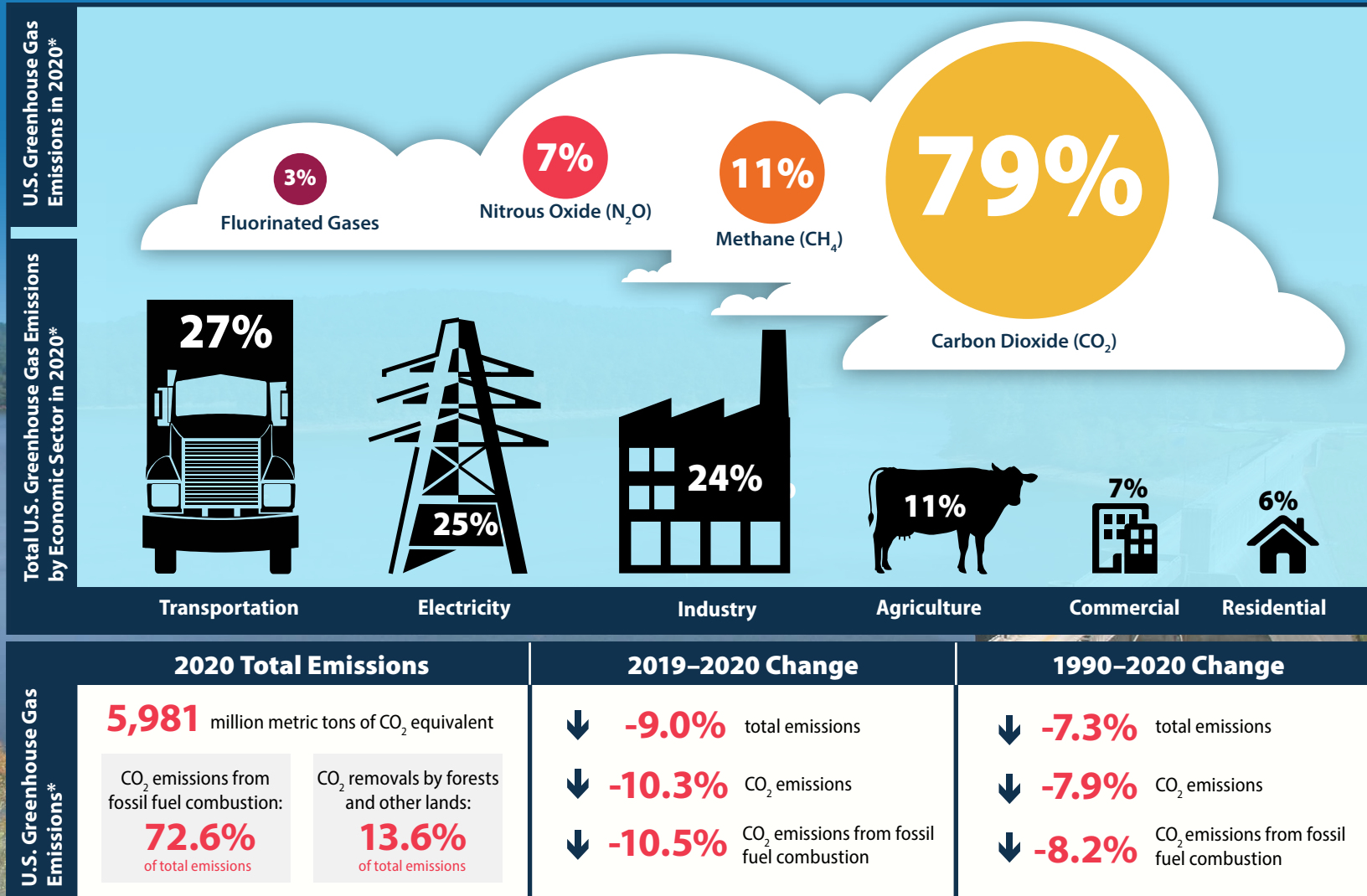


# Fast Facts

# 1990-2020

National-Level U.S. Greenhouse Gas Inventory



To learn more about the inventory, visit [www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks](http://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks), or explore the data at <https://cfpub.epa.gov/ghgdata/inventoryexplorer>.

