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In 2021, US transportation released more greenhouse gas emissions than any other sector: more than 1.8 billion metric tons of CO2 equivalent emissions, or 28.5% of emissions overall.

Since 1990, emissions have increased for the transportation, agricultural, and residential sectors, as well as US territories. Conversely, emissions from the electric power, industrial, and commercial sectors have all declined.

However, power plants disproportionately account for the highest greenhouse gas emissions, with 90 of the top 100 emitting facilities being power generation sites in 2022.

How much greenhouse gas does the US emit?

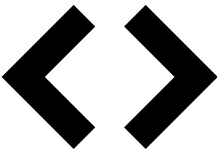
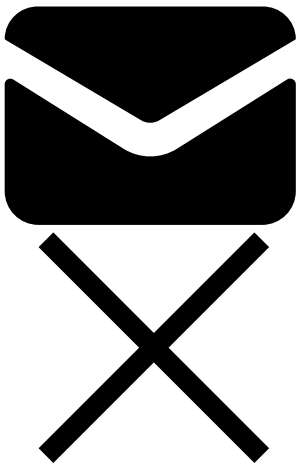
In 2021, the US emitted 6,340 million metric tons of greenhouse gas emissions in carbon dioxide (CO2) equivalent metric tons.^[1] That’s 2.3% lower than measured in 1990, and 15.6% lower than 2007, when the US hit its recorded peak of 7,511 million metric tons of greenhouse gas emissions.

For context, a typical passenger vehicle in the US emits an average of [4.6 metric tons of carbon dioxide](#) per year. 2021 emissions were equivalent to over 1.4 billion cars driving — equal to about one metric ton for every 2,500 miles.^[2]

While total emissions have declined marginally since 1990, greenhouse gas emissions per person have seen a steeper decrease over the last 31 years.

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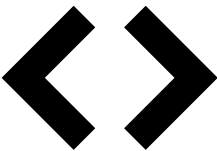
Per person emissions estimates can be imprecise as they aggregate national emissions, including those from businesses, power plants, and agricultural activities, and divide them by the total population. This method doesn't differentiate between emissions caused by personal actions or from industries, so it may not accurately represent individual carbon footprints.

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Which industries and sectors are the biggest emitters in the US?

In 2021, most US greenhouse gas emissions came from three economic sectors: transportation (28.5%), electricity production (25.0%), and industry (23.5%).



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Transportation



The [transportation sector](#) (28.5% of 2021 emissions), responsible for moving people and goods via cars, trucks, trains, ships, airplanes, and other vehicles, predominantly emits greenhouse gases from burning fossil fuels. In 2021, over 94% of the sector's energy came from petroleum products such as gasoline and diesel.

Electricity production



The [electric power sector](#) (25.0% of 2021 emissions) involves the generation, transmission, and distribution of electricity. In 2021, 60% of the country's electricity came from burning fossil fuels, namely coal and natural gas.

Electricity production includes end-use emissions from sectors such as industrial, residential, and commercial. If these emissions were assigned to the sectors using the electricity, their reported emissions would markedly increase.

For example, when emissions from [electricity are allocated to commercial and residential end-use](#), the sectors' accounts for a much larger share (30%) of US greenhouse gas emissions.

Industry



The [industrial sector](#) (23.5% of 2021 emissions) encompasses the greenhouse gases emitted during the production of goods and raw materials. Emissions are produced by burning fuel, leaking industrial processes and equipment, and from natural gas and petroleum systems.

Agriculture



The [agricultural sector](#) (10.0% of 2021 emissions) contributes to emissions through crop and livestock production. For example, land management practices that increase nitrogen in soil can result in nitrous oxide emissions, which are roughly [265 times stronger](#) at trapping heat in the atmosphere than carbon dioxide emissions.

Additionally, livestock, namely cattle, produce methane through their digestion. Methane is about [28 times stronger](#) than carbon dioxide emissions and accounts for over a quarter of agricultural sector greenhouse gas emissions.

Commercial and residential



The [commercial and residential sectors](#) (6.9% and 5.8% of 2021 emissions, respectively) account for greenhouse gases from all homes and commercial businesses (excluding agricultural and industrial activities). Emissions are produced, in part, by heating and cooking, management of waste and wastewater, and leaks from fluorinated gases used in air conditioning and refrigeration.

