

Municipal Greenhouse Gas Emissions Inventory, 2013

Acronyms and Definitions

ACS- American Community Survey

The ACS collects yearly population and housing data from roughly 3.5 million housing units nationwide. Important information is collected, including age, race, income, and home value. With yearly data, the ACS is able to provide both single-year and multi-year estimates. The ACS remains a critical element in the Census Bureau's decennial census program.

BTU- British Thermal Units

The BTU is a traditional unit of energy. One BTU is defined as the amount of energy needed to cool or heat one pound of water by one degree Fahrenheit. The BTU, however, has been largely replaced by the SI energy unit, the Joule.

Building Energy Benchmarking

Philadelphia passed the Energy Benchmarking ordinance in 2012, joining a select group of cities committed to promoting better performing, more efficient buildings. Designed to reduce Philadelphia's building energy use by 10% by 2015, energy benchmarking and disclosure by commercial buildings is a key part of Philadelphia's Greenworks plan.

C40- C40 Cities Climate Leadership Group

Founded in 2005, C40 is a network of the world's largest cities working collaboratively to address climate change. At present, sixty-nine member cities make up the C40 network.

CCP- Cities for Climate Protection

The CCP is the world's first and largest program supporting cities in climate action planning.

CDD- Cooling Degree Days

A cooling degree day is a measurement used to quantify the demand for building cooling in a particular location. Calculation of cooling degree days is based on outside air temperatures, and baseline temperatures may vary.

CDP- Carbon Disclosure Project

CDP is an international, nonprofit organization that promotes the measuring, disclosing, and sharing of important environmental information among cities. This past year, the CDP received climate-related data disclosures from 270 cities worldwide. Additionally, CDP works to motivate companies to disclose their environmental impacts and take action toward smart environmental practices.

CH₄- Methane

Methane is the second most prevalent greenhouse gas emitted by human activities in the United States. Methane is emitted by landfills and leakages from natural gas systems, and it is also emitted by natural sources, including wetlands and the raising of livestock.

CO₂- Carbon Dioxide

CO₂ is the primary greenhouse gas emitted through human activities. CO₂ is naturally produced during the respiration of aerobic organisms, and it is absorbed by plants during photosynthesis. Human activities are

altering the natural carbon cycle. Increased levels of CO₂ are released into the atmosphere through fossil fuel combustion, and natural carbon sinks, such as forests and trees, are being destroyed.

CO₂e- Carbon Dioxide Equivalent

Carbon dioxide equivalency is a quantity that describes, for a given amount of a particular GHG, the amount of CO₂ that would have the same global warming potential (GWP), when measured over a specified timescale (typically 100 years).

CY- Calendar Year

January 1 to December 31 of any given year.

DVRPC- Delaware Valley Regional Planning Commission

DVRPC is the federally designated Metropolitan Planning Organization for the Greater Philadelphia Region. It serves the region of nine counties (Bucks, Chester, Delaware, Montgomery, Philadelphia, Burlington, Camden, Gloucester, and Mercer), uniting elected officials, planning professionals, and the public with a common vision to improve the region.

eGRID- EPA's Emissions and Generation Resource Integrated Database

eGRID serves as a comprehensive data source on the environmental characteristics of most all of the electric power generated in the United States.

EIA- United States Energy Information Administration

EIA collects and releases independent and impartial energy information. EIA provides a wide range of information, including energy production, stocks, demand, imports, exports, and prices.

EPA- United States Environmental Protection Agency

EPA works toward its mission to protect human health and the environment by implementing various projects and grants and by providing publicly-available resources for people and organizations across the country. Additionally, EPA sets national standards and regulations that are monitored and enforced.

F gases- Fluorinated Gases

Unlike many other GHGs, fluorinated gases have no natural sources and only come from human-related activities. Many F gases have very high GWPs so that even small atmospheric concentrations have large effects on global temperatures. Also, F gases often have especially long atmospheric lifetimes. The main subcategories of F gases are HFCs, PFCs, and SF₆.

FY- Fiscal Year

A fiscal year, often referred to as a 'financial year' or 'budget year', is a 12-month period used for calculating annual financial statements in various businesses and organizations. Fiscal years may vary between businesses and countries.

GHG- Greenhouse Gas

Greenhouse gases are gases that trap heat in the atmosphere, causing increased global temperatures. Human activities are responsible for large increases in GHGs in our atmosphere over the last century. The burning of fossil fuels for electricity, heat, and transportation, for instance, is a large source of rising greenhouse gas levels.

GWP- Global Warming Potential

GWP is a metric used to describe a gas's potential to warm the planet. As many different gas types are defined as 'greenhouse gases', a metric is necessary to be able to describe the relative warming effects of each of the different greenhouse gases. A gas's GWP is measured over a time interval, typically 20, 100, or 500 years, and is determined as a factor of carbon dioxide, which has a GWP standardized to 1. In this Inventory, 100-year time horizon GWPs are used from the IPCC 2nd Assessment.

