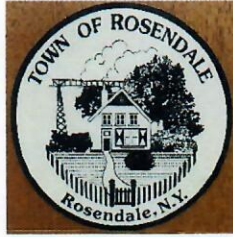# TOWN OF ROSENDALE
GOVERNMENT OPERATIONS
GREENHOUSE GAS INVENTORY
2023 SUMMARY REPORT

Amberly Jane Campbell / Shawangunk Journal

CREDITS AND ACKNOWLEDGEMENTS

This report was prepared by Penny Coleman, member of the Rosendale Environmental Commission and the Rosendale Climate Smart Task Force. The groundwork for this report was laid in the 2019 GHG Report. Invaluable support for this update was provided by Melanie Patapis, Climate Smart Communities Coordinator, Hudson Valley Regional Council. Project support and data collection assistance provided by: Jeanne Walsh, Rosendale Town Supervisor; Mandy Donald, Rosendale Town Clerk; Christine Harrison, Deputy Town Clerk; Robert Gallagher, Rosendale Highway Superintendent; and Dorene Whitaker, Highway Department Clerk.

BACKGROUND

The Town of Rosendale 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 2009 the Town of Rosendale 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 2019, 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 of Rosendale's consumption of energy and materials within town-owned buildings, the Water Treatment Plant, vehicle fleet, outdoor lighting, and other facilities. This data was generated from electric, 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 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.

In 2019, GHG emissions from Rosendale's government operations totaled 462.18 MTCO2e. Figure 1 shows the emissions for government operations broken down by sector and Figure 2 shows the Town emissions broken down by energy type. The Vehicle Fleet accounts for the largest percentage of GHG emissions at 46%. The second largest contributor is the Town's Administration Facilities with 33% of emissions. The remaining emissions come from Wastewater Facilities (10%), Water Delivery Facilities (8%) and Outdoor Lighting (3%).
