

Environmental protection 8 kWh

Select data to convert: There are two options for entering data into this calculator: energy data or emissions data. When you enter energy data, the calculator converts these values into carbon dioxide-equivalent greenhouse gas emissions based on emission factors for energy consumption or electricity reductions. Then, it provides equivalent ways to express those emissions. When you enter emissions data, the calculator provides equivalent ways to express those emissions.

Carbon Dioxide or CO₂ Equivalent* Carbon dioxide (CO₂) is the primary greenhouse gas emitted through human activities. CO₂ is naturally present in the atmosphere as part of the Earth's carbon cycle. The main human activity that emits CO₂ is the combustion of fossil fuels (coal, natural gas, and oil) for energy and transportation, although certain industrial processes and land-use changes also emit CO₂. [Link](#)

Carbon Greenhouse gas emissions may be expressed in terms of a quantity of the gas itself (e.g., 1 ton of methane), an equivalent quantity of carbon dioxide (e.g., 28 tons of CO₂ equivalent), or in terms of carbon (e.g., 7.63 tons of carbon). Carbon is often used as the unit of measurement when tracing emissions through the carbon cycle. To convert a quantity of carbon to the equivalent quantity of carbon dioxide, multiply by 3.67.

CH₄ - Methane Methane (CH₄) is a greenhouse gas emitted during the production and transport of coal, natural gas, and oil, or from the decomposition of organic waste in municipal landfills and the raising of livestock. Methane is also emitted by natural sources such as wetlands. Pound for pound, the impact of CH₄ is 28 times greater than CO₂ over a 100-year period. [Link](#)

N₂O - Nitrous Oxide Nitrous oxide (N₂O) is a powerful greenhouse gas that occurs both naturally and due to human activities. Major sources include farming practices that add nitrogen to the soil (e.g., using fertilizers), burning fossil fuels, and some industrial processes. The impact of 1 pound of N₂O on warming the atmosphere is 265 times that of 1 pound of CO₂. [Link](#)

Anesthetic gases Isoflurane, desflurane, and sevoflurane are gaseous ethers used to induce and/or maintain general anesthesia in medical operating rooms. In general, fluorinated gases are the most potent and longest-lasting group of greenhouse gases emitted by human activities. [Link](#) HCFE-235da2 (isoflurane) HFE-236ea2 (desflurane) HFE-347mmz1 (sevoflurane)

SF₆ - Sulfur Hexafluoride Fluorinated gases come from human-related activities. They are emitted through their use as substitutes for ozone-depleting substances (e.g., as refrigerants) and through industrial processes such as aluminum and semiconductor manufacturing. In general, fluorinated gases are the most potent and longest lasting type of greenhouse gases emitted by human activities. [Link](#)



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*If your estimated emissions of methane, nitrous oxide, or other non-CO₂ gases are already expressed in CO₂ equivalent or carbon equivalent, please enter your figures in the row for CO₂ or carbon equivalent.

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A note on global warming potentials (GWPs): Some of the equivalencies in the calculator are reported as CO₂ equivalents (CO₂E). These are calculated using GWPs from the Intergovernmental Panel on Climate Change's Fourth Assessment Report.

The Greenhouse Gas Equivalencies Calculator uses the AVOIDed Emissions and geneRATION Tool (AVERT) U.S. national weighted average CO₂ marginal emission rate to convert reductions of kilowatt-hours into avoided units of carbon dioxide emissions.

In the preamble to the joint EPA/Department of Transportation rulemaking on May 7, 2010 that established the initial National Program fuel economy standards for model years 2012-2016, the agencies stated that they had agreed to use a common conversion factor of 8,887 grams of CO₂ emissions per gallon of gasoline consumed (Federal Register 2010). For reference, to obtain the number of grams of CO₂ emitted per gallon of gasoline combusted, the heat content of the fuel per gallon can be multiplied by the kg CO₂ per heat content of the fuel.

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