



Town of Philipstown

GOVERNMENT OPERATIONS GREENHOUSE GAS INVENTORY 2022 SUMMARY REPORT



CREDITS AND ACKNOWLEDGEMENTS

This report was prepared by Martha Upton, Philipstown Climate Smart Coordinator, with the help of Allison Shea, Susan Kenney, Teri Fleming, Cecily Hall, Tara Percacciolo, and Kelly MacIntyre, who provided data necessary for the completion of this report.

BACKGROUND

Philipstown recognizes that greenhouse gas (GHG) emissions from human activity are causing climate change, the consequences of which pose substantial risks to the future health and well-being of our community. To demonstrate its commitment to addressing the growing threat of climate change, in 2017 Philipstown became a registered Climate Smart Community by formally adopting the New York State Climate Smart Communities (CSC) pledge.

The CSC program, administered by the New York State Department of Environmental Conservation (DEC), is a certification program that provides a robust framework to guide the actions local governments can take to reduce GHG emissions and adapt to the effects of climate change. The first step in this process is to perform a GHG Inventory for all buildings, vehicles and operations controlled by the local government. The town completed its first government operations GHG inventory based on data from 2016. Using data from 2021 this updated GHG inventory provides a new baseline from which the Town can set emissions and operation costs reduction goals, determine ways in which those goals can be reached, and track progress.

This GHG Inventory for Government Operations Report summarizes the GHG emissions from Philipstown's consumption of energy and materials within town-owned buildings, water facilities, and vehicle fleet. This data was generated from electric, propane, and oil bills for all Town owned buildings and operations, as well as fuel records for the Town's vehicle fleet. The GHG emissions for all local government operations are measured in metric tons of CO₂ equivalents (CO₂e) and were calculated using emissions factors by the US Energy Information Administration (EIA), US Environmental Protection Agency (EPA) and the Climate Action Associates (CAA), LLC's GHG Inventory Tool.

KEY FINDINGS

In 2021, GHG emissions from Philipstown's government operations totaled 515.24 MTCO₂e. Figure 1 shows the emissions for government operations broken down by sector. Philipstown's Vehicle Fleet account for the largest percentage of GHG emissions at 77%. The second largest contributor is the Town's Administration Facilities with 22% of emissions. Water delivery facilities make up the remaining 1%.

The Inventory Results section of this report provides a detailed profile of emissions sources within the Town of Philipstown. This data will also provide a baseline from which the Town will be able to compare future performance and demonstrate progress in reducing emissions.

