# VILLAGE OF MILLBROOK
**Merritt Avenue, Millbrook NY 12545**

## Government Operations Greenhouse Gas Inventory

## 2022 Summary Report

**Revised and published June 2025**

## CREDITS AND ACKNOWLEDGEMENTS

This report was prepared by Genevieve Glasson, Climate Smart Community Coordinator, Village of Millbrook Planning Board member, and Mike Herzog, Climate Smart Community Task Force member and Village of Millbrook Trustee. We would like to give special acknowledgement to Nicole Zeko, our Deputy Clerk for the Village of Millbrook, and Sarah Witt, Village of Millbrook Clerk/Treasurer, respectively, for their timely and accurate preparation of data and documents vital for us to complete this report.

## BACKGROUND

The Village of Millbrook 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, on June 8th, 2022, the Village of Millbrook 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. Using data from 2020, 2021 and 2022, this GHG inventory provides a baseline for which the Village of Millbrook 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 the Village of Millbrook's consumption of energy and materials within village-owned buildings, the Water Treatment Plant, vehicle fleet, outdoor lighting, and other facilities. This data was generated from electric, propane, and oil bills for all Village of Millbrook owned buildings and operations, as well as fuel records for the Village'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

Using an average of the years 2020, 2021 and 2022, GHG emissions from Village of Millbrook government operations totaled 143.2 CO2e. Figure 1 shows the emissions for government operations broken down by sector. The Village's largest emitter, government buildings and facilities, account for the largest percentage of GHG emissions at 49%. The second largest contributor is the Village of Millbrook's Vehicle Fleet with 30% of emissions. The Water and Sewer Delivery facilities account for 19% of emissions and Outdoor Lighting makes up the final 2% of emissions.

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

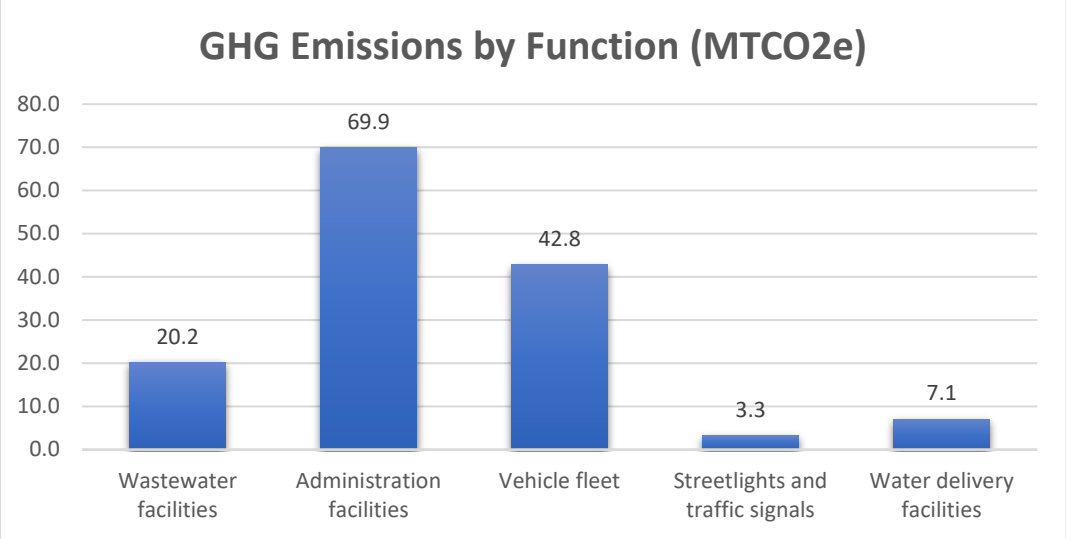


*Figure 1. Government Operations Emissions by Sector (2020-2022)*

## 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. The Village of Millbrook is focusing first on government operations emissions to lead by example and will inventory community-wide emissions in a future report.

The CSC Task Force appointed Genevieve Glasson and Mike Herzog to lead the 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 (propane and fuel oil) Village of Millbrook'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. It is also preferable to establish a base year several years in the past to be able to account for the emissions benefits of recent actions. A local government's emissions inventory should comprise all greenhouse gas emissions occurring during the selected baseline year. We selected data captured in the years 2020, 2021, and 2022. The reason we didn't select just a single year was largely due to the onset of the pandemic and the potential for subsequent skewed data. Therefore, we considered a blend of three years' data to be a better representation of the Village's usages.

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:

$$Activity\ Data \times Emissions\ Factor_{(Fuel,\ GHG)} = GHG\ Emissions_{(Fuel,\ GHG)}$$

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

Calculations for this inventory were made using CAA's GHG Inventory Tool. Data was first measured in kWh for grid electricity, therms for natural gas, 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 Village's 19 units / buildings including streetlights, and vehicle fleet, that 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. The Village does not manage a landfill and does not own/operate an ice rink or large refrigeration/HVAC system, and therefore does not account for refrigerant leakage in scope 1 emissions.

## 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 Village of Millbrook's government operations emissions in further detail.

