Town of Warwick, New York
Greenhouse Gas Inventory for Government Operations
2025 Summary Report

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

CREDITS AND ACKNOWLEDGEMENTS

This report was prepared by Michael Helme and Brookelyn Jaeckel, with assistance from Town of Warwick Supervisor Jesse Dwyer and his office staff, Department of Public Works (DPW) Commissioner Ben Astorino, DPW Deputy Commissioner Matthew McPherson, and Recreation Director Sam Walters.

BACKGROUND

The Town of Warwick recognizes that greenhouse gas (GHG) emissions from human activity are contributing significantly to climate change, the consequences of which pose substantial risks to the health and well-being of our community. To demonstrate its commitment to addressing the growing threat of climate change, in 2024 the Town of Warwick 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 2025, this GHG inventory provides a baseline for 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 the Town's consumption of energy and materials within Town-owned buildings, parks, water treatment facilities, vehicle fleet, outdoor lighting, and other facilities. This data was generated from electric, natural gas, propane, and fuel 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 carbon dioxide equivalents (CO_2e) 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, which complies with the Local Government Operations Protocol.

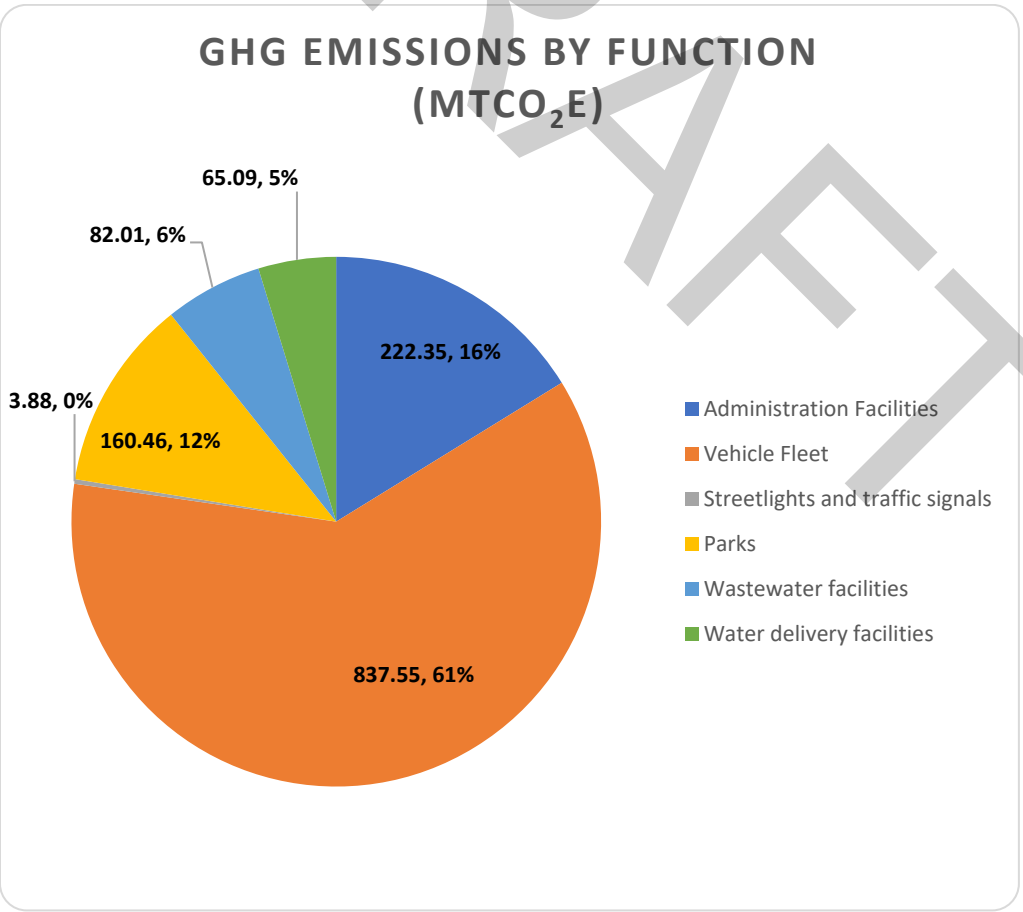
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KEY FINDINGS

In 2025, GHG emissions from The Town of Warwick's government operations totaled 1,371 Metric Tons CO_2e. Figure 1 shows the emissions for government operations broken down by sector. The Vehicle Fleet accounts for the largest percentage of GHG emissions at 61%. The second largest contributor is the Town of Warwick's Administration Facilities with 16% of emissions. The remainder of the GHG emissions from the Town of Warwick include the Parks (12%), the Wastewater Facilities (6.0%), the Water Delivery Facilities (5%), and lastly the Streetlights and Traffic Signals (0.03%).

The Inventory Results section of this report provides a detailed profile of emissions sources within the municipality. 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: 2025 Town of Warwick Government Operations Emissions by Function



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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 Town of Warwick 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 Michael Helme and Brookelyn Jaeckel 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.

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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. 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.

For the Town of Warwick inventory, 2025 was chosen as the baseline year because the Town's software for tracking vehicle fleet fuel does not have the capacity to provide records for prior years. Thus, we had a complete data set for 2025.