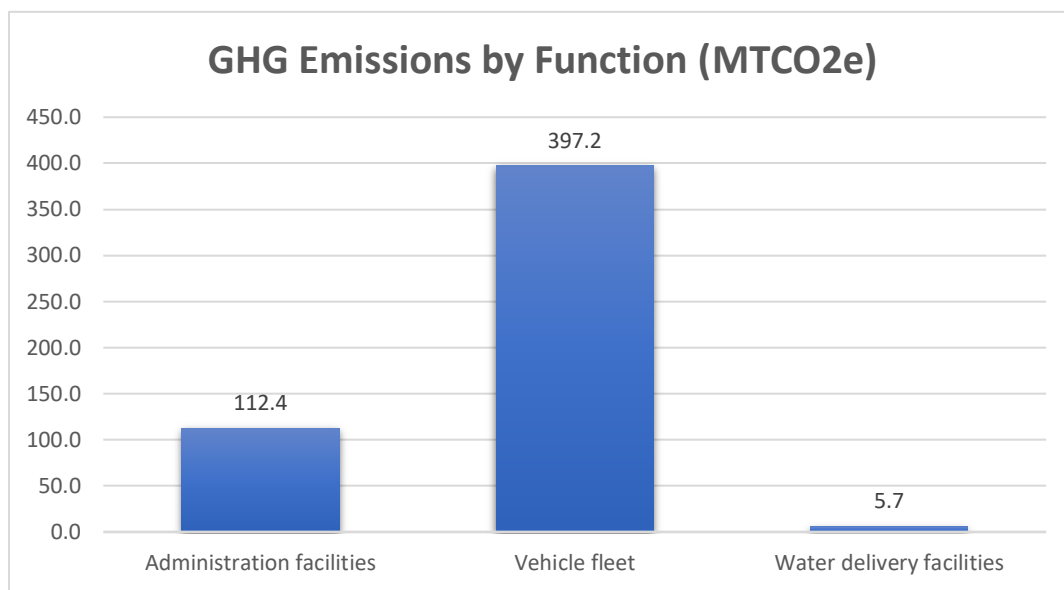


Figure 1. 2021 GHG Emissions by Sector (MTCO₂e)

DATA GATHERING AND METHODOLOGY

The first step toward achieving tangible greenhouse gas emission reductions requires identifying baseline emissions levels and sources and activities generating emissions in the community. Philipstown is focusing here on government operations emissions, and this inventory follows up on the Town's initial government operations inventory, which was based on 2016 data. The Town previously completed an inventory of community-wide emissions entitled *Sink, Store, Reduce, Offset* in 2020.

The CSC Task Force appointed Martha Upton to lead this latest GHG Inventory data collection effort, with the help of Hudson Valley Regional Council (HVRC). The GHG Inventory spreadsheet used was developed by Climate Action Associates, LLC.

Emissions Scopes

For the government operations inventory, emissions are categorized by scope. Using the scopes framework helps prevent double counting. There are three emissions scopes for government operations emissions, as defined below:

- **Scope 1:** All direct emissions from a facility or piece of equipment operated by the local government, usually through fuel (natural gas, propane, and fuel oil) combustion. Examples include emissions from fuel consumed by the Town's vehicle fleet and emissions from a furnace in a municipal building.
- **Scope 2:** Indirect GHG emissions from purchased electricity. This refers to operations powered by grid electricity.
- **Scope 3:** All other indirect GHG emissions not covered in scope 2. Examples include contracted services, emissions in goods purchased by the local government and emissions associated with disposal of government generated waste.

This inventory only accounts for Scope 1 and 2 emissions, as they are the most essential components of a government operations greenhouse gas analysis and are most easily affected by local policy making. Under the DEC's CSC program, tracking Scope 3 is encouraged, but optional.

Baseline Year

The inventory process requires the selection of a baseline year. Local governments examine the range of data they have over time and select a year that has the most accurate and complete data for all key emission sources. A local government's emissions inventory should comprise all greenhouse gas emissions occurring during the selected baseline year. We chose 2021 as the base year for this inventory because our initial Government Operations GHG Inventory was based on 2016 data, and we thought the 2021 data, five years later, would provide us with useful information about the progress we have made and the areas we need to focus on going forward.

Quantification Methods

Greenhouse gas emissions in this inventory are quantified using calculation-based methodologies. Calculation-based methodologies calculate emissions using activity data and emissions factors. To calculate emissions accordingly, the basic equation is used:

$$\text{Activity Data} \times \text{Emissions Factor}_{(\text{Fuel}, \text{GHG})} = \text{GHG Emissions}_{(\text{Fuel}, \text{GHG})}$$

Activity data refer to the relevant measurement of energy use or other greenhouse gas-generating processes such as fuel consumption by fuel type, metered annual electricity consumption, and annual vehicle miles traveled. To obtain this data, Philipstown gathered and reviewed all electric, propane, and fuel oil bills for the Town's Central Hudson, Downey, and Bottini accounts, as well as fuel records for gasoline and diesel used to power the Town's vehicle fleet.

Calculations for this inventory were made using CAA's GHG Inventory Tool. Data was first measured in kWh for grid electricity, and gallons for gasoline, fuel oil, diesel, and propane. Using the CAA tool, this data was multiplied by emission factors published by the EPA and EIA to convert the energy usage, or other activity data in quantified emissions.