### Government Operations Emissions

Administration Facilities were the largest sector of government operations emissions. We'd like to note that the ICLEI Category, Administrative Facilities, does not strictly mean government administration work. Many facilities listed here have primarily storage of equipment, training work by volunteers, or Highway staff workplace as its primary function.

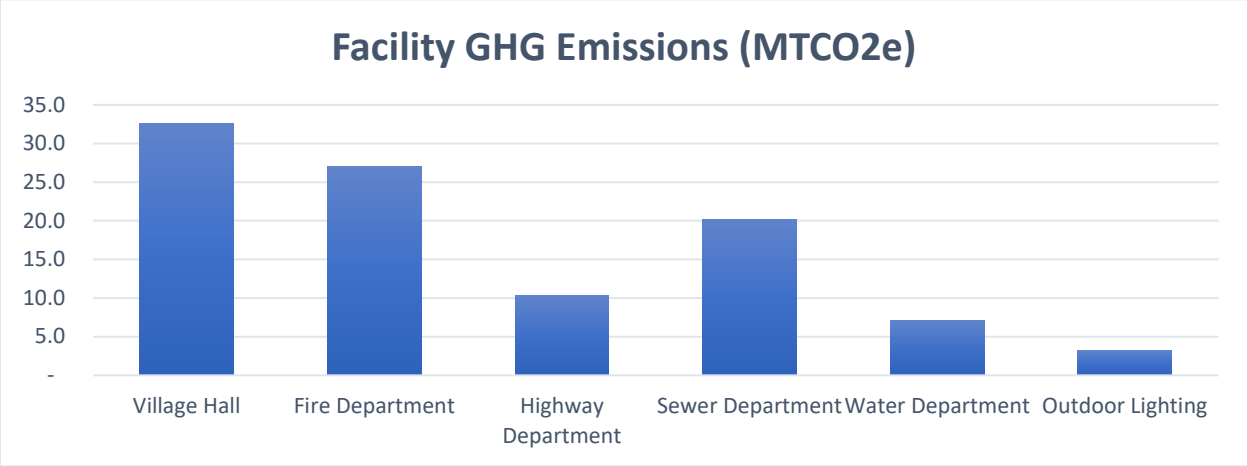


*Figure 2. Facility GHG Emissions (MTCO2e)*

### Vehicle Fleet Emissions

After Administrative Facilities, Village of Millbrook's Vehicle Fleet was the next largest source of government operations emissions, with a total of 42.8 CO2e. The high gasoline and diesel usage and emissions is something for the Village to consider when deciding on whether to electrify the vehicle fleet.

