



## Village of Upper Nyack Greenhouse Gas Inventory for Government Operations 2023 Summary Report



**The Old Stone Meeting House has been environmentally upgraded and now serves as a community meeting and gathering place for the Village of Upper Nyack.**



Supported by Hudson Valley Regional Council through the NYSDEC Climate Smart Communities Coordinator Program

## CREDITS AND ACKNOWLEDGEMENTS

This report was prepared by Harry Vetter, Chair, Upper Nyack Green Committee. The Chairs of the Climate Smart Task Force are Peggy Kurtz and Addison Chappell. We thank Mayor Karen Tarapata for her support and input and Jilliana Sinnott, Financial Secretary, for providing all necessary back-up data.

## BACKGROUND

The Village of Upper Nyack 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 9/24/2021 the Village of Upper Nyack 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 the calendar year 2023, this GHG inventory provides a baseline for 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 Upper Nyack's consumption of energy and materials within Village-owned buildings, the Department of Public Works, vehicle fleet, outdoor lighting it controls, 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's equipment and vehicle fleet. The GHG emissions for all local government operations are measured in metric tons of CO<sub>2</sub> equivalents (CO<sub>2</sub>e) 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.

It is important to note that streetlights (count: 181) are under the auspices of the Town of Clarkstown. The Wastewater Treatment Plant is run by the Town of Orangetown.

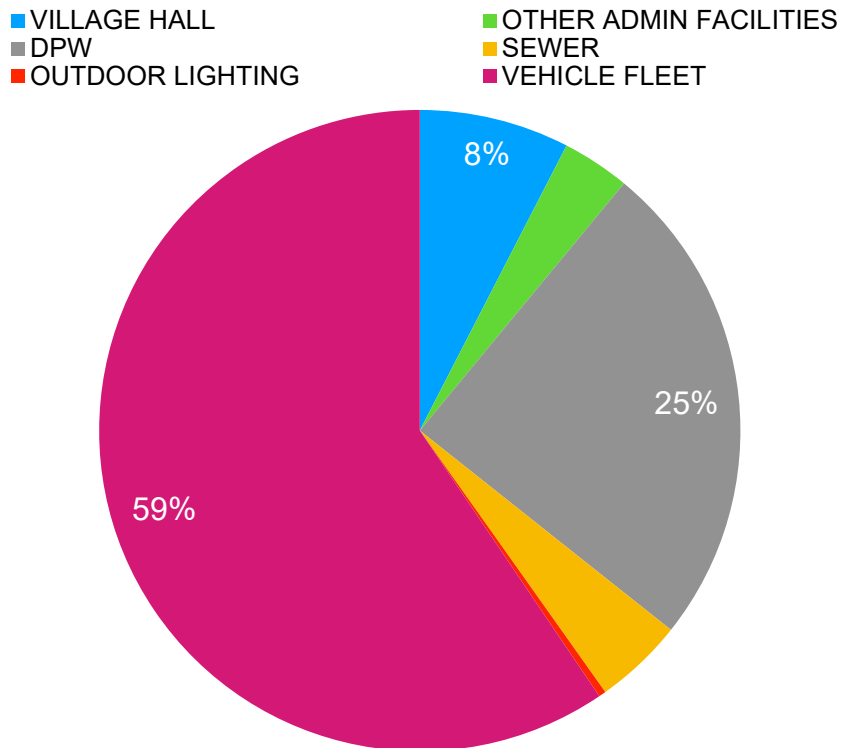
## KEY FINDINGS

In 2023, GHG emissions from the Village of Upper Nyack's government operations totaled 55.5 MTCO<sub>2</sub>e. Figure 1 shows the emissions for government operations broken down by sector. The largest emitter, the Vehicle Fleet, accounts for 59% of GHG emissions. The second largest contributor is the DPW Administrative Facility at 25%. The GHG emissions from government operations are just 0.5% of the Village's communitywide emissions when compared to the 2021 Mid-Hudson Regional Inventory.

