# PHILADELPHIA GREENHOUSE GAS INVENTORY

**Municipal Facilities & Operations, 2013**

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GREENWORKS PHILADELPHIA

THE CITY OF PHILADELPHIA
MAYOR'S OFFICE OF SUSTAINABILITY

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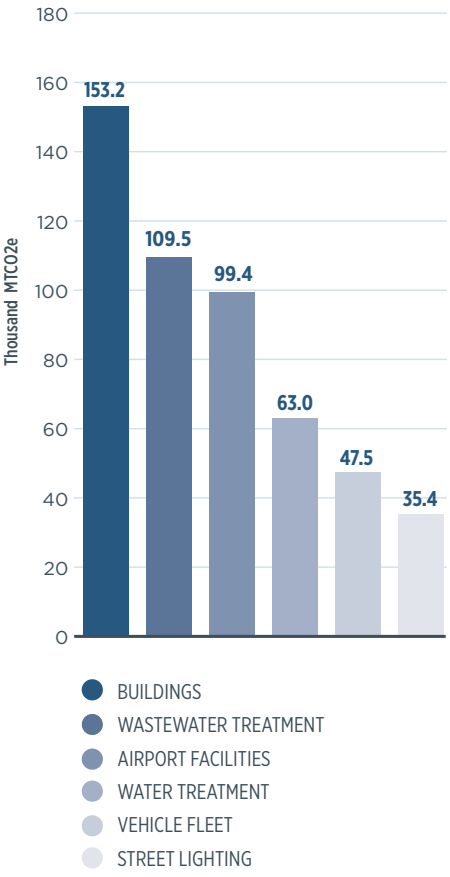
This document was prepared by the Energy Office and Office of Sustainability at the City of Philadelphia. The offices would like to particularly recognize the efforts of Kate Wessels, former intern at the Office of Sustainability, in producing this inventory. The following agencies provided data and support in ensuring the accuracy of the City's greenhouse gas accounting: Air Management Services (City of Philadelphia), Amtrak, Delaware Valley Regional Planning Commission, PECO, Philadelphia Gas Works, Philadelphia Water, the Streets Department, and Veolia.

# Municipal Inventory

FIGURE 1

PHILADELPHIA'S MUNICIPAL EMISSIONS, 2013




▲ In 2013 the City of Philadelphia's building stock was the largest source of carbon emissions, followed by wastewater treatment.

## INTRODUCTION

The City of Philadelphia is committed to leading on climate change mitigation by reducing carbon emissions from sources within its management and control. To understand the scope and scale of these emissions, the City has maintained a greenhouse gas inventory of municipal emissions annually since 2006. Because the City manages data related to its emissions sources (including municipal facilities and vehicles, street lighting, water and wastewater treatment, and the Philadelphia International Airport), these inventories can be updated more frequently and with a greater degree of accuracy than citywide inventories.

Wherever possible, the City followed version 1.1 of ICLEI's Local Government Operations Protocol (LGOP). As advised in the LGOP, IPCC's 2nd Assessment GWPs are used in this inventory. Scope 1 emissions factors come from the LGOP, and Scope 2 electricity emissions factors come from eGRID RFC east region. For a complete list of emissions factors used in this inventory and a more detailed methodology, see the online appendix available at www.phila.gov/green. This inventory covers emissions from 2013, the most recent year for which all required data is available.

Over the past seven years, greenhouse gas emissions from City government sources have declined nearly ten percent to approximately 500,000 metric tons of CO2-equivalent ($MtCO_2e$). The largest sector for carbon emissions in the municipal inventory are buildings owned and operated by the City of Philadelphia. Emissions from buildings have decreased by 12 percent in part due to the City's commitment to energy efficiency. The completion of the guaranteed energy savings project for City Hall and nearby downtown office buildings should yield additional energy and carbon emissions savings in future inventories.

Further reductions in greenhouse gas emissions can be attributed to a less carbon-intensive approach to street lighting. In the past several years, the City of Philadelphia replaced more than 85,000 incandescent traffic signals with LED bulbs, helping to reduce emissions in this sector by more than a third.

The only sector in the inventory to see emissions increase from between 2006 and 2013 is wastewater treatment. This is due to the operation of the Philadelphia Water Department's Biosolids Recycling Center, which generates compost from wastewater and only began running at full capacity in 2013.