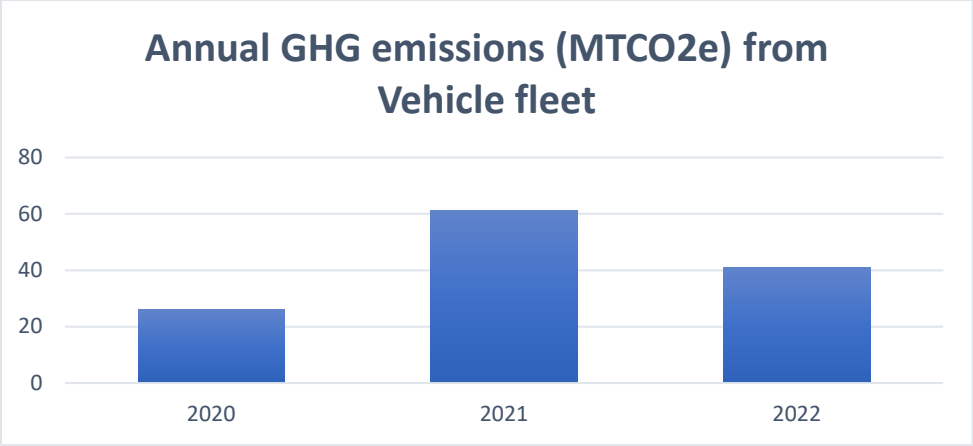


*Figure 3. GHG Emissions (MTCO2e) from Vehicle Fleet*

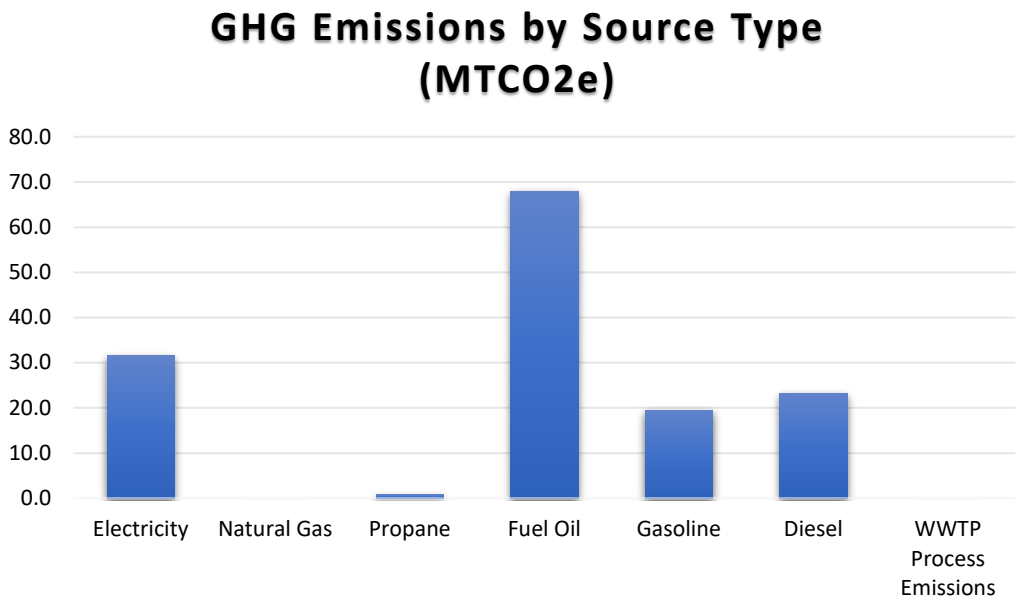


*Figure 4. GHG Emissions by Source Type (MTCO2e)*

Note: In the month of August 2020 the Village of Millbrook paid a single heating fuel oil charge and paid a single diesel fuel charge in September 2021 for the Water Treatment Plant. The Village of Millbrook has a contract with VRI Environmental Services Inc to manage the Water Treatment Plant as well as the Sewer Treatment Plant. However, the Village of Millbrook pays the utilities for both facilities. The contract with VRI Environmental Services Inc is a three-year renewable contract. No further data on additional utility payments made by the Village of Millbrook is available.

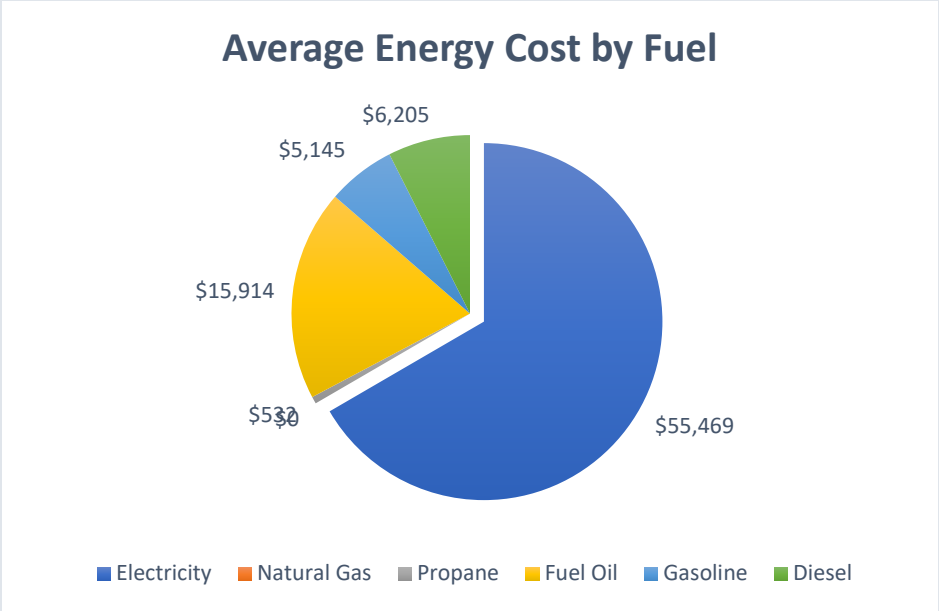


*Figure 5. Average Energy Cost by Fuel*

## OPPORTUNITIES TO REDUCE GREENHOUSE GASES

Developing a GHG emissions baseline enables the Village of Millbrook to set goals and targets for future reduction of GHG emissions.

The Village of Millbrook has been proactive to reduce GHG emissions and energy costs. The following actions have been taken to reduce emissions:

- A portion of the street light fixtures have been converted to LED lighting.
- The Millbrook Firehouse had all the lighting fixtures changed to LED in the last 2 years.
- The Highway Garage interior lighting was converted to LED lighting.
- Both burners in the Village Hall have been replaced in the last four years with more energy efficient models.

Due to the size and age of the current vehicle fleet, there are no current plans to upgrade to electric vehicles. The Village of Millbrook in conjunction with the Town of Washington, are under contract currently to install two electric charging stations within the geographic confines of the Village.

Additionally, the following actions are being discussed to be implemented in the near future:

- Window replacement in the Village Hall is in progress and associated costs and project scope is currently being addressed.
- The Millbrook Firehouse has requested replacement of several windows to improve energy efficiency.

The Village of Millbrook has passed a resolution to be a Climate Smart Community. The Village is actively engaged in completing a DEC (Department of Environmental Conservation) CSC Assessment. This assessment will aid the Village in determining which pledge elements designated by the DEC are best suited to implement in the near future.

The next steps are to set an emissions reduction target, and to develop a climate action plan that identifies specific quantified strategies that can cumulatively meet that target. In the meantime, Village of Millbrook 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 buildings and facility operations. Future emissions reductions strategies for the Village to consider for its climate action plan include increasing energy efficiency and renewable energy investments, as well as vehicle fuel efficiency. Investigation into introducing solar power in the Village would be one of the ways to mitigate the Village's use of electricity.