HDD- Heating Degree Days

A heating degree day is a measurement used to quantify the demand for building heating in a particular location. Calculation of heating degree days is based on outside air temperatures, and baseline temperatures may vary.

HFCs- Hydrofluorocarbons

HFCs became popular when they were substituted for ozone-depleting substances for use as refrigerants, aerosol propellants, solvents, and fire retardants. They are released into the atmosphere through inevitable leaks during servicing and disposal of equipment in which they are used. HFCs unfortunately are potent GHGs with a long atmospheric lifetime and high GWP.

ICLEI- ICLEI Local Governments for Sustainability

ICLEI is the world's leading association of cities and local governments working together toward sustainable urban development. Founded in 1990 by 200 local governments from 43 countries, ICLEI's programs and campaigns have dealt with climate action planning and urban sustainability issues.

IPCC- Intergovernmental Panel on Climate Change

The IPCC was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 with a mission to provide the world with an assessment on the current state of knowledge on climate change. With thousands of scientists across the globe contributing to the work of the IPCC, the organization continues to produce and study all information that may better our understanding of climate change.

kWh- Kilowatt-hours

A kWh is a unit of energy equal to 1,000 watt-hours or 3.6 mega joules. The kWh is commonly used as a billing unit for energy delivered in the form of electricity.

Kyoto Protocol

The Kyoto Protocol is an international agreement, linked to the UNFCCC, which commits its parties by setting internationally binding emission reduction targets. It places a heavier burden on developed nations under the principle of "common but differentiated responsibilities." The Protocol was adopted in Kyoto, Japan in 1997 and is seen as an important first step toward a global emission reduction regime and future international agreements on climate change.

LFGTE- Land Fill Gas to Energy

LFGTE facilities are able to collect CH₄ emitted during the natural anaerobic decomposition of organic waste and use the methane to generate electricity. Landfills that have LFGTE facilities are able to reduce

emissions by directly reducing CH₄ emissions and also by purchasing less grid electricity to power their processes.

LGOP- Local Government Operations Protocol

The California Air Resources Board partnered with the Climate Action Reserve (CAR), the Climate Registry (TCR), and ICLEI to develop the LGOP for local government GHG assessment. The LGOP provides detailed methodologies and guidance on how to develop a GHG emissions inventory for government buildings and facilities, fleet vehicles, water and wastewater treatment, and other operations.

LPG- Liquid Petroleum Gas

LPG is a mixture of propane and butane, both flammable but nontoxic hydrocarbon gases. LPG is often compressed and stored in liquid form for use in homes for heating and cooking (in place of piped natural gas).

MMBtu- Million British Thermal Units

When 'MM' is present in front of a measurement unit, it means million, or 10⁶. Here, for example, 1 MMBtu is the equivalent of writing 1,000,000 Btu.

MMTCO_{2e}- Million Metric Tons of Carbon Dioxide Equivalent

The same as 'MMBtu', writing 'MMTCO_{2e}' means 'one million metric tons of carbon dioxide equivalent'. This is equal to 10⁶ tons of CO_{2e}.

MOBILE6- EPA's Vehicle Emission Modeling Software

MOBILE6 is a computer program, offered by the EPA, that estimates emissions for gasoline-fueled and diesel-fueled highway motor vehicles.

MOS- Mayor's Office of Sustainability

Created by Mayor Nutter in 2008, MOS works toward making Philadelphia a greener city. In 2009, the Office released 'Greenworks Philadelphia', the City's ambitious plan that sets 15 sustainability targets in the areas of energy, environment, equity, economy, and engagement.

MOTU- Mayor's Office of Transportation and Utilities

Founded in 2008 by Mayor Nutter, MOTU serves the city by coordinating decision-making among City agencies and public and private partners in order to save money and improve conditions throughout the city's utility network and transportation system.

MOVES- EPA's Motor Vehicle Emission Simulator

Developed by EPA's Office of Transportation and Air Quality, MOVES estimates emissions for on-road mobile sources covering a broad range of pollutants. This updated model allows for multiple scale analysis and estimates emissions from cars, trucks, and motorcycles.

MSW- Mixed Solid Waste

MSW is a term used to describe 'garbage', consisting of waste from all kinds of sources. This includes general household waste, plastics, glass, organics, synthetic materials, and metals.

MT- Metric Tons

The metric ton, an SI unit, is equal to 1000 kg, or approximately 2204 lbs. It is often used to avoid the confusion between the British ton (the long ton) and the U.S. ton (the short ton).

MW- Megawatts

The watt is the derived SI unit of power, equal to one Joule per second. The megawatt is equal to one million (10⁶) watts. Electric trains and larger buildings often consume power on the scale of MWs.

N₂O- Nitrous Oxide

N₂O is always present in the atmosphere as part of the nitrogen cycle, and it has a variety of natural sources. The quantity of N₂O in the atmosphere has significantly increased, however, due to human activities such as agriculture, fossil fuel combustion, and wastewater management. As a greenhouse gas, N₂O has a GWP that is 300 times that of CO₂.