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 Town gathered and reviewed:

- all electricity and natural gas bills for the Town's Orange and Rockland accounts
- fuel records for gasoline and diesel used to power the Town vehicle fleet and
- propane and fuel oil deliveries for heating at Mountain Lake Park and backup generator use for various water delivery and wastewater treatment facilities.

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 carbon dioxide equivalents (CO_2e).

Facilities Master List

A key step in creating the GHG inventory is to compile a facility master list that includes the Town's 56 facilities, including:

- 7 Administration facilities
- 17 Parks facilities
- 9 Wastewater facilities
- 13 Water delivery facilities
- 10 Streetlight and traffic signal zones

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Each was assigned to a category to indicate the type of infrastructure and then similar facilities along with their energy use. The Town of Warwick does not manage a landfill or own an ice rink but does manage a wastewater treatment plant.

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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. Table 1 shows the emissions for government operations broken down by sector, while the remainder of this section breaks down these emissions in further detail within each sector.

Table 1: Government Facilities Emissions 2025 by Sector

	Consumption				Emissions (MT CO_2e)			
Facility/Group Name	Electricity (kWh)	Natural Gas (Therms)	Propane (Gallons)	Fuel Oil (Gallons)	Electricity	Natural Gas	Propane	Fuel Oil
Administration Facilities	324,341	35,323	–	–	35.5	186.9	–	–
Streetlights and traffic signals	35,518	–	–	–	3.9	–	–	–
Parks	341,324	–	6,037	8,679	37.3	–	34.7	88.4
Wastewater facilities	610,596	–	–	–	66.7	–	–	–
Water delivery facilities	512,143	–	–	894	56.0	–	–	9.1

The largest sector of government operations emissions came from the Town's vehicle fleet, as broken down in Table 2 below. The work of the DPW requires snowplows and other heavy-duty equipment that are not designed for fuel efficiency. The Police Department physically monitors the 100+ square miles in the Town of Warwick throughout the day throughout the year, which requires driving long distances daily.

Table 2: Vehicle Fleet Emissions 2025 by Department

	Consumption		Emissions (MT CO_2e)	
Department	Gasoline (Gal)	Diesel (Gal)	Gasoline	Diesel
DPW	12,021	21,552	114	220
Police	31,713	21	300	0
Dial-A-Bus	18,161	–	172	–
Water	2,226	–	21	–
Buildings	1,178	–	11	–
Vehicle Fleet Total	**65,299**	**21,573**	**618**	**220**

After the Vehicle Fleet, the Town's administration facilities were the next largest source of government operations emissions, with a total of 222 MT CO2e. Among administration facilities, it was the use of more than 25,000 therms of natural gas at the DPW building, which accounts for 187 MT CO_2e, that was responsible for the majority of emissions. This is an aging and poorly insulated building that is required to keep snowplows and other equipment warm and ready for use throughout the coldest months of the year.

Among the Town's park facilities, emissions from Mountain Lake Park amounted to 153 MT CO_2e of the total 160 MT CO_2e emitted by all Town parks. Mountain Lake Park, which formerly

DRAFT

operated as a summer camp, was acquired by the Town in 2020. It has a main lodge, theater and arts building, in addition to a couple dozen cabins and other recreation facilities. Many of these facilities are now actively used through the winter, although they often lack insulation and the heating and cooling equipment is aging.

OPPORTUNITIES TO REDUCE GREENHOUSE GASES

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

The Town has been proactive to reduce GHG emissions and energy costs. Most Town facilities have completely changed lighting over to LEDs, and the Town has reduced energy usage and emissions by retrofitting almost all of its streetlights to LEDs. At the end of 2025, the Town Board passed a resolution and Town Supervisor Dwyer signed a five-year contract with Perch Energy for a community solar subscription that will cover roughly one-third of the Town's annual electricity usage.

Since September 2025, the Town has worked with Municipal Solar Partners to complete the first phase of developing municipally owned solar arrays. Several sites were ruled out as impractical for large solar arrays, but there are also four or five sites where interconnection studies seem to show strong feasibility, including for a large roof-top mounted system at Town Hall. The completed site studies will provide the Town with opportunities to build more solar arrays over the next few years.

In June 2026, the Town began work with Veregy, an engineering and energy service firm that works with municipalities to evaluate where they can make investments to optimize energy use. Veregy also connects municipalities with grants that financially support efficiency upgrades.

The Town has also made efforts to build electric vehicle charging stations that would charge Town-owned EVs and be available for public use. The application process for a major grant from Orange & Rockland has been at a standstill for many months, but the Town is committed to developing the infrastructure to start electrifying its fleet. In addition, in October of 2026, the Town installed a new FuelCloud system for monitoring transportation fuels, which will significantly improve the capacity to monitor its use of gasoline and diesel.

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, the Town of Warwick 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. The Town of Warwick is planning to update this inventory before 2031 to analyze actual progress in reducing emissions.

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This inventory shows that it will be particularly important to begin electrifying its fleet and focus on energy efficiency in Town facilities. Future emissions reductions strategies for Town of Warwick to consider for its CAP include renewable energy investments, increasing energy efficiency and vehicle fuel efficiency. Other key data points to collect and track might include wastewater emissions, water delivery rates, and government employee vehicle trips.

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