VILLAGE OF MAMARONECK

GOVERNMENT OPERATIONS
GREENHOUSE GAS (GHG) INVENTORY

2022 SUMMARY REPORT

CREDITS AND ACKNOWLEDGEMENTS

This report was prepared by Ellen Silver, Village of Mamaroneck Climate Smart Communities Task Force Coordinator, who participated in a program sponsored by The Hudson Valley Regional Council to assist municipalities in calculating their greenhouse gas emissions. Jerry Barberio, Village Manager, Daniel Sarnoff, Assistant Village Manager and Courtney Wong, Secretary to the Village Manager provided critical data and insights for this report.

BACKGROUND

The Village of Mamaroneck 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 2010 the Village of Mamaroneck became a registered Climate Smart Community by formally adopting the New York State Climate Smart Communities (CSC) pledge. In July 2021, the Village of Mamaroneck passed a resolution to create a dedicated Climate Smart Community Task Force to make recommendations and oversee actions in the CSC program.

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 2019 this GHG inventory provides a baseline from which the Village 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 Mamaroneck's consumption of energy and materials within village-owned buildings, vehicles, outdoor lighting, and other facilities. This data was generated from electric and natural gas bills for all Village owned buildings and operations, as well as fuel records for the Village vehicle fleet. The GHG emissions for all local government operations are measured in metric tons of CO2 equivalents (MTCO2e) 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 2019, GHG emissions from the Village of Mamaroneck's government operations totaled 1,807.54 MTCO2e. Figure 1 shows the emissions for government operations broken down by sector and Figure 2 shows emissions by energy type. The Village's government buildings account for the largest percentage of emissions at 46%. The vehicle fleet is the next largest emitter at 42%**.** Streetlights and traffic signals comprise the remainder of the GHG emissions accounting for 12% of the total. In 2016, the Village replaced all streetlights and traffic signals with LED bulbs thereby reducing electricity costs for this sector by over 50%.

