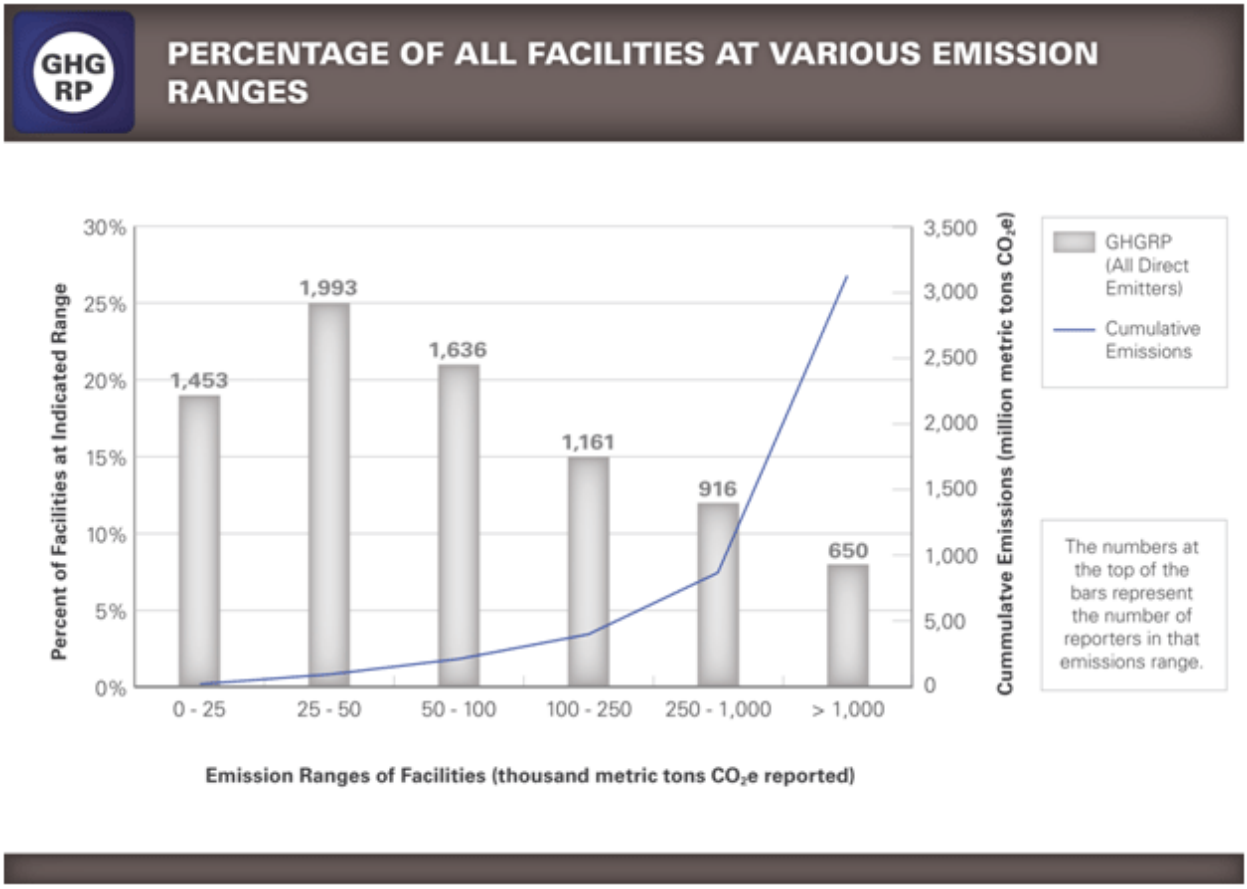
Figure 6: Direct GHG Emissions by State and Sector (2012)

View this information in FLIGHT.

Emissions Range

The GHGRP provides a comprehensive dataset that can be used to determine the number of facilities at various emissions levels in many industry sectors. The GHGRP can also be used to determine the total GHG emissions from individual facilities, including emissions from fossil fuel combustion and other processes. This information is valuable for planning future policies. GHGRP data provide policy makers with a better understanding of the number of facilities and total emissions that would be covered by potential GHG reduction policies for various industries.

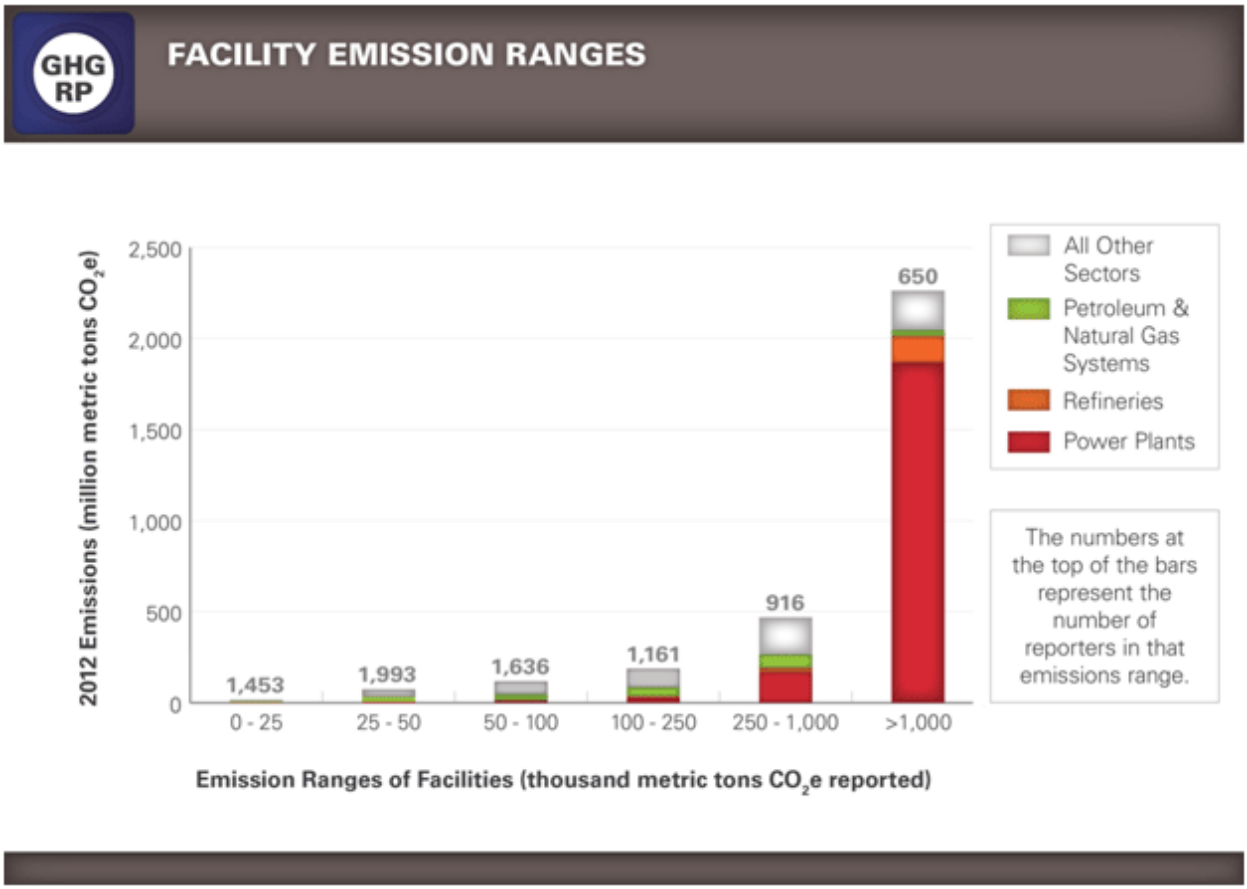
Figure 7: Percentage of All Reporting Facilities at Various Emission Ranges (2012)



Eighty percent of reporting facilities had emissions less than 250,000 metric tons CO_2e. In 2012, the 650 largest-emitting facilities—those emitting more than 1,000,000 metric tons CO_2e—accounted for almost 2.3 billion metric tons CO_2e. These emissions represent 72.9% of the total 3.13 billion metric tons CO_2e reported. These high-emitting facilities are mainly Power Plants, but also include Petroleum Refineries, and facilities in the Chemicals and Metals sectors.

You can use FLIGHT to list and sort facilities based on total reported emissions and find the largest emitting facilities in the country or a specific state or county. This tool also allows you to sort facilities by specific industry types.

Figure 8: Facility Emission Ranges (2012)



GHGRP Calculation Methods Used

The GHGRP prescribes methodologies that must be used to determine GHG emissions from each source category. Reporters generally have the flexibility to choose among several methods to compute GHG emissions. The decision of which method to use may be influenced by the existing environmental monitoring systems in place and other factors. Reporters can change emission calculation methods from year to year and within the same year, as long as they meet the requirements for use of the method selected.

For additional information on the methodologies that reporters use to determine GHG emissions, please read the GHGRP Methodology Factsheet.

Report Verification

All reports submitted to EPA are evaluated by electronic validation and verification checks. If potential errors are identified, EPA will notify the reporter, who can resolve the issue either by providing an acceptable response describing why the flagged issue is not an error or by correcting the flagged issue and resubmitting their annual GHG report.

For additional information describing EPA's verification process in more details, please read the GHGRP Verification Factsheet.

For More Information

For more detailed information from each industrial sector, view the industry sections below.

Use FLIGHT to view maps of facility locations, obtain summary data for individual facilities, create customized searches, and display search results graphically.

Downloadable spreadsheets containing summary data reported to the GHGRP from each reporter are available on the Data Downloads page.

All other publicly available data submitted to the GHGRP are available for download through Envirofacts.

The U.S. Greenhouse Gas Inventory contains information on all sources of GHG emissions and sinks in the United States from 1990 to 2012.

GHGRP 2012: Power Plants

The power plant sector consists of facilities that produce electricity by combusting fossil fuels and/or biomass. The sector includes units that are subject to the Acid Rain Program and any other electricity generators that are otherwise required to report to EPA CO_2 mass emissions year-round according to 40 CFR part 75. This sector also includes combustion units serving electricity generators that are located at facilities with primary NAICS codes of 221330 (Steam and Air-Conditioning Supply[6]) and 2211xx (Electric Power Generation, Transmission and Distribution), which includes some part 75 reporters that report heat input to the EPA on a year-round basis. The emissions from this sector are solely from stationary fuel combustion sources.

Power Plant Sector — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

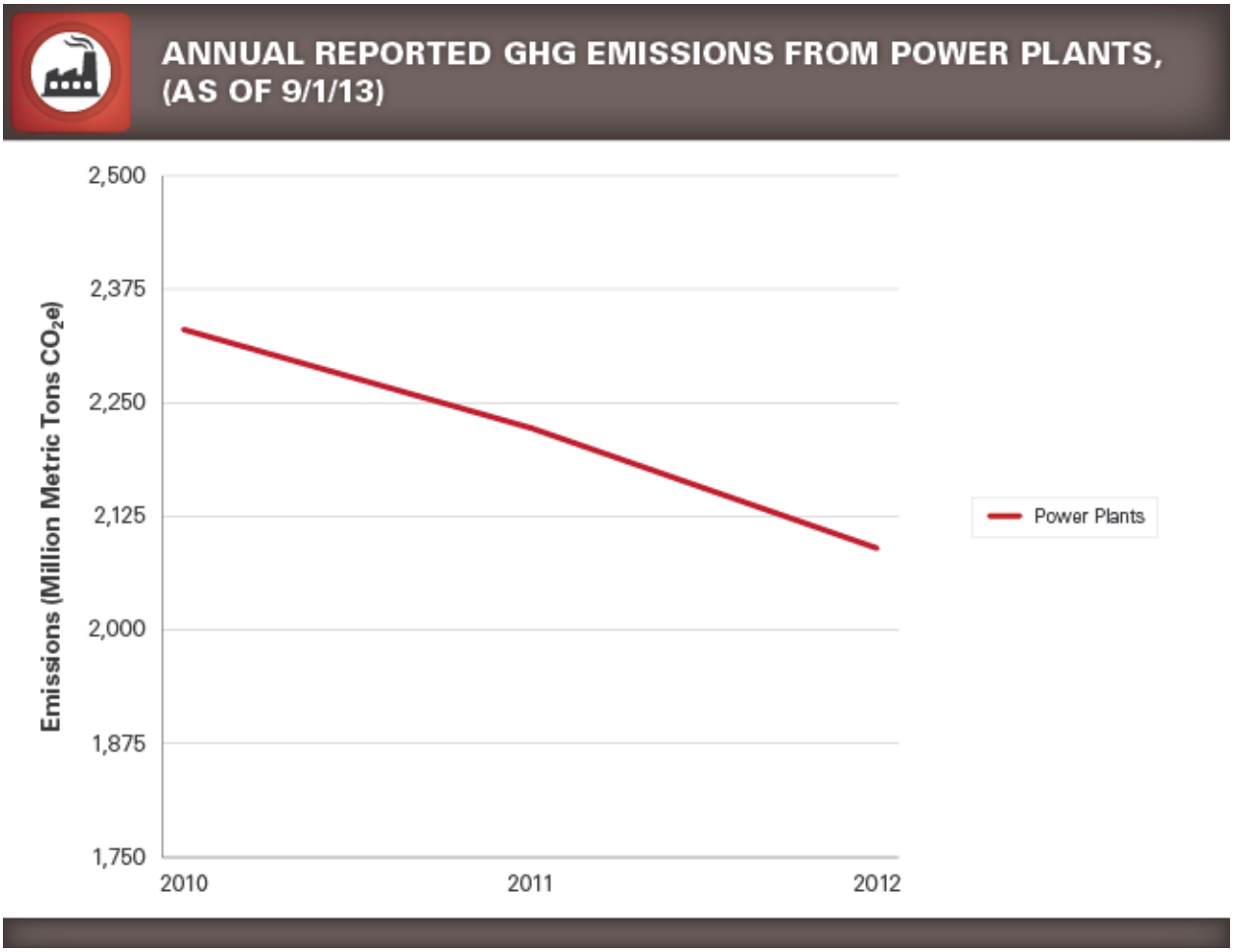
	2010	2011	2012
Number of facilities:	1,587	1,593	1,611
Total emissions (CO_2e):	2,331	2,222	2,090
Emissions by greenhouse gas (CO_2e)			
• Carbon dioxide (CO_2)	2,317	2,209	2,078
• Methane (CH_4)	3.8	3.5	3.1
• Nitrous oxide (N_2O)	10.0	10.0	8.5

Totals may not equal sum of individual GHGs due to independent rounding.

CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

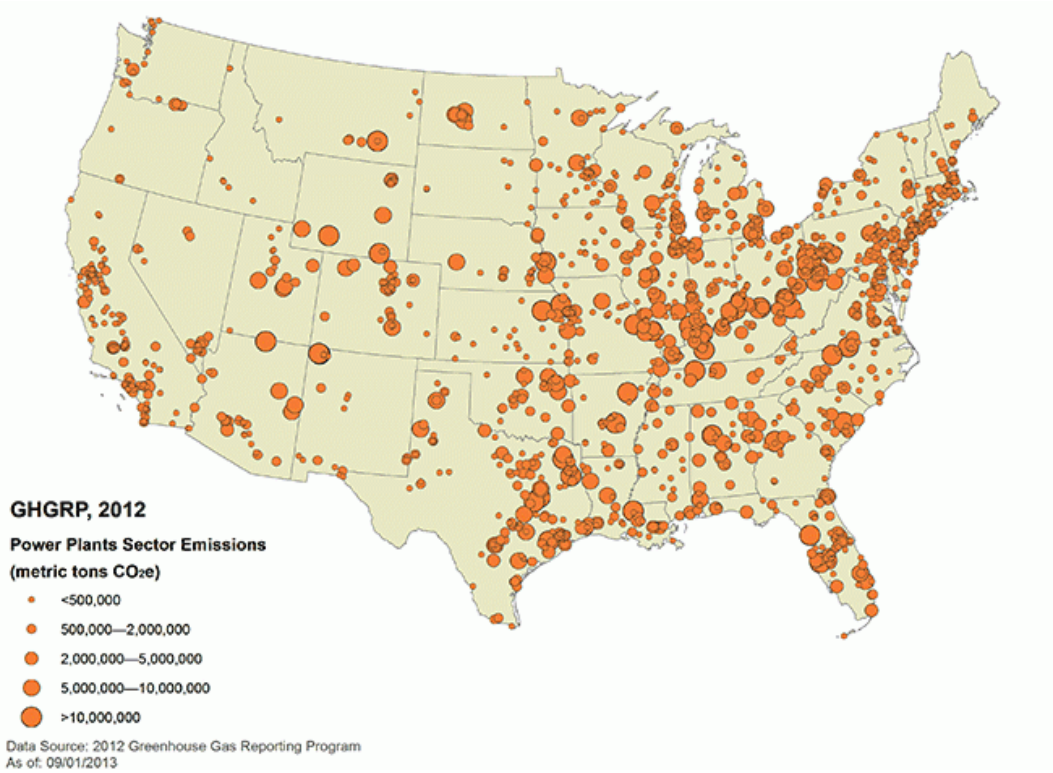
[6] Establishments primarily engaged in providing steam, heated air, or cooled air. The steam distribution may be through mains.

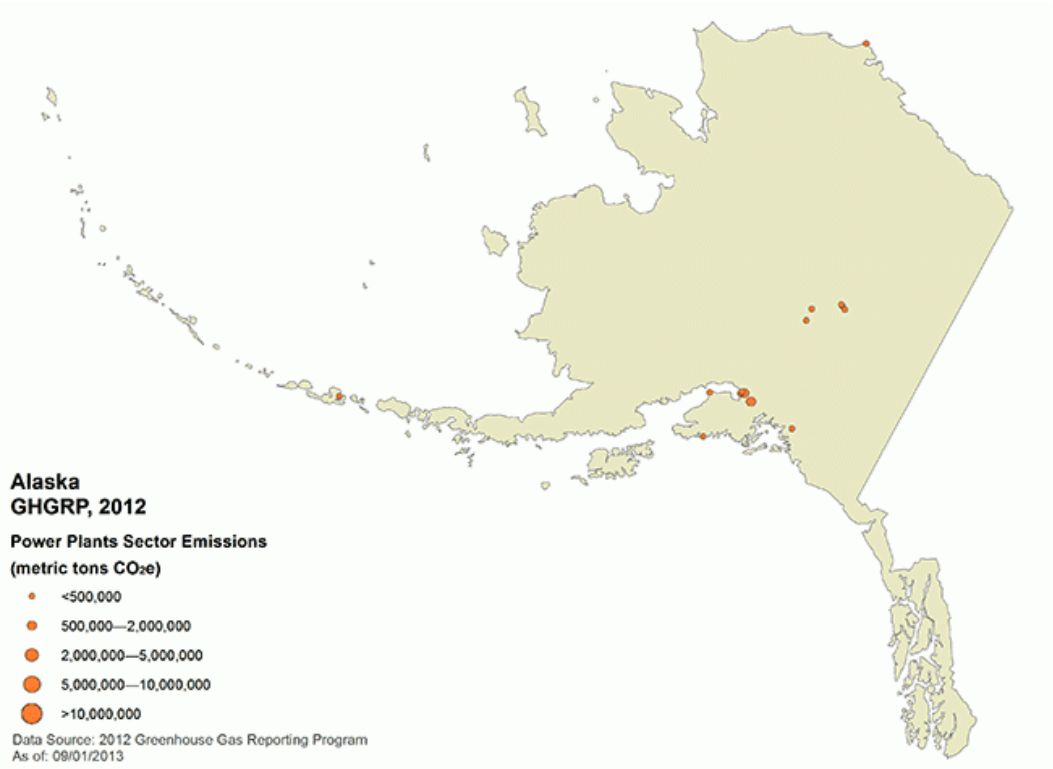
Trend of Annual Reported GHG Emissions in the Power Plant Sector (as of 9/1/13)

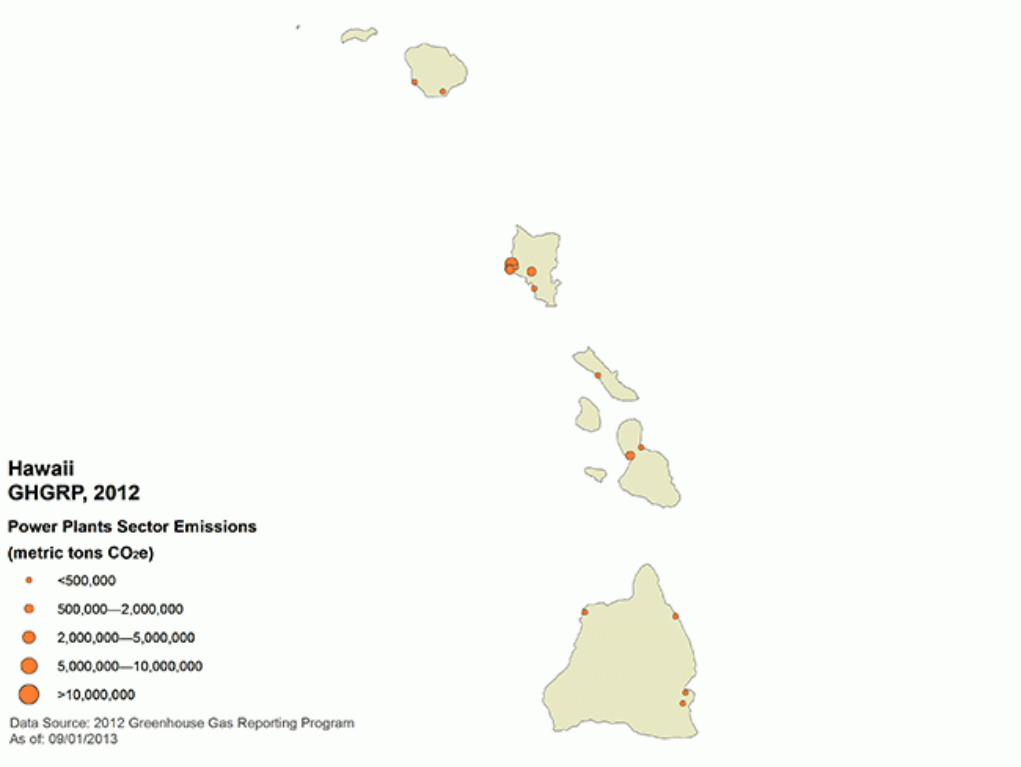


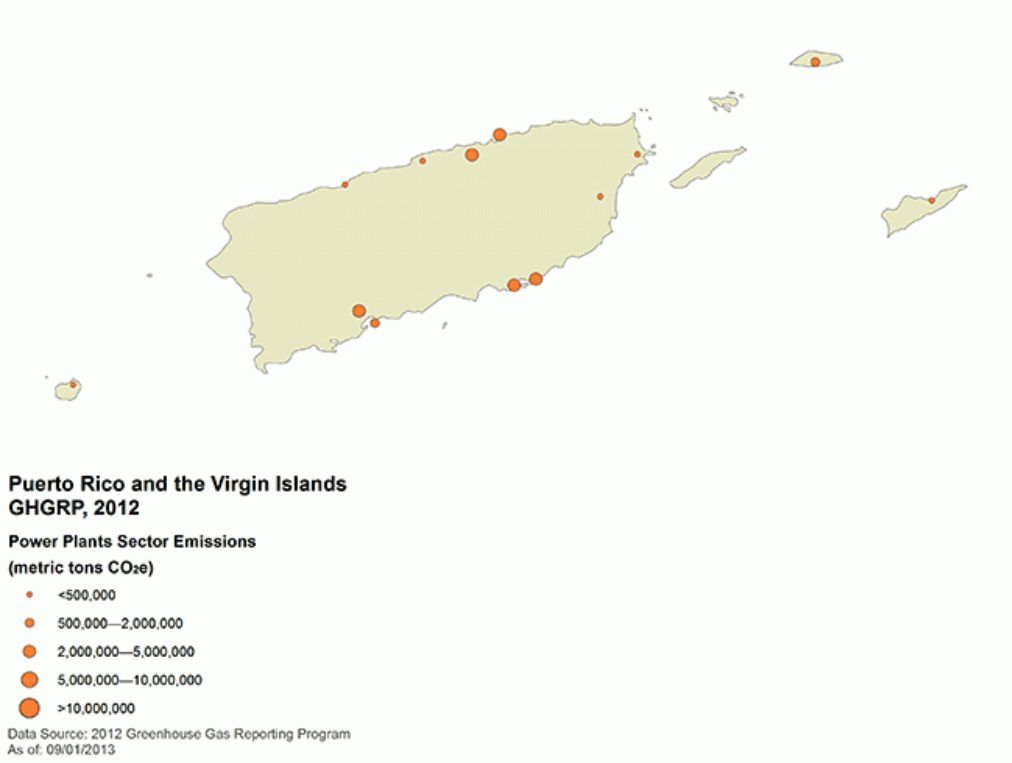
Location and emissions range for each reporting facility in the power plant sector (as of 9/1/13).

These maps show the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.


GHGRP, 2012
Power Plants Sector Emissions
(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: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013


Alaska
GHGRP, 2012
Power Plants Sector Emissions
(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: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013


Hawaii
GHGRP, 2012
Power Plants Sector Emissions
(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: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013


Puerto Rico and the Virgin Islands
GHGRP, 2012
Power Plants Sector Emissions
(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: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013

Other EPA Resources

- U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Petroleum & Natural Gas Systems

This sector consists of the following industry segments of the petroleum and natural gas industry.

- **Onshore Production.** Production of petroleum and natural gas associated with onshore production wells and related equipment.
- **Offshore Production.** Production of petroleum and natural gas from offshore production platforms.
- **Natural Gas Processing.** Processing of field quality gas to produce pipeline quality natural gas.
- **Natural Gas Transmission.** Compressor stations used to transfer natural gas through transmission pipelines.
- **Underground Natural Gas Storage.** Facilities that store natural gas in underground formations.
- **Natural Gas Distribution.** Distribution systems that deliver natural gas to customers.
- **Liquified Natural Gas (LNG) Import/Export.** Liquified Natural Gas import and export terminals.
- **LNG Storage.** Liquified Natural Gas storage equipment.

Petroleum and Natural Gas Systems Sector — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

	2011	2012
Number of facilities:	1,904	2,058
Total emissions (CO_2e):	210	217
Emissions by greenhouse gas (CO_2e)		
• Carbon dioxide (CO_2)	139	147
• Methane (CH_4)	71	70
• Nitrous oxide (N_2O)	0.5	0.4

Totals may not equal sum of individual GHGs due to independent rounding.

Reporting year 2011 was the first year process emissions data were collected for this industry sector.

CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

Number of reporters and 2012 emissions (CO_2e) per petroleum and natural gas systems industry sector

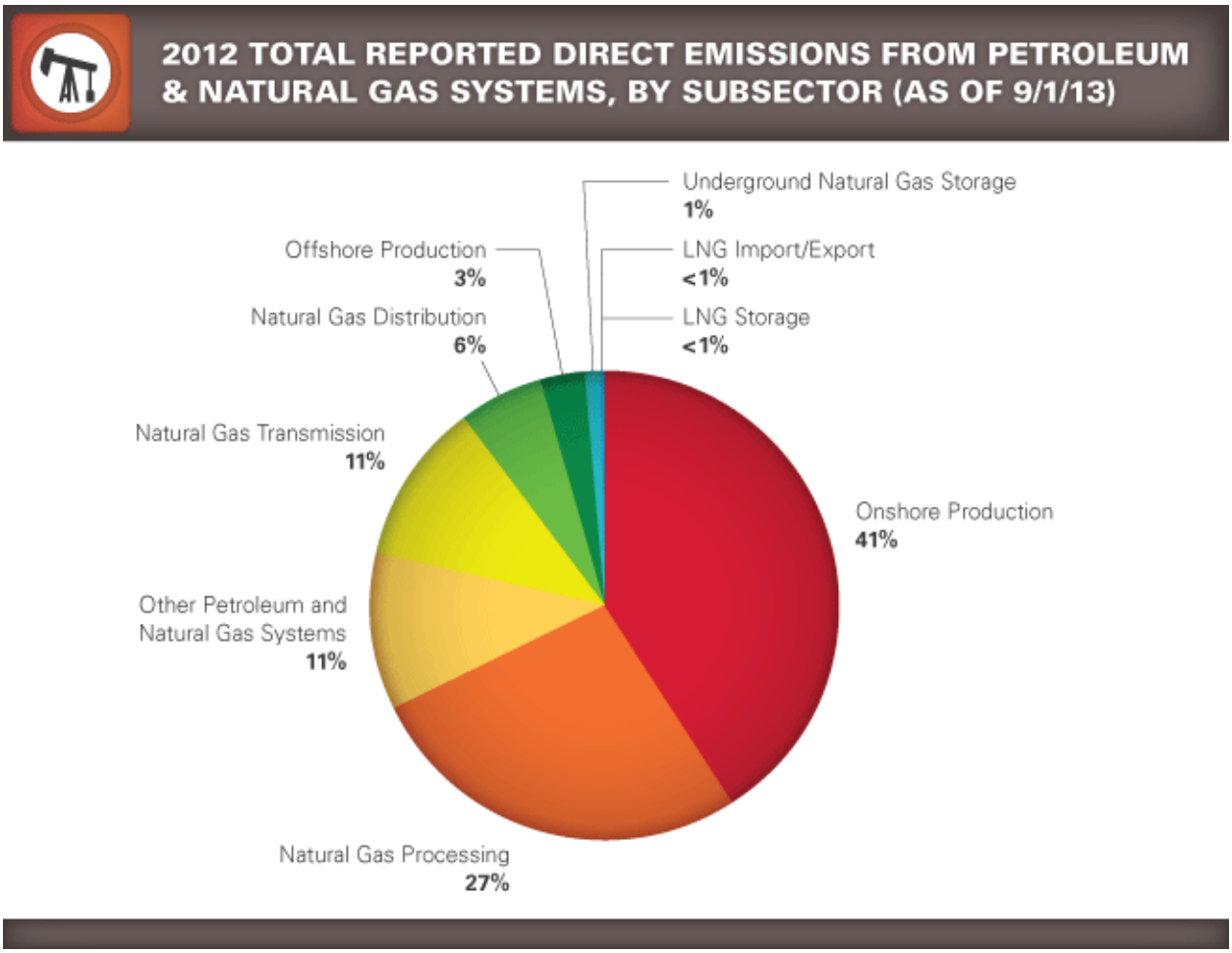
Industry Sector	2012 Number of Reporters	2012 Emissions (million metric tons CO_2e per year)
Onshore Production	497	88

Industry Sector	2012 Number of Reporters	2012 Emissions (million metric tons CO_2e per year)
Offshore Production	106	6.5
Natural Gas Processing	394	60
Natural Gas Transmission	462	23
Underground Natural Gas Storage	49	1.3
Natural Gas Distribution	174	13
Liquified Natural Gas (LNG) Import/Export	8	0.6
LNG Storage	4	**
Other Petroleum and Natural Gas Systems	381	24

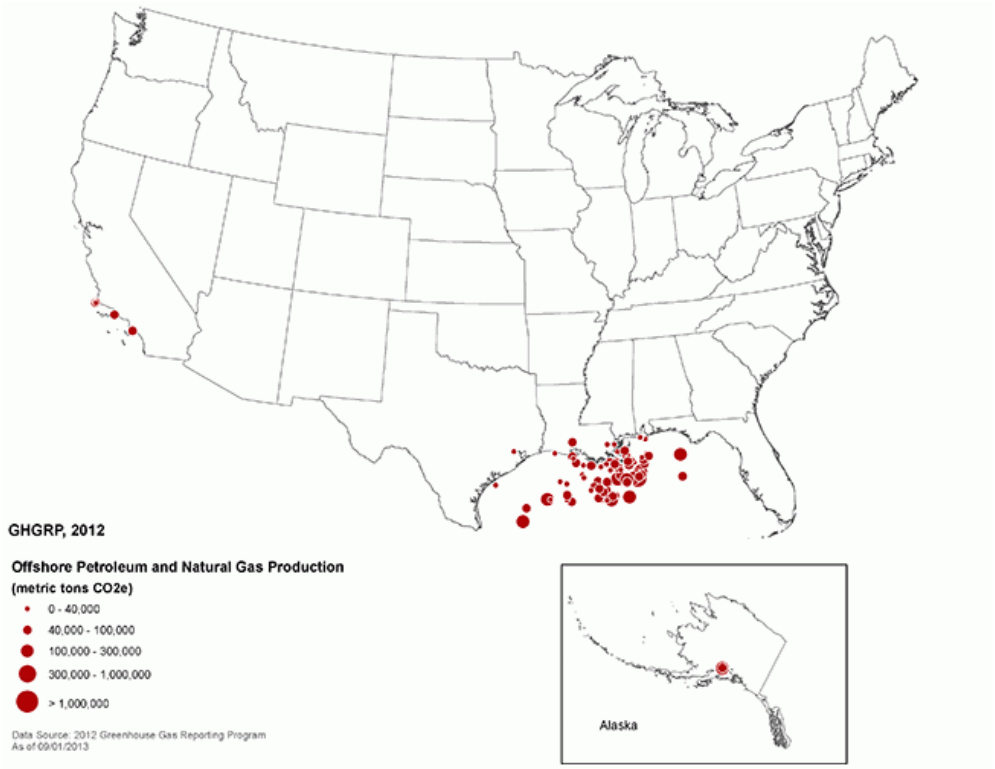
Totals may not equal sum of individual GHGs due to independent rounding.

** Total reported emissions are less than 0.05 million metric tons CO_2e.

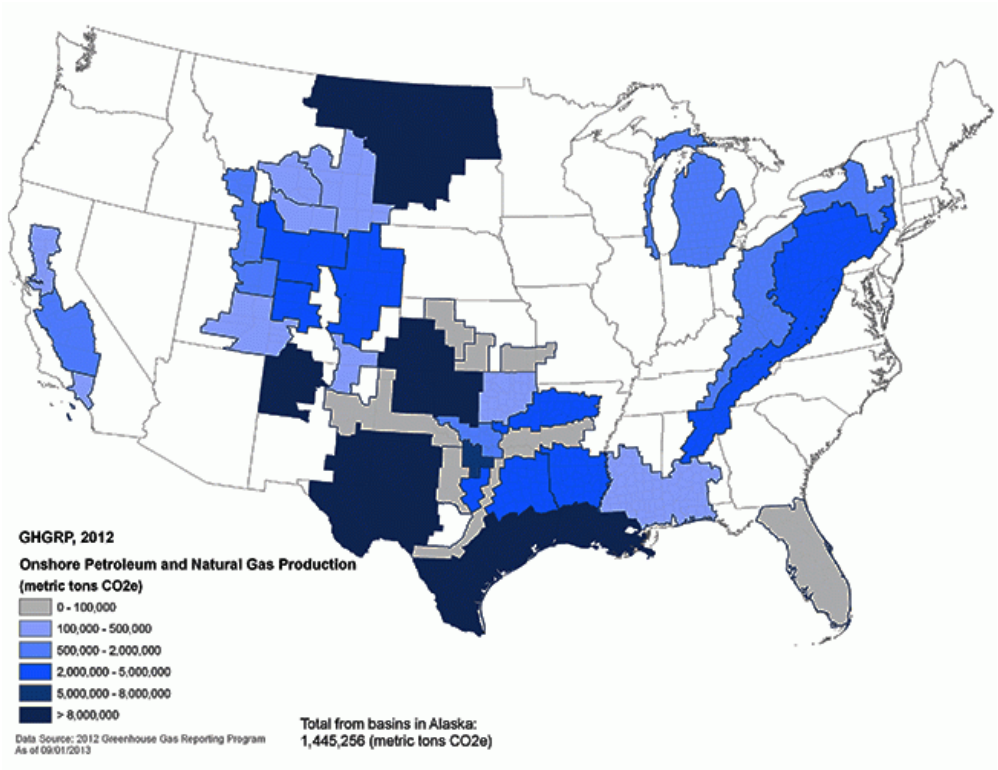
Total Reported Direct Emissions from Petroleum and Natural Gas Systems, by Subsector (as of 9/1/13).



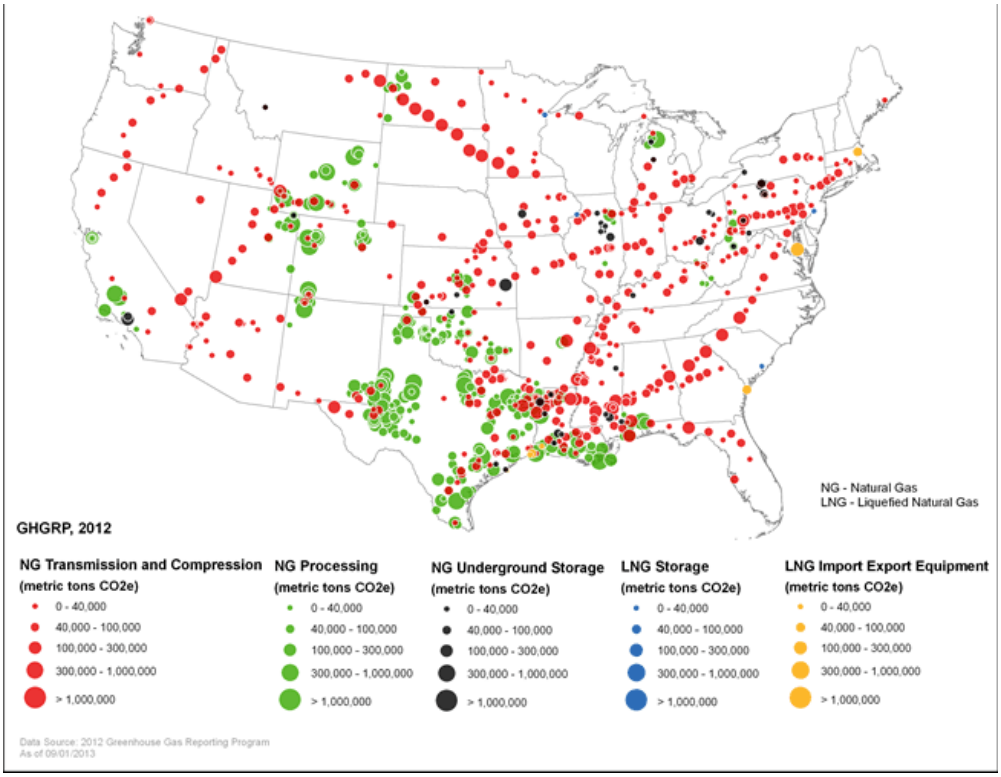
Facility locations and total emissions (CO_2e) for offshore petroleum and natural gas production



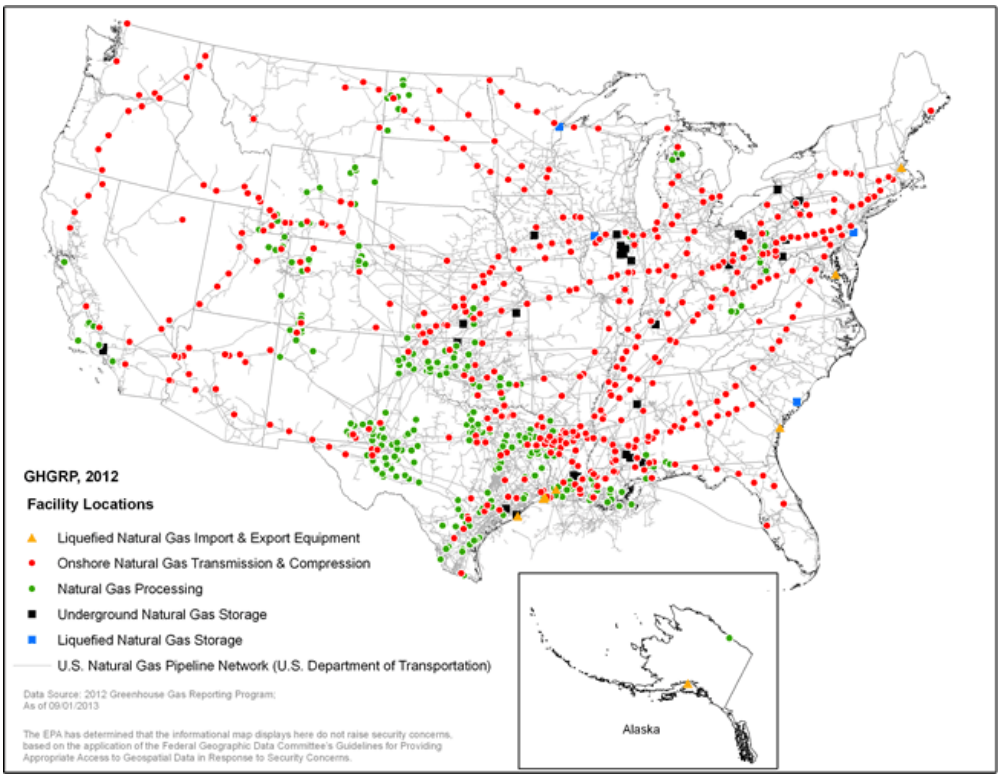
Total emissions (CO_2e) by geologic basin for onshore petroleum and natural gas production facilities



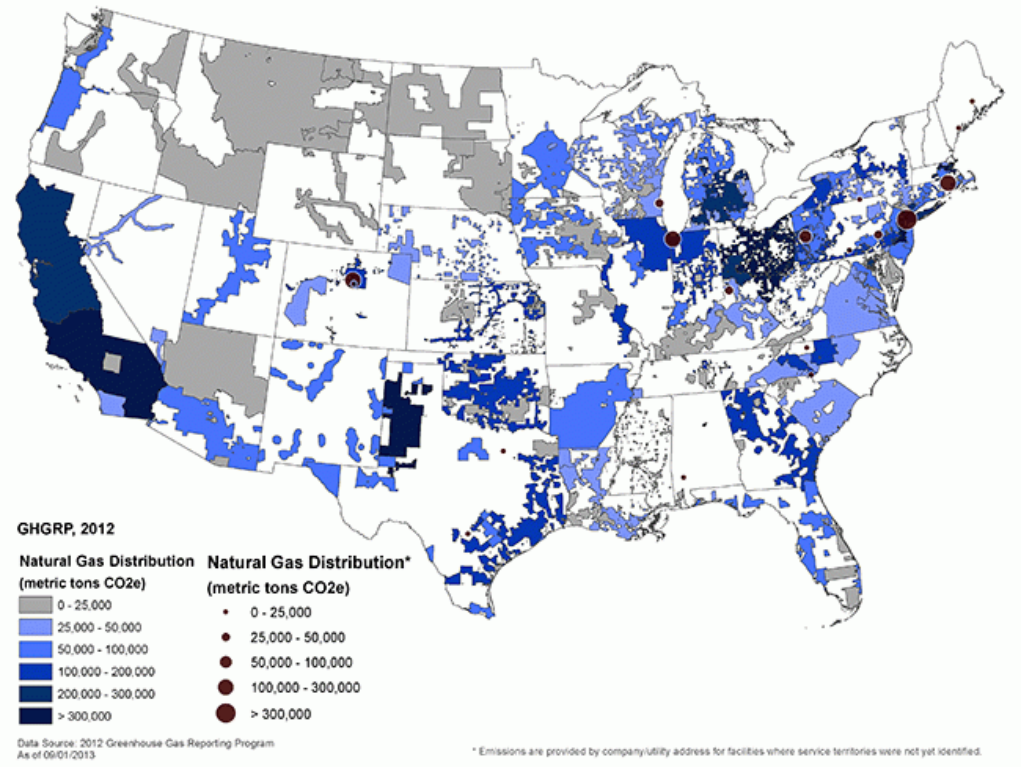
Total emissions (CO_2e) by facility for industry types: onshore natural gas processing, onshore natural gas transmission compression, underground natural gas storage, liquefied natural gas storage, LNG import and export equipment



Facility locations for industry types: onshore natural gas processing, onshroe natural gas transmission compression, underground natural gas storage, liquefied natural gas storage, LNG import and export equipment



Total emissions (CO_2e) by natural gas utility service territory for natural gas distribution facilities



Other EPA Resources

- U.S. Greenhouse Gas Inventory Report 1990-2010

GHGRP 2012: Refineries

The refinery sector consists of facilities that produce gasoline, gasoline blending stocks, naphtha, kerosene, distillate fuel oils, residual fuel oils, lubricants, or asphalt (bitumen) by the distillation of petroleum or the redistillation, cracking, or reforming of unfinished petroleum derivatives. GHG process emissions from this sector include emissions from venting, flares, and fugitive leaks from equipment (e.g., valves, flanges, pumps). In addition to emissions from petroleum refining processes, the sector includes combustion emissions from stationary combustion units located at these facilities. Emissions from hydrogen production plants located at refineries are included in a separate sector, chemical manufacturing. Emissions from industrial waste landfills and industrial wastewater treatment at these facilities are included in the waste sector.

Refineries Sector — Greenhouse Gas Emissions Reported to the GHGRP

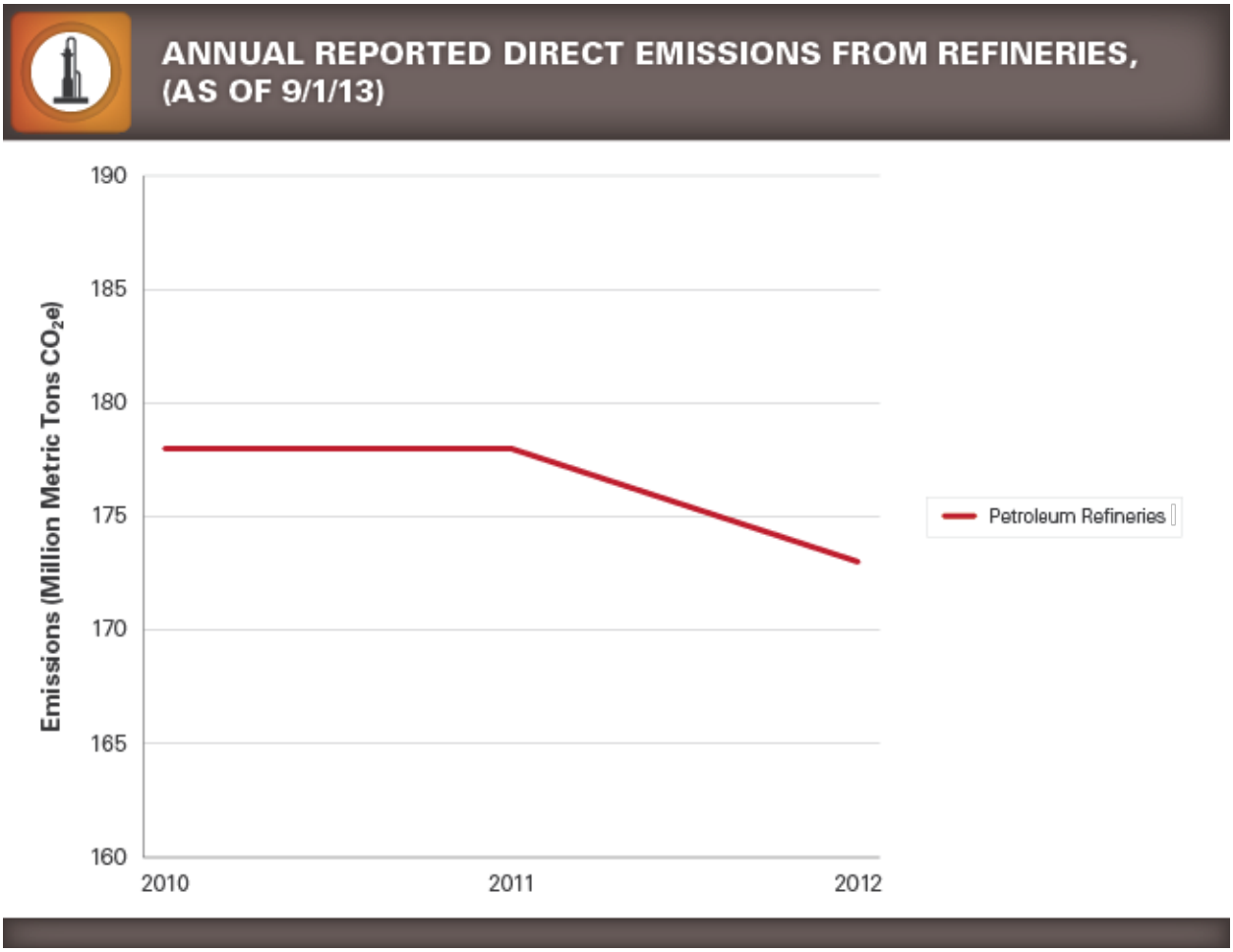
(all emission values presented in million metric tons CO_2e unless otherwise noted)

	2010	2011	2012
Number of facilities:	145	145	144
Total emissions (CO_2e):	178	178	173
Emissions by greenhouse gas (CO_2e)			
• Carbon dioxide (CO_2)	177	177	172
• Methane (CH_4)	0.7	0.8	0.8
• Nitrous oxide (N_2O)	0.5	0.5	0.5

Totals may not equal sum of individual GHGs due to independent rounding.

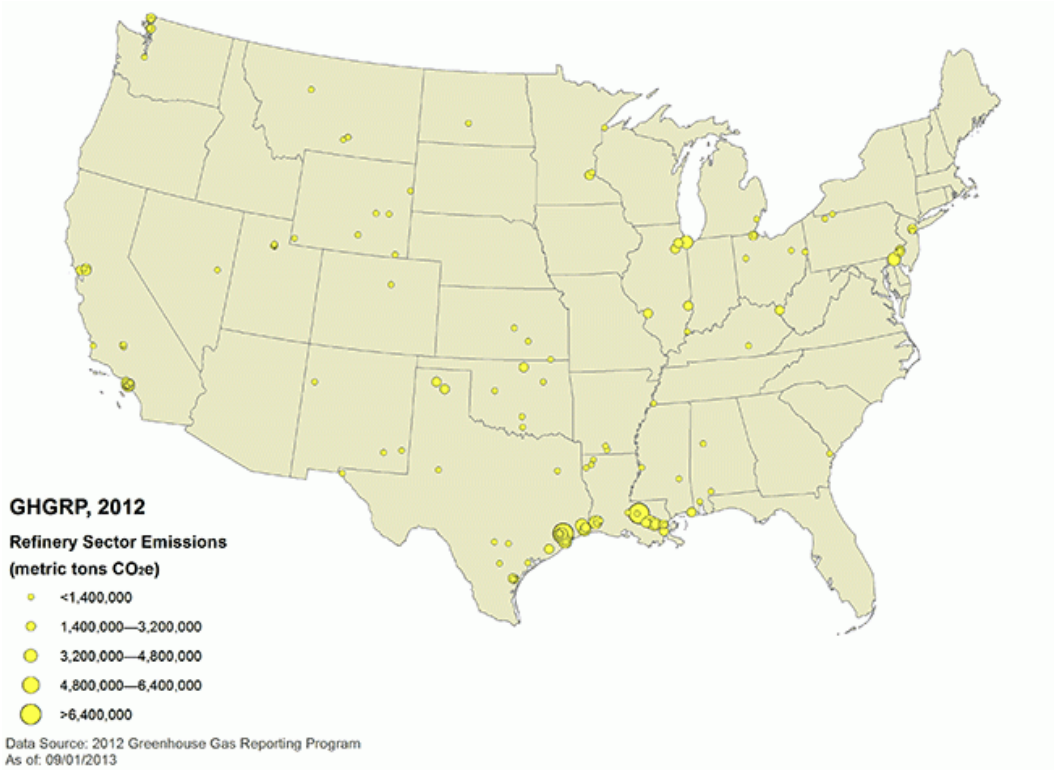
CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

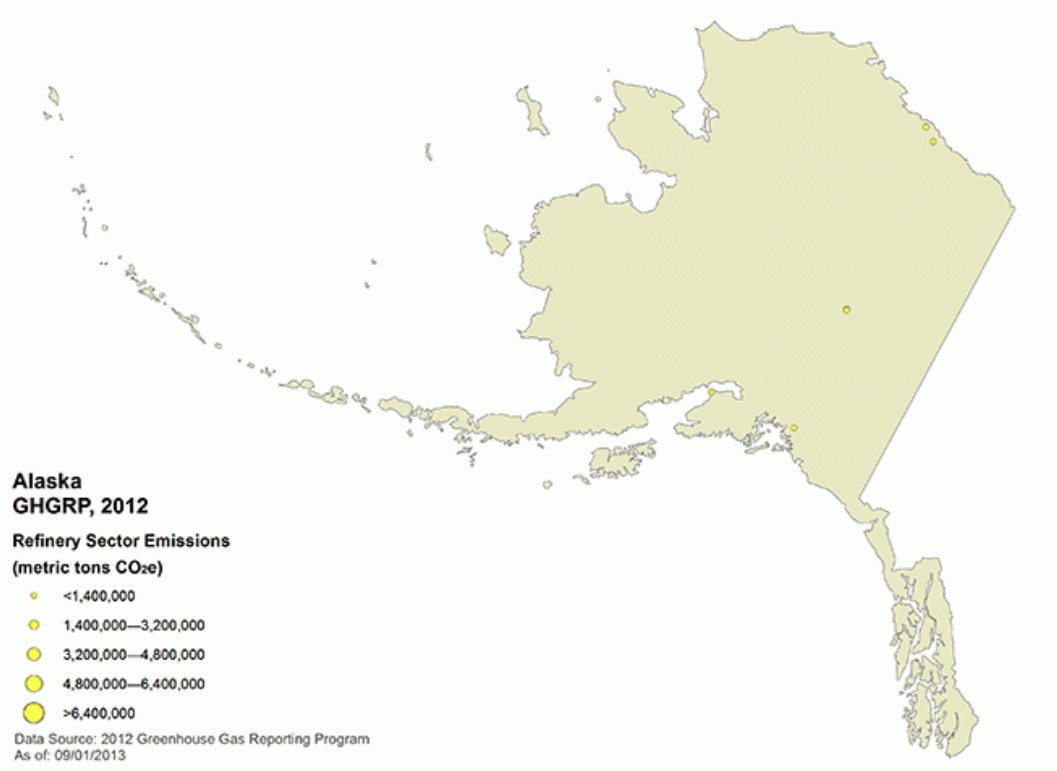
Trend of Annual Reported GHG Emissions in the Refinery Sector (as of 9/1/13).