Emissions Factors

Each GHG has an emission factor unique to each fuel. The electricity emission factor is based on the EPA eGRID subregion, which in this case is NYUP (Upstate). The natural gas, propane, heating oil/diesel, and gasoline emissions factors are taken from the EIA database on carbon dioxide emissions coefficients. The GHG emissions in this inventory are measured in metric tons of CO₂ equivalents (CO₂e).

Facilities Master List

A key step in creating the GHG inventory is to compile a facility master list that includes the Town's 19 buildings/structures and vehicle fleet, which each use at least one form of energy. Each was assigned to a category to indicate the type of infrastructure and then similar facilities along with their energy use. As indicated, the Highway Department moved to temporary structures in 2021 while a new garage was under construction.

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|--|---|
| 1. Town Hall | 10. Workshop (CVP) |
| 2. Building Department | 11. Highway Department Office and Shed |
| 3. Depot Theatre | 12. Highway Dep. Temp Pole 2 |
| 4. Recreation Center | 13. Highway Dep. Temp Bay 1 and 2 |
| 5. Rec center Auxiliary | 14. Recycling Center |
| 6. Philipstown Park | 15. Aqueduct Rd Pump House |
| 7. Clubhouse (Continental Village Park) | 16. Lower Station Road Pump House |
| 8. Stone barn (CVP) | 17. Howland Drive Pump House |
| 9. Bath House (CVP) | 18. Arden Drive Pump House |

INVENTORY RESULTS

For developing emissions reduction policies, it is often most useful to look at emissions broken down by sector, as each sector will have a particular set of strategies to reduce emissions. Figure 1 shows the emissions for government operations broken down by sector. The figures below show Philipstown's government operations emissions in further detail.

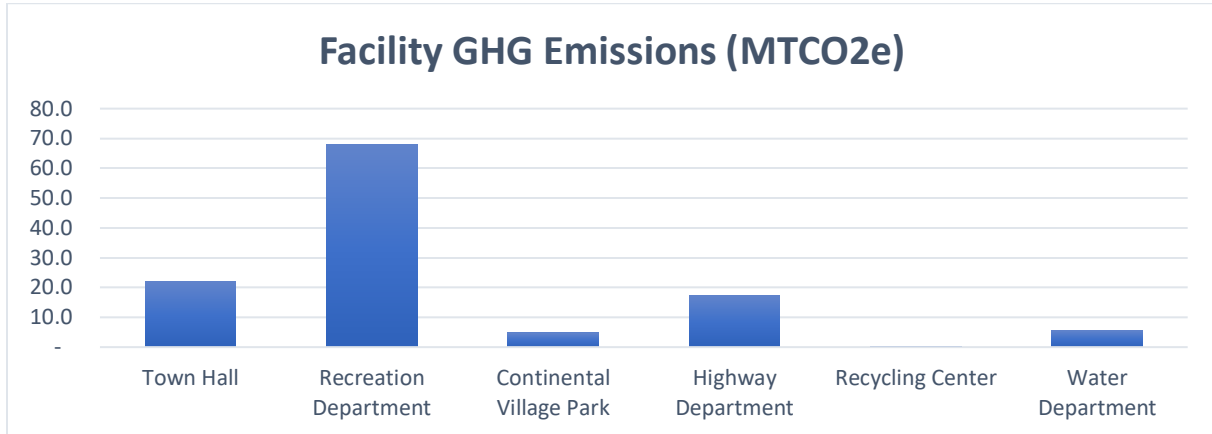


Figure 2. Philipstown Facility GHG Emissions (MTCO_{2e})

The Rec Center was closed for a significant portion of 2021 due to Covid. As a result, both the electricity usage and the fuel oil usage are significantly lower than they would be in a typical year. That said, the Rec Center produces much higher emissions than other town buildings due to its heavy reliance on fuel oil.

