



## TOWN OF SAND LAKE

# 2023-2024 GREENHOUSE GAS INVENTORY FOR GOVERNMENT OPERATIONS

## SUMMARY REPORT

COMPILED ON JANUARY 20, 2026

### CREDITS AND ACKNOWLEDGEMENTS

This report was prepared by The Capital District Regional Planning Commission, with the support of Anna Rizzo, Chair of the Sand Lake Climate Smart Community along with Megan Bailey and Meagan Wait in the Sand Lake Comptroller's Office.

### BACKGROUND

The Town of Sand Lake recognizes that human-caused greenhouse gas (GHG) emissions drive climate change, threatening our community's health and safety. To address this, the Town of Sand Lake adopted the New York State Climate Smart Communities (CSC) pledge on April 30, 2025, and is pursuing Bronze Certification in the program.




The CSC program, administered by the New York State Department of Environmental Conservation (DEC), supports local governments in reducing emissions and adapting to climate impacts. 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 2023 and 2024, 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 Greenhouse Gas Inventory establishes a baseline for all emissions across sectors, including municipal buildings, vehicles, streetlights, and waste. This baseline will guide emission reduction targets and a Government Operations Climate Action Plan.

### DATA GATHERING AND METHODOLOGY

This inventory report presents an accounting and analysis of GHG emissions for the municipal operations of the Town. The Climate Smart Communities Task Force appointed Anna Rizzo, Planning and Zoning Coordinator and CSC Coordinator, to lead the GHG Inventory data collection effort, with the help of the Capital District Regional Planning Commission (CDRPC). The GHG inventory spreadsheet used was developed by Climate

Action Associates, LLC, and is compliant with the Local Government Operations Protocol (LGOP)<sup>1</sup>, a standardized set of guidelines for quantifying and reporting greenhouse gas emissions associated with government operations.

		
<b>SCOPE 1</b>	<b>SCOPE 2</b>	<b>SCOPE 3</b>
Emissions from government-owned vehicles, onsite fuel combustion (e.g., natural gas, propane, or fuel oil), landfills, process emissions from wastewater treatment facilities, refrigerant leakage	Emissions from purchased electricity for street lights and indoor lighting in municipal buildings	Emissions from employee commuting, purchased materials and fuels, transportation in non-government vehicles, outsourced activities, waste disposal

This inventory includes Scope 1 and Scope 2 emissions, which are the most critical components of a local government operations greenhouse gas analysis and are most directly influenced by municipal policy decisions. This inventory includes refrigerants.

While the New York State Department of Environmental Conservation’s Climate Smart Communities (CSC) program encourages the tracking of Scope 3 emissions, it remains optional and is dependent on data availability.

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#### BASELINE YEAR

The inventory process requires selecting the baseline year. Local governments typically review the range of available data over time and choose a year that offers the most complete and accurate information across all major emission sources. Ideally, the baseline year is set several years in the past to allow recent emissions reduction actions to be captured and evaluated. The emissions inventory should include all greenhouse gas emissions generated during the selected baseline year.

This inventory uses the average data from years 2023 and 2024 to establish a baseline.

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#### QUANTIFICATION METHODS

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<sup>1</sup> <https://icleiusa.org/resources/local-government-operations-lgo-protocol/>

GHG emissions are calculated using a calculation-based approach, in which emissions are estimated using activity data and published emissions factors:

Activity Data x Emissions Factor (Fuel, GHG) = GHG Emissions (Fuel, GHG)

Activity data refers to actual energy consumption or process data such as:

- Annual electricity consumption (kWh)
- Natural gas usage (therms)
- Fuel consumption (gallons of gasoline, diesel, propane, heating oil)

To obtain this data, the Town gathered and reviewed all electricity, propane, and fuel oil bills for the Town's accounts, as well as fuel records for gasoline and diesel used to run the Town vehicle fleet.