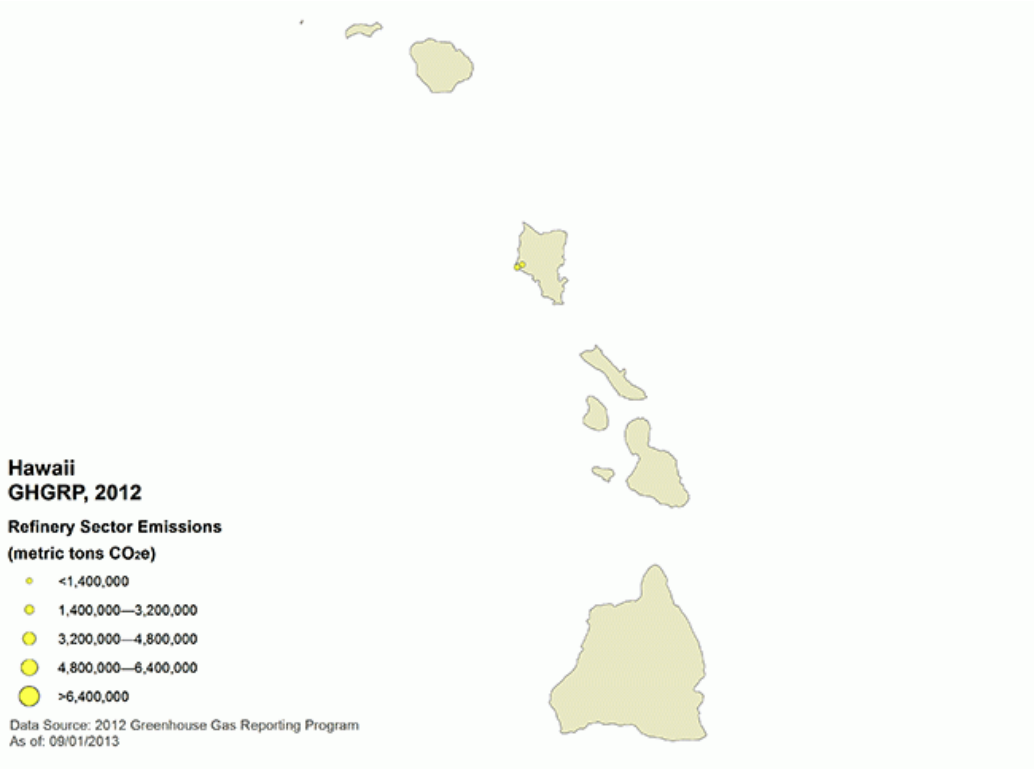


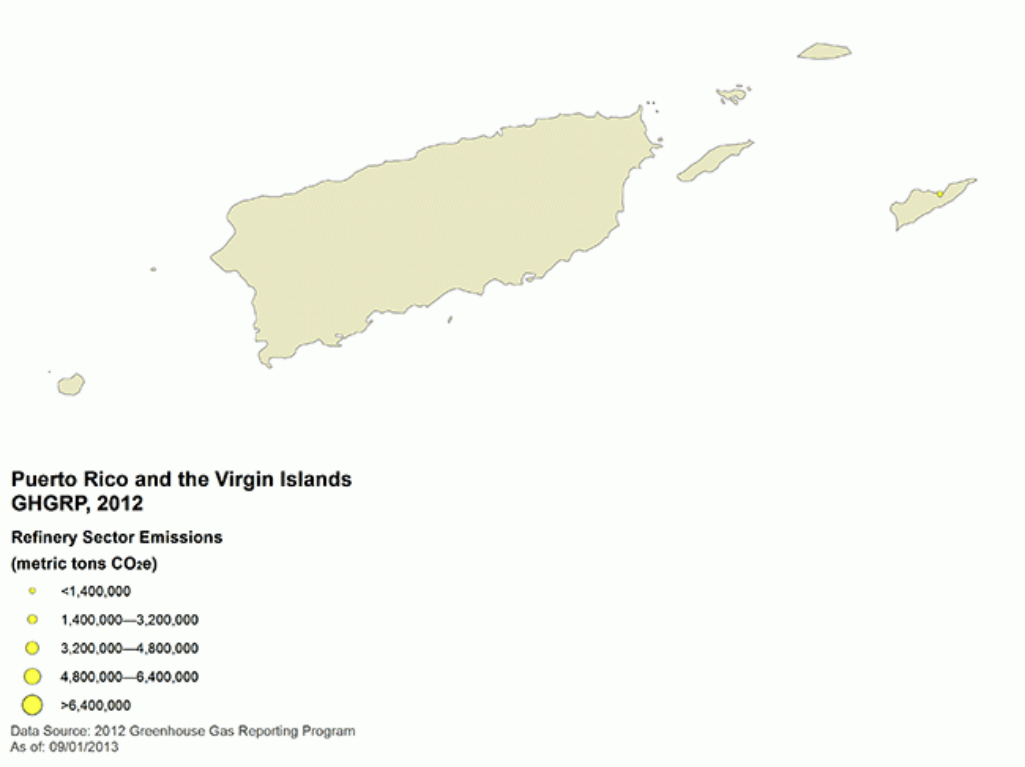
Location and emissions range for each reporting facility in the refinery sector (as of 9/1/13).

These maps show the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.


GHGRP, 2012
Refinery Sector Emissions
(metric tons CO2e)
<1,400,000
1,400,000—3,200,000
3,200,000—4,800,000
4,800,000—6,400,000
>6,400,000
Data Source: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013


Alaska
GHGRP, 2012
Refinery Sector Emissions
(metric tons CO2e)
<1,400,000
1,400,000—3,200,000
3,200,000—4,800,000
4,800,000—6,400,000
>6,400,000
Data Source: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013





Other EPA Resources

U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Chemicals

The chemical manufacturing sector consists of facilities that manufacture organic or inorganic chemicals. For this summary, the sector is broken down into facilities that produce fluorinated chemicals and non-fluorinated chemicals. The non-fluorinated chemicals subsector comprises facilities that produce adipic acid, ammonia, hydrogen (both merchant and non-merchant plants), nitric acid, petrochemicals, phosphoric acid, silicon carbide, and titanium dioxide. The fluorinated chemicals subsector comprises facilities that produce HCFC-22 (and destroy HFC-23) and other fluorinated chemicals. A more detailed description of these subsectors is provided below. A total of 463 chemicals facilities reported in 2012**.**

Chemicals Sector — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

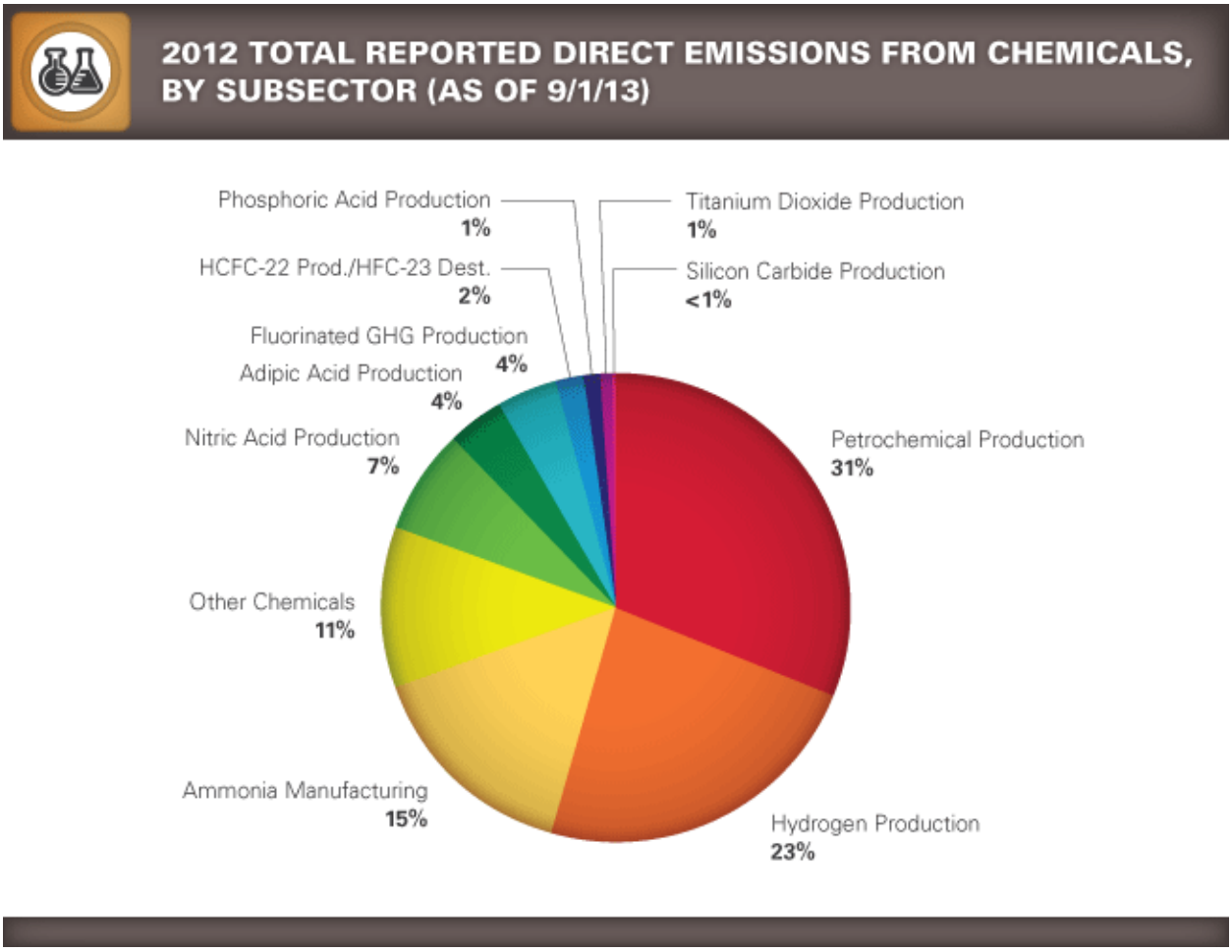
	2010	2011	2012
Number of facilities:	445	456	463
Total emissions (CO_2e):	170	178	163
Emissions by greenhouse gas (CO_2e)			
• Carbon dioxide (CO_2)	140	143	142
• Methane (CH_4)	0.2	0.3	0.2
• Nitrous oxide (N_2O)	17	22	17
• Fluorinated GHGs	6.4[a]	13	11
Emissions by subsector			
• Non-fluorinated chemicals	159	165	156
• Fluorinated chemicals	NR	14	12

Totals may not equal sum of individual GHGs due to independent rounding.

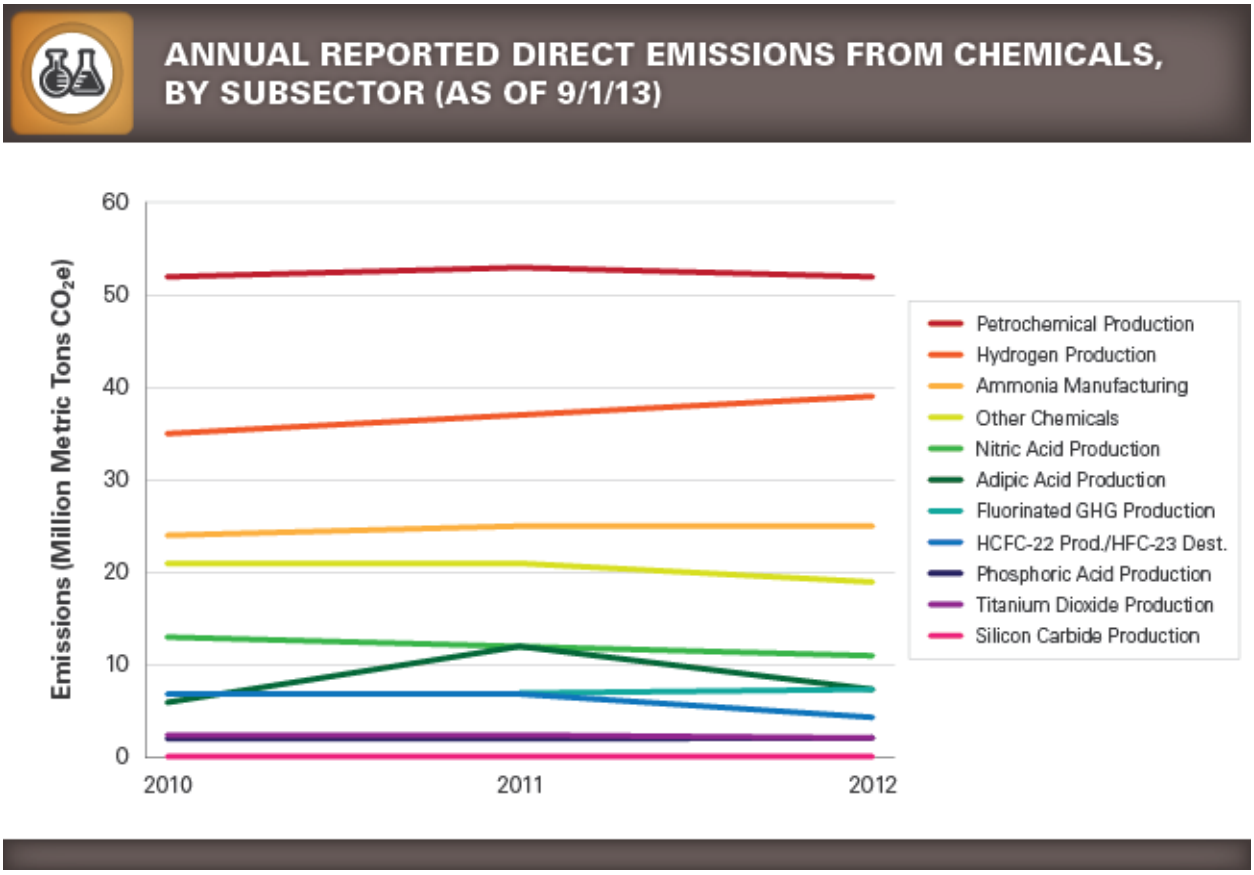
CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

[a] Some facilities that emit fluorinated gases began reporting for the first time in 2011.

Total Reported Direct Emissions from Chemicals (All Subsectors), by Subsector (as of 9/1/13).

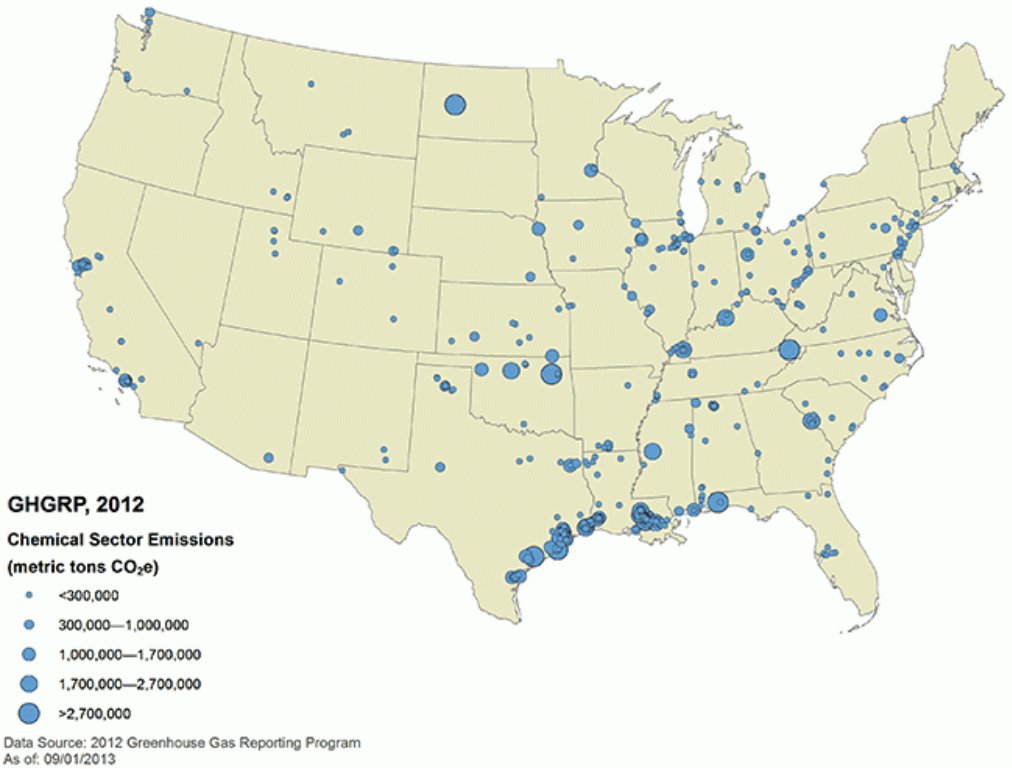


Trend of Annual Reported GHG Emsisions for Chemicals (All Subsectors) (as of 9/1/13).



Location and emissions range for each reporting facility for Chemicals (All Subsectors) (as of 9/1/13).

This map shows the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.



Chemicals (Non-fluorinated)

The chemical manufacturing sector consists of facilities that produce adipic acid, ammonia, hydrogen (both merchant and non-merchant plants), nitric acid, petrochemicals (i.e., acrylonitrile, carbon black, ethylene, ethylene dichloride, ethylene oxide, methanol), phosphoric acid, silicon carbide, soda ash, and titanium dioxide. Besides the emissions from these chemical production processes, the sector includes combustion emissions from facilities that produce pesticides, fertilizer, pharmaceuticals, and other organic and inorganic chemicals. A total of 442 facilities reported 2012 emissions under this sector. A small number of facilities in this sector collect CO_2 either for use in their other production processes, to transfer to other users, or to sequester or otherwise inject underground; this sector includes the CO_2 from those process emissions. For example, some of the process emissions reported for ammonia manufacturing plants includes CO_2 that is later consumed on site for urea production. This CO_2 is not released to the ambient air from the ammonia manufacturing process unit(s).

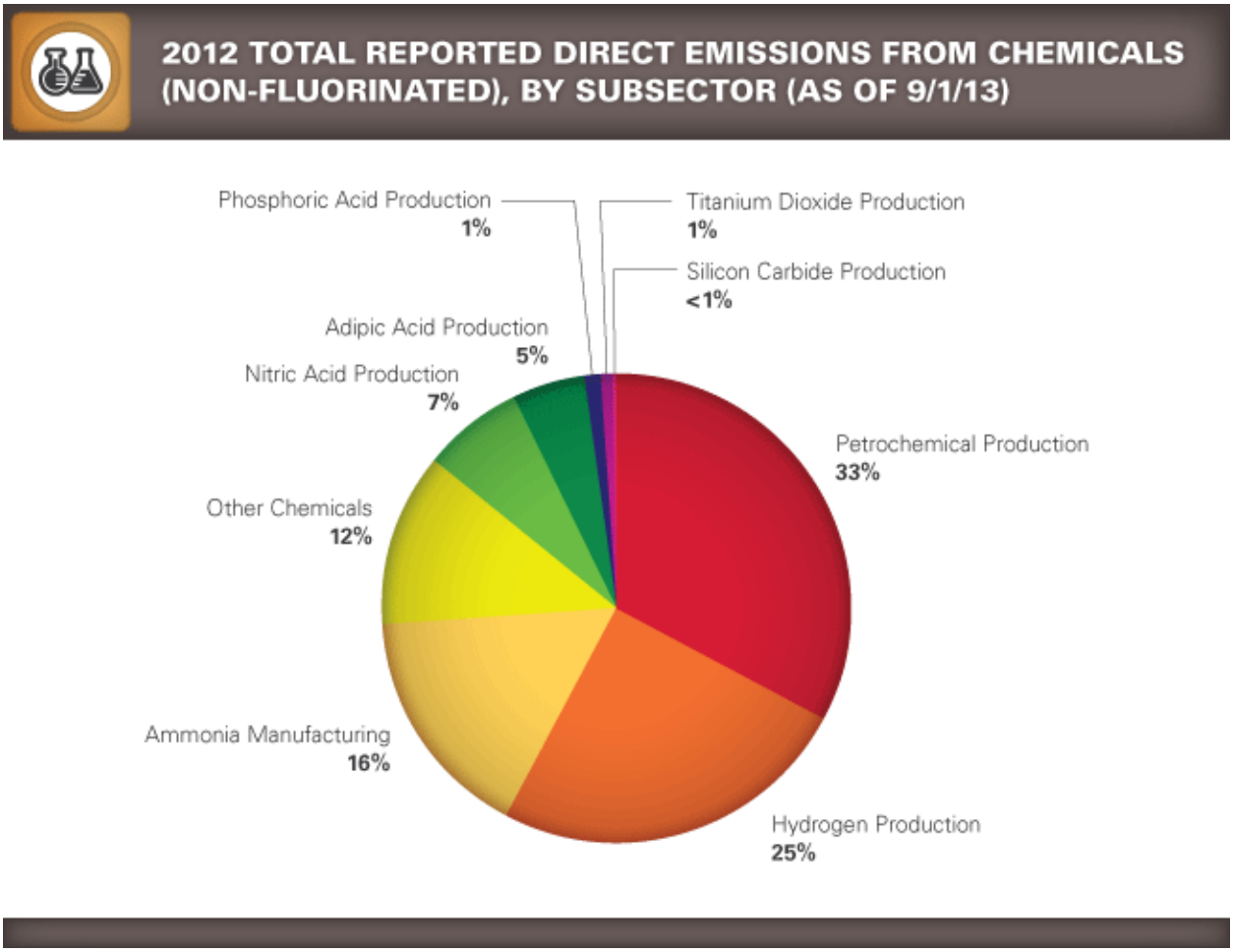
Chemicals (Non-Fluorinated) Subsector — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

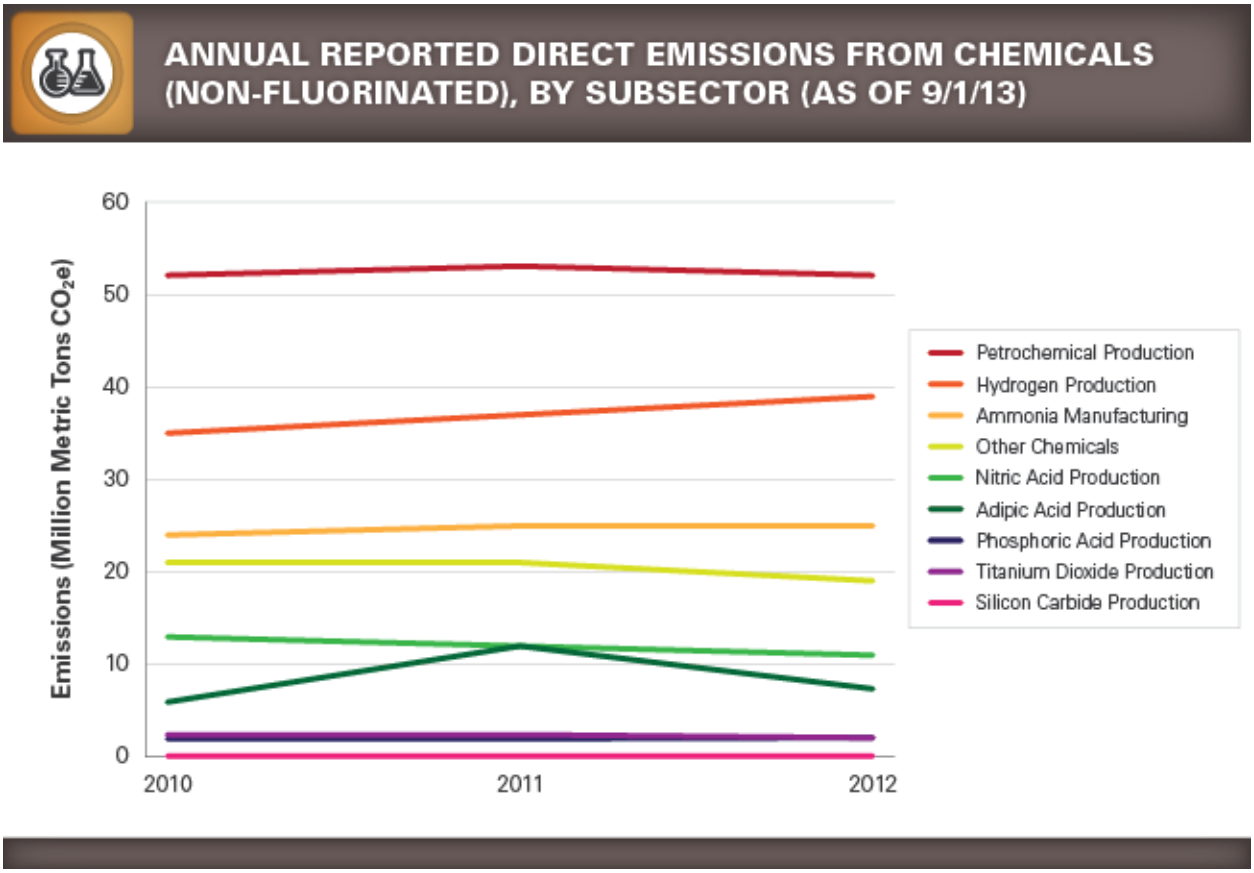
	2010	2011	2012
Number of facilities:	440	440	447
Total emissions (CO_2e):	156	165	159
Emissions by greenhouse gas (CO_2e)			
• Carbon dioxide (CO_2)	139	142	142
• Methane (CH_4)	0.1	0.3	0.2
• Nitrous oxide (N_2O)	17	22	17

Totals may not equal sum of individual GHGs due to independent rounding.

Total Reported Direct Emissions from Chemicals (Non-fluorinated), by Subsector (as of 9/1/13).

