



**Village of Cold Spring**

# **Greenhouse Gas Inventory for Government Operations**

**July 2022 – June 2023 Summary Report**

**March 2024**



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

## CREDITS AND ACKNOWLEDGEMENTS

This report was prepared by Laura Bozzi, Village of Cold Spring Trustee and Cold Spring Climate Smart Task Force Coordinator. Thank you to the following Village staff who provided data necessary for the completion of this report: Michelle Ascolillo (Village Accountant), Jeff Vidakovich (Village Clerk/Treasurer), and Matt Kroog (Water and Wastewater Superintendent).

## BACKGROUND

The Village of Cold Spring 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 December 2023 the Village of Cold Spring 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 July 2022 to June 2023, this GHG inventory provides a baseline for which the Village of Cold Spring can set emissions and operation costs reduction goals, determine ways in which those goals can be reached, and track progress.

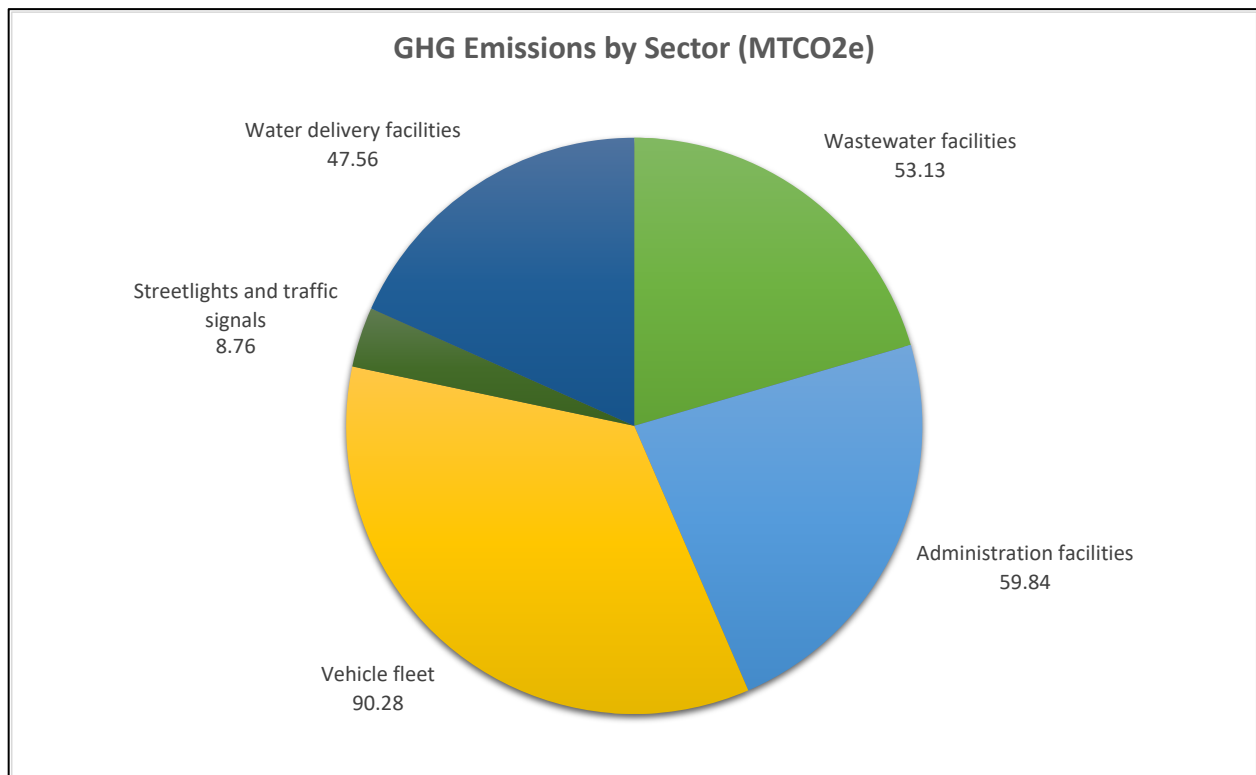
This GHG Inventory for Government Operations Report summarizes the GHG emissions from the Village of Cold Spring's consumption of energy and materials within Village-owned buildings, the water and wastewater treatment plants, vehicle fleet, outdoor lighting, and other facilities. This data was generated from electric, oil, and propane bills for all Village-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 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.