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#### EMISSIONS FACTORS

Each GHG and fuel type has a distinct emissions factor used to convert activity data into emissions:

- Electricity: 2022 EPA Emissions and Generation Resources Integrated Database (EGRID) grid-average emission factor for the upstate New York region<sup>2</sup>
- Fuels (natural gas, propane, heating oil/diesel, gasoline): EIA Carbon Dioxide Emissions Coefficients by Fuel<sup>3</sup>

All emissions are expressed in metric tons of carbon dioxide equivalents (MTCO<sub>2</sub>e), which includes CO<sub>2</sub>, methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), using 100 year global warming potential (GWP) factors from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report, 2014 (AR5)<sup>4</sup>

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#### FACILITIES MASTER LIST

A key step in creating the GHG inventory is compiling a facility master list that includes the Town's facilities that consume energy. The table below identifies the facilities and their respective energy providers included in the inventory, and each is categorized by infrastructure type to facilitate grouping similar facilities, based on the ICLEI Reporting Standard from the Local Government Operations Protocol.<sup>5</sup>

The landfill of the Town of Sand Lake closed on April 1, 1993. There is a transfer station currently in operation in the town.

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<sup>2</sup> <https://www.epa.gov/egrid/historical-egrid-data>

<sup>3</sup> [https://www.eia.gov/environment/emissions/co2\\_vol\\_mass.php](https://www.eia.gov/environment/emissions/co2_vol_mass.php)

<sup>4</sup> [https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%28Feb%2016%29\\_1.pdf](https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%28Feb%2016%29_1.pdf)

<sup>5</sup> <https://icleiusa.org/resources/local-government-operations-lgo-protocol/>

Facility	Energy Providers	Sector
Town Hall	Mirabito Energy	Administration Facilities
Highway Garage	Nolan, Mirabito Energy	Administration Facilities
Vehicle Fleet		Vehicle Fleet
Sewer Station	Nolan, National Grid	Wastewater facilities
Transfer Station	Nolan	Solid Waste Facilities
Streetlights	NYSEG	Streetlights and Traffic Signals