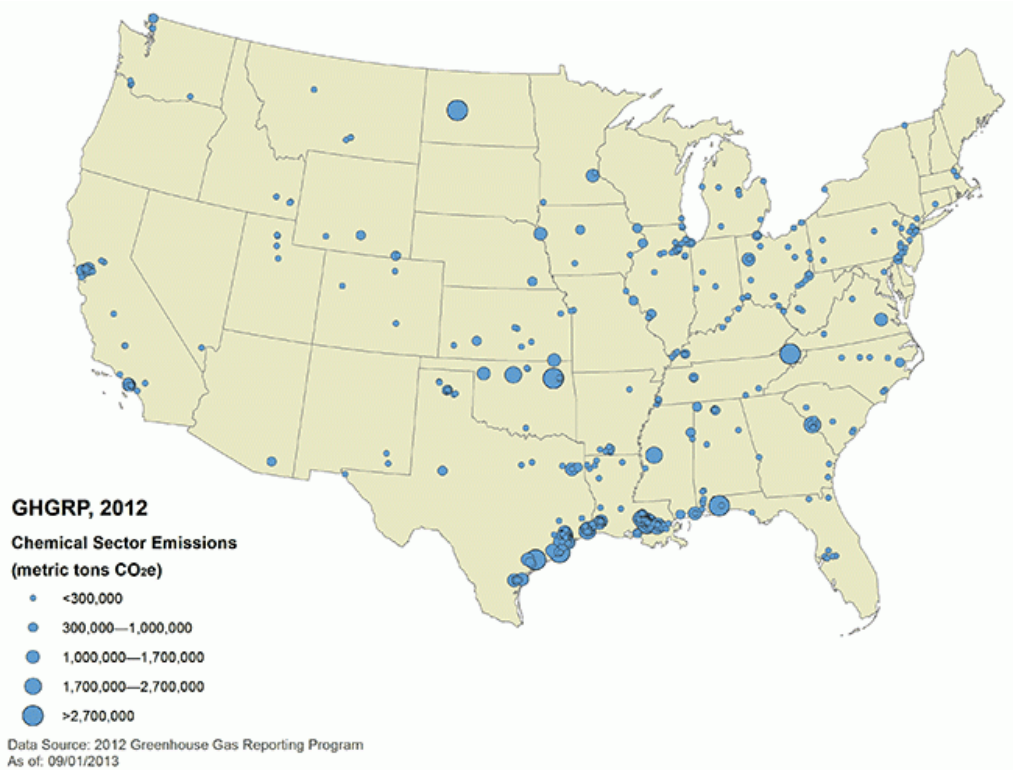


Trend of Annual Reported GHG Emissions for Chemicals (Non-fluorinated), by Subsector (as of 9/1/13).

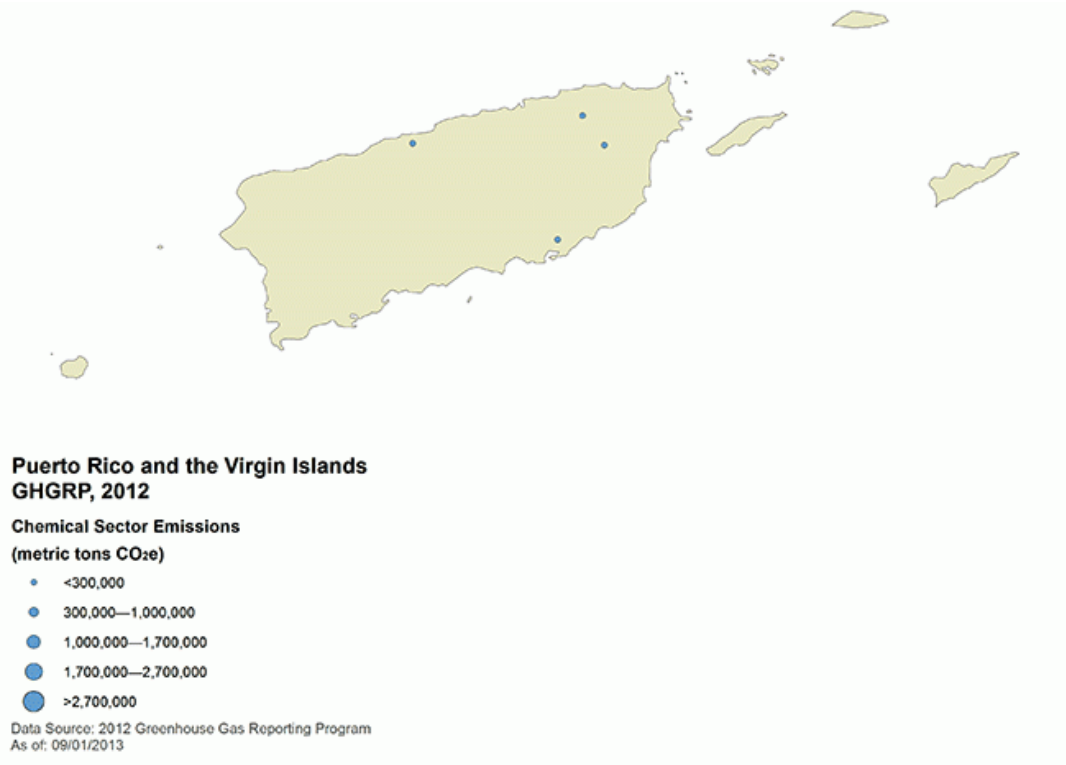


Location and emissions range for each reporting facility for Chemicals (Non-fluorinated) (as of 9/1/13).

These maps show the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.


GHGRP, 2012
Chemical Sector Emissions
(metric tons CO2e)
<300,000
300,000—1,000,000
1,000,000—1,700,000
1,700,000—2,700,000
>2,700,000
Data Source: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013


Alaska
GHGRP, 2012
Chemical Sector Emissions
(metric tons CO2e)
<300,000
300,000—1,000,000
1,000,000—1,700,000
1,700,000—2,700,000
>2,700,000
Data Source: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013



Chemicals (Fluorinated)

The fluorinated chemical subsector includes facilities that produce hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), nitrogen trifluoride (NF_3), other fluorinated GHGs such as fluorinated ethers, and chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), including chlorodifluoromethane (HCFC-22). The category also includes facilities that

destroy HFC-23, which is a by-product of HCFC-22 production and which may be emitted from the destruction process.

Fluorinated Chemicals Subsector — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

	2010	2011	2012
Number of facilities:	5	16	16
Total emissions (CO_2e):		14	12
• HCFC-22 Production/HFC-23 Destruction	6.9	6.9	4.3
• Other Fluorinated Gas Production	NR	7.0	7.4
Emissions by greenhouse gas (CO_2e)			
• Carbon dioxide (CO_2)	0.6	0.9	0.7
• Methane (CH_4)	**	**	**
• Nitrous oxide (N_2O)	**	**	**
• Fluorinated GHGs	6.4[a]	13	11

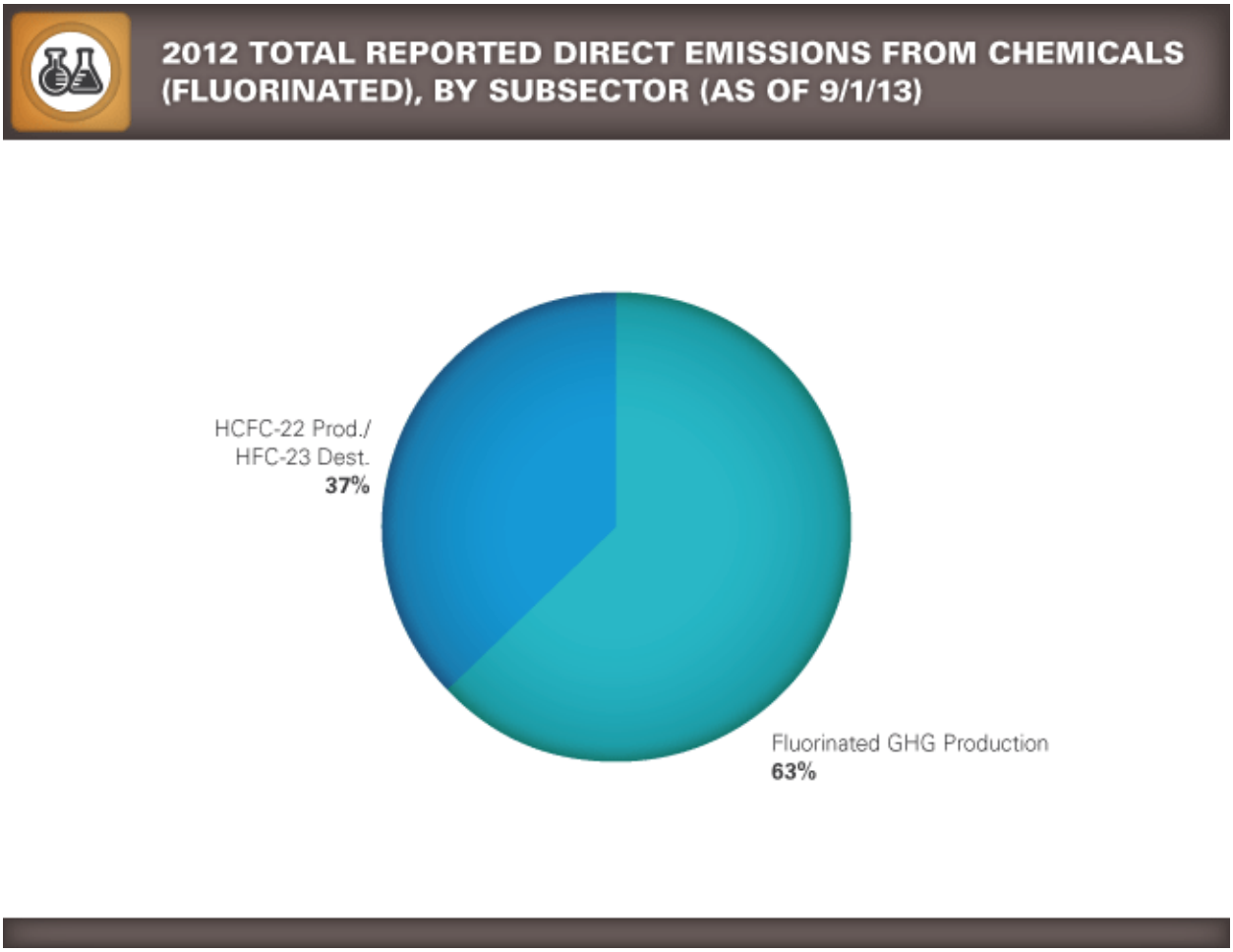
Totals may not equal sum of individual GHGs due to independent rounding.

** Total reported emissions are less than 0.05 million metric tons CO_2e.

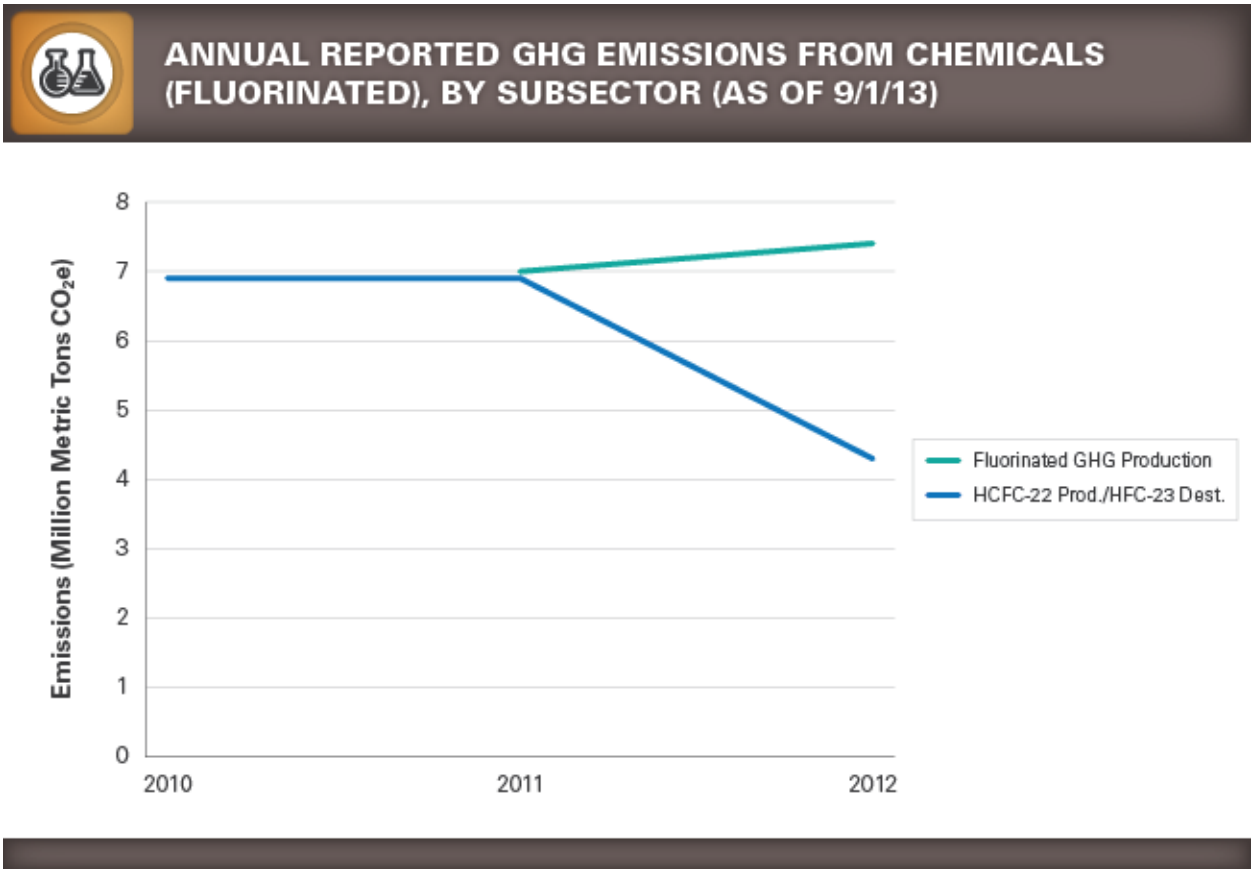
NR means that this value was not reported for the 2010 reporting year.

[a] Some facilities that emit fluorinated gases began reporting for the first time in 2011.

Total Reported Direct Emissions from Fluorinated Chemicals, by Subsector (as of 9/1/13).

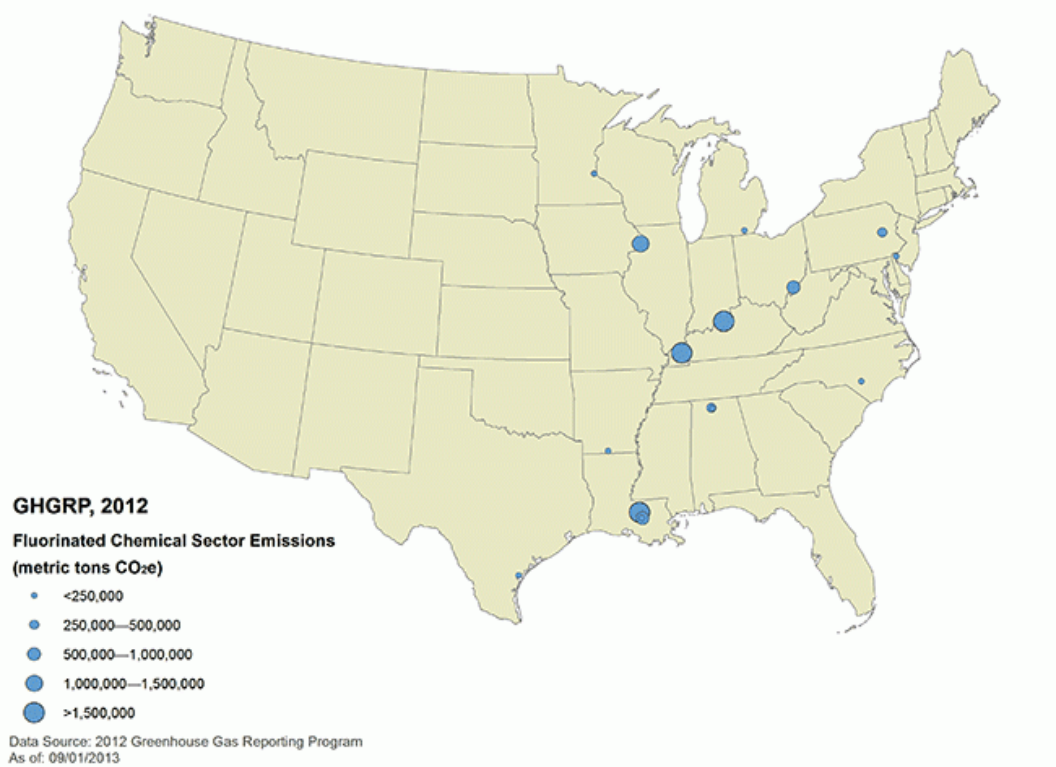


Trend of Annual Reported GHG Emissions for Fluorinated Chemicals, by Subsector (as of 9/1/13).



Location and emissions range for each reporting facility in Fluorinated Chemicals (as of 9/1/13).

This map shows the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.



Other EPA Resources

U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Waste

The waste sector consists of municipal solid waste (MSW) landfills, industrial waste landfills, industrial wastewater treatment systems, and facilities that operate combustors or incinerators for the disposal of nonhazardous solid waste. Emissions from fossil fuel combustion at facilities with industrial waste landfills, and industrial wastewater treatment systems are included in other sectors.

MSW landfills. This category consists of landfills that accepted MSW on or after January 1, 1980 and generate methane in amounts equivalent to 25,000 metric tons of CO_2e or more per year. This category includes emissions from the landfill, landfill gas collection systems, and destruction devices for landfill gases (including flares).

Industrial Waste Landfills. This category consists of industrial waste landfills that accepted industrial waste on or after January 1, 1980 and that have a total landfill design capacity of 300,000 metric tons or more. The category excludes landfills for hazardous waste and those that receive only construction and demolition or inert wastes. This category includes emissions from the landfill, landfill gas collection systems, and destruction devices for landfill gases (including flares).

Industrial Wastewater Treatment. This category consists of anaerobic processes used to treat nonhazardous industrial wastewater and industrial wastewater treatment sludge at facilities that perform pulp and paper manufacturing, food processing, ethanol production, or petroleum refining.

Solid Waste Combustion. This category consists of combustors and incinerators for the disposal of nonhazardous solid waste.

Waste Sector — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

	2010	2011	2012
Number of facilities:	1,267	1,593	1,606
Total emissions (CO_2e):	94	99	100
Emissions by greenhouse gas (CO_2e)			
• Carbon dioxide (CO_2)	9.4	10	10
• Methane (CH_4)	84	88	89
• Nitrous oxide (N_2O)	0.4	0.4	0.4

Totals may not equal sum of individual GHGs due to independent rounding.

Emissions from industrial waste landfills and industrial wastewater treatment systems were reported beginning in 2011. These emissions are included in the table above. Total emissions from these source categories in 2011 and 2012 were 11 MMT CO_2e.

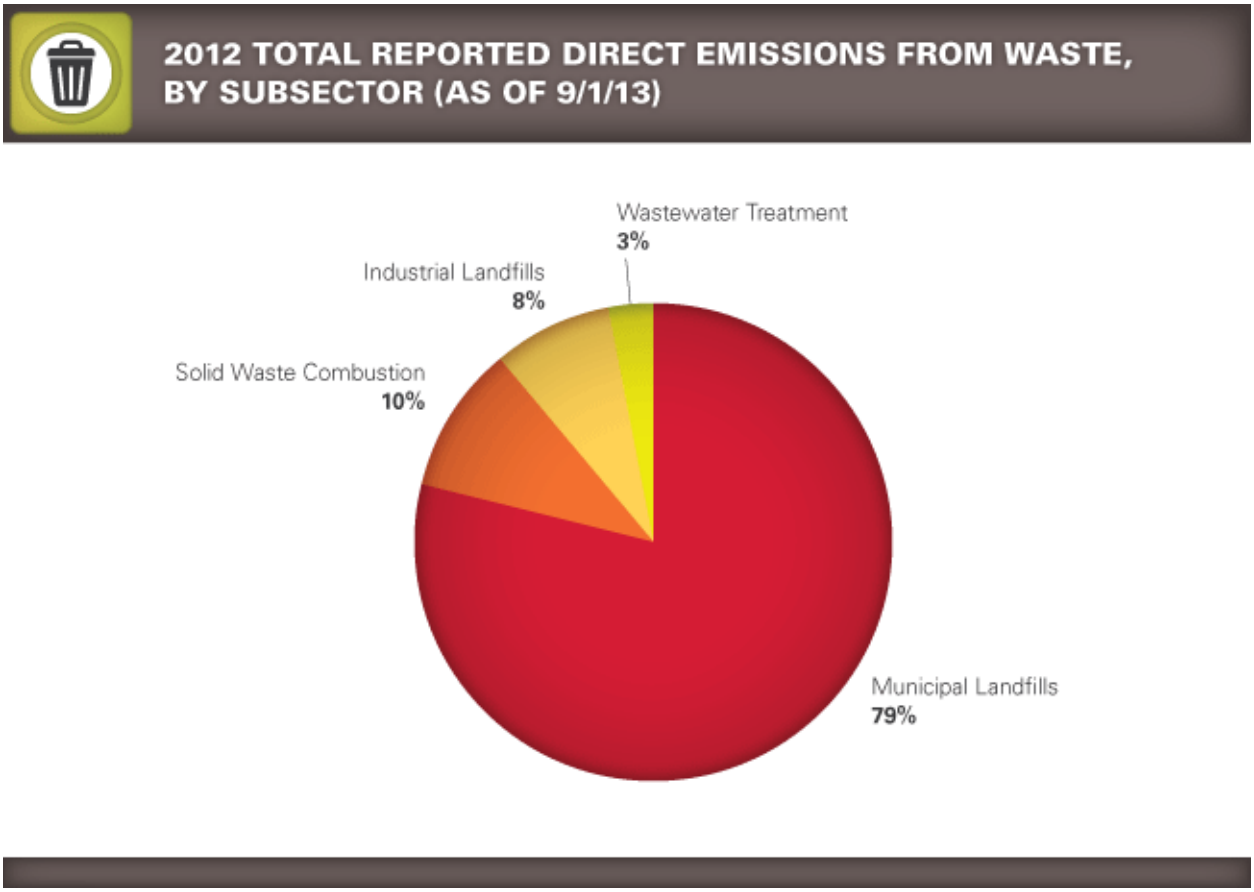
CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

Number of reporters and 2012 emissions (CO_2e) per waste industry subsector

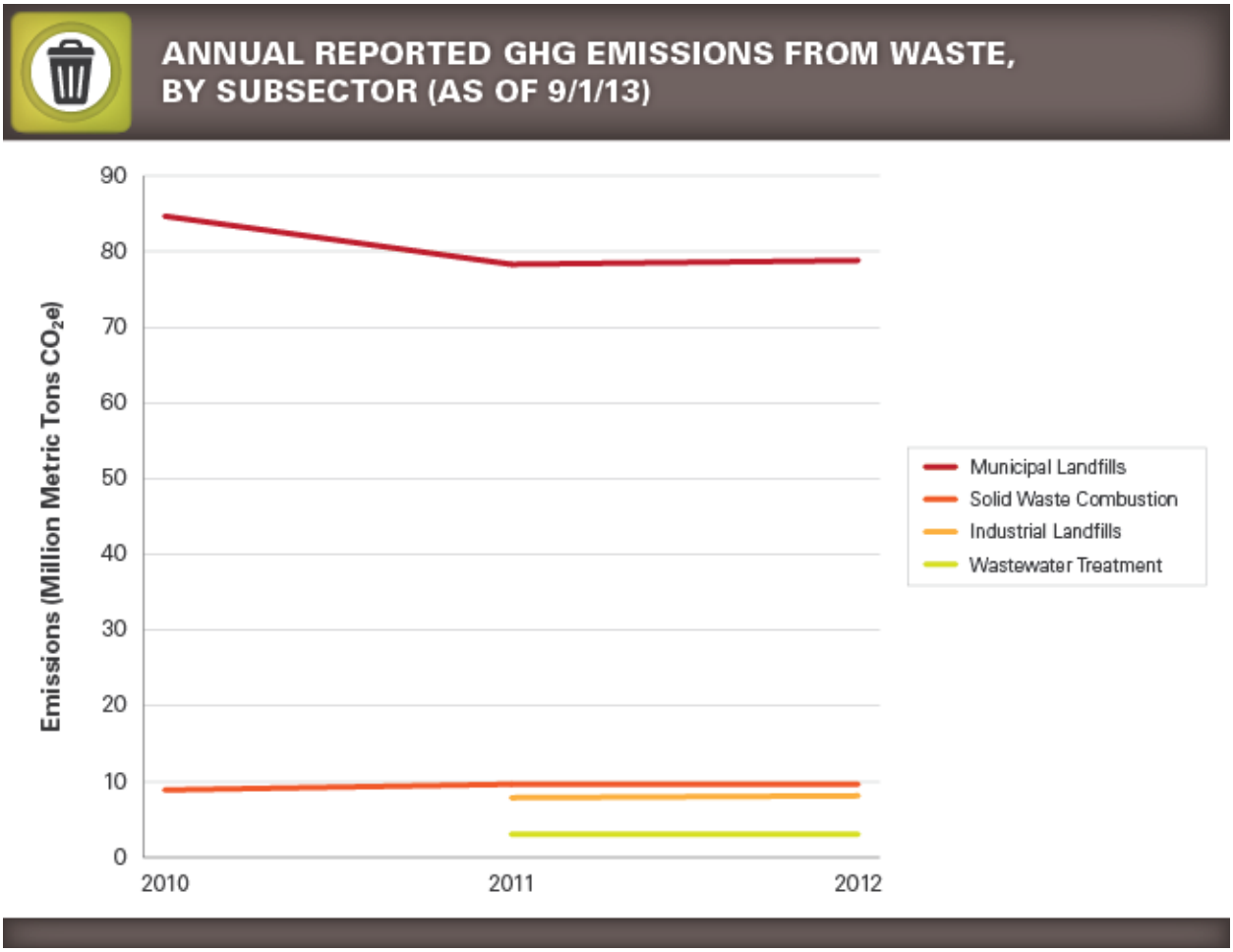
Industry Sector	2012 Number of Reporters	2012 Emissions (million metric tons CO_2e per year)
MSW Landfills	1,217	79
Industrial Wastewater Treatment	155	3

Industry Sector	2012 Number of Reporters	2012 Emissions (million metric tons CO_2e per year)
Industrial Waste Landfills	176	8.2
Solid Waste Combustion	69	10

Total Reported Direct Emissions from Waste, by Subsector (as of 9/1/13).