US Territories



Emissions from US territories are unique to each territory and are not categorized under any specific economic sector.

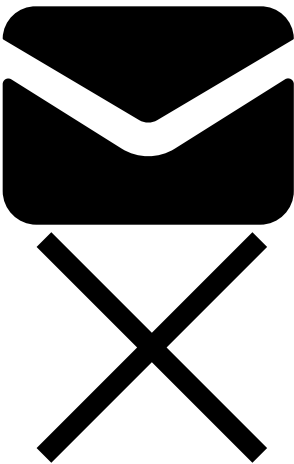
Who are the largest emitters in the US?

The [Greenhouse Gas Emissions database](#) collects emissions records for the largest single emitters by industry. Data from 2022 tracks 7,586 facilities emitting 2,695 million metric tons of greenhouse gases. Of these, 1,332 power plants contributed 58.8% of reported emissions despite representing 17.6% of the facilities in the database. Petroleum and

natural gas systems came second in overall emissions at 11.7% of greenhouse gases from 2,330, or 30.7%, of reporting facilities.

In 2021, the database captured the emissions records of 7,660 individual facilities, emitting 2,718 million metric tons of greenhouse gases – roughly 42.9% of total emissions that year.

Remaining emissions came from refineries, and chemical, mineral, waste, metal, or pulp and paper facilities.[\[3\]](#)



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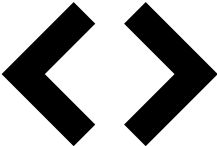
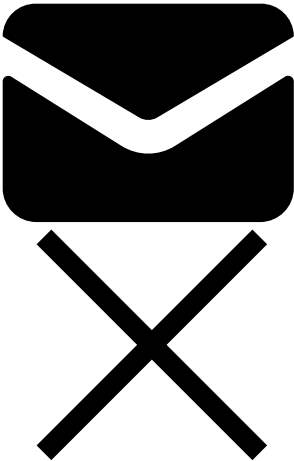
The 100 largest facilities by emissions contributed over 745 million metric tons of greenhouse gas emissions in 2022.

Which states emit the most greenhouse gases?

Texas had the largest portion of greenhouse gas emissions in 2021 at over 873 million metric tons. That’s 13.8% of

total emissions. For context, Texas made up 8.9% of the US population that year.

The next four emitting states in 2021 accounted for 32.2% of total emissions, including California (6.2%), Florida (4.3%), Pennsylvania (4.2%), and Ohio (3.7%).

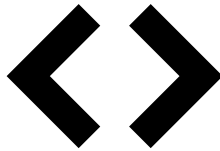
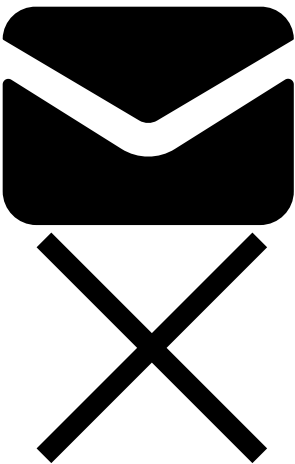


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Another useful way to compare emission rates across states is to divide them by state population and examine them on a per-person basis. While per person rates aren't as helpful for national greenhouse gas emissions, they can be useful or state comparisons.

Using this scale, Wyoming had the highest emissions rate at 144.5 metric tons of greenhouse gases per person, exceeding the nationwide average of approximately 19.1 metric tons. This was followed by North Dakota (113.6 metric tons), West Virginia (65.9), Alaska (51.6), and Louisiana (48.5).



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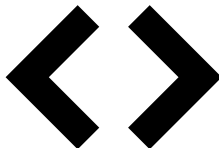
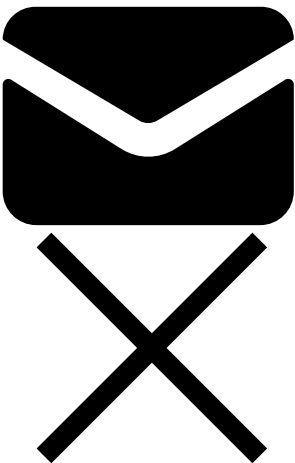
Many factors affect [variations in per person emissions](#), including the presence of energy industries in each state, population density, energy sources, and efforts to implement renewable energy resources and reduce emissions.