## KEY FINDINGS

From July 2022 to June 2023, GHG emissions from the Village of Cold Spring's government operations totaled 259.6 MTCO<sub>2</sub>e. Figure 1 shows the emissions for government operations broken down by sector. The vehicle fleet accounts for the largest percentage of GHG emissions at 35%. The second largest contributor is the Village buildings at 23%. Wastewater facilities contribute 20%, water delivery facilities (the water plant and operations) contributes 18%, and streetlights and traffic signals contribute 3%.

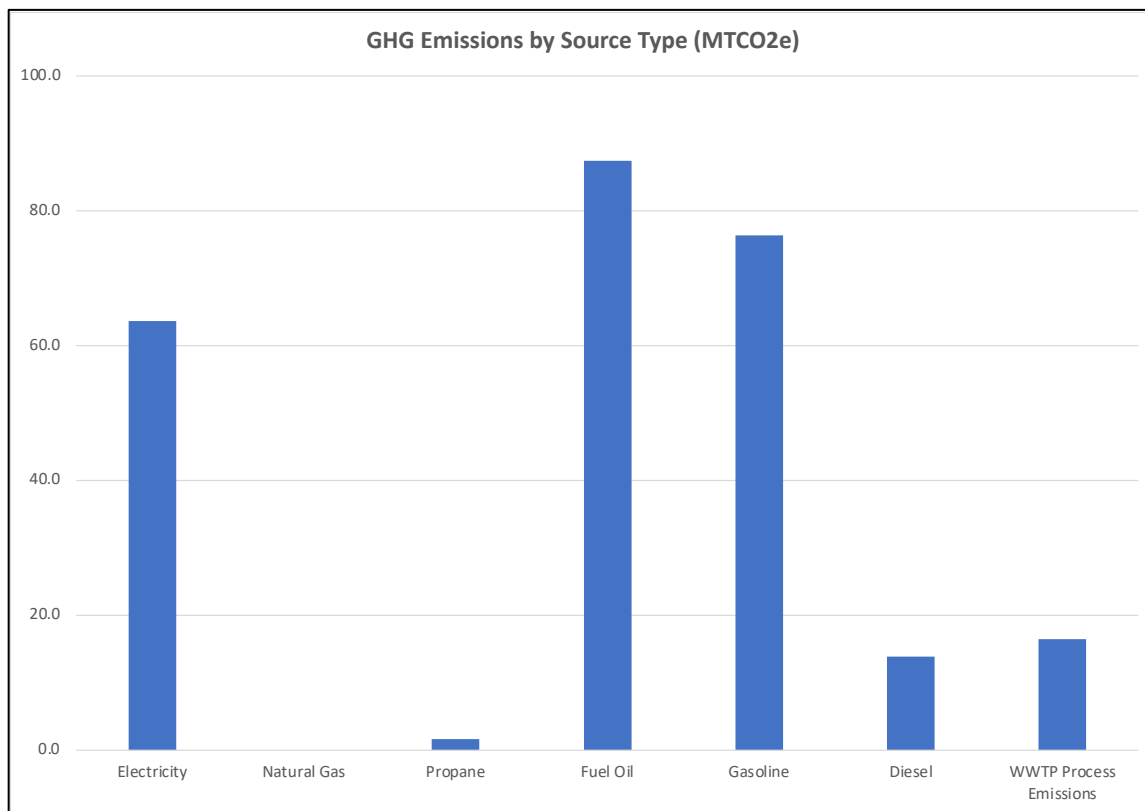
The Inventory Results section of this report provides a detailed profile of emissions sources within the Village of Cold Spring. This data will also provide a baseline from which the Village will be able to compare future performance and demonstrate progress in reducing emissions.

**Figure 1: July 2022 to June 2023 Cold Spring Government Operations Emissions by Sector**



Fuel oil and gasoline are responsible for the most GHG emissions from Village operations, followed by electricity (Figure 2). While wastewater treatment plant process emissions represent a small proportion of total emissions, the process also requires substantial electricity. No natural gas is consumed in Village operations.

**Figure 2: July 2022 to June 2023 Cold Spring Government Operations Emissions by Source 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. In addition to this government operations emissions inventory report, the Village of Cold Spring produced a community-wide emissions inventory that was adopted on February 14, 2024.

Laura Bozzi, Cold Spring Trustee and Climate Smart Coordinator led 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 Cold Spring'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. July 2022 to June 2023 was selected as the baseline year because it is a time period for which complete and accurate data is available.

## 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, the Village of Cold Spring gathered and reviewed all electricity, oil, and propane bills for the Village of Cold Spring's Central Hudson, Pidala, and Paraco accounts, as well as fuel records for gasoline and diesel used to power the Village of Cold Spring 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 CO<sub>2</sub> equivalents (CO<sub>2</sub>e).