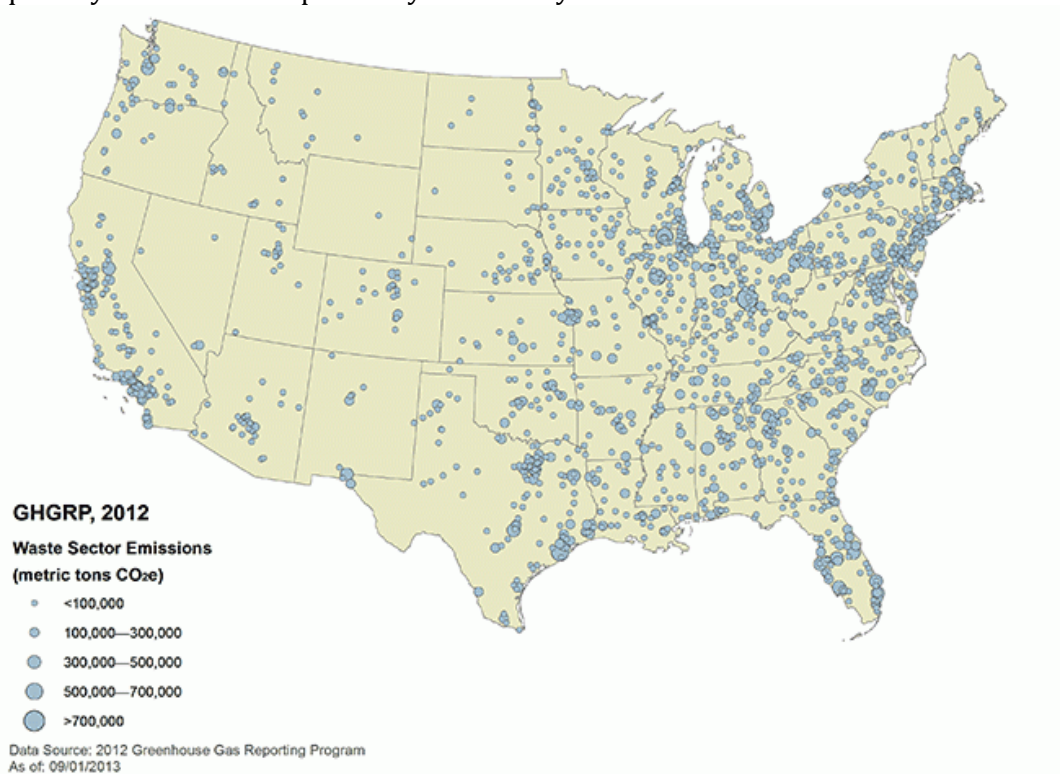


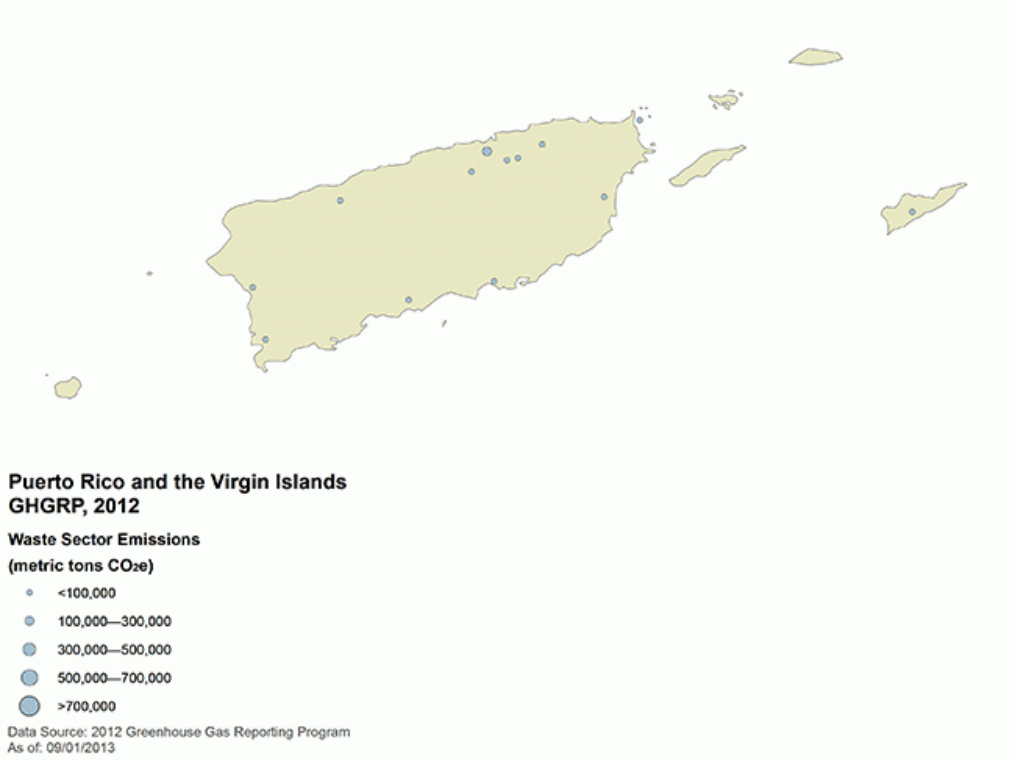
Trend of Annual Reported GHG Emissions for Waste, by Subsector (as of 9/1/13).



Location and emissions range for each reporting facility in the waste sector (as of 9/1/13).

These maps show the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.





Other EPA Resources

U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Metals

The metals sector consists of metal production facilities that smelt, refine, and/or cast ferrous and nonferrous metals, including primary aluminum, ferroalloy, iron and steel, lead, magnesium, and zinc, from ore, pig, or scrap using electrometallurgical and other methods. The sector also includes foundries and any other metal production facility operating under NAICS codes beginning with 331 (Primary Metal Manufacturing). Primary aluminum, ferroalloy, iron and steel, lead, magnesium, and zinc production facilities report GHG emissions from metal smelting, refining, and/or casting activities, as well as from stationary fuel combustion sources. All other metal production facilities report only the GHG emissions from stationary fuel combustion sources. Data for magnesium production were reported beginning in 2011 while data for all other metal production were reported beginning in 2010.

Metals Sector — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

	2010	2011	2012
Number of facilities:	269	297	297
Total emissions (CO_2e):	99	112	107
Emissions by greenhouse gas (CO_2e)			
• Carbon dioxide (CO_2)	97	108	103
• Methane (CH_4)	**	**	**
• Nitrous oxide (N_2O)	**	**	**
• Hydrofluorocarbons (HFCs)	**	**	**
• Perfluorocarbons (PFCs)	1.6	2.9	2.5
• Sulfur hexafluoride (SF_6)	NR	1.5	1.3

Totals may not equal sum of individual GHGs due to independent rounding.

NR means that this value was not reported for the 2010 reporting year.

** Total reported emissions are less than 0.05 million metric tons.

Process emissions from magnesium production (sulfur hexafluoride) were reported beginning in 2011. These emissions are included in the table above. Total emissions from magnesium production were 1.9 MMT CO_2e in 2011.

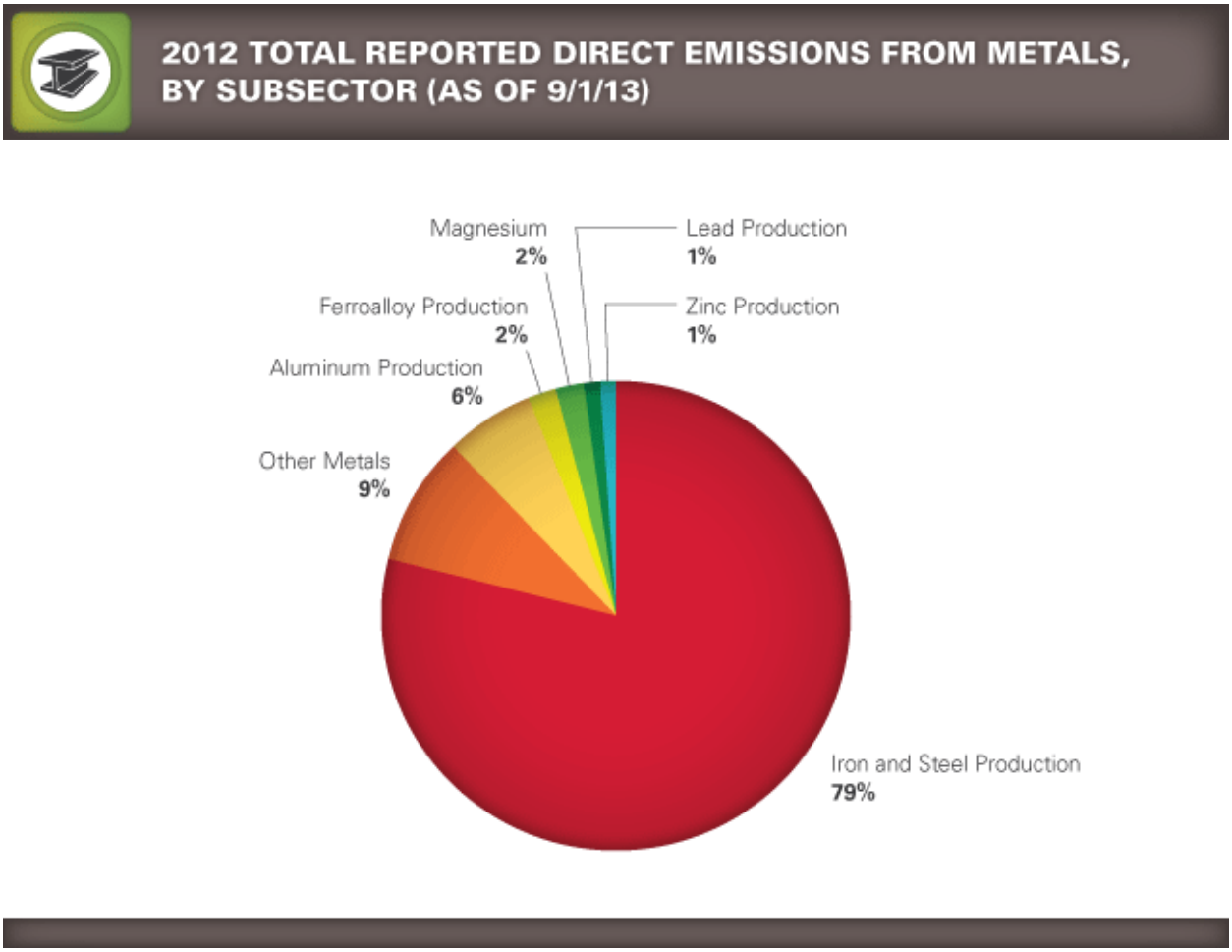
CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

Number of reporters and 2012 emissions (CO_2e) per metals industry subsector

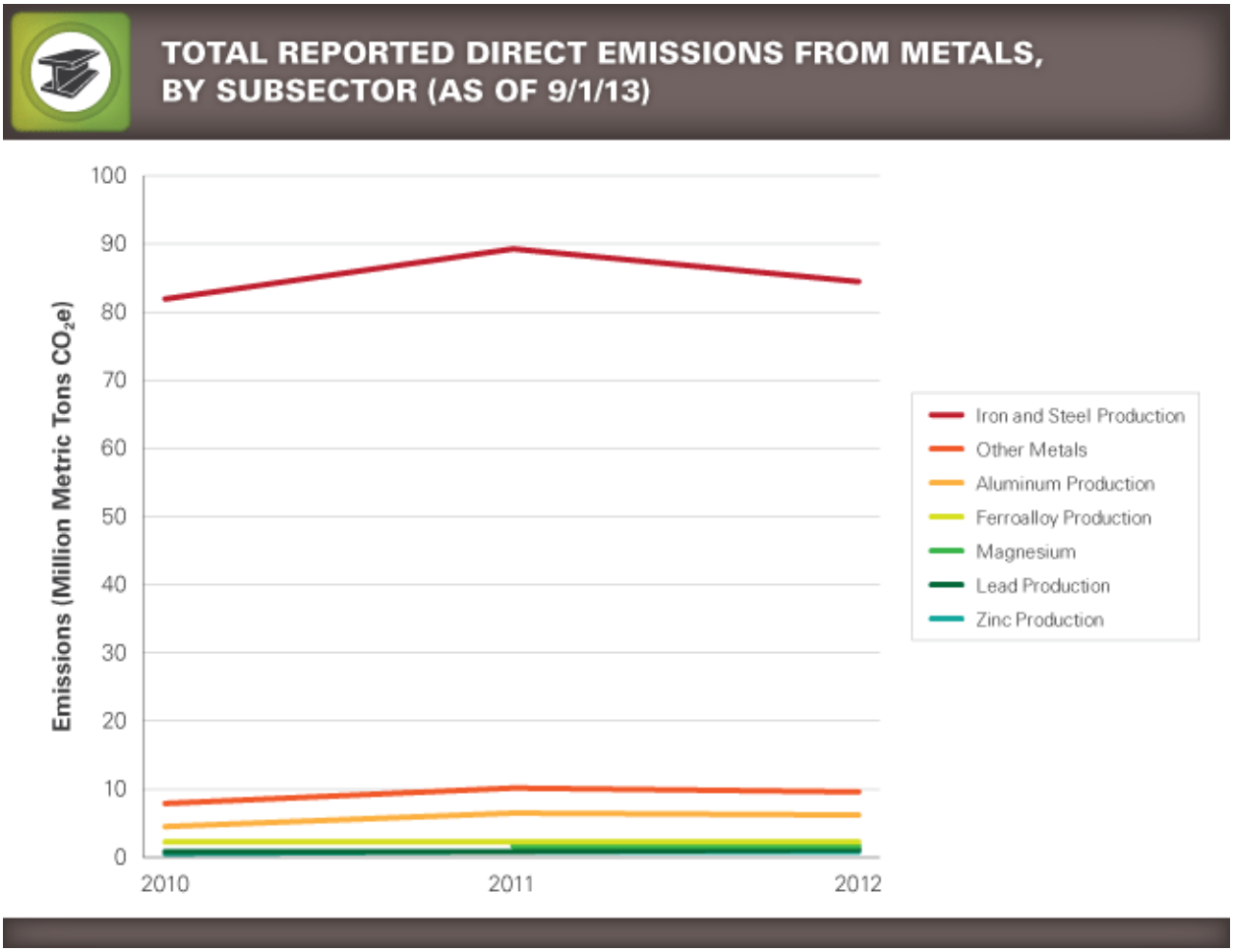
Industry Sector	2012 Number of Reporters	2012 Emissions (million metric tons CO_2e per year)
Aluminum Production	10	6.5
Ferroalloy Production	10	2.4
Iron and Steel Production	125	84
Lead Production	14	1.1
Magnesium Production	10	1.7

Industry Sector	2012 Number of Reporters	2012 Emissions (million metric tons CO_2e per year)
Zinc Production	6	1.0
Other Metals	122	9.7

Total Reported Direct Emissions from Metals, by Subsector (as of 9/1/13).

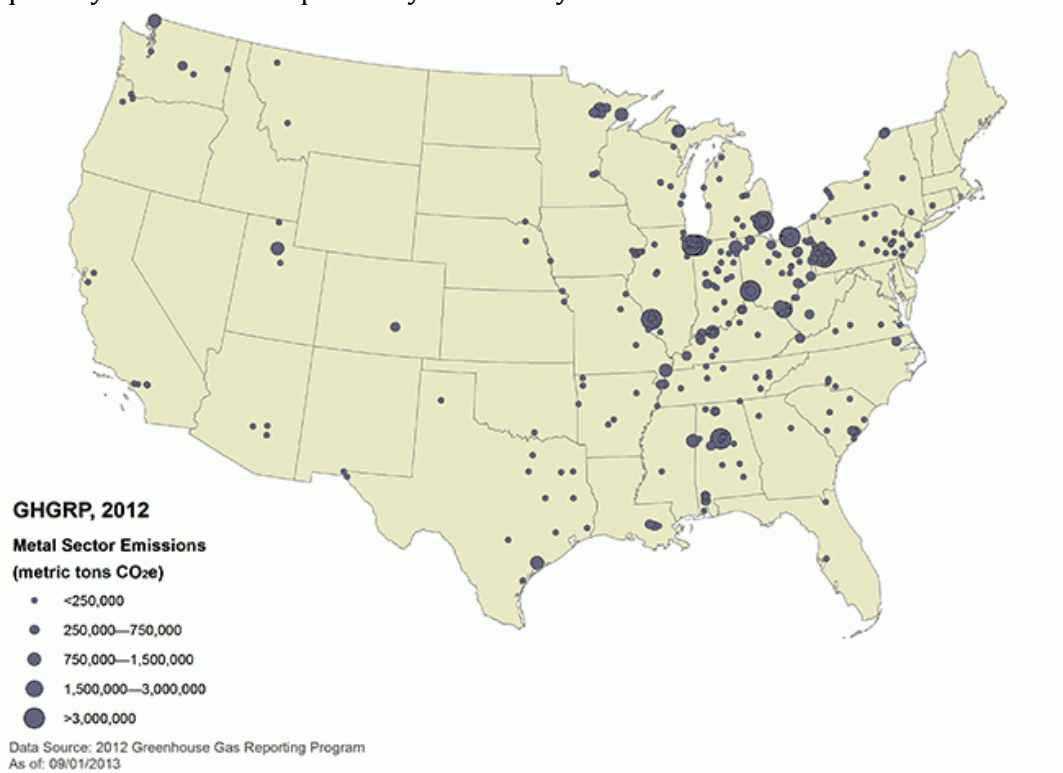


Trend of Annual Reported GHG Emissions for Metals, by Subsector (as of 9/1/13).



Location and emissions range for each reporting facility in the waste sector (as of 9/1/13).

This map shows the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.



Other EPA Resources

U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Minerals

The minerals sector consists of cement production, glass manufacturing, lime production, and any other mineral production facility operating under NAICS codes beginning with 327 (Nonmetallic Mineral Product Manufacturing). Facilities under this sector transform mined or quarried nonmetallic minerals, such as sand, gravel, stone, clay, and refractory materials, into products for intermediate or final consumption. Excluded from this sector are facilities that primarily beneficiate mined nonmetallic minerals. Glass manufacturing facilities with emissions above 25,000 metric tons CO_2e per year, and all cement and lime facilities report both process emissions from the calcination of carbonate-based raw materials and GHG emissions from stationary combustion sources. All other facilities report only the GHG emissions from stationary combustion sources. Approximately 13% of the 352 facilities reporting under this sector measure emissions using continuous emissions monitoring equipment. The remaining facilities use engineering calculations based on measured data. A small number of facilities in this sector collect CO_2 either for use in their other production processes (e.g., sugar refining), to transfer to other users, or to sequester or otherwise inject underground. Process emissions reported under this sector include any CO_2 that is later consumed on site or transferred off site.

Minerals Sector — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

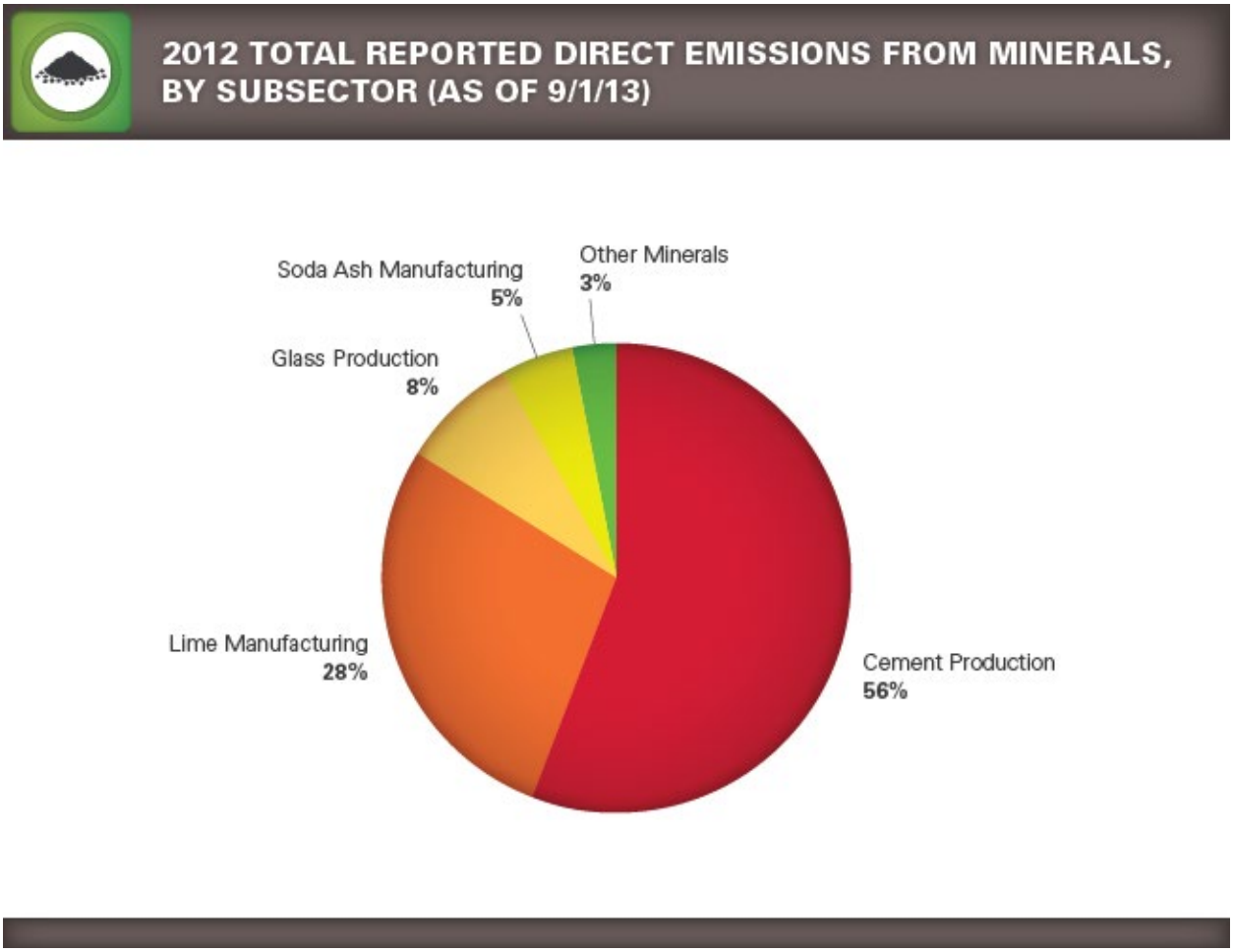
	2010	2011	2012
Number of facilities:	359	367	369
Total emissions (CO_2e):	101	103	107
Emissions by greenhouse gas (CO_2e)			
• Carbon dioxide (CO_2)	101	103	107
• Methane (CH_4)	0.1	0.1	0.1
• Nitrous oxide (N_2O)	0.3	0.2	0.2

CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

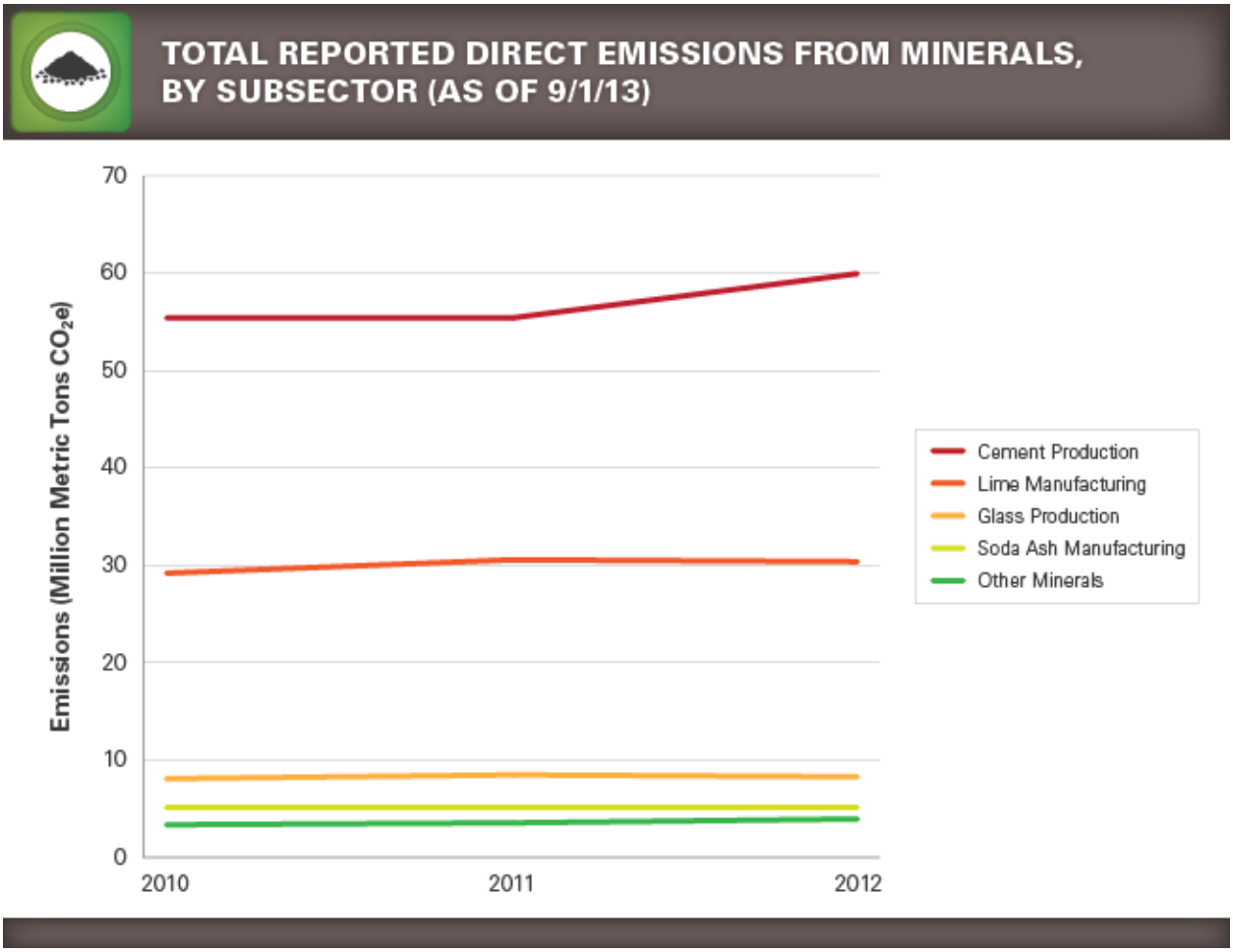
Number of reporters and 2012 emissions (CO_2e) per minerals industry subsector

Industry Sector	2012 Number of Reporters	2012 Emissions (million metric tons CO_2e per year)
Cement Production	96	60
Lime Production	74	30
Glass Production	107	8.2
Soda Ash Manufacturing	4	5.2
Other Minerals	89	3.8

Total Reported Direct Emissions from Minerals, by Subsector (as of 9/1/13).