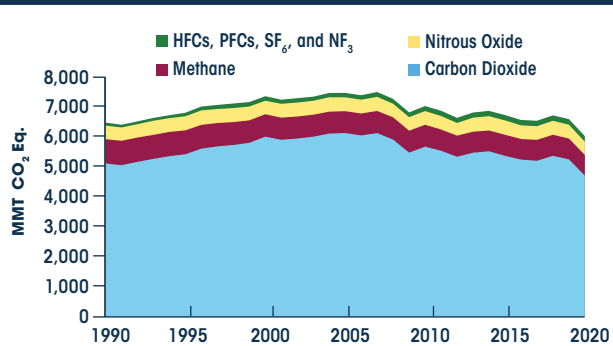
\* Percentages may not add to 100% due to independent rounding and the way the inventory qualifies U.S. territories (not shown) as a separate sector. Emissions from Land-Use, Land-Use Change and Forestry are reported separately and not shown in the figure.



April 2022  
EPA 430-F-22-001

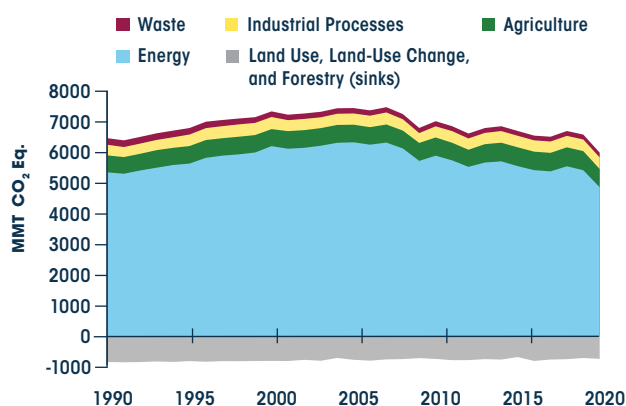
## U.S. Greenhouse Gas Emissions

by Gas



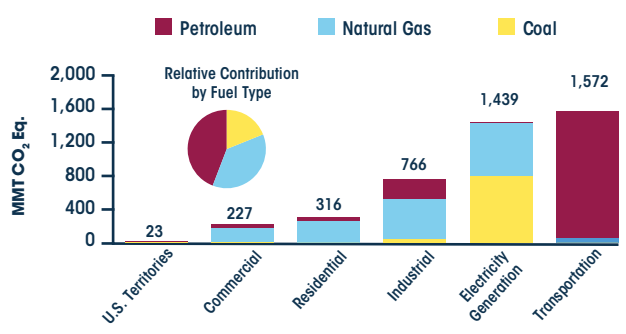
## U.S. Greenhouse Gas Emissions/Sinks

by Chapter/IPCC Sector



## 2020 U.S. CO<sub>2</sub> Emissions

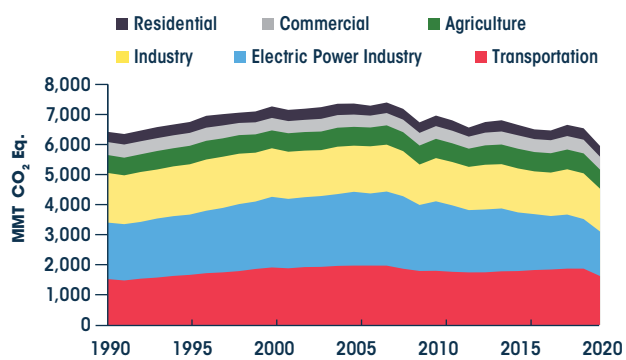
from Fossil Fuel Combustion by Fuel Type and End-Use Sector



Note: Electricity generation also includes emissions of less than 0.5 Tg CO<sub>2</sub> Eq. from geothermal-based electricity generation.

## U.S. Greenhouse Gas Emissions

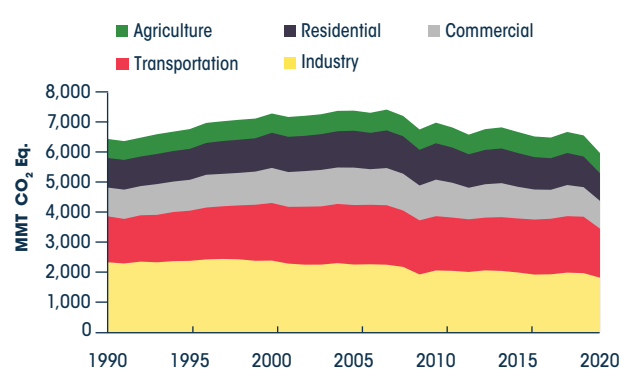
Allocated to Economic Sectors



Note: Does not include U.S. territories and LULUCF sector.