### **Figure 1: Government Operations by Sector**

**The above % represents the following emissions in MTCO<sub>2</sub>e.**

<b>DPW</b>	<b>13.7 MTCO<sub>2</sub>e</b>
<b>Other Admin facilities</b>	<b>1.9 MTCO<sub>2</sub>e</b>
<b>Outdoor Lighting</b>	<b>0.2 MTCO<sub>2</sub>e</b>
<b>Sewer</b>	<b>2.5 MTCO<sub>2</sub>e</b>
<b>Vehicle Fleet</b>	<b>33 MTCO<sub>2</sub>e</b>
<b>Village Hall</b>	<b>4.2 MTCO<sub>2</sub>e</b>
<b>Total Emissions:</b>	<b>55.5 MTCO<sub>2</sub>e</b>



The percentage share of emissions from government operations versus total community emissions is approx. 0.5%. This is relatively low compared to other municipalities. This is largely due to entities that could not be included since not under Village jurisdiction: The Wastewater Treatment Plant is operated by the Town of Orangetown; street lighting is under the control of the Town of Clarkstown (181 in total which, incidentally, were switched to LED in approx. 2016); a stop light on Route 9-W is state-owned.

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

## 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 Upper Nyack 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 Harry Vetter 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 (natural gas, propane, and fuel oil) combustion. Examples include emissions from fuel consumed by the Village'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. The full calendar year of 2023 was chosen, and all relevant vendor invoices were tabulated by monthly usage for each of the Village-owned facilities and vehicles.

### 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 Upper Nyack made available and allowed review of all bills for electricity and natural gas usage from the Village’s utility provider accounts (Orange & Rockland /Direct Energy), as well as fuel records for gasoline and diesel used to power the Village’s vehicle fleet and other equipment.

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. 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 administrative buildings (Village Hall, Old Stone Meeting House, River Hook Barn/Apartment, Broadway Garage, also DPW including speed monitor, 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 of Upper

Nyack does not manage a landfill, does not own/operate an ice rink, and as outlined before, does not manage a wastewater treatment plant.

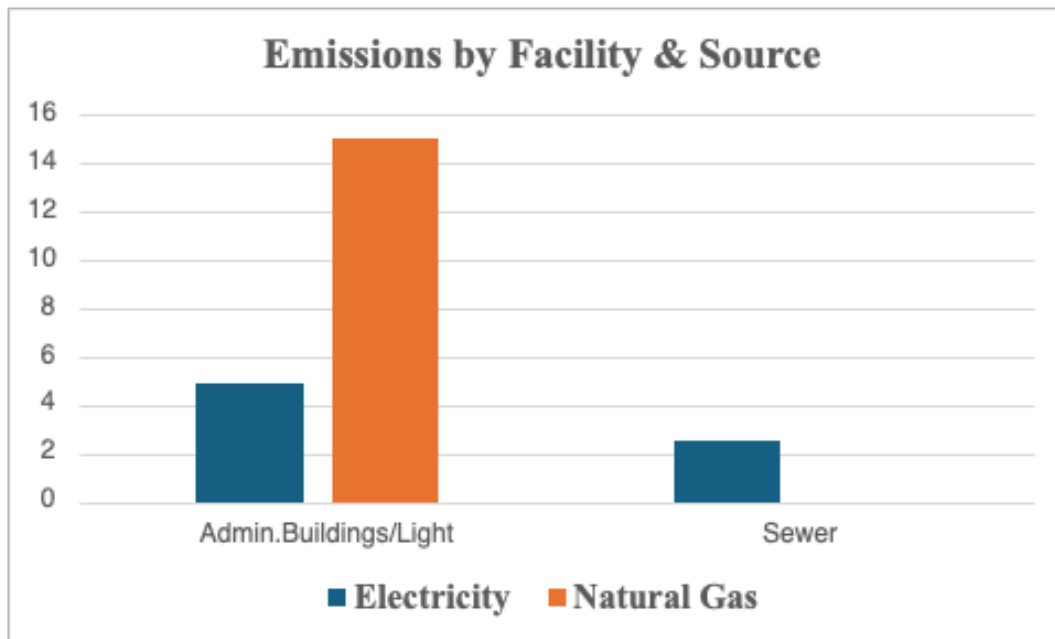
## INVENTORY RESULTS

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. Figures 2 and 3 shows the emissions for government operations in 2023 broken down by source.