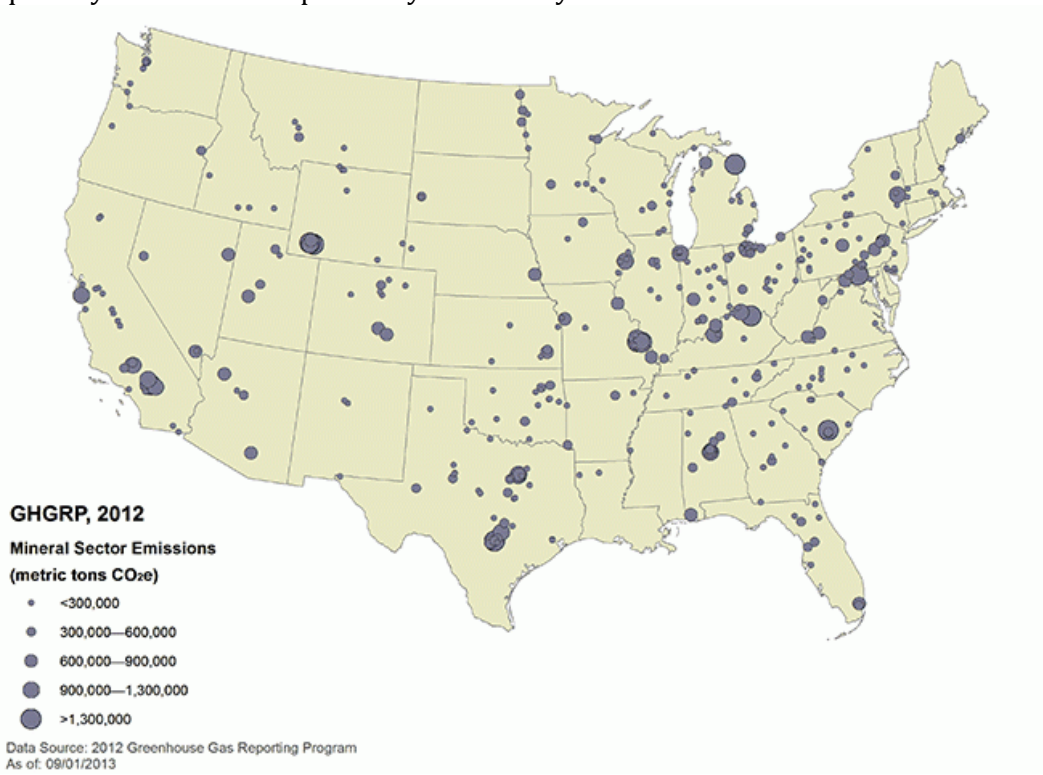


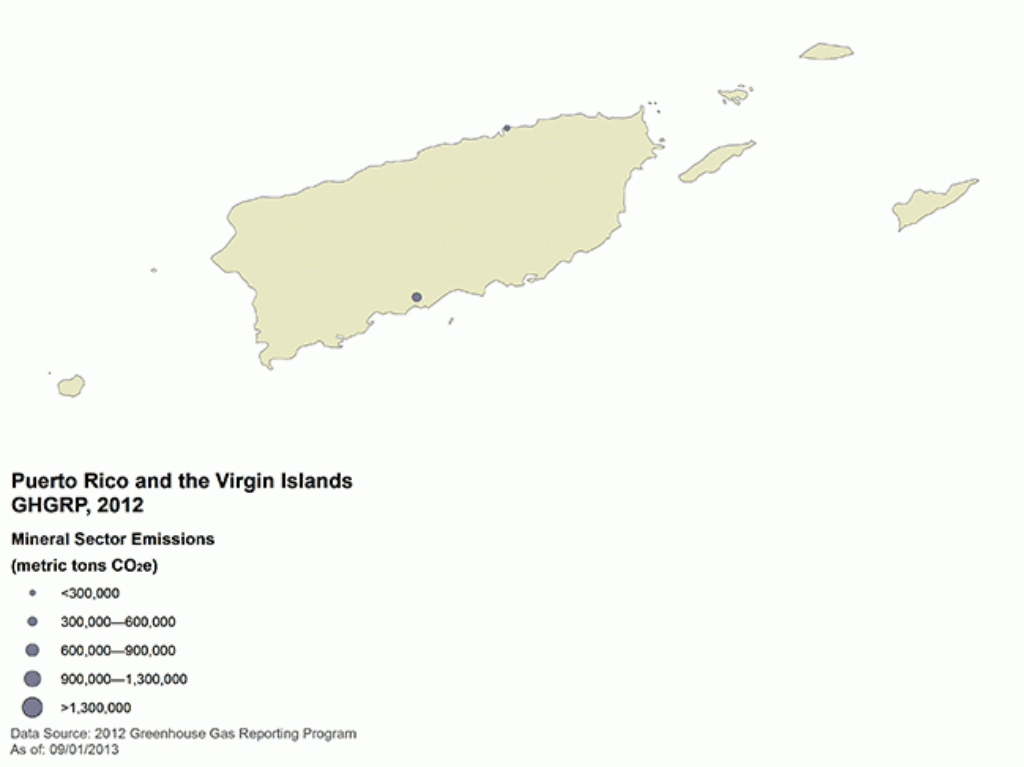
Trend of Annual Reported GHG Emissions for Minerals, by Subsector (as of 9/1/13).



Location and emissions range for each reporting facility in the minerals ector (as of 9/1/13).

These maps show the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.





Other EPA Resources

- U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Pulp and Paper

The pulp and paper sector consists of facilities that produce market pulp or that manufacture pulp and paper. Facilities that have pulping processes report the GHG emissions from chemical recovery units, lime kilns, and stationary fuel combustion units. In addition to emissions from pulp production processes, the sector includes combustion emissions from facilities that produce paper products from purchased pulp, produce secondary fiber from recycled paper, convert paper into paperboard products, operate coating and laminating processes, print products (such as books, labels, business cards, stationery, and business forms), and perform support activities (such as data imaging, plate-making services, and bookbinding). Emissions from industrial landfills and industrial wastewater treatment at these facilities are included in the waste sector.

Pulp and Paper Sector — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

	2010	2011	2012
Number of facilities:	229	231	232
Total emissions (CO_2e):	46	44	42
Emissions by greenhouse gas (CO_2e)			
• Carbon dioxide (CO_2)	43	41	39
• Methane (CH_4)	0.9	0.9	0.9
• Nitrous oxide (N_2O)	2	2	2

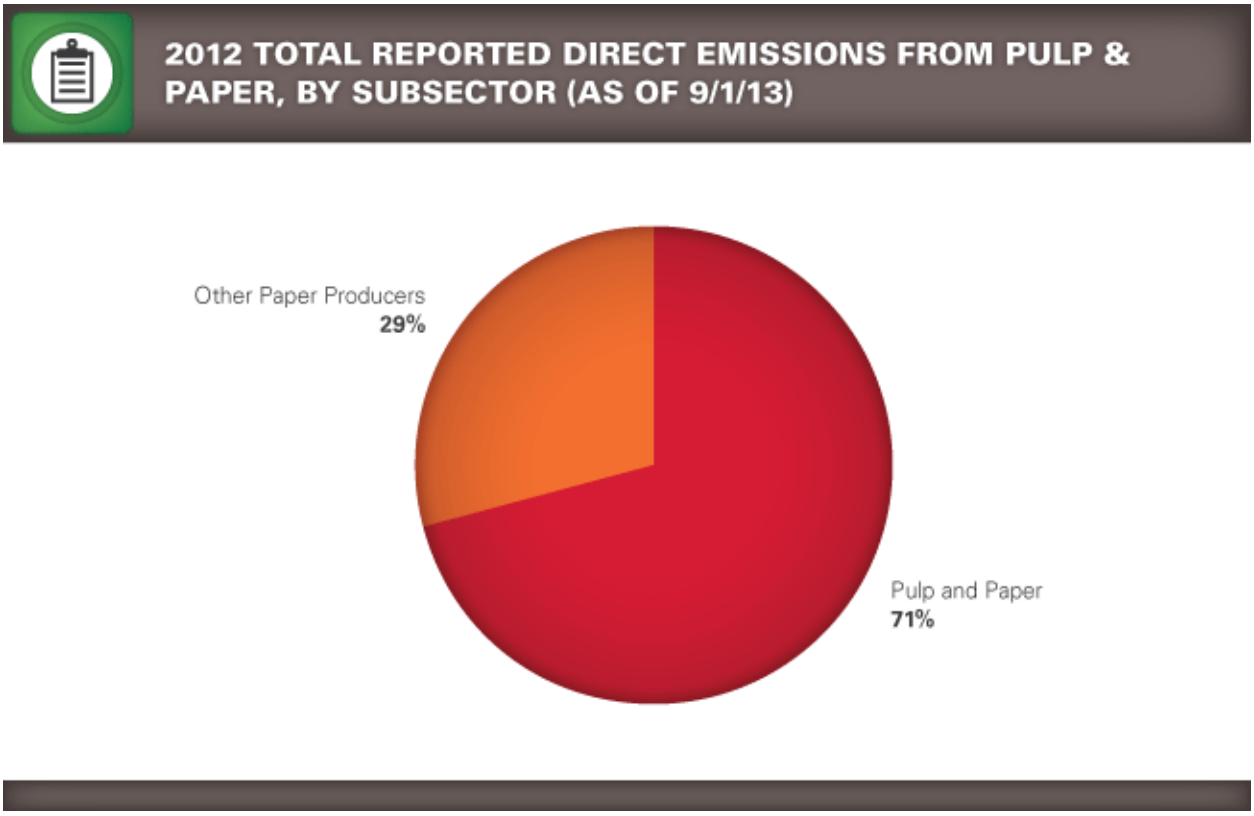
Totals may not equal sum of individual GHGs due to independent rounding.

CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

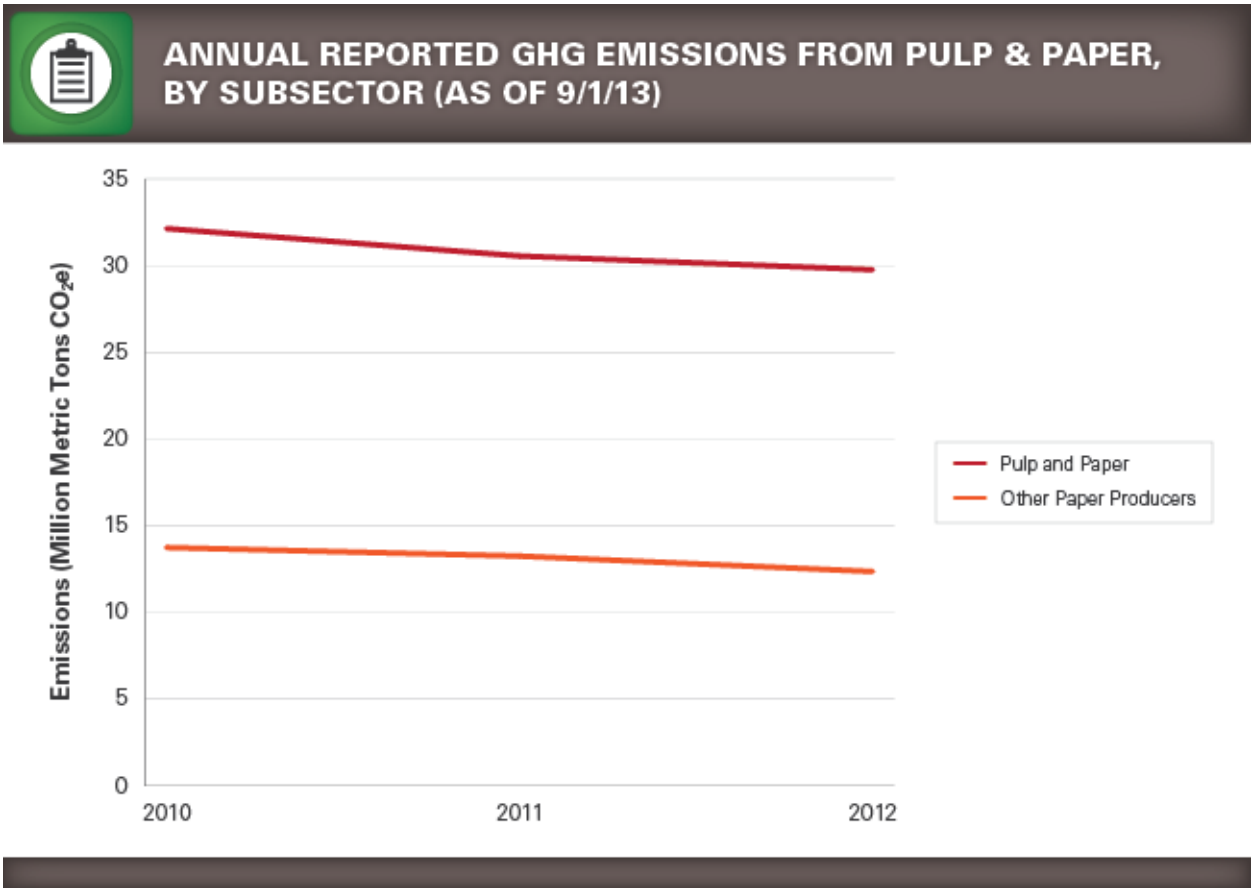
Number of reporters and 2012 emissions (CO_2e) per pulp and paper industry subsector

Industry Sector	2012 Number of Reporters	2012 Emissions (million metric tons CO_2e per year)
Pulp and Paper Production	110	30
Other Paper Products	122	12

Total Reported Direct Emissions from Pulp and Paper, by Subsector (as of 9/1/13).

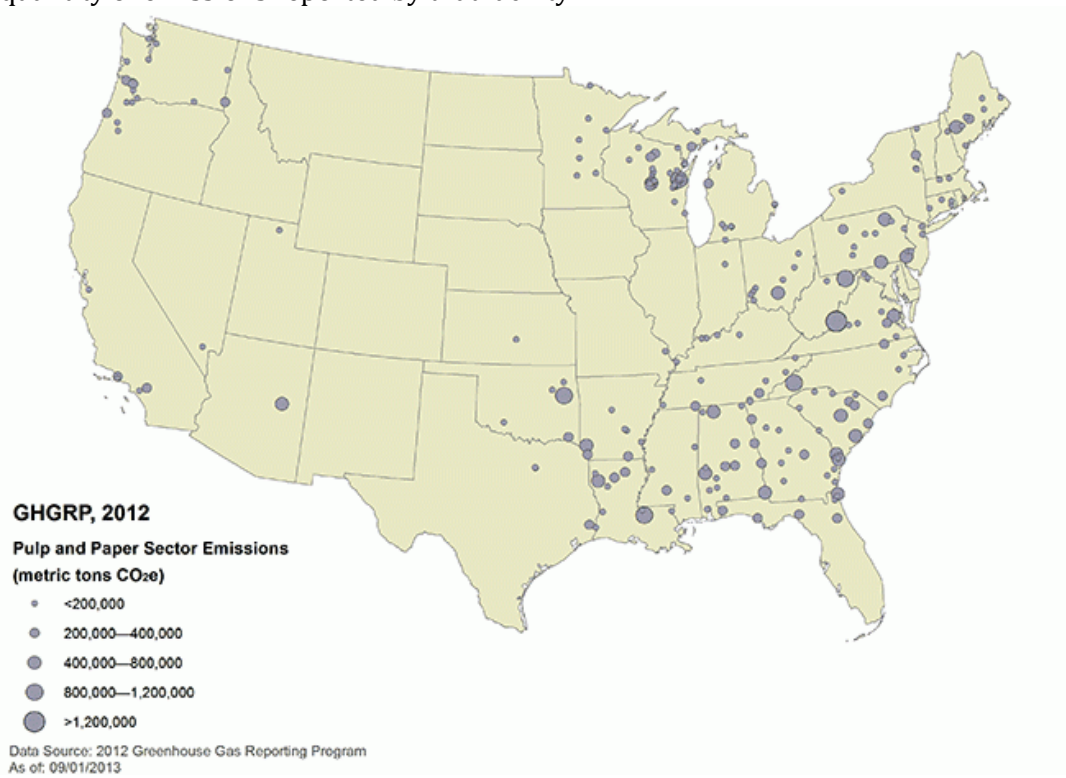


Trend of Annual Reported GHG Emissions for Pulp and Paper, by Subsector (as of 9/1/13).



Location and emissions range for each reporting facility in the pulp and paper sector (as of 9/1/13).

This map shows the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.



Other EPA Resources

U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Other Sectors

This sector consists of underground coal mines, electronics manufacturing, electrical equipment manufacturing and electrical transmission and distribution systems. The sector also includes stationary fuel combustion from miscellaneous commercial, institutional, and industrial facilities not covered under other sectors (e.g., ethanol production, food processing, and other manufacturing processes). Emissions from industrial waste landfills and industrial wastewater treatment at these facilities are included in the waste sector.

Other Sector — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

	2010	2011	2012
Number of facilities:	1,039	1,392	1,419
Total emissions (CO_2e):	89	129	123
Emissions by greenhouse gas (CO_2e)			
• Carbon dioxide (CO_2)	89	91	88
• Methane (CH_4)	0.1	30	27
• Nitrous oxide (N_2O)	0.4	0.5	0.6
• Hydrofluorocarbons (HFCs)	NR	0.2	0.2
• Perfluorocarbons (PFCs)	NR	2.5	2.3
• Sulfur hexafluoride (SF_6)	NR	4.8	3.9
• Nitrogen trifluoride (NF_3)	NR	0.7	0.7

Totals may not equal sum of individual GHGs due to independent rounding.

NR means that this value was not reported for the 2010 reporting year.

Process emissions from underground coal mines, electronics manufacturing, electrical equipment manufacturing and electrical transmission and distribution systems were reported beginning in 2011. These emissions are included in the table above. Emissions from these source categories totaled 40 million metric tons CO_2e in 2011 and 36 million metric tons CO_2e in 2012.

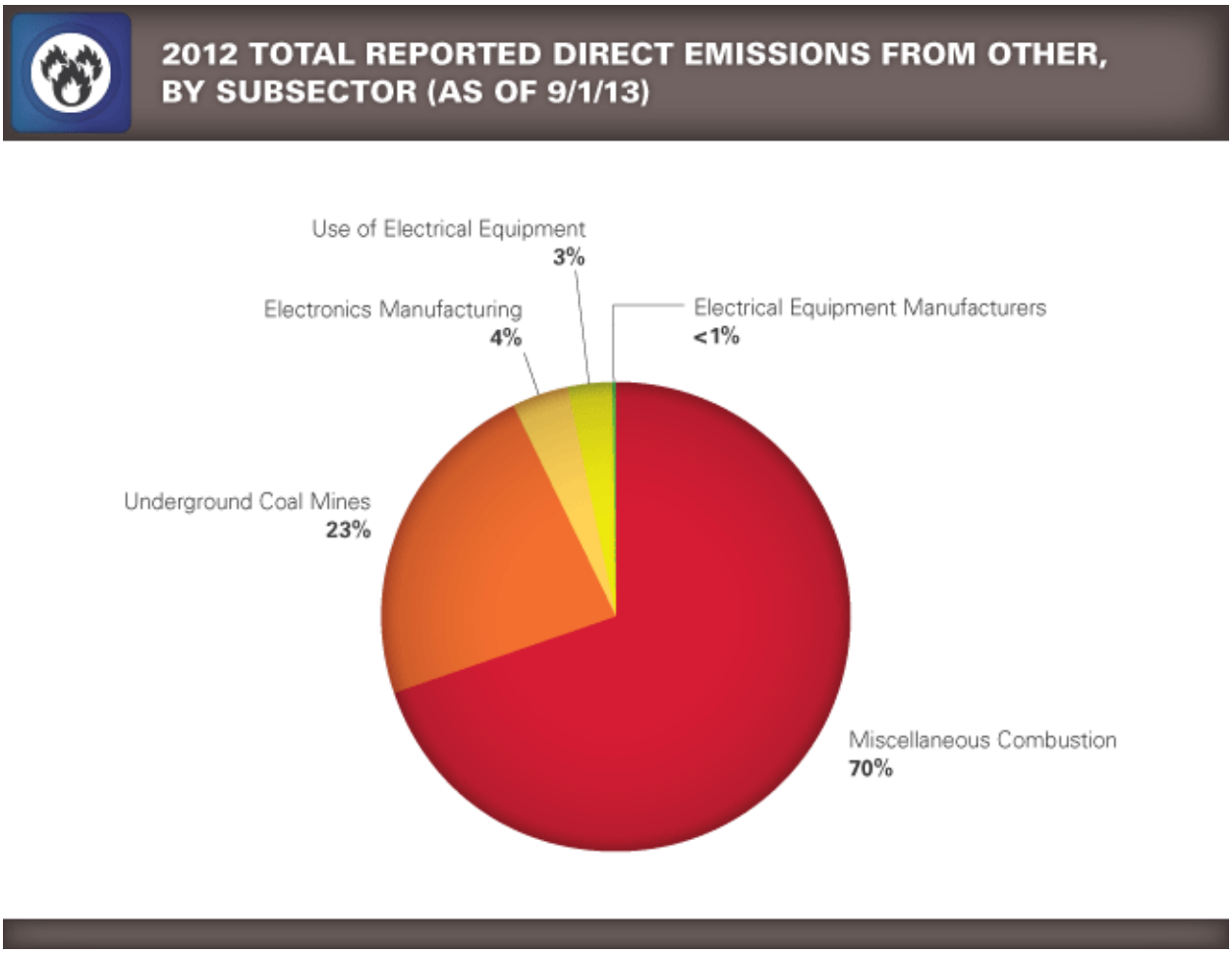
CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

Number of reporters and 2012 emissions (CO_2e) per other industry subsector

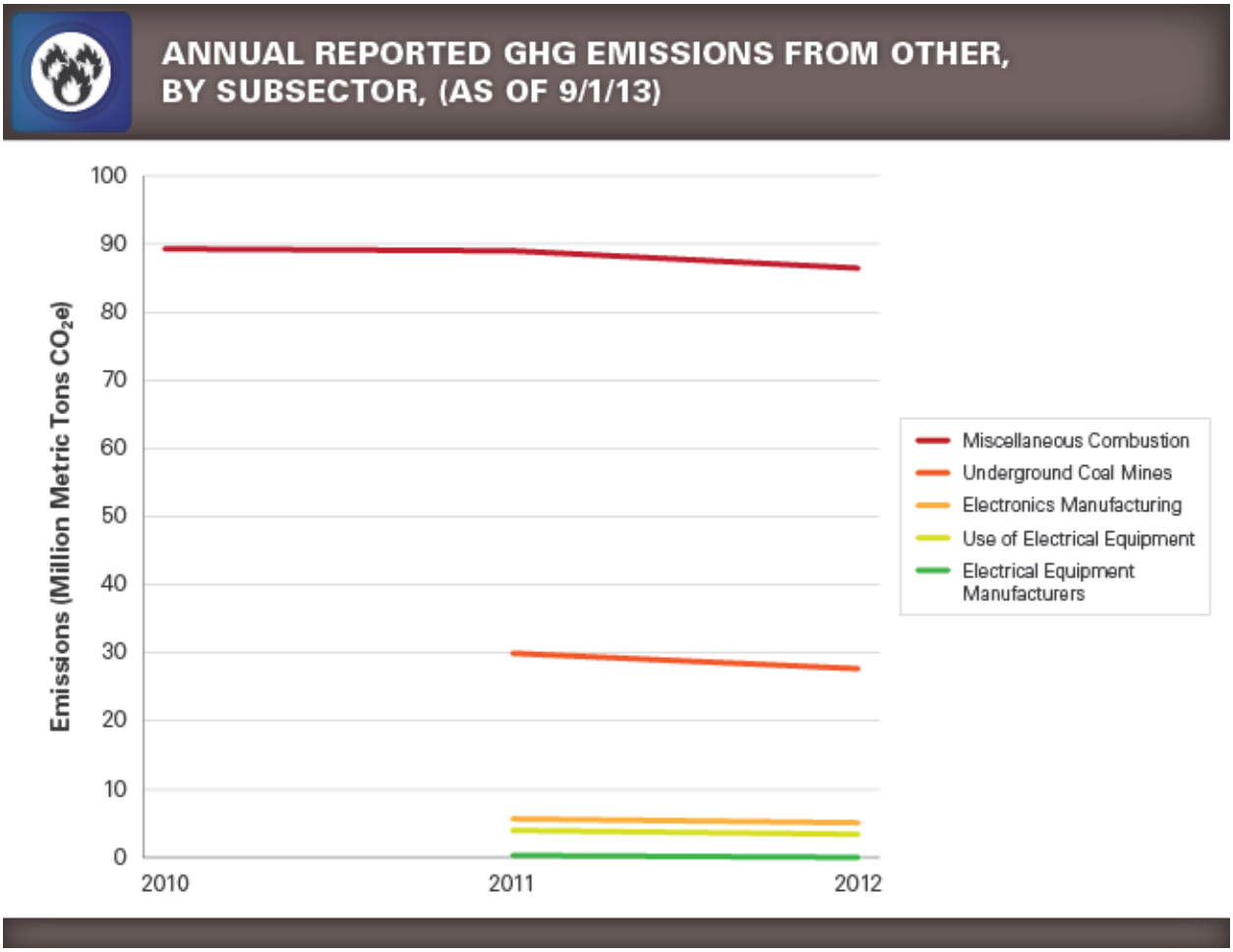
Industry Sector	2012 Number of Reporters	2012 Emissions (million metric tons CO_2e per year)
Miscellaneous Combustion		
• Food Processing	316	31
• Ethanol Production	166	17
• Other Manufacturing	285	16
• Universities	113	8.9
• Military	44	2.6
• Other Combustion	166	11
Underground Coal Mines	151	28

Industry Sector	2012 Number of Reporters	2012 Emissions (million metric tons CO_2e per year)
Electronics Manufacturing	53	5.1
Production and Use of Electrical Equipment		
• Electrical Equipment Manufacturers	6	0.2
• Electrical Equipment Use	123	3.4

Total Reported Direct Emissions from Other, by Subsector (as of 9/1/13).



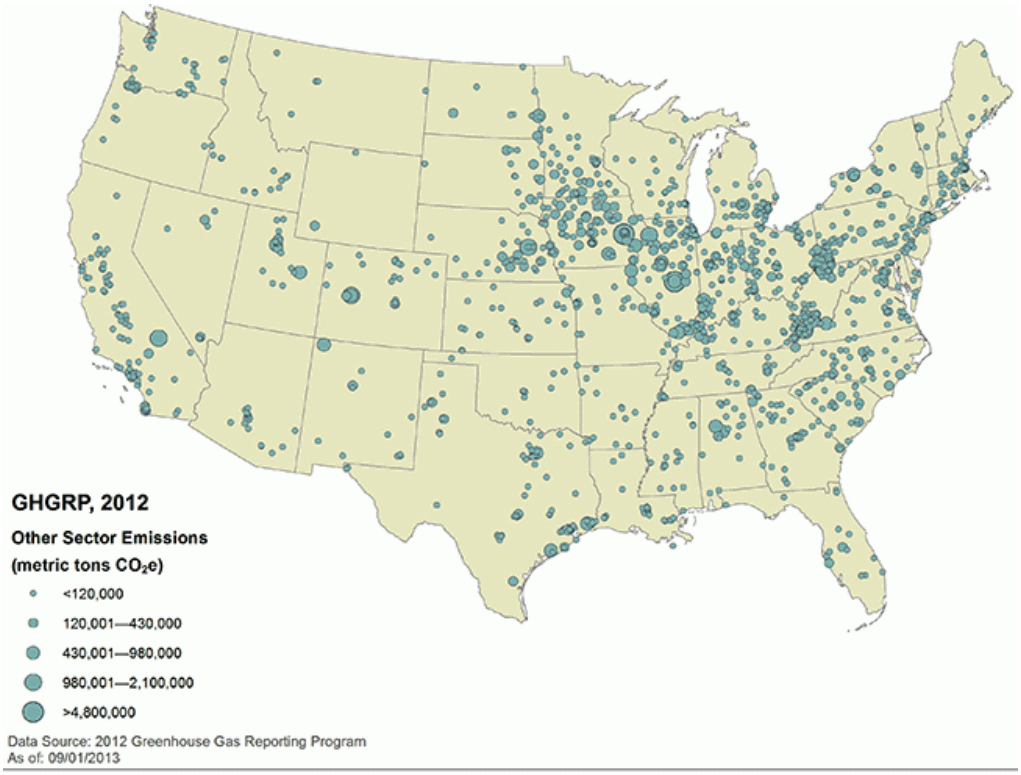
Trend of Annual Reported GHG Emissions for Other, by Subsector (as of 9/1/13).