## U.S. Greenhouse Gas Emissions

with Electricity Distributed to Economic Sectors



Note: Does not include U.S. territories and LULUCF sector.

\* Additional sources that do not exceed 0.05 MMT CO<sub>2</sub> Eq. in all listed years:  
CO<sub>2</sub>: Abandoned Oil and Gas Wells, Magnesium Production and Processing.  
CH<sub>4</sub>: Carbide Production and Consumption, Iron and Steel Production and Metallurgical Coke Production, Ferroalloy Production, Incineration of Waste.  
N<sub>2</sub>O: Natural Gas Systems, Petroleum Systems  
PFCs: Electrical Transmission and Distribution

+ Does not exceed 0.05 MMT CO<sub>2</sub> Eq.

\* Emissions from international bunker fuels are not included in totals.

\* Emissions from Wood Biomass, Ethanol, and Biodiesel Consumption are not included specifically in summing energy sector totals. Net carbon fluxes from changes in biogenic carbon reservoirs are accounted for in the estimates for land use, land-use change, and forestry.

\* LULUCF emissions of CH<sub>4</sub> and N<sub>2</sub>O are reported separately from gross emissions totals.

\* Small amounts of PFC emissions also result from this source.

\* LULUCF Carbon Stock Change is the net C stock change from the following categories: Forest Land Remaining Forest Land, Land Converted to Forest Land, Cropland Remaining Cropland, Land Converted to Cropland, Grassland Remaining Grassland, Land Converted to Grassland, Wetlands Remaining Wetlands, Land Converted to Wetlands, Settlements Remaining Settlements, and Land Converted to Settlements.

\* The LULUCF Sector Net Total is the net sum of all CH<sub>4</sub> and N<sub>2</sub>O emissions to the atmosphere plus net carbon stock changes.

Note: Totals may not sum due to independent rounding.