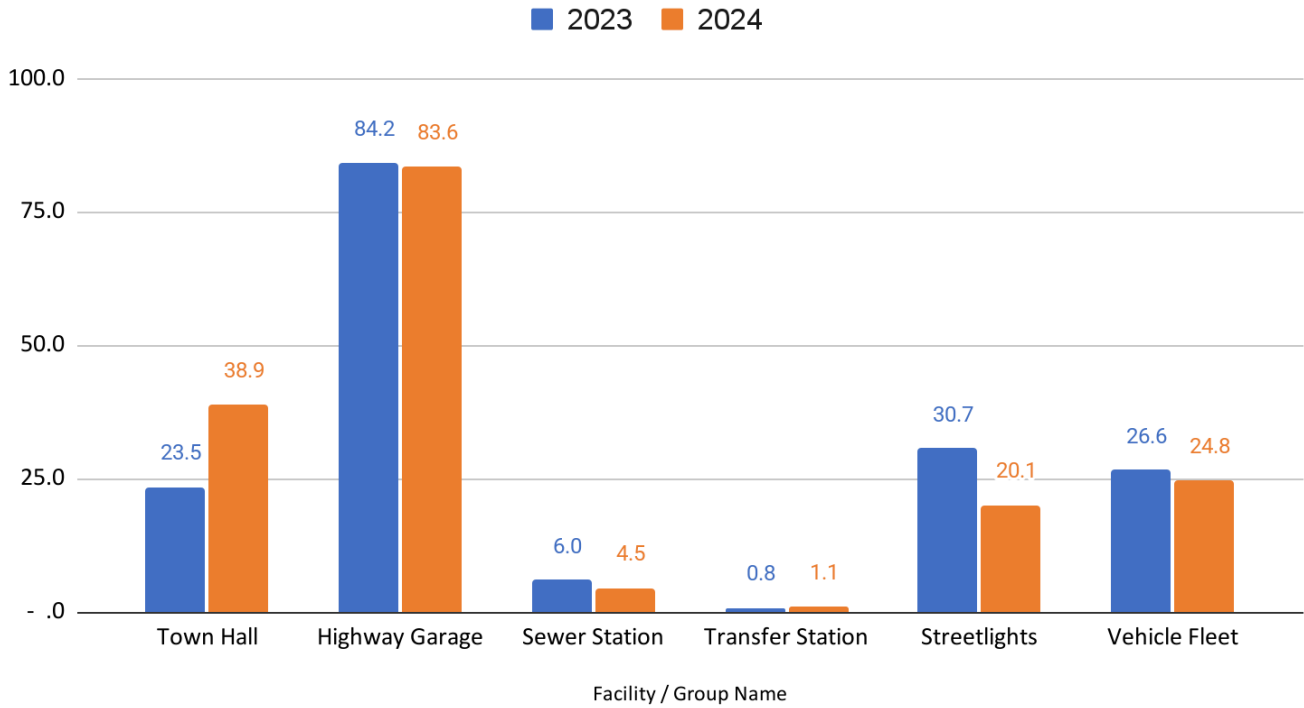
**TOWN OF SAND LAKE INVENTORY RESULTS**

In 2023 and 2024, greenhouse gas (GHG) emissions from government operations for the Town of Sand Lake totaled 171.8 and 178.3 metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e), respectively. The average emissions for both years is 172.4 MTCO<sub>2</sub>e.

The charts below show energy-related GHG emissions by facility. The below chart demonstrates the Highway Garage is the largest contributor to government GHG emissions, accounting for an average of 83.9 MTCO<sub>2</sub>e per year—representing 49% of the Town’s total municipal emissions. The second-largest contributor is the Town Hall, responsible for 18% of emissions. The remaining emissions are distributed across other facilities, each contributing a smaller share to the overall total.

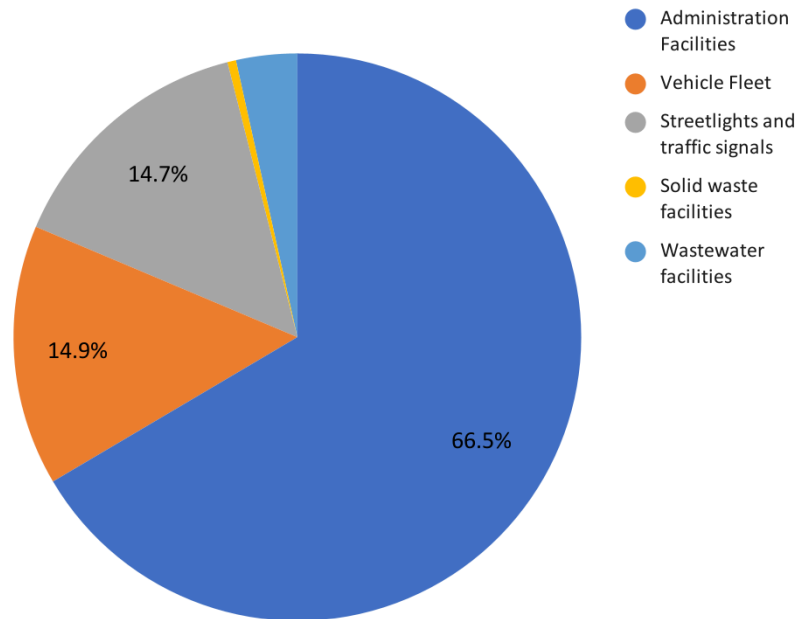
Facility	Average Emissions (MTCO <sub>2</sub> e) from 2023-2024	% Emissions across all Facilities
Town Hall	31.2	18%
Highway Garage	83.9	49%
Sewer Station	5.3	3%
Transfer Station	1.0	1%
Streetlights	25.4	15%
Vehicle Fleet	26	15%