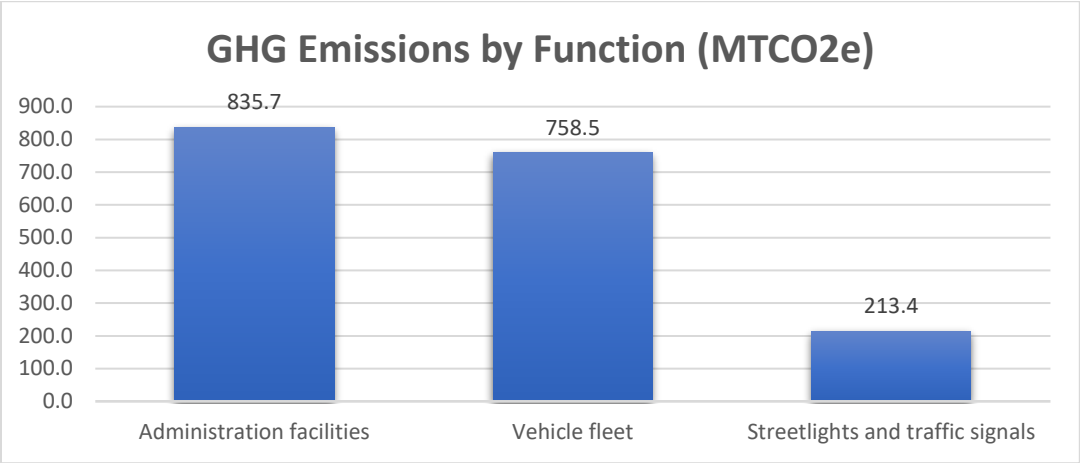

Figure 1: 2019 Village of Mamaroneck Government Operations Emissions by Sector

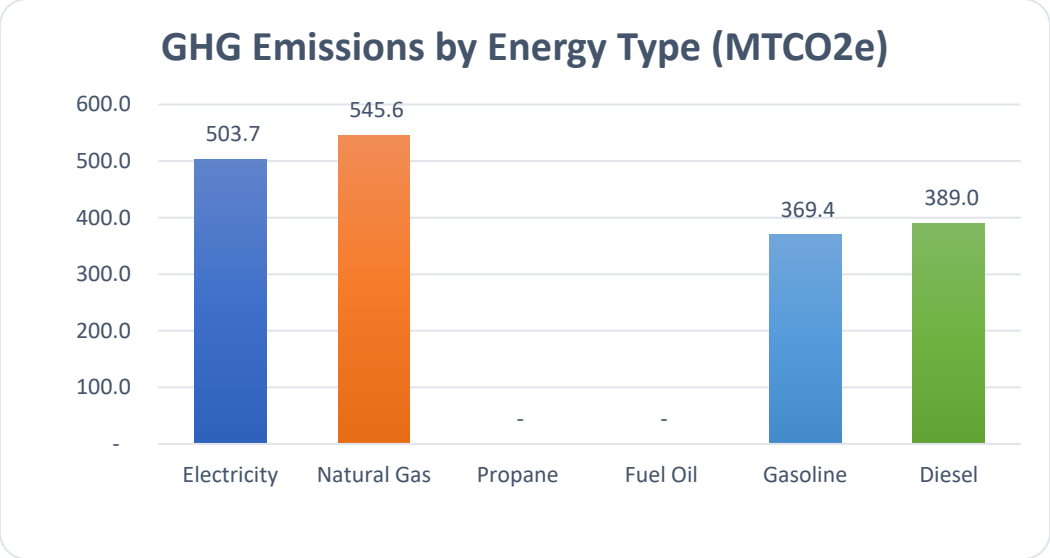

Figure 2: 2019 Village of Mamaroneck GHG Emissions (MTCO2e) by Energy Type

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 Mamaroneck 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 Ellen Silver to lead the GHG Inventory data collection and reporting effort, with the help of Melanie Patapis, CSC Coordinator, 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/Village/City'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 include all greenhouse gas emissions occurring during the selected baseline year. This report is based on data from 2019 which is the most recent year that is without large distortions from the Covid-19 shut-down and from Hurricane Ida which skewed the data in the years 2020 and 2021.

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 x Emissions Factor $_{(Fuel, GHG)}$ *= GHG Emissions* $_{(Fuel, GHG)}$

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, the Village gathered and reviewed the monthly natural gas and electric bills for the Village's Con Edison and NYPA accounts, as well as fuel records for gasoline and diesel used to power the Village 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 and diesel fuel. 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 NYCW (Westchester). 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 (MTCO2e).

Facilities Master List

A key step in creating the GHG inventory is to compile a facility master list that includes the Village's building facilities, vehicle fleet and streetlights and traffic lights that use at least one form of energy. See Appendix 1 for a list of the building facilities.

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 (see Figure 1). The remainder of this section breaks down these emissions in further detail within each sector.

Building Facilities

Village building facilities accounted for 46% of government operations emissions, with the Parks Department having the highest emissions. This is due to the natural gas usage in the Parks Department, which is higher than the rest of the Village's buildings. Figure 3 shows the total GHG emissions for each Village department.