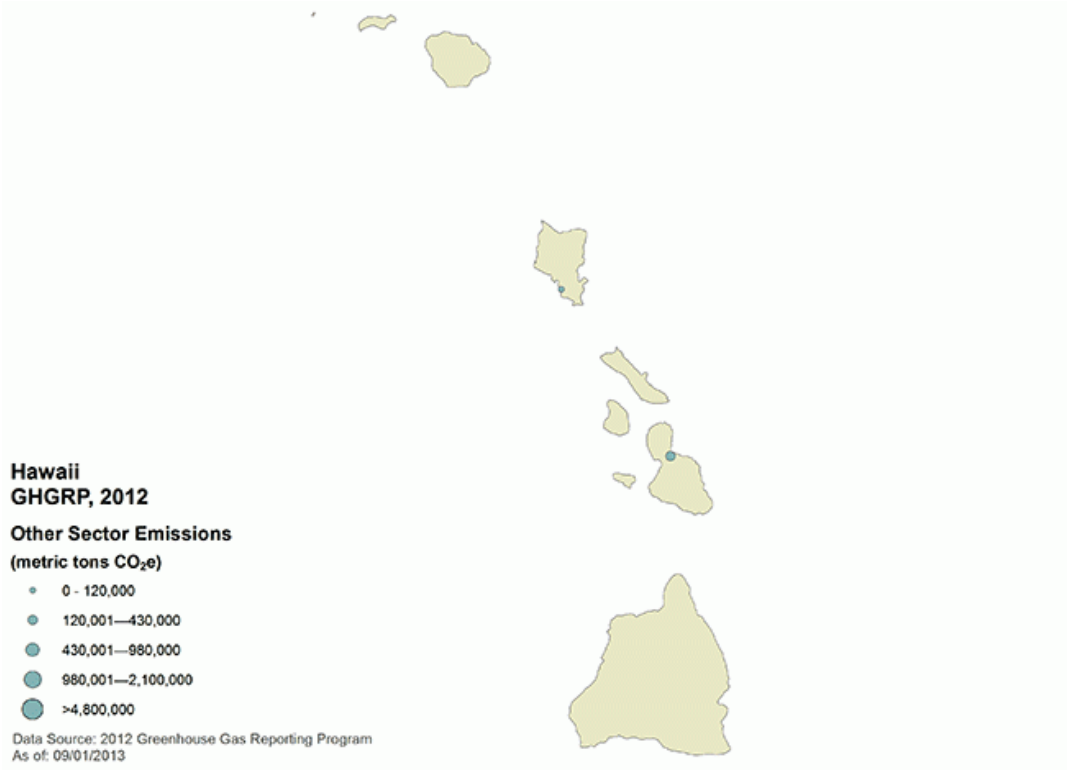
Emissions for 2010 are not shown because the reporting requirements for facilities in this sector were different in 2011 than in 2010.

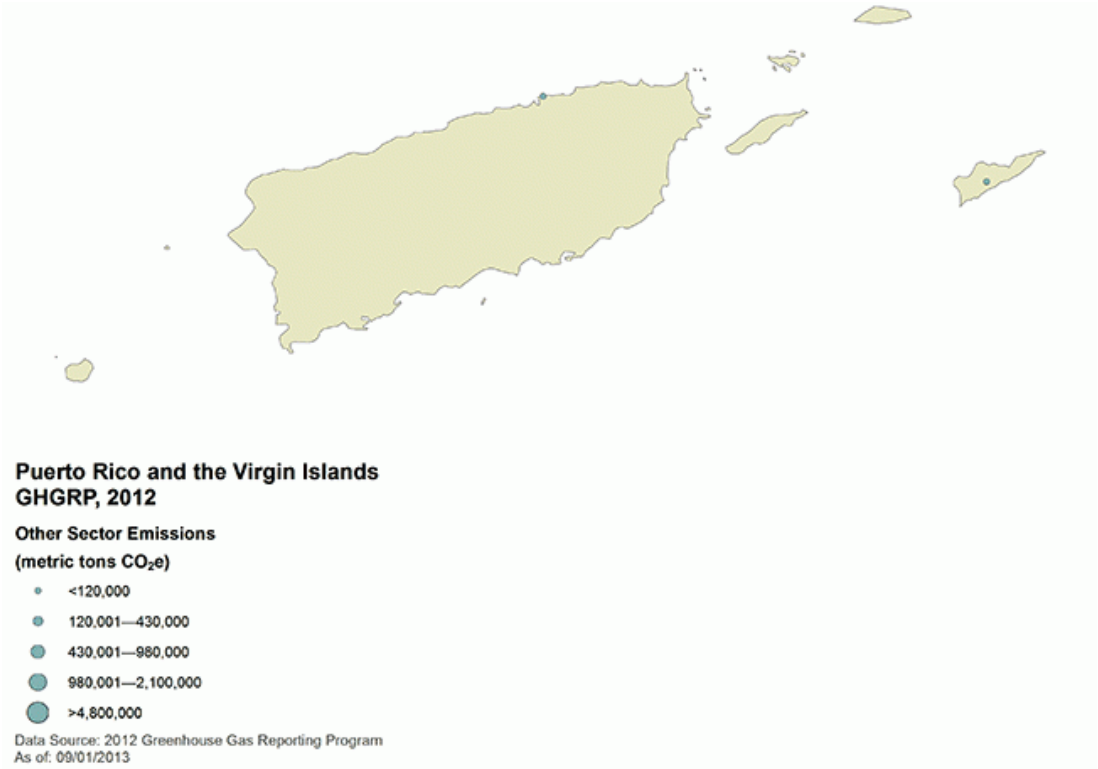
Location and emissions range for each reporting facility in the other sector (as of 9/1/13).

These maps show the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.


GHGRP, 2012
Other Sector Emissions
(metric tons CO_2e)
<120,000
120,001—430,000
430,001—980,000
980,001—2,100,000
>4,800,000
Data Source: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013


Alaska
GHGRP, 2012
Other Sector Emissions
(metric tons CO_2e)
<120,000
120,001—430,000
430,001—980,000
980,001—2,100,000
>4,800,000
Data Source: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013





Other EPA Resources

U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Miscellaneous Combustion

Miscellaneous combustion comprises facilities that reported GHG emissions from stationary fuel combustion sources only and that are not part of any other sector. This category includes food processing, ethanol production, manufacturing operations, universities, military installations, and any combustion sources not included elsewhere, such as mining operations and hospitals.

Miscellaneous Combustion — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

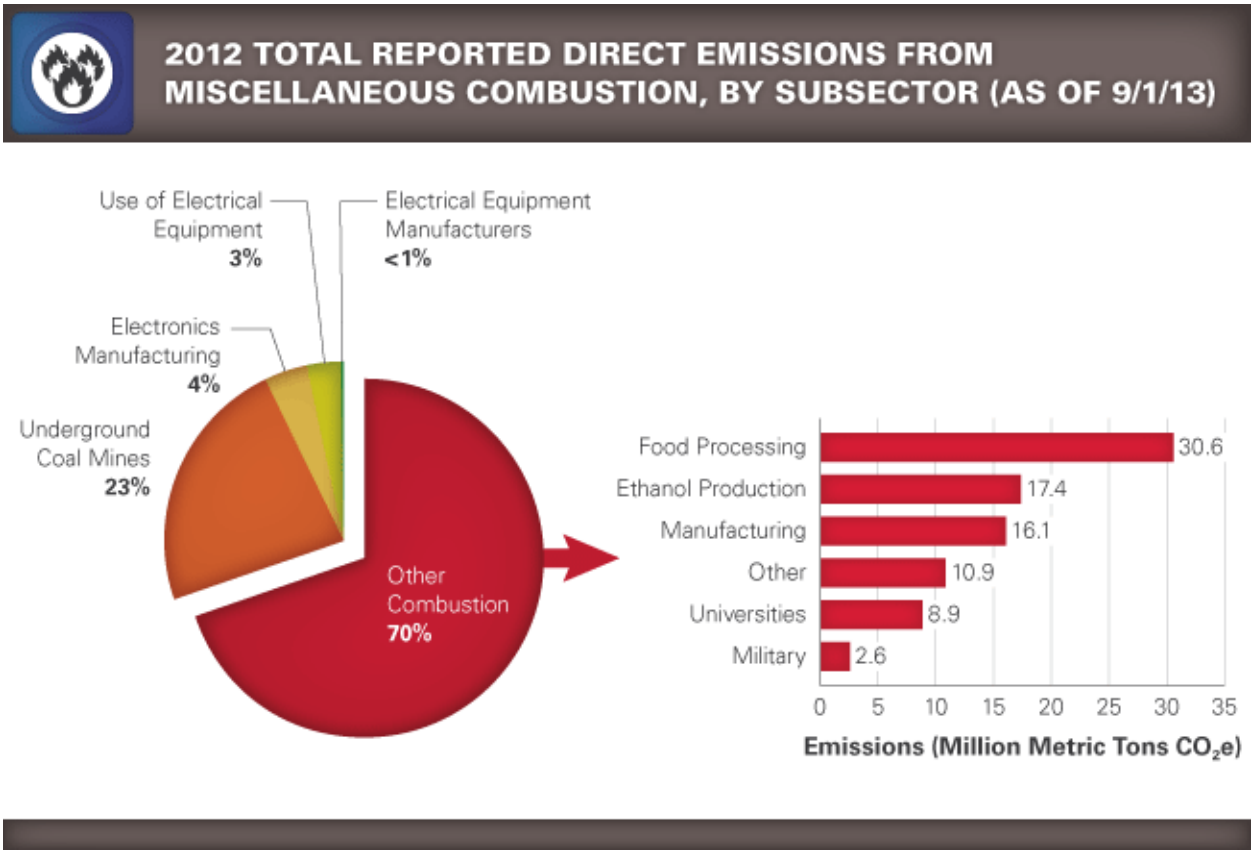
	2010	2011	2012
Number of facilities:			
• Food Processing	281	309	216
• Ethanol Production	161	163	166
• Other Manufacturing	279	283	285
• Universities	111	111	113
• Military	37	43	44
• Other Combustion	170	162	166
Total emissions (CO_2e):			
• Food Processing	32	31	31
• Ethanol Production	18	18	17
• Other Manufacturing	16	17	16
• Universities	9.6	9.4	8.9
• Military	2.3	2.7	2.6
• Other Combustion	12	11	11
Emissions by greenhouse gas (CO_2e) Food Processing			
• Carbon dioxide (CO_2)	31	31	31
• Methane (CH_4)	0.1	0.1	0.1
• Nitrous oxide (N_2O)	0.2	0.1	0.1
Ethanol Production			
• Carbon dioxide (CO_2)	18	18	17.1
• Methane (CH_4)	**	**	**
• Nitrous oxide (N_2O)	0.1	**	0.2
Other Manufacturing			
• Carbon dioxide (CO_2)	16	17	16
• Methane (CH_4)	**	**	**
• Nitrous oxide (N_2O)	0.1	0.1	0.1
Universities			
• Carbon dioxide (CO_2)	9.6	9.4	8.9
• Methane (CH_4)	**	**	**
• Nitrous oxide (N_2O)	**	**	**
Military			

	2010	2011	2012
• Carbon dioxide (CO_2)	2.3	2.7	2.6
• Methane (CH_4)	**	**	**
• Nitrous oxide (N_2O)	**	**	**
Other Combustion			
• Carbon dioxide (CO_2)	12.3	10.8	10.8
• Methane (CH_4)	**	**	**
• Nitrous oxide (N_2O)	**	**	**

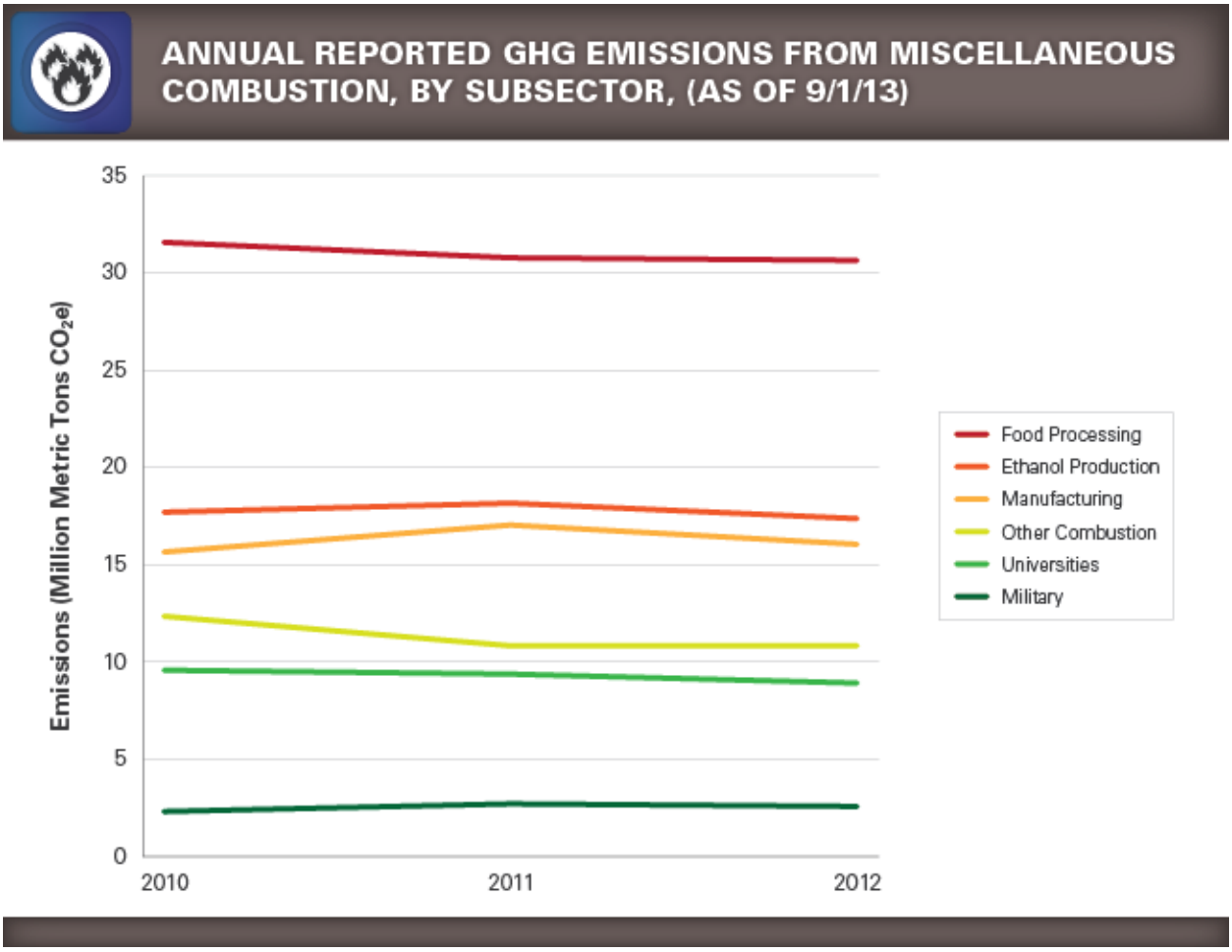
Totals may not equal sum of individual GHGs due to independent rounding.

** Total reported emissions are less than 0.05 million metric tons CO_2e.

Total Reported Direct Emissions from Miscellaneous Combustion, by Subsector (as of 9/1/13).

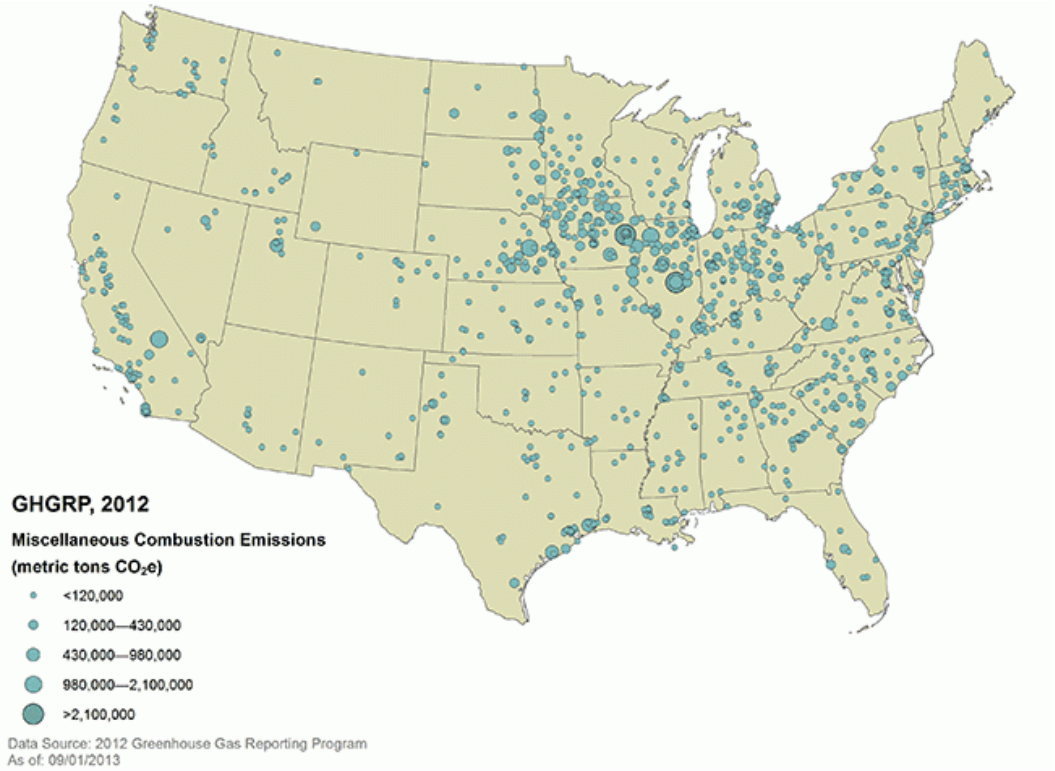


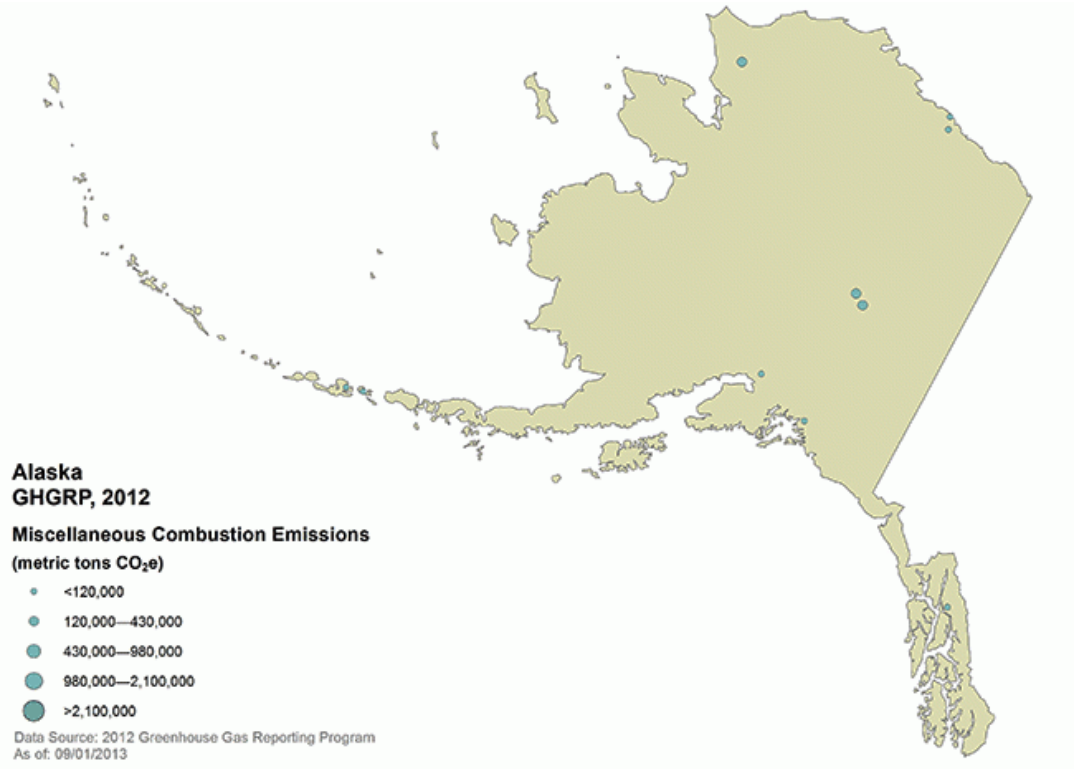
Trend of Annual Reported GHG Emissions from Miscellaneous Combustion, by Subsector (as of 9/1/13).

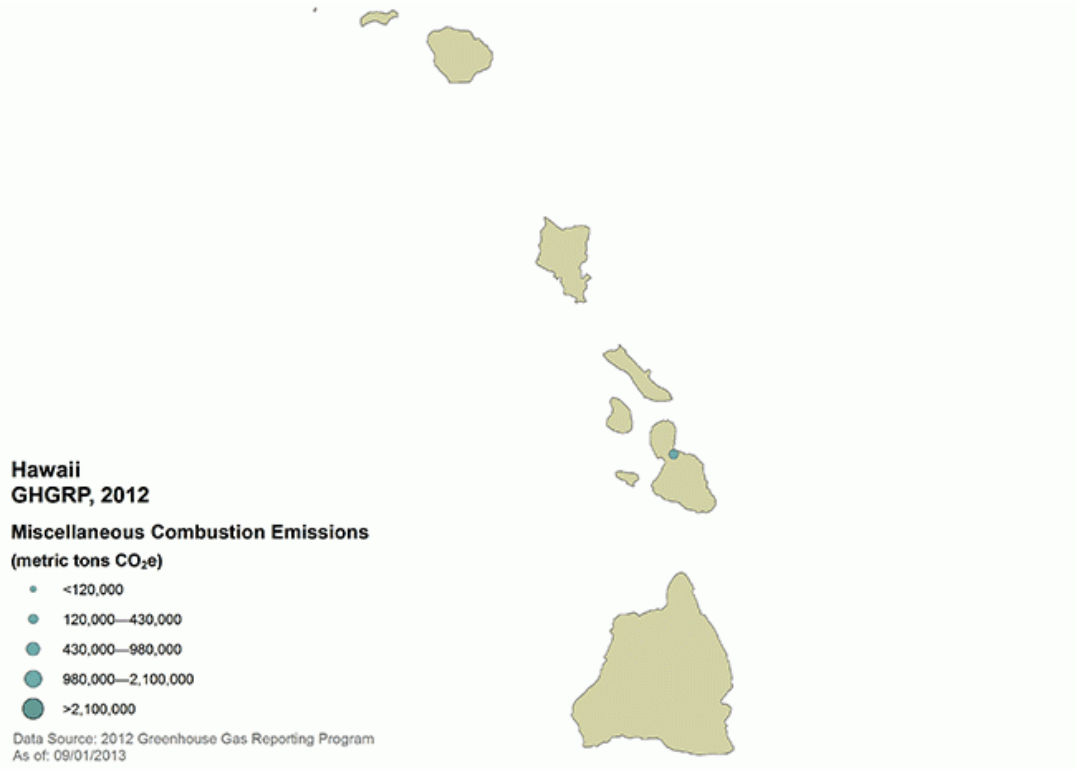


Location and emissions range for each reporting facility in miscellaneous combustion sector (as of 9/1/13).

These maps show the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.


GHGRP, 2012
Miscellaneous Combustion Emissions
(metric tons CO_2e)
<120,000
120,000—430,000
430,000—980,000
980,000—2,100,000
>2,100,000
Data Source: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013


Alaska
GHGRP, 2012
Miscellaneous Combustion Emissions
(metric tons CO_2e)
<120,000
120,000—430,000
430,000—980,000
980,000—2,100,000
>2,100,000
Data Source: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013



Other EPA Resources

U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Underground Coal Mines

The underground coal mines sector consists of any underground coal mine that liberates 36,500,000 actual cubic feet of methane (equivalent to approximately 14,784 metric tons CO_2e) or more per year. Facilities in this sector include both underground coal mines under development and those categorized by the Mine Safety and Health Administration as active mines. Surface mines and abandoned mines are excluded from this category. Facility owners or operators must report the total annual methane liberated from ventilation wells, shafts, and degasification systems as well as GHG emissions from any other source categories at the facility, such as stationary combustion devices.

Reporting year 2011 was the first year emissions data were collected for this industry sector.

Underground Coal Mines — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

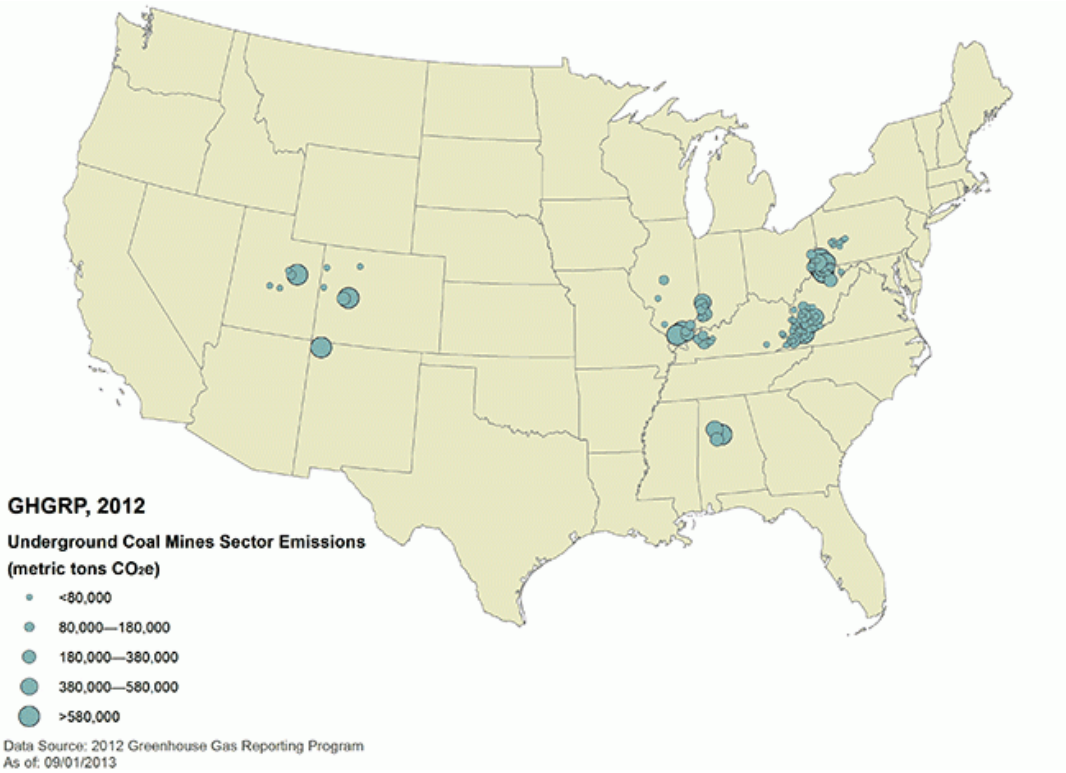
	2011	2012
Number of facilities:	149	151
Total emissions (CO_2e):	29.9	27.7
Emissions by greenhouse gas (CO_2e)		
• Carbon dioxide (CO_2)	0.5	0.5
• Methane (CH_4)	29.4	27.2
• Nitrous oxide (N_2O)	**	**

** Total reported emissions are less than 0.05 million metric tons CO_2e.

CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

Location and emissions range for each reporting facility in the underground coal mines sector (as of 9/1/13).