## 2023 & 2024 GHG Emissions by Facility/Group Name

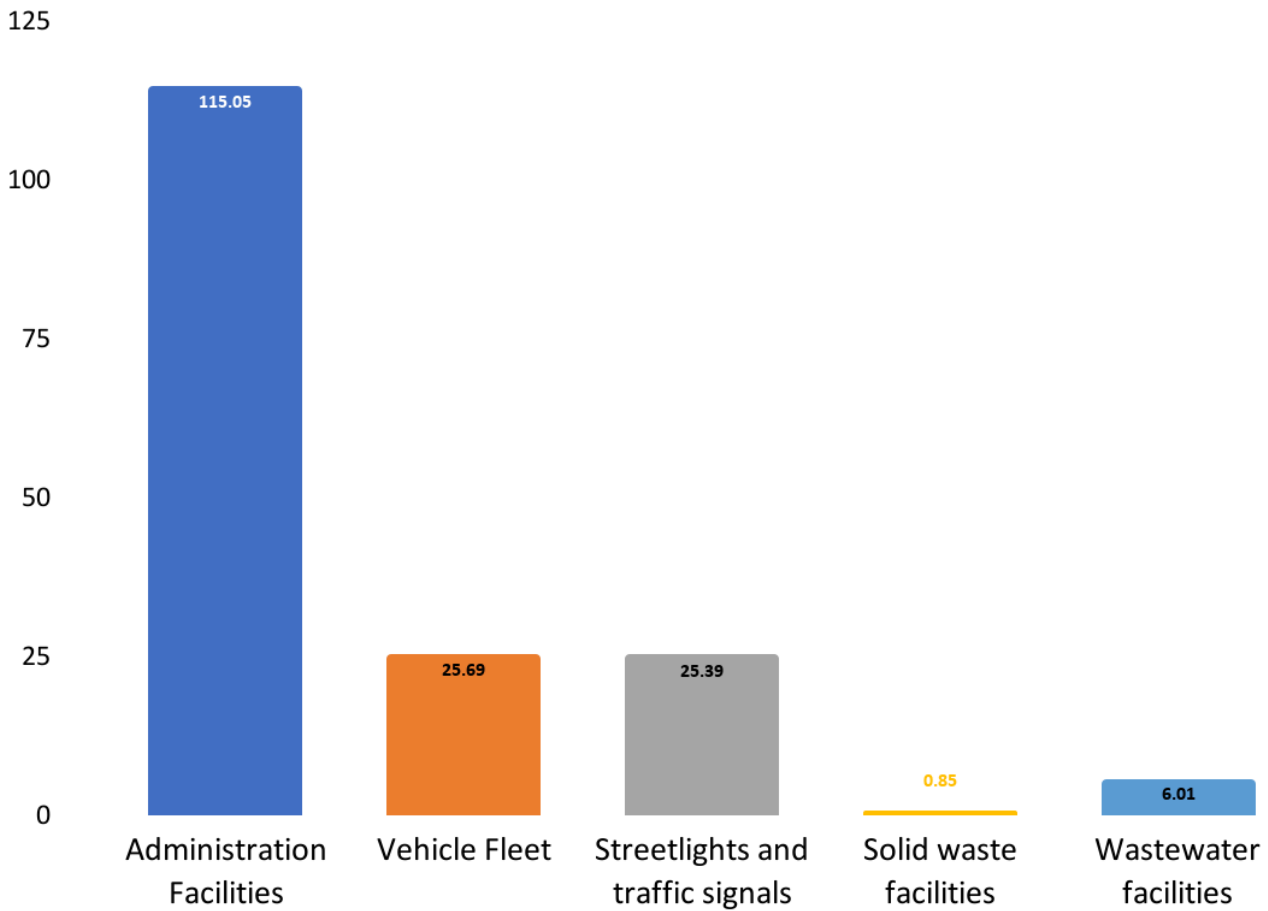


It is also useful to analyze emissions across administrative functions. The next charts illustrate GHG emissions by function. Administration Facilities, which includes Town Hall and the Highway Garage, contribute to the highest emission across all functions of the Town. The Vehicle Fleet is second, contributing about 15% of emissions, closely followed by Streetlights with 14.7% of emissions.