## U.S. Greenhouse Gas Emissions and Sinks (MMT CO<sub>2</sub> Equivalents)

Gas/Source*	1990	2005	2016	2017	2018	2019	2020
<b>CO<sub>2</sub></b>	<b>5,122.5</b>	<b>6,137.6</b>	<b>5,251.8</b>	<b>5,211.0</b>	<b>5,376.7</b>	<b>5,259.1</b>	<b>4,715.7</b>
Fossil Fuel Combustion	4,731.2	5,752.0	4,909.6	4,853.3	4,989.3	4,852.3	4,342.7
Transportation	1,468.9	1,858.6	1,757.6	1,780.0	1,812.8	1,813.8	1,572.0
Electric Power Sector	1,820.0	2,400.1	1,808.9	1,732.0	1,752.9	1,606.1	1,439.0
Industrial	853.7	851.5	792.7	790.4	814.1	816.1	766.3
Residential	338.6	358.9	292.8	293.4	338.2	341.4	315.8
Commercial	228.3	227.1	231.5	232.0	245.8	250.7	226.8
U.S. Territories	21.7	55.9	26.0	25.5	25.5	24.3	22.7
Non-Energy Use of Fuels	112.2	128.9	99.5	112.6	128.9	126.8	121.0
Natural Gas Systems	31.9	24.9	29.8	31.1	32.4	38.7	35.4
Cement Production	33.5	46.2	39.4	40.3	39.0	40.9	40.7
Lime Production	11.7	14.6	12.6	12.9	13.1	12.1	11.3
Other Process Uses of Carbonates	6.2	7.5	10.8	9.9	7.4	9.8	9.8
Glass Production	2.3	2.4	2.1	2.0	2.0	1.9	1.9
Soda Ash Production	1.4	1.7	1.7	1.8	1.7	1.8	1.5
Carbon Dioxide Consumption	1.5	1.4	4.6	4.6	4.1	4.9	5.0
Incineration of Waste	12.9	13.3	14.4	13.2	13.3	12.9	13.1
Titanium Dioxide Production	1.2	1.8	1.7	1.7	1.5	1.5	1.3
Aluminum Production	6.8	4.1	1.3	1.2	1.5	1.9	1.7
Iron and Steel Production & Metallurgical Coke Production	104.7	70.1	43.6	40.6	42.6	43.1	37.7
Ferroalloy Production	2.2	1.4	1.8	2.0	2.1	1.6	1.4
Ammonia Production	13.0	9.2	10.2	11.1	12.2	12.3	12.7
Urea Consumption for Non-Agricultural Purposes	3.8	3.7	5.3	5.2	6.0	6.0	6.0
Phosphoric Acid Production	1.5	1.3	1.0	1.0	0.9	0.9	0.9
Petrochemical Production	21.6	27.4	28.1	28.9	29.3	30.7	30.0
Carbide Production and Consumption	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Lead Production	0.5	0.6	0.5	0.5	0.5	0.5	0.5
Zinc Production	0.6	1.0	0.8	0.9	1.0	1.0	1.0
Petroleum Systems	9.6	12.0	21.9	25.0	37.3	46.7	30.2
Liming	4.7	4.3	3.1	3.1	2.2	2.4	2.4
Urea Fertilization	2.4	3.5	4.7	4.9	5.0	5.1	5.3
Coal Mining	4.6	4.2	2.8	3.1	3.1	3.0	2.2
<i>International Bunker Fuels<sup>a</sup></i>	<i>103.6</i>	<i>113.3</i>	<i>116.7</i>	<i>120.2</i>	<i>122.2</i>	<i>116.1</i>	<i>69.6</i>
<i>Wood Biomass, Ethanol, and Biodiesel Consumption<sup>b</sup></i>	<i>219.4</i>	<i>230.7</i>	<i>316.9</i>	<i>312.7</i>	<i>319.8</i>	<i>317.2</i>	<i>291.6</i>
<b>CH<sub>4</sub><sup>c</sup></b>	<b>780.8</b>	<b>697.5</b>	<b>657.6</b>	<b>663.8</b>	<b>671.1</b>	<b>668.8</b>	<b>650.4</b>
Stationary Combustion	8.6	7.8	7.9	7.7	8.6	8.8	7.9
Mobile Combustion	6.5	4.0	2.6	2.6	2.5	2.5	2.2
Coal Mining	96.5	64.1	53.8	54.8	52.7	47.4	41.2
Abandoned Underground Coal Mines	7.2	6.6	6.7	6.4	6.2	5.9	5.8
Natural Gas Systems	195.5	177.5	165.2	166.6	171.8	172.1	164.9
Petroleum Systems	47.8	41.4	40.4	40.5	38.6	40.4	40.2
Abandoned Oil and Gas Wells	6.5	6.8	6.9	6.9	6.9	7.0	6.9
Petrochemical Production	0.2	0.1	0.2	0.3	0.3	0.3	0.3
Enteric Fermentation	163.5	168.0	171.3	174.9	175.7	176.1	175.2
Manure Management	34.8	49.0	57.1	57.5	59.4	58.7	59.6
Rice Cultivation	16.0	18.0	15.8	14.9	15.6	15.1	15.7
Field Burning of Agricultural Residues	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Landfills	176.6	131.5	107.9	109.2	111.7	113.6	109.3