This map shows the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.



Other EPA Resources

U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Electronics Manufacturing

This source category includes, but is not limited to, facilities that manufacture semiconductors (including light-emitting diodes), micro-electromechanical systems (MEMS), liquid crystal displays (LCDs), and photovoltaic cells (PV). Specifically, this subsector consists of electronics manufacturing facilities with production processes that use plasma-generated fluorine atoms and other reactive fluorine-containing fragments to etch thin films, clean chambers for depositing thin films, clean wafers, or remove residual material. The source category also includes electronics manufacturing facilities with chemical vapor deposition processes or other production processes that use N_2O, and with processes that use fluorinated GHGs as heat transfer fluids (HTF) to control temperature or clean surfaces.

Electronics Manufacturing — Greenhouse Gas Emissions Reported to the GHGRP

(all emission values presented in million metric tons CO_2e unless otherwise noted)

	2011	2012
Number of facilities:	53	53
Total emissions (CO_2e):	5.6	5.1
Emissions by greenhouse gas (CO_2e)		
• Carbon dioxide (CO_2)	1.6	1.5
• Methane (CH_4)	**	**
• Nitrous oxide (N_2O)	0.2	0.2
• Hydrofluorocarbons (HFCs)	0.2	0.2
• Perfluorocarbons (PFCs)	2.5	2.2
• Sulfur hexafluoride (SF_6)	0.4	0.4
• Nitrogen trifluoride (NF_3)	0.7	0.7

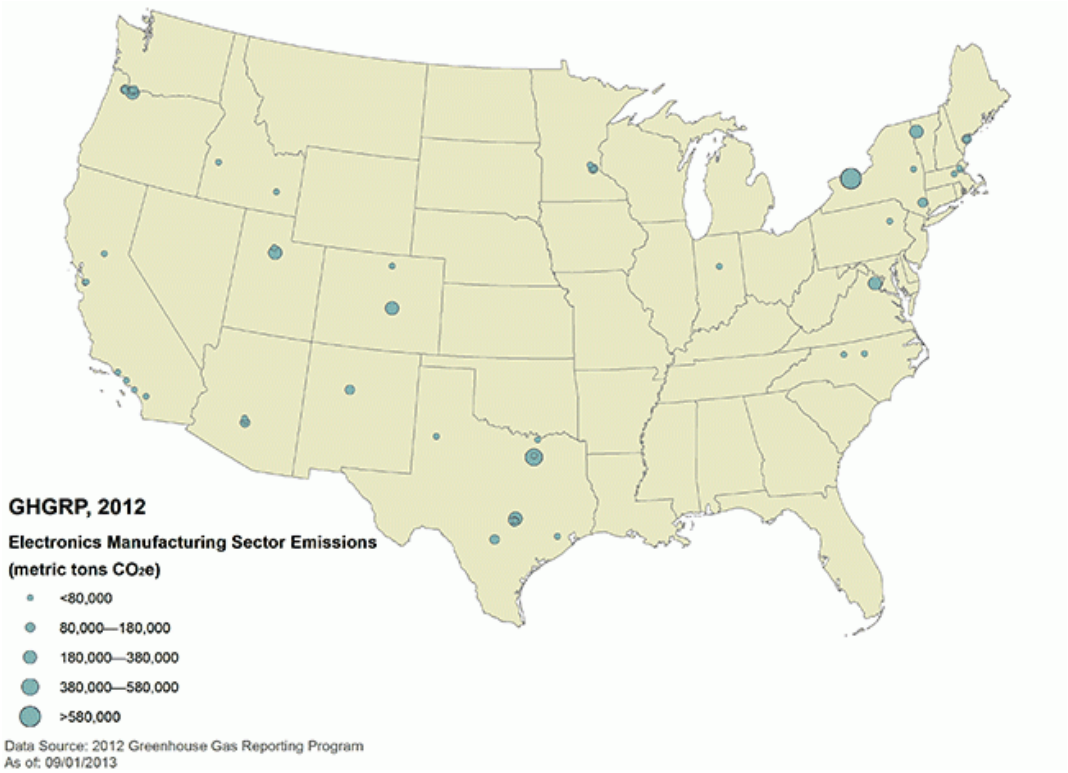
Totals may not equal sum of individual GHGs due to independent rounding.

** Total reported emissions are less than 0.05 million metric tons CO_2e.

CO_2 emissions from the combustion of biomass are NOT included in emissions totals provided above.

Location and emissions range for each reporting facility in the electronics manufacturing sector (as of 9/1/13).

This map shows the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.



Other EPA Resources

U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Electrical Equipment Production and Use

This source category is comprised of electrical transmission and distribution systems and facilities that manufacture or refurbish electrical equipment.

The electrical transmission and distribution equipment use subsector consists of all electric transmission and distribution equipment insulated with or containing sulfur hexafluoride (SF_6) or perfluorocarbons (PFCs) within an electric power system. This equipment includes but is not limited to gas-insulated substations; circuit breakers; switchgear, including closed-pressure and hermetically sealed-pressure switchgear; gas-insulated lines containing SF_6 or PFCs; and gas containers such as pressurized cylinders, gas carts, electric power transformers, and other containers of SF_6 or PFCs.

The electrical equipment manufacturing or refurbishment subsector consists of electrical equipment manufacturers and refurbishers of closed-pressure equipment and sealed pressure equipment insulated with SF_6 or PFCs. This equipment includes gas insulated substations, circuit breakers and other switchgear, gas-insulated lines, or power transformers containing SF_6 or PFCs.

Electrical Equipment Production and Use — Greenhouse Gas Emissions Reported to the GHGRP

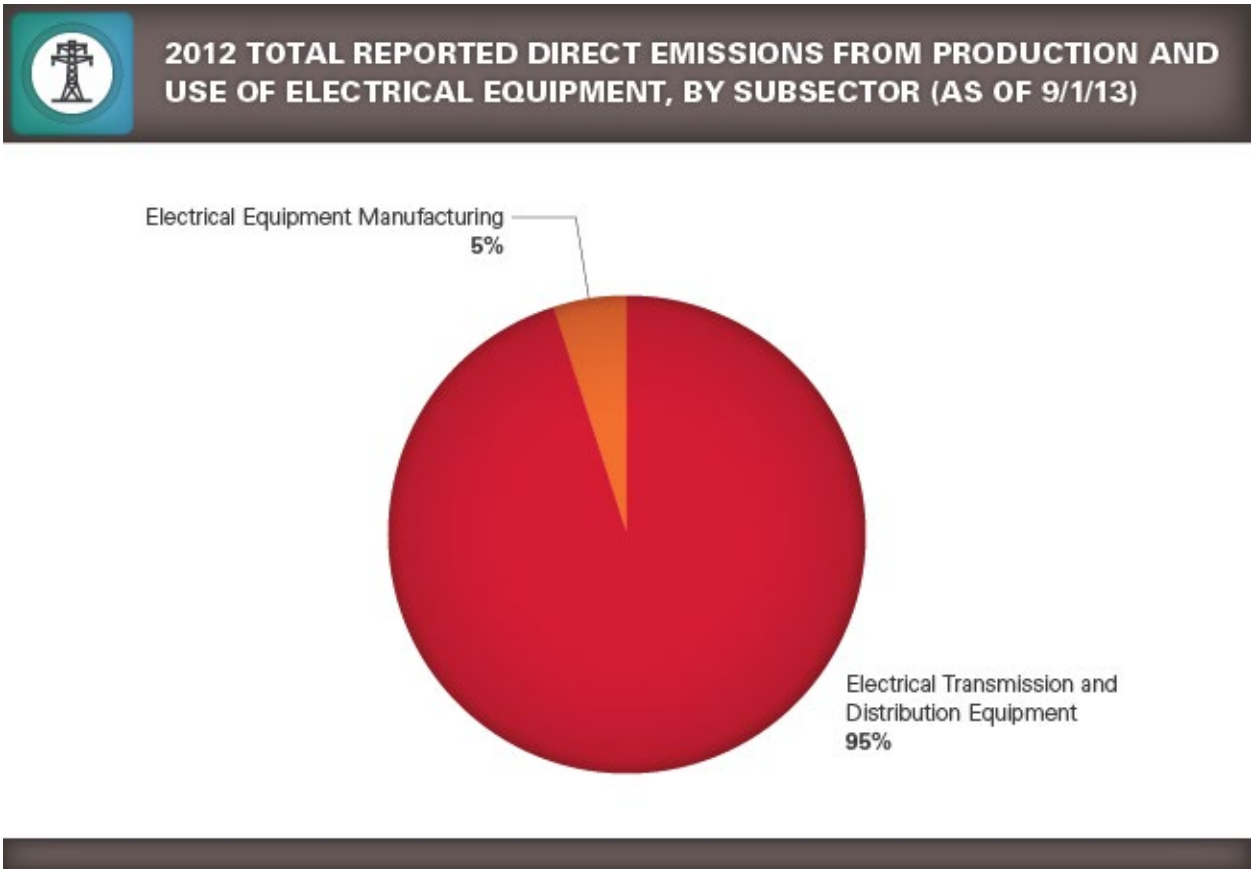
(all emission values presented in million metric tons CO_2e unless otherwise noted)

	2011	2012
Number of facilities:		
• Electrical Transmission and Distribution Equipment Use	117	123
• Electrical Equipment Manufacturing	6	6
Total emissions (CO_2e):		
• Electrical Transmission and Distribution Equipment Use	4.1	3.4
• Electrical Equipment Manufacturing	0.4	0.2
Emissions by greenhouse gas (CO_2e)		
• Perfluorocarbons (PFCs)	**	**
• Sulfur hexafluoride (SF_6)	4.5	3.6

Totals may not equal sum of individual GHGs due to independent rounding.

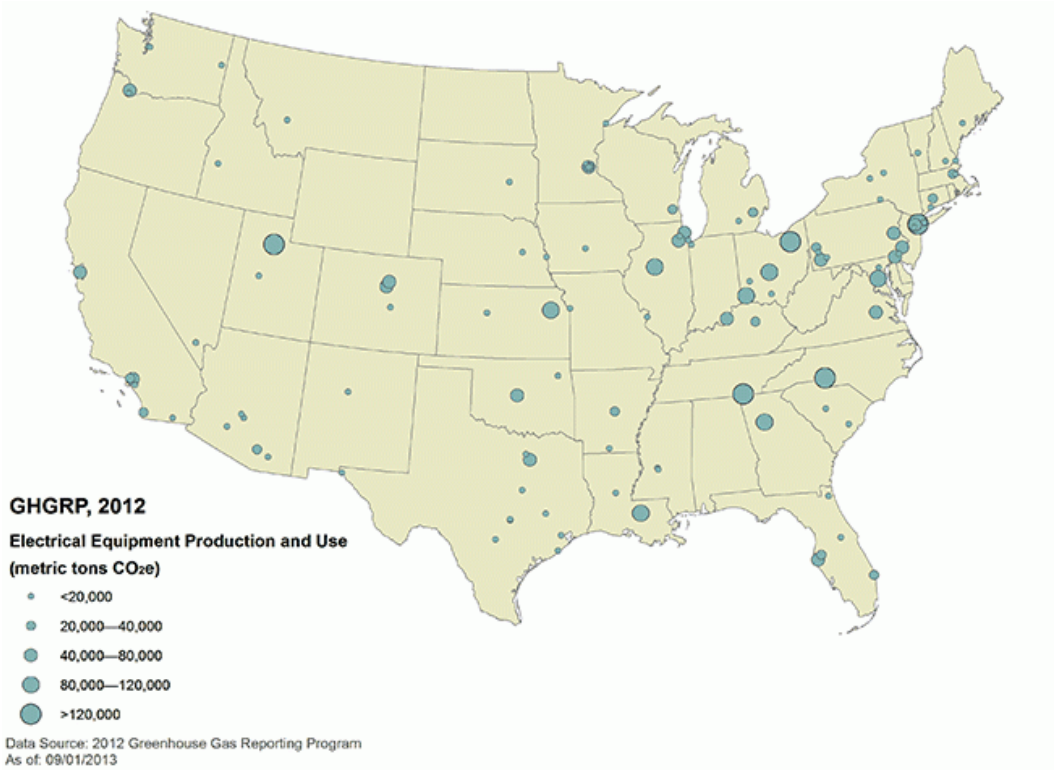
** Total reported emissions are less than 0.05 million metric tons CO_2e.

Total Reported Direct Emissions from Electrical Equipment Production and Use, by Subsector (as of 9/1/13).

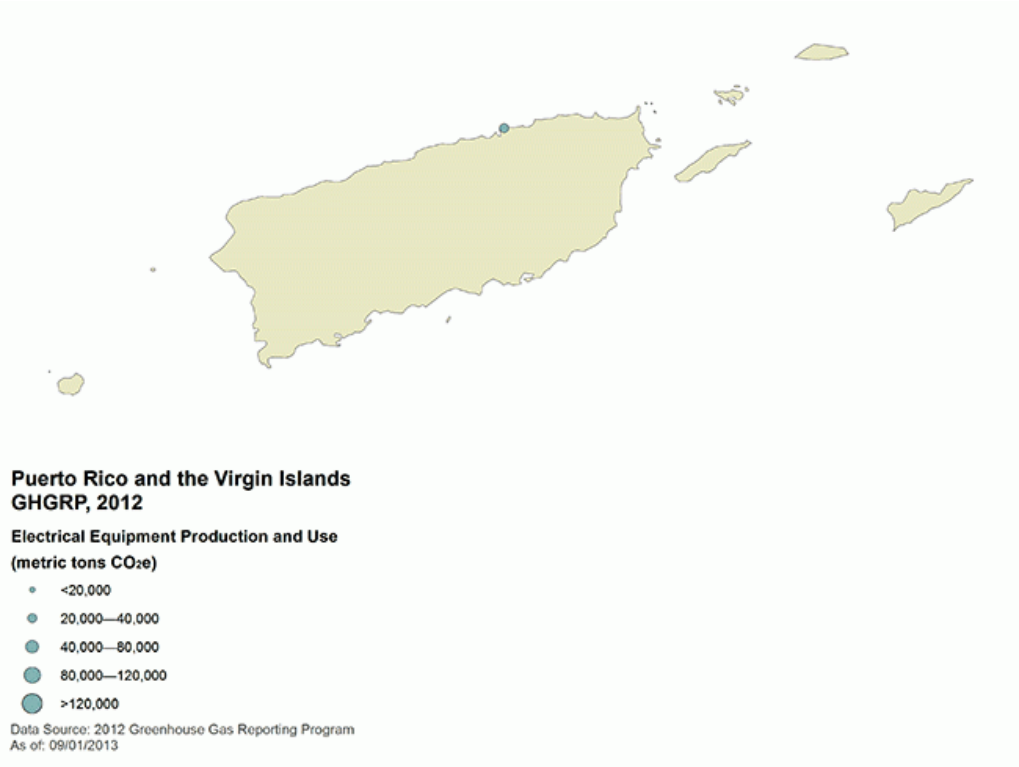


Location and emissions range for each reporting facility in the subsector (as of 9/1/13).

These maps show the locations of direct-emitting facilities. The size of a circle corresponds to the quantity of emissions reported by that facility.


GHGRP, 2012
Electrical Equipment Production and Use
(metric tons CO2e)
<20,000
20,000—40,000
40,000—80,000
80,000—120,000
>120,000
Data Source: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013


Hawaii
GHGRP, 2012
Electrical Equipment Production and Use
(metric tons CO2e)
<20,000
20,000—40,000
40,000—80,000
80,000—120,000
>120,000
Data Source: 2012 Greenhouse Gas Reporting Program
As of: 09/01/2013



Other EPA Resources

U.S. Greenhouse Gas Inventory Report 1990-2012

GHGRP 2012: Supplier Highlights

For reporting year (RY) 2012, over 800 suppliers of fuels and industrial gases reported to EPA's Greenhouse Gas Reporting Program (GHGRP).

Suppliers do not report direct emissions, but instead report the quantity of GHGs that would be emitted if the fuels and industrial GHGs that they produce, import, or export each year were combusted, released, or oxidized. Emissions associated with these fuels and industrial gases do not occur at the supplier's facility but instead occur throughout the country, wherever the products are used. An example of this is gasoline, which is supplied into the U.S. economy by a relatively small number of entities and consumed by many individual vehicles throughout the country.

The GHG quantity reported by suppliers might not always result in GHG emissions, and the emissions might not take place during that particular reporting year. However, the data from suppliers provide important information on the structure and flow through the economy of products that might ultimately result in greenhouse gas emissions. In addition, data reported by fossil fuel and industrial gas suppliers can account for greenhouse gases emitted by the numerous sources that use these products but do not report under the GHGRP due to their low individual emissions (passenger vehicles, for example). Emissions reported by suppliers can be accessed through the suppliers section of FLIGHT.

For 2012, 883 suppliers submitted a GHG report. The majority of GHG emissions associated with the transportation, residential, and commercial sectors are accounted for by these suppliers.

Number of Suppliers that Reported (2012)

Industry Sector	Number of Reporters[7]
Suppliers of Coal-Based Liquid Fuels	1
Suppliers of Petroleum Products	234
Suppliers of Natural Gas and Natural Gas Liquids	
• *Natural Gas Distribution Companies*	365
• *Natural Gas Liquids Fractionators*	119
Suppliers of Industrial GHGs and Products Containing GHGs	
Metals	297
• *Industrial GHGs*	58
• *Imports and Exports of Equipment Pre-charged with Fluorinated GHGs or Containing Fluorinated GHGs in Closed-cell Foams*	44
Suppliers of Carbon Dioxide	137

[7] Totals sum to more than 883 because suppliers that fall into more than one sector are counted multiple times.

GHGRP 2012: Suppliers of Natural Gas and Natural Gas Liquids

This sector consists of entities that supply natural gas and natural gas liquids. Natural gas supply is reported by Local Distribution Companies (LDCs) and natural gas liquids (NGL) fractionators.

NGL Fractionators are installations that receive natural gas or natural gas liquids from producers and fractionate these raw inputs into individual products (ethane, propane, normal butane, isobutane, or pentanes plus) and supply those products into the economy.

Local Distribution Companies receive natural gas from a transmission pipeline company and physically deliver the gas to end users.

These Suppliers do not report direct emissions, but instead report the quantity of CO_2 that would be emitted if the fuels they supply each year were combusted. Emissions associated with these fuels do not occur at the supplier's facility but instead occur throughout the country, wherever they are used. The full GHG quantity reported by suppliers might not always result in GHG emissions, and the emissions might not take place during that particular reporting year. An example is ethane supplied by NGL fractionators, which is often used to produce plastics.

The GHG quantities reported by suppliers can be accessed through the suppliers section of FLIGHT. Some natural gas and natural gas liquids suppliers also report direct emissions from petroleum and natural gas operations. Go to the petroleum and natural gas systems section to learn more.

Natural Gas and Natural Gas Liquids Suppliers Sector — Carbon Dioxide Quantity Reported to the GHGRP (million metric tons CO_2)

	2010	2011	2012
Local Distribution Companies			
Number of reporters:	372	370	365
CO_2 Quantity	715.6	718.4	704.5
Natural Gas Liquids Fractionators			
Number of reporters:	108	113	119
CO_2 Quantity[a]:	206.2	218.5	242.1

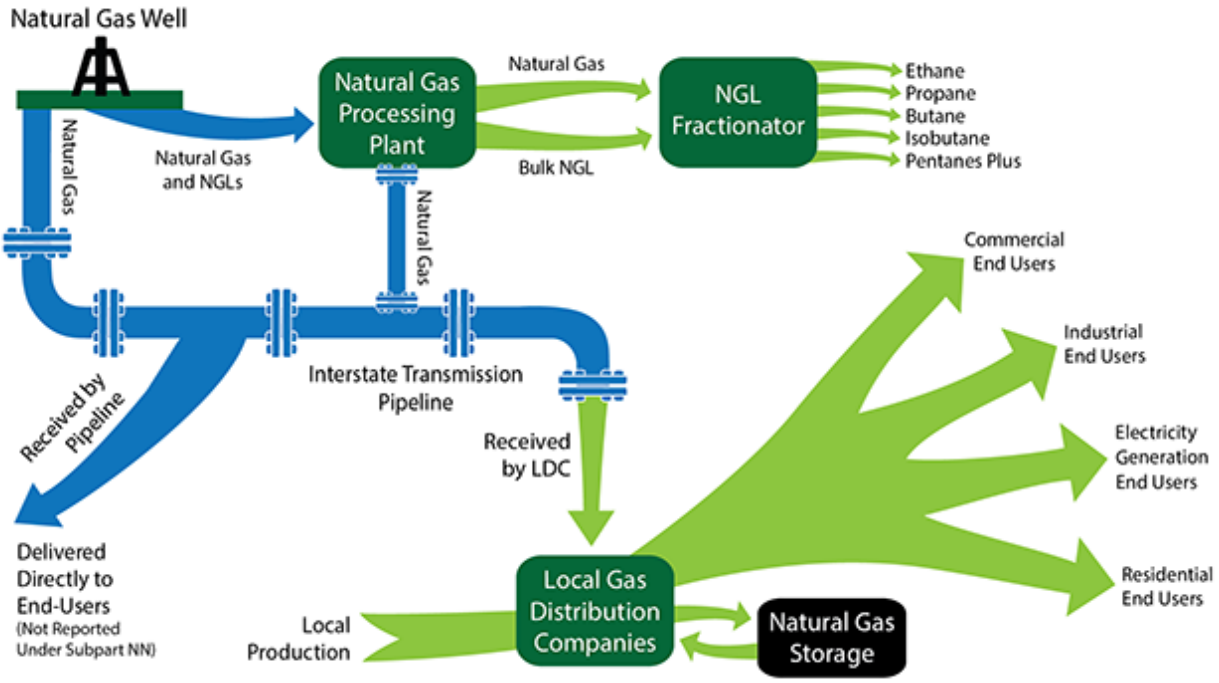
[a] Excludes CO_2 reported by NGL Fractionators whose reported quantities are classified as confidential business information (CBI).

Natural Gas Deliveries Reported by LDCs (Mscf)

End-User	2010	2011	2012
Total Reported Deliveries	12,773,016,503	12,768,837,601	12,738,553,240
Residential Customers	4,681,611,446	4,631,261,922	4,078,702,157
Commercial Customers	2,929,714,709	3,033,644,755	2,792,796,677
Industrial Customers	3,382,614,478	3,245,078,743	3,450,910,172
Electricity Generating Facilities	1,779,075,869	1,858,852,181	2,416,144,234

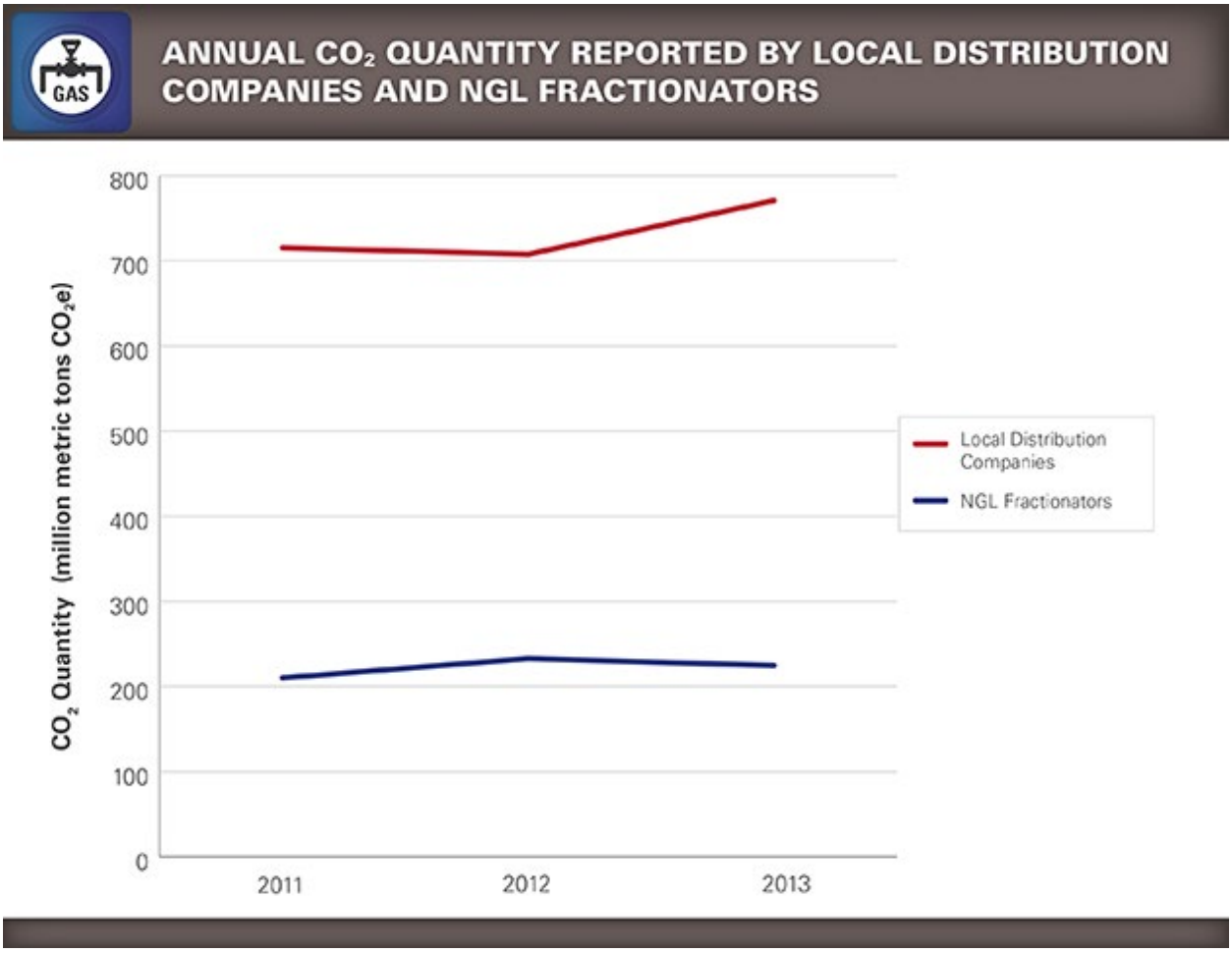
Mscf means thousand standard cubic feet of gas.

Graphic of the natural gas and NGL supply chain



Quantities marked with green arrows are reported to EPA by NGL Fractionators or Local Distribution Companies under Subpart NN.

Trend of Annual Reported CO_2 Quantity Associated with Natural Gas and NGL Supply.



Glossary

Combustion sources: Combustion sources are produced from the combustion of fuel to provide process heat for industrial, commercial, or industrial uses, whether the combustion is internal or external to the manufacturing process equipment. Examples are boilers, stationary internal combustion engines, process heaters, kilns, combustion turbines, and waste incinerators.

Process emission sources: Process emissions are vented, evaporative, or fugitive emission from industrial manufacturing processes and from decomposition processes at landfills and wastewater treatment systems.