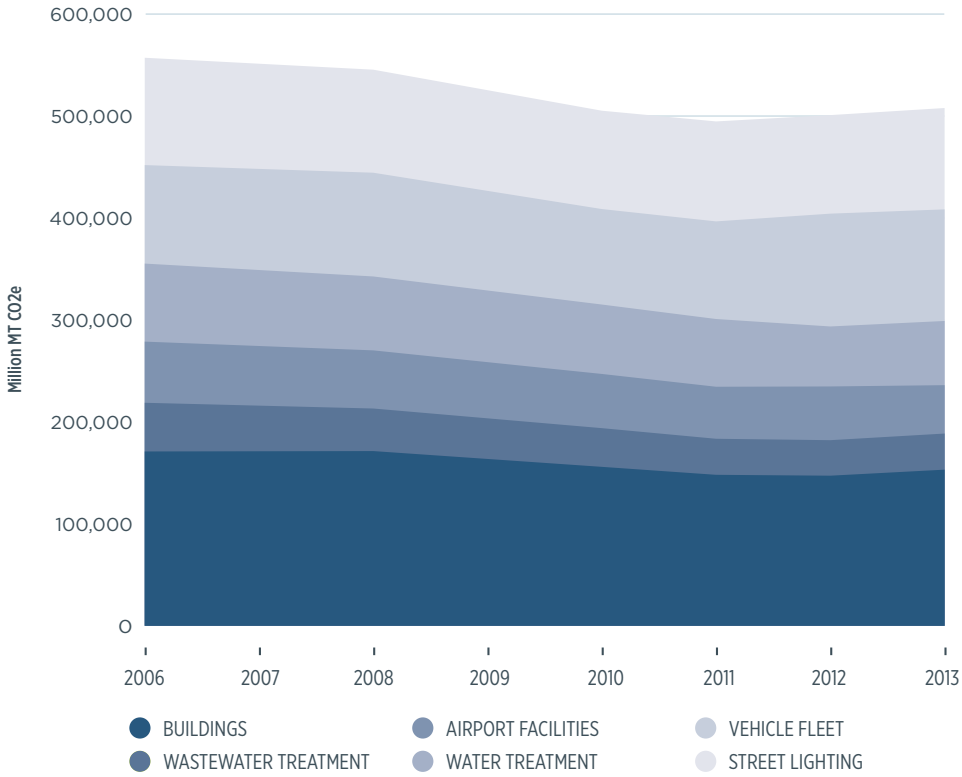
## METHODOLOGY AND EMISSIONS SCOPE

In 2014, the City moved to a new accounting tool which provides a robust platform for measuring greenhouse gas emissions.

The ClearPath tool provided by ICLEI USA allows users to easily standardize emissions factors and other metrics across multiple reporting years, minimizing year-to-year variation in inventory methodologies.

Emissions are categorized by their scope, which varies based on their source. Scope 1 emissions are those which are directly emitted from sources that are owned or controlled by the entity (the municipal government for the Municipal Inventory and the City of Philadelphia as a whole for the Citywide Inventory), typically through burning fossil fuels on site and through entity-owned or entity-leased vehicle use. Scope 2 emissions are indirect emissions resulting from electricity, heating and cooling, or steam generated off site but purchased by the entity. Scope 3 emissions include indirect emissions from sources that are not owned or controlled by the entity but are related to the entity's activities.

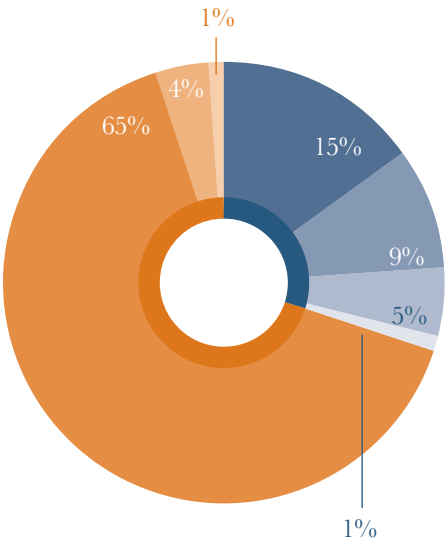
**FIGURE 2** MUNICIPAL EMISSIONS BY SECTOR, 2006-2013




▲ The City of Philadelphia carbon emissions have trended downward since 2006, with the greatest reductions coming in the building sector.

**FIGURE 3**

MUNICIPAL EMISSIONS BY SOURCE AND SCOPE, 2013




**SCOPE 1**
- NATURAL GAS
- VEHICLE FUELS
- PROCESS EMISSIONS
- FUEL OIL

**SCOPE 2**
- ELECTRICITY
- TRANSMISSION & DISTRIBUTION LOSSES
- STEAM

## BUILDINGS

There are more than 600 facilities in the City of Philadelphia's building portfolio, serving a variety of functions from police stations and libraries to recreation centers and administrative offices. Collectively, these buildings account for roughly 30 percent of municipal emissions, making buildings the single-biggest contributor to the City's carbon footprint. Since 2011, the City has been benchmarking the performance of the majority of these buildings using EPA Portfolio Manager to identify facilities that offer the most potential for improvement.

Improving the energy efficiency (and consequently reducing greenhouse gas emissions) of these facilities has been a primary focus of the City in the last several years. The City's Energy Office completed work on a guaranteed energy savings project for City Hall and three other downtown office buildings, and continues to support energy efficiency projects in new and existing facilities through the Energy Efficiency Fund.

## STREET LIGHTING

Carbon emissions from city street lighting declined by more than 12,000 metric tons of CO2-equivalent emissions emitted, a reduction of 35 percent. Much of this reduction was accomplished through the installation of 85,000 LED traffic signals citywide, which helped lower not only greenhouse gas emissions but municipal energy costs.

## NEXT STEPS

The City of Philadelphia is committed to continued tracking and reporting of greenhouse gas emissions. Municipal inventories will be updated and published on an annual basis. The City's transition to the ICLEI ClearPath platform will allow for more consistent tracking of greenhouse gas trends in future years and for the adjustment of existing inventories as new information is made public.

As described in this report, buildings and stationary energy usage accounts for the vast majority of municipal emissions, and will remain the primary focus of the City's mitigation efforts going forward. The City completed a guaranteed energy savings project in its largest downtown office buildings (including City Hall) and will continue to consider energy-efficiency projects in its facilities, including those outside the General Fund.

The City can also lead by example by beginning to incorporating lifecycle energy costs and carbon emissions into City capital planning and procurement. By expanding the inventory to include additional Scope 3 emissions, the City can evaluate how its business purchasing and operations contribute to emissions in other areas and begin to set appropriate policies. While currently outside the scope of Philadelphia's municipal inventory, considering climate impacts in procurement can leverage the City's role in the local economy to drive emissions reductions throughout the supply chain.

At the same time, the City must continue to set long-range goals around carbon emissions reductions. The City of Philadelphia is currently working with Drexel University to develop a framework for reducing greenhouse gas emissions 80 percent from a current baseline by 2050. Several cities nationally and worldwide have made similar commitments, and the Drexel study will be the first step toward establishing a similar target locally in Philadelphia.

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