NONROAD- EPA's Model for Nonroad Engines, Equipment, and Vehicles

The NONROAD model is a program that allows users to estimate the emissions associated with off road vehicle use in a given geographical area and time frame.

OTAQ- EPA's Office of Transportation and Air Quality

OTAQ is responsible for regulating air pollution from motor vehicles, engines, and the fuels used to operate them.

PECO- Philadelphia Electric Company

PECO has a history of over 100 years of service to the Greater Philadelphia region and is currently the sole electricity provider in the city. PECO takes several positive environmental initiatives, including building a green supply chain, distributing community grants to conserve green spaces, and implementing 'PECO Smart Ideas' energy solutions, which helps people save both energy and money.

PFCs- Perfluorocarbons

PFCs are produced as a by-product of various industrial processes, particularly in the production of aluminum and the manufacturing of semiconductors. PFCs have long atmospheric lifetimes and a high GWP.

PFMC- Philadelphia Facilities Management Corporation

PFMC is a non-profit corporation which operates PGW under contract with the city.

PGW- Philadelphia Gas Works

PGW manages and maintains a system of over 6,000 miles of gas mains and service pipes, delivering reliable natural gas to its 500,000 customers each year. PGW is currently the largest municipally-owned gas utility in the country. Its operations are managed by PFMC.

PHMSA- US Department of Transportation Pipeline and Hazardous Materials Safety Administration

PHMSA's mission is to protect people and the environment from the risks associated with the transportation of hazardous materials. The administration works toward establishing and enforcing national policies and preventing incidents by educating workers and conducting research.

PWD- Philadelphia Water Department

PWD is responsible for all water and wastewater treatment and distribution in and around Philadelphia. The water department provides safe drinking water and water for industrial processes, and it protects the region's water resources. PWD takes on several additional projects in the city, including restoration projects on the city's waterways and the implementation of green stormwater infrastructure and a biogas digester.

Scf- Standard Cubic Foot

Scf is a common unit used to measure quantity of gas. A standard cubic foot is technically equal to a cubic foot volume at 60 degrees Fahrenheit and 14.73 psi of pressure.

Scope 1 Emissions

Scope 1 emissions are those that are directly emitted by the city.

Scope 2 Emissions

Scope 2 emissions are those that are indirectly emitted by the city, including electricity, heat, and steam that is purchased from outside the city. Scope 2 emissions are important to include in the city's inventory, as the city's consumption is the driving force behind the production.

Scope 3 Emissions

Scope 3 emissions are other indirect emissions that aren't covered under Scope 2. They generally include emissions such as those from the extraction or production of purchased materials and fuels, employee commute or other transport-related activities in vehicles that are not owned by the reporting entity, and other outsourced activities.

SEPTA- South Eastern Pennsylvania Transit Authority

SEPTA serves five counties, including Philadelphia, and provides public transit, via buses and electric trains and trolleys, to people in, around, and out of the city. SEPTA currently covers 2,184 square miles of service region, and serves 400,000 average weekday riders.

SF₆- Sulfur Hexafluoride

SF₆ is an inorganic, extremely potent greenhouse gas. It in fact has been termed the most potent greenhouse gas by the IPCC, with a GWP of about 23,900 times that of CO₂. It is commonly used as an electrical insulator in high-voltage circuit breakers and switchgear. There are increasing numbers of regulations to control and prevent leakages.

SIT- EPA's State Inventory Tool

EPA's State Inventory Tool is an interactive spreadsheet model designed to help states develop their GHG emissions inventories. SIT consists of 11 estimation modules, applying a top-down approach to calculate GHG emissions.

T&D- Transmission and Distribution

T&D refers to the electricity that is generated at facilities that then put the electricity into the transmission and distribution grid in order to transport the electricity from provider to user. Generally, the national electricity transmission and distribution losses average about six percent of the electricity that is transmitted and distributed in the US each year. This means that more electricity is created than is ultimately consumed, resulting in increased emissions per electricity that is put through the T&D grid.

TCR- The Climate Registry

The Climate Registry is a nonprofit collaboration among North American states, provinces, territories, and Native Sovereign Nations that sets standards to calculate, verify, and report greenhouse gas emissions into a single registry.

UNFCCC- United Nations Framework Convention on Climate Change

The UNFCCC, an international treaty adopted in 1994, now has been ratified by 195 member countries. The primary objective of the UNFCCC is to stabilize GHG concentrations at a level which will prevent dangerous human interference with the climate system. The Convention works toward setting emissions reductions targets for developed countries as well as directing funds to developing countries to be used toward climate action.

USCP- United States Community Protocol for Accounting and Reporting Greenhouse Gas Emissions

The Community Protocol, created by ICLEI, is designed to guide local governments on how to report the GHG emissions associated with the community they represent. This new national standard establishes requirements and recommended best practices for developing community GHG emissions inventories.

VMT- Vehicle Miles Traveled

VMT is the total number of miles traveled by a group of mobile vehicles. VMT is used to calculate the emissions associated with mobile vehicle travel, often of a particular fuel type or vehicle class.