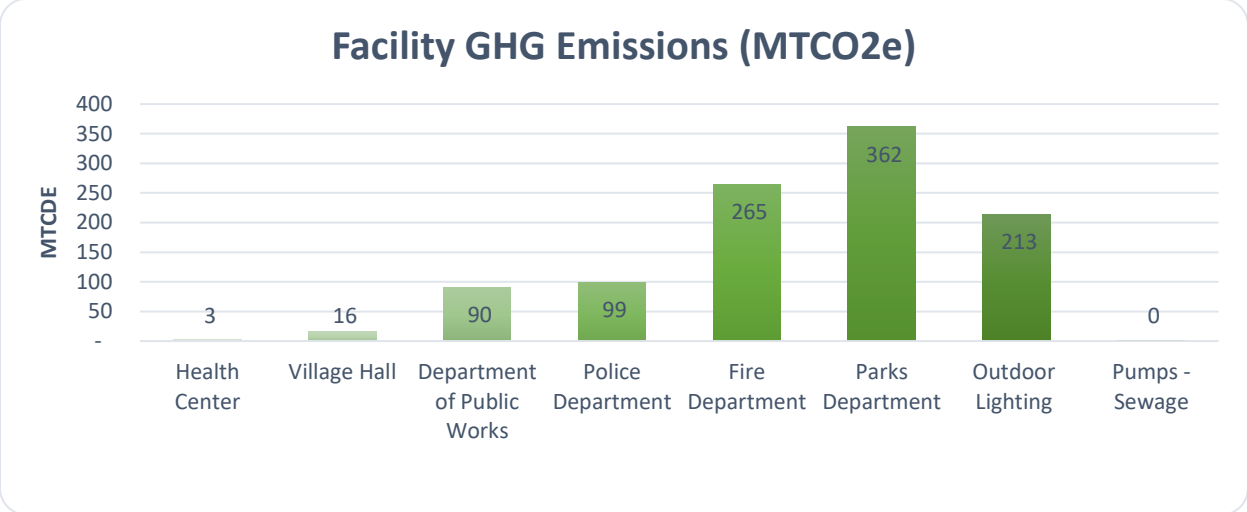

Figure 3: 2019 Village of Mamaroneck GHG Emissions by Department (MTCO2e)

Vehicle Fleet

The Village's Vehicle Fleet accounted for 42% of government operations emissions. The Village owns an extensive fleet of cars and heavy-duty vehicles and equipment for its various departments, such as police, fire, sanitation, parks, recreation, building department, etc. Figure 4 below shows the breakdown of total vehicle emissions by department.

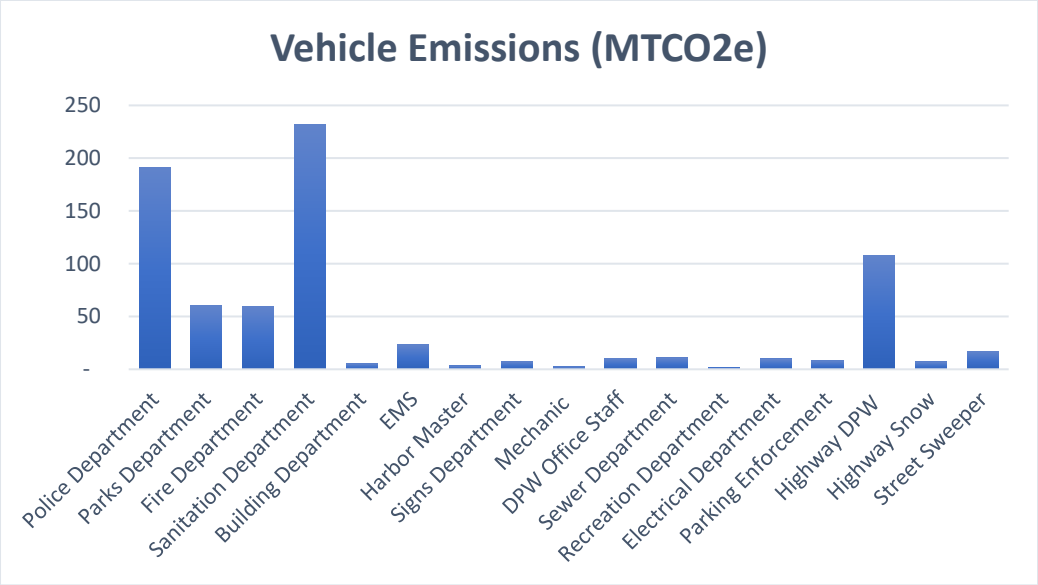

Figure 4: 2019 Village of Mamaroneck Vehicle Fleet Emissions by Department (MTCO2e)

In 2019, the Village used 42,074 gallons of gasoline and 38,180 gallons of diesel fuel. The police fleet was approximately half of the gasoline usage given that patrol cars drive 24/7. The next largest user group was the Highway Department at 6%. The Sanitation fleet accounted for 57% of the total diesel fuel used by the Village. Figure 5 shows gasoline and diesel consumption by department.