### **Figure 2: 2023 Admin. Buildings (incl. DPW, light), Sewer Emissions by Source**

**Admin. Buildings** in this chart include Village Hall, Old Stone Meeting House, Broadway Garage, River Hook Barn & Apartment, DPW with combined GHG emissions in MTCO<sub>2</sub>e of **4.9 electric, 15 natural gas**.

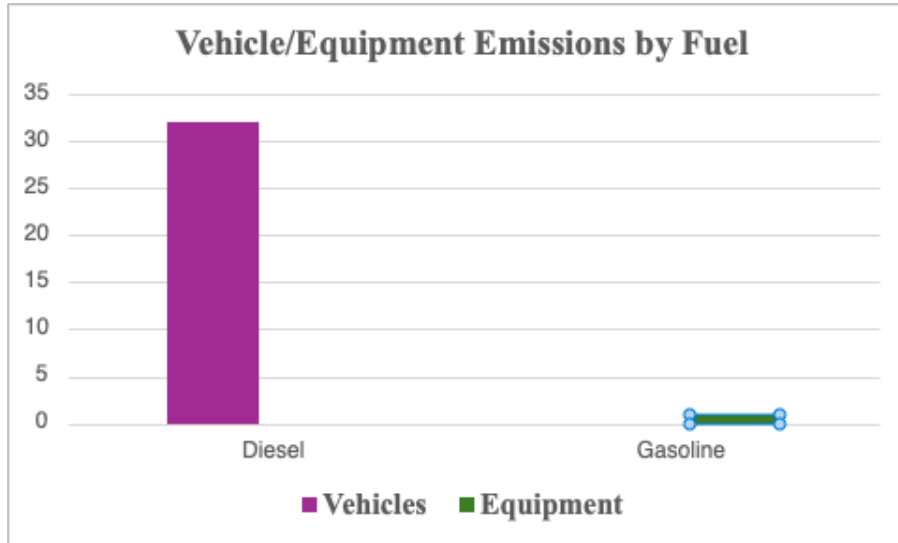
The **Sewer Plant** emissions were: **2.5 electric**.



**Figure 3: 2023 Village Vehicles and Equipment Emissions by Source**

The Village has 7 trucks and front loaders. Diverse lawn equipment sees only sporadic use.

**Vehicle Emissions:** 32 MTCO<sub>2</sub>e  
**Equipment Emission:** 1 MTCO<sub>2</sub>e



**OPPORTUNITIES TO REDUCE GREENHOUSE GASES**

Developing a GHG emissions baseline enables the Village of Upper Nyack to set goals and targets for future reduction of GHG emissions. The Village of Upper Nyack has been proactive to reduce GHG emissions and energy costs.

The Old Stone Meeting House saw a new heat pump installed. This facility was infrequently used in the past, but is now being utilized for meetings (Board of Trustees and Land Use Boards), community events, etc.

Even though not under Village control, influence was used to see street light conversion to LED in approx. 2016.

**Other areas of Emission Reductions:**

- The Village is already in a CCA for its residents, with the default of 100% renewable energy and it is also now considering Community Solar for municipal facilities.
- An energy audit at key facilities may be contemplated.
- Upgrading heating and cooling systems in government buildings will need to be evaluated,
- A switch to more fuel-efficient vehicles to be considered.

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

The next steps will be 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, the Village is urged 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 energy-efficient buildings in the future and for the Village to continue further emissions reductions strategies for its climate action plan such as renewable energy investments, as well as take steps toward greater vehicle fuel efficiency.

The Village will also focus on reducing indirect emissions, for example by taking a leading role in getting a reduction in trash accumulation by advocating for employees in the work environment to partake in the brand-new composting pilot program made available by the Town of Clarkstown.