GHG Emissions by Function (MTCO<sub>2e</sub>)



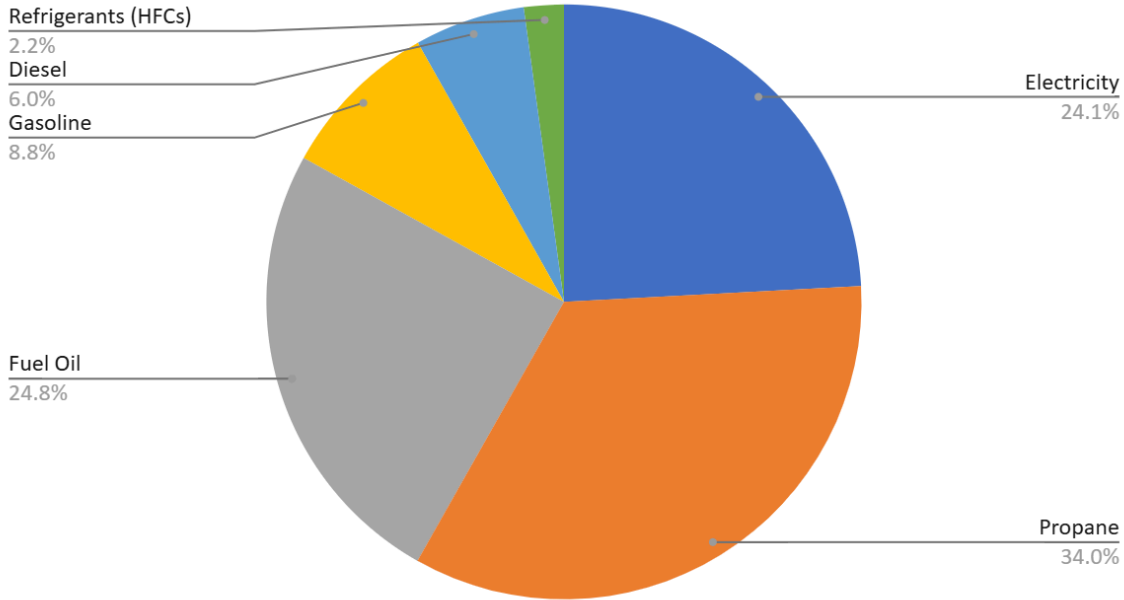
## GHG Emissions by Function (MTCO<sub>2</sub>e)