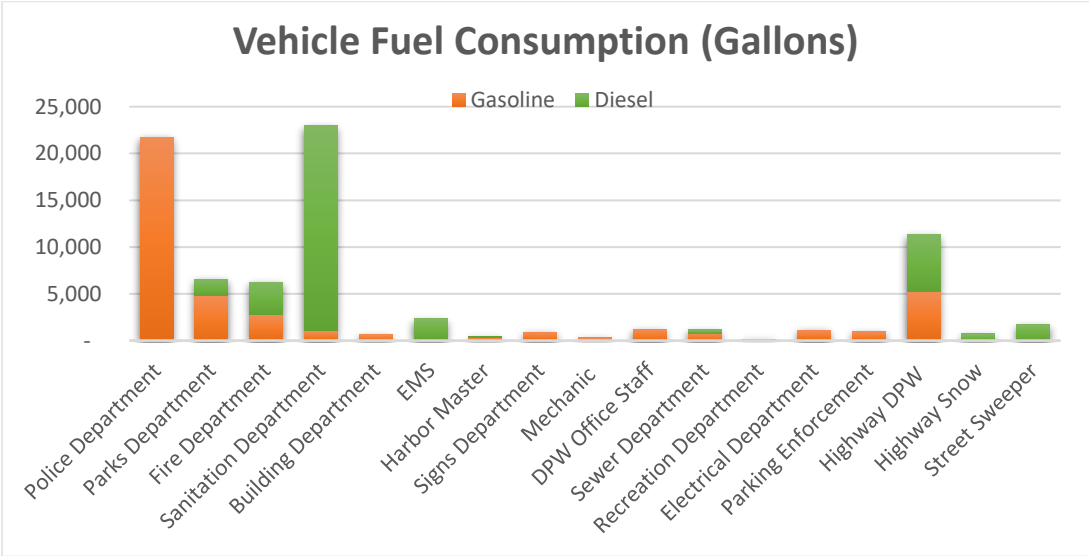

Figure 5: 2019 Village of Mamaroneck Vehicle Fleet Consumption by Department (gallons)

Cost Breakdown

Figure 6 shows the facility energy cost at each department.

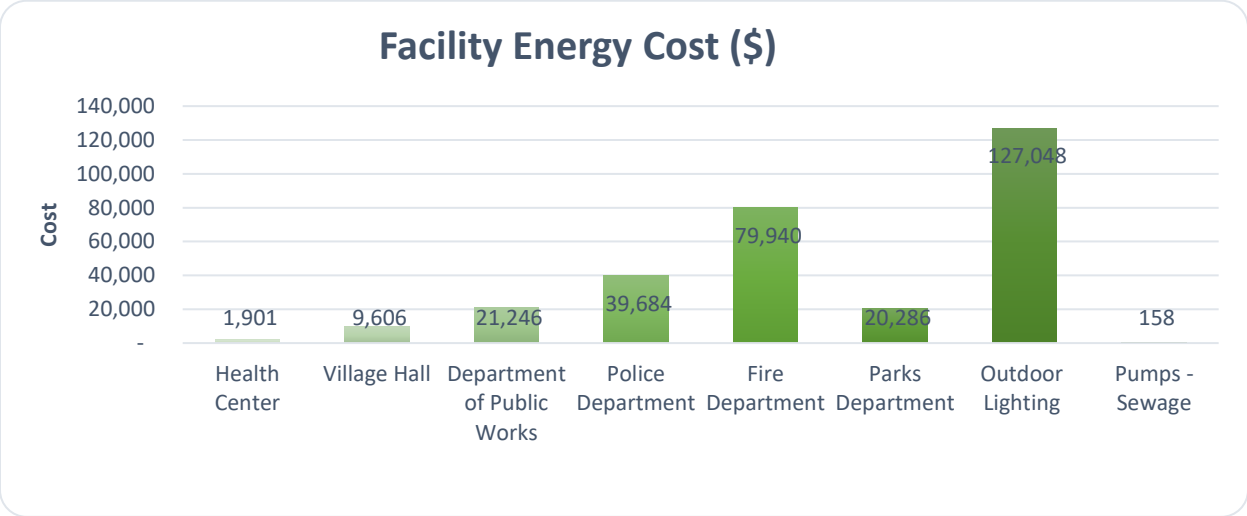

Figure 6: 2019 Village of Mamaroneck Facility Energy Cost by Department

OPPORTUNITIES TO REDUCE GREENHOUSE GASES

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

Actions Taken to Reduce Greenhouse Gases:

The Village has already taken significant measures to reduce GHG emissions and energy costs. The most significant action was an LED lighting conversion for its outdoor lights and traffic signals in 2016. By retrofitting with LED bulbs, the Village reduced the energy usage of these lights by over 50 percent.

The Village has also taken important steps toward enabling the adoption of electric vehicle use through installation of EV charging ports. In December 2022, the Village entered a contract with Blink, an EV charging solutions company, for the installation of up to 12 charging stations for both Village use and public use. These locations will add to the two existing Level 2 charging ports at the Hunter Lot on Prospect Avenue, across from the Courthouse.