The Highway Department's electric and fuel oil usage were also significantly lower in 2021 than they would be in a typical year, as they made use of temporary structures throughout the year.

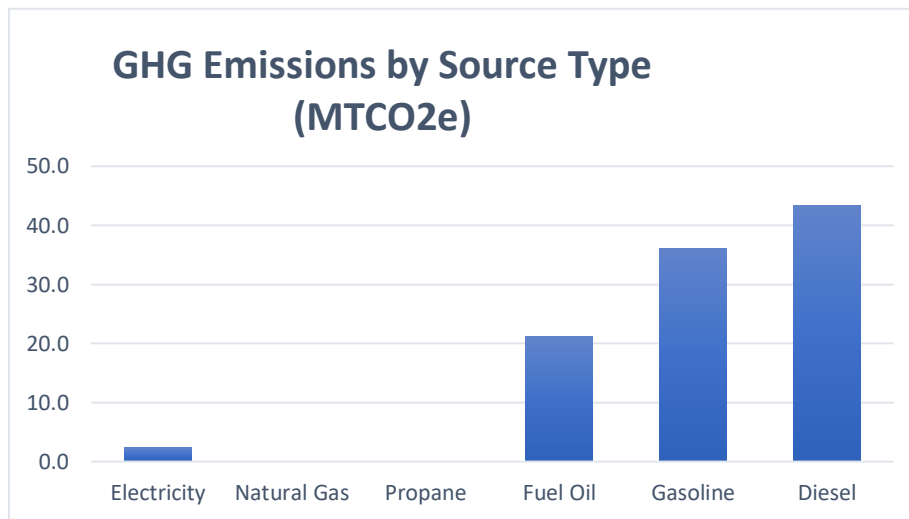


Figure 3. Philipstown GHG Emissions by Source Type (MTCO_{2e})

OPPORTUNITIES TO REDUCE GREENHOUSE GASES

Continual monitoring of GHG emissions enables Philipstown to set goals and targets for future reduction of GHG emissions. The Town has been proactive in efforts to reduce GHG emissions and energy costs.

Since its first Government Operations GHG inventory in 2016, the Town has taken a number of steps to reduce emissions, including:

- Conducting energy audits of most municipal buildings.
- Installing solar panels on the roof of the Rec Center, which went into operation in mid-2022.
- Installing a dual-system for heating/cooling the Town Hall in 2020, including heat pumps and a high-efficiency oil furnace.
- Participation in a Community Choice Aggregation Opt-out Clean Electricity program from 2019-2022.
- Adoption of the NY Stretch Code in 2022.
- Installation of two public EV charging Stations at the Town Hall in 2022.
- Instituting a Food Scrap Recycling Program in 2022, which currently has over 160 households enrolled.

Several new clean energy projects are currently in the pipeline:

- The town recently received a NYSERDA grant to install 4 additional EV charging stations in two locations this spring.
- Philipstown is exploring the creation of a local Solar Siting map, which would support responsibly sited solar installations in the area.
- The town is looking into joining the NYS Green Purchasing Communities Program.

Implementing these proposed projects along with other Climate Action Plan (CAP) priorities/actions, will inevitably lead to reductions in GHG emissions and move the Town closer to its goal of net zero emissions by 2040.

The next steps are to set emissions reduction benchmarks, and to develop a climate action plan that identifies specific quantified strategies that can cumulatively meet that target. In the meantime, Philipstown will continue to track key energy use and emissions indicators on an ongoing basis. DEC recommends conducting a new inventory at least every five years to measure emissions reductions progress.

This inventory shows that it will be particularly important to focus on fuel oil usage in buildings and gasoline/diesel usage by the town fleet. Future emissions reductions strategies for Philipstown to consider for its climate action plan include increasing energy efficiency and investing in clean heating systems, as well as vehicle fuel efficiency and transitioning to electric vehicles when feasible.