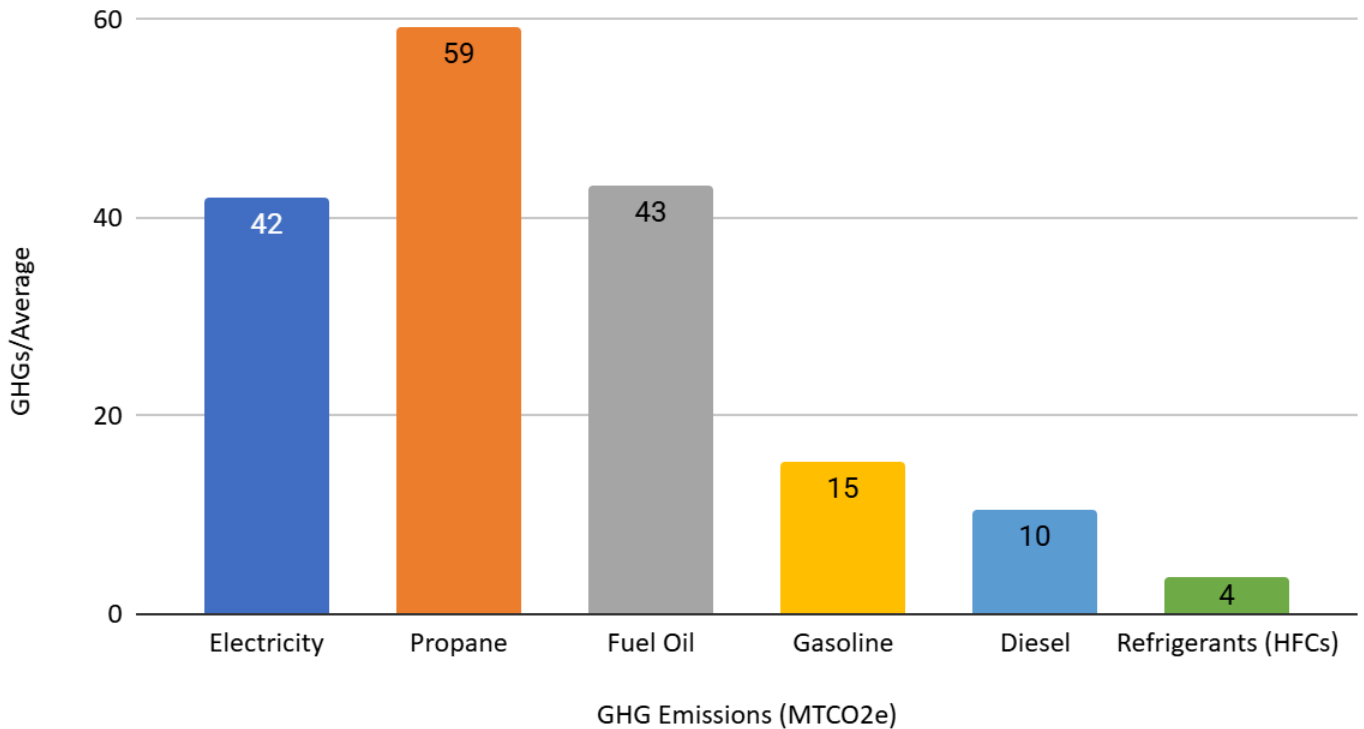
The Town's vehicle fleets produce an average of 25.7 MTCO<sub>2</sub>e of GHG emissions annually, with gasoline-powered vehicles accounting for 10.2 MTCO<sub>2</sub>e and diesel-powered vehicles for 7 MTCO<sub>2</sub>e. Refrigerant leakage was quantified at 2.5 MTCO<sub>2</sub>e.

When looking at sources in the charts below, propane is the largest contributor to the Town's greenhouse gas emissions, accounting for approximately 34% of total emissions.

## GHGs/Average Emissions by Source



## GHGs/Average vs. GHG Emissions (MTCO<sub>2</sub>e) by Source



Establishing a GHG emissions baseline enables the Town to set measurable goals and targets for future emissions reductions. The Town has already taken several proactive steps to reduce both GHG emissions and energy costs.

In April of 2024, 100% of the lights were changed to LED in the Town Hall. The previous fixtures were incandescent lights. All 363 fixtures were converted at the Town Hall. Additionally, in 2022, the Town completed a full conversion of its streetlights to LEDs, further enhancing energy efficiency.

In April of 2016 the Town installed 450 kilowatt, ground mounted solar panels at the old town garage. The Town of Sand Lake receives all the power. Additionally, the Department of Public Works has their own roof mounted panels. A pole mounted panel was also installed in 2012.

Beyond electricity, the majority of the Town of Sand Lake's GHG emissions come from fuel sources such as propane and fuel oil. Therefore, transitioning the Town Hall to a heat pump system presents the next major opportunity to significantly reduce emissions by electrifying heating. This shift from on-site fuel combustion (Scope 1 emissions) to electricity use (Scope 2 emissions) also enables the Town of Sand Lake to offset its emissions through renewable electricity sources, such as expanded on-site solar arrays or participation in community solar programs.

While vehicle emissions make up a relatively small share of the Town's total GHG footprint compared to buildings, the Town recognizes the long-term importance of fleet electrification, especially as New York State moves toward phasing out internal combustion vehicles by 2035.

Looking ahead, the Town is preparing to update this inventory with more recent data to understand how recent upgrades have impacted emissions and then undertake Climate Action Planning as a critical next step. This planning process will help establish clear emissions reduction targets and identify strategies and funding opportunities to achieve them.