In December 2022, an environmentally preferable purchasing (EPP) policy was adopted which requires the Village to take effective measures to reduce or limit the environmental impacts of its operations and conserve resources. This policy includes procurement decisions for energy use such that priority shall be given to products and services which consume the least amount of energy in their manufacture, use and disposal. Where possible, Energy Star qualification and/or an equivalent elevated measure of efficiency should be a minimum requirement in any energy consuming equipment, device, vehicle, or appliance purchase.

Recommendations:

Vehicle Fleet: As of the date of this report, the Village owns only two fully electric vehicles and 5 hybrid vehicles out of its fleet of 139 vehicles. Given that the Village owns an extensive vehicle fleet which significantly contribute to emissions, the CSC PE3 Actions regarding fleet management and conversion to clean energy should be a priority. As a first step, the Village should complete a Fleet Inventory. By creating a fleet inventory and keeping it up to date, the Village can identify the least fuel-efficient vehicles in its fleet. The next step is implementing a Fleet Efficiency Policy to develop a plan to replace the least fuel-efficient vehicles with vehicles that serve the same function but are more fuel-efficient. Another important action is Fleet Rightsizing to assess if the Village owns more vehicles than is necessary. Lastly, the Advanced Vehicles action gives credit based on the percentage conversion from combustion engine vehicles to clean energy vehicles. According to the EPA, the difference between 25 miles per gallon and 20 miles per gallon can amount to the reduction of 10 tons of carbon dioxide over a

vehicle's lifetime. As a general matter, good fleet management improves efficiency, reduces GHG emissions, and saves taxpayer money.

Lawn Maintenance Equipment: Every effort should be made to transition to electric leaf blowers to reduce emissions. According to the DEC, emissions from gas-powered leaf blowers can affect air quality through fuel combustion and the blowing of dust particles. The amount of CO (carbon monoxide) emitted from a typical backpack leaf blower for just 1 hour is equal to CO coming from the tailpipe of a current year automobile operating for over 8 hours. For the other pollutants, the amounts are even greater.

The Village has had a long-standing ordinance banning the residential use of all leaf blowers from May 15 – September 30th each year. The municipal use of leaf blowers is exempt from this law. The Village should consider amending the ordinance to entirely ban gas-powered leaf blowers but allow electric blowers for both the municipality and for residential use.

Energy Audits: Energy use in Village owned buildings is the largest contributor to GHG emissions. The Village should consider performing an energy audit of the Parks Department and Fire Department buildings which produce the highest amount of GHG emissions among all Village owned facilities. Buildings contain heating, ventilation, and air conditioning (HVAC) equipment, lighting, information technology equipment, appliances, motors, and pumping equipment. All of these consume energy and provide many opportunities for improved energy efficiency and cost savings. Energy audits are an important step in identifying inefficiencies and developing plans for improvement, especially in older buildings.

Solar installations: The Village should consider rooftop and/or parking lot canopy solar installations. The Village owns a 7-acre parcel of land ("Taylor's Lane") which was once a DEC superfund site. This site has been fully remediated and is waiting for DEC approval to develop the site. Taylor's Lane has been discussed as a viable option for solar arrays. There are potential recreational uses for the site which need to be considered. There are several possible sites for village rooftop installations: Village Hall if a renovation is undertaken, Harbor Island Parking lot, building in Harbor Island, and the DPW shed.

After implementing these proposed projects and identifying other Climate Action Plan (CAP) priorities / actions, total GHG emissions will inevitably be reduced.

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 Mamaroneck 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.

Appendix 1.

List of Building Facilities:

1. Health Center – 234 Stanley Avenue
2. Village Hall – 123 Mamaroneck Avenue
3. DPW Shed – 727 Fenimore Road
4. DPW Garage - 313 Fayette Avenue
5. Police and Court Building – 169 Mount Pleasant Avenue
6. Fire House/Rescue Squad Building – 601 North Barry Avenue
7. Fire House - 146 Palmer Avenue
8. Fire House – 1400 Halstead Avenue
9. Fire House – 651 Mamaroneck Avenue
10. Harbor Island Park – Main Building
11. Harbor Island Park – Bathroom Building