## Facilities Master List

A key step in creating the GHG inventory is to compile a facility master list that includes the 19 facilities (including streetlight categories and pump stations), and vehicle fleet, that use at least one form of energy. Each was assigned to a category to indicate the type of infrastructure; similar facilities were grouped together and their energy use aggregated. The Village owns and manages a wastewater treatment plant, which was included in the analysis; the Village does not own or operate a landfill or an ice rink.

## 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 Village of Cold Spring's government operations emissions broken down by sector, while the remainder of this section breaks down these emissions in further detail within each sector.

### Vehicle Fleet

The vehicle fleet was the largest sector of government operations emissions, with a total of 90.3 MTCO<sub>2</sub>e. Table 1 breaks out fuel consumption and associated GHG emissions by Village department. (Water and Wastewater share one vehicle; in this report, the fuel consumed was apportioned equally to each department for tracking purposes.) The Police fleet produces the most GHG emissions, followed by the Roadways and Facilities fleet.

**Table 1: June 2022- July 2023 vehicle fleet fuel consumption and GHG emissions by Village department.**

Department	Consumption		GHG Emissions (MTCO <sub>2</sub> e)		
	Gasoline (gallons)	Diesel (gallons)	Gasoline	Diesel	Total MTCO <sub>2</sub> e
Fire Fleet	1177.0	512.0	10.7	5.3	16.0
Roadways and Facilities Fleet	2319.0	826.0	21.0	8.6	29.6
Water Fleet	379.0	0.0	3.4	0.0	3.4
Police Fleet	4182.0	0.0	37.9	0.0	37.9
Wastewater Fleet	379.0	0.0	3.4	0.0	3.4
<b>TOTALS</b>	<b>8436.0</b>	<b>1338.0</b>	<b>76.4</b>	<b>13.9</b>	<b>90.3</b>

### **Administration Facilities**

After the vehicle fleet, Cold Spring's administrative facilities were the next largest source of government operations emissions, with a total of 59.8 MTCO<sub>2</sub>e (Table 2). Administrative facilities include the Village's buildings, including the wastewater treatment plant (WWTP), water plant, Village Hall, highway garage, and fire station, as well as facilities including streetlights and park lighting, traffic light, and pump stations. These facilities consumed a combination of electricity, fuel oil, and propane. The wastewater treatment plant and the water plant produce the most GHG emissions because of the energy-intensive nature of their processes.

**Table 2: June 2022- July 2023 fuel consumption and GHG emissions by Village facility.**

Facility	Consumption (KWh and Gallons)			GHG Emissions (MTCO <sub>2</sub> e)			
	Electricity (kWh)	Propane (gal)	Fuel Oil (gal)	Electricity	Propane	Fuel Oil	Total MTCO <sub>2</sub> e
Cold Spring WWTP	244,640	0	787.2	25.9	0	8.2	34.0
Pump Station	24,280	0	0	2.6	0	0	2.6
Water	195,953	0	2,593.1	20.7	0	26.8	47.6
Village Hall	25,775	0	1,087.1	2.7	0	11.3	14.0
Roadways and Facilities	13,877	0	1,956.9	1.5	0	20.3	21.7
Fire	30,253	0	2,022.2	3.2	0	20.9	24.1
Street Lights	61,488	0	0	6.5	0	0	6.5
Parks	5,740	277.4	0	0.6	1.6	0	2.2
Traffic Light	204	0	0	0	0.0	0	0



## OPPORTUNITIES TO REDUCE GREENHOUSE GASES

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

The Village of Cold Spring has been proactive to reduce GHG emissions and energy costs. Recent actions include LED lighting conversion at the highway garage and water plant, LED retrofits on streetlights, and an energy study of Village Hall. The first Village-owned EV charging stations is expected to be installed in Spring 2024.

The Village is exploring additional opportunities to reduce GHG emissions, including purchase of a municipal Electric Vehicle, energy efficiency and clean energy upgrades to Village Hall, and rooftop solar at municipal buildings. After implementing these proposed projects and identifying other climate action plan priorities and actions, total GHG emissions are expected to 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 Cold Spring 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 the vehicle fleet, water and wastewater operations, and building heating. Future emissions reductions strategies for the Village of Cold Spring to consider for its climate action plan include increasing energy efficiency and renewable energy investments – particularly related to water treatment processes – as well as switching to electric vehicles. Other key data points to collect and track might include solid waste emissions.