In 2021, the top five states with the highest per-person emissions also had the [greatest energy intensity rates](#). Energy intensity, the amount of energy required to produce one unit of output, suggests that these states [use and distribute energy less efficiently](#) than others.

West Virginia and Wyoming had 2021's [highest](#) carbon intensity rates, tracking the ratio of carbon dioxide released to produce a kilowatt hour of electricity. This means these states are more reliant on energy sources that emit high levels of greenhouse gases.

Which states have reduced greenhouse gas emissions?

Between 1990 and 2021, 26 states and Washington, DC, reduced overall emissions, with Washington, DC, (-37.4%), Massachusetts (-31.6%), and Delaware (-25.4%) leading. Conversely, Idaho had the highest emission rate increase.



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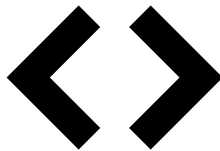
How do US emissions compare to the rest of the world?

As of 2021, the US was responsible for 13.8% of global carbon dioxide emissions.^{[\[4\]](#)} While this excludes emissions from other greenhouse gases like methane and nitrous oxide, it gives an imperfect look at the proportion of emissions by regions of the world.

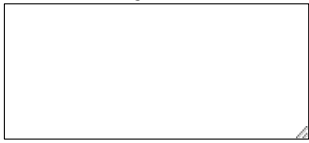
The US share of global carbon dioxide emissions has fallen from 25.4% in 1980, in part due to the rise of emissions from East and Southeast Asia. This includes China, whose share of global CO2 emissions grew from 8.5% in 1980 to 32.2% in 2021, and India, whose share increased from 1.4% to 6.7%.

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Ten countries accounted for 70% of CO2 emissions in 2021, despite representing [50%](#) of the population. These include China (32.2%), the United States (13.8%), India (6.7%), Russia (5.3%), Japan (3.0%), Iran (1.9%), South Korea (1.9%), Germany (1.9%), Indonesia (1.6%), and Saudi Arabia (1.6%).

Where does this data come from?

The Environmental Protection Agency collects and provides emissions data through the [Greenhouse Gas Inventory Data Explorer](#), which displays emissions rates by economic sector and inventory between 1990 and 2021. The database also includes breakdowns by type of greenhouse gas, state and US territory, and greenhouse gas sinks.

The large facility [greenhouse gas emissions data](#) covers [sources](#) if they emit 25,000 metric tons CO2 equivalent emissions or more per annually, if the supply of certain products would result in over 25,000 metric tons CO2e of GHG emissions if those products were released, combusted, or oxidized, or if the facility receives 25,000 metric tons or more of CO2 for underground injection.

Additional information on carbon dioxide emissions by country, energy terminology definitions and examples come from the Energy Information Administration and the Department of Energy.

Learn more about how [emissions in the US are changing](#), and get data directly in your inbox by [signing up for our newsletter](#).

Sources & Footnotes

[US Environmental Protection Agency](#)

Greenhouse Gas Inventory Data Explorer

Last updated

August 18, 2023

[US Environmental Protection Agency](#)

Sources of US Greenhouse Gas Emissions

Last updated

November 16, 2023

[US Environmental Protection Agency](#)

Greenhouse Gas (GHG) Emissions Data from Large Facilities

Last updated

August 18, 2023.

[1]

The Environmental Protection Agency's measurement standard for greenhouse gas emissions is a metric ton of CO₂ (rather than methane or other greenhouse gases).¹ This method factors in the duration these gases remain in the atmosphere and their relative effectiveness in trapping heat, facilitating a more comprehensive understanding of their overall impact on climate change.

[2]

Estimated based on EPA data in which the average gasoline vehicle has a fuel economy of about 22.2 miles per gallon.

[3]

Along with 1,357 facilities listed as "Other" in 2022. There were 1,317 facilities in the "Other" category in 2021.

[4]

This data comes from the Energy Information Administration, which calculates emission data differently than the Environmental Protection Agency, which provides emissions data for all other charts in this article.

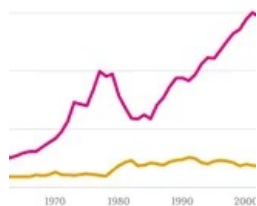
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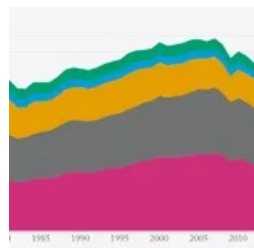
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