Wastewater Treatment	20.3	20.1	18.7	18.5	18.3	18.1	18.3
Composting	0.4	1.9	2.3	2.5	2.3	2.3	2.3
Anaerobic Digestion at Biogas Facilities	+	+	0.2	0.2	0.2	0.2	0.2
<i>International Bunker Fuels<sup>a</sup></i>	<i>0.2</i>	<i>0.1</i>	<i>0.1</i>	<i>0.1</i>	<i>0.1</i>	<i>0.1</i>	<i>0.1</i>
<b>N<sub>2</sub>O<sup>c</sup></b>	<b>450.5</b>	<b>453.3</b>	<b>449.2</b>	<b>444.6</b>	<b>457.7</b>	<b>456.8</b>	<b>426.2</b>
Stationary Combustion	25.1	34.4	30.0	28.4	28.2	24.9	23.2
Mobile Combustion	44.6	41.4	21.1	20.1	19.2	20.0	17.4
Adipic Acid Production	15.2	7.1	7.1	7.5	10.5	5.3	8.3
Nitric Acid Production	12.1	11.3	10.1	9.3	9.6	10.0	9.3
Manure Management	13.9	16.3	18.4	19.0	19.3	19.5	19.7
Agricultural Soil Management	316.0	313.8	330.8	328.3	338.9	345.3	316.2
Field Burning of Agricultural Residues	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Wastewater Treatment	16.6	20.3	22.8	23.2	23.5	23.4	23.5
N <sub>2</sub> O from Product Uses	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Caprolactam, Glyoxal, and Glyoxylic Acid Production	1.7	2.1	1.7	1.5	1.4	1.4	1.2
Incineration of Waste	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Composting	0.3	1.7	2.0	2.2	2.0	2.0	2.0
Electronics Industry	+	0.1	0.2	0.3	0.3	0.2	0.3
<i>International Bunker Fuels<sup>a</sup></i>	<i>0.9</i>	<i>1.0</i>	<i>1.0</i>	<i>1.1</i>	<i>1.1</i>	<i>1.0</i>	<i>0.6</i>
<b>HFCs, PFCs, SF<sub>6</sub>, and NF<sub>3</sub></b>	<b>99.7</b>	<b>146.4</b>	<b>179.3</b>	<b>181.7</b>	<b>182.0</b>	<b>186.9</b>	<b>189.2</b>
<b>HFCs</b>	<b>46.5</b>	<b>127.4</b>	<b>168.3</b>	<b>171.1</b>	<b>171.0</b>	<b>175.9</b>	<b>178.8</b>
Substitution of Ozone Depleting Substances	0.2	107.2	165.1	165.5	167.3	171.8	176.2
HCFC-22 Production	46.1	20.0	2.8	5.2	3.3	3.7	2.1
Electronics Industry	0.2	0.2	0.3	0.4	0.4	0.4	0.4
Magnesium Production and Processing	+	+	0.1	0.1	0.1	0.1	0.1
<b>PFCs</b>	<b>24.3</b>	<b>6.7</b>	<b>4.4</b>	<b>4.2</b>	<b>4.8</b>	<b>4.6</b>	<b>4.4</b>
Aluminum Production	21.5	3.4	1.4	1.1	1.6	1.8	1.7
Electronics Industry	2.8	3.3	3.0	3.0	3.1	2.8	2.7
Substitution of Ozone Depleting Substances <sup>d</sup>	+	+	+	+	0.1	0.1	0.1
<b>SF<sub>6</sub></b>	<b>28.8</b>	<b>11.8</b>	<b>6.0</b>	<b>5.9</b>	<b>5.7</b>	<b>5.9</b>	<b>5.4</b>
Electrical Transmission and Distribution	23.2	8.3	4.1	4.2	3.8	4.2	3.8
Electronics Industry	0.5	0.7	0.8	0.7	0.8	0.8	0.7
Magnesium Production and Processing	5.2	2.7	1.1	1.0	1.0	0.9	0.9
<b>NF<sub>3</sub></b>	<b>+</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
Electronics Industry	+	0.5	0.6	0.6	0.6	0.6	0.6
<b>Total Emissions</b>	<b>6,453.5</b>	<b>7,434.8</b>	<b>6,537.9</b>	<b>6,501.0</b>	<b>6,687.5</b>	<b>6,571.7</b>	<b>5,981.4</b>
LULUCF Emissions <sup>e</sup>	31.4	41.3	35.4	45.5	39.8	30.3	53.2
LULUCF CH <sub>4</sub> Emissions	27.2	30.9	28.3	34.0	30.7	25.5	38.1
LULUCF N <sub>2</sub> O Emissions	4.2	10.5	7.1	11.5	9.1	4.8	15.2
LULUCF Carbon Stock Change <sup>e</sup>	(892.0)	(831.1)	(862.0)	(826.7)	(809.0)	(760.8)	(812.2)
LULUCF Sector Net Total <sup>f</sup>	(860.6)	(789.8)	(826.6)	(781.2)	(769.3)	(730.5)	(758.9)
<b>Net Emissions (Sources and Sinks)</b>	<b>5,592.8</b>	<b>6,645.0</b>	<b>5,711.2</b>	<b>5,719.8</b>	<b>5,918.2</b>	<b>5,841.2</b>	<b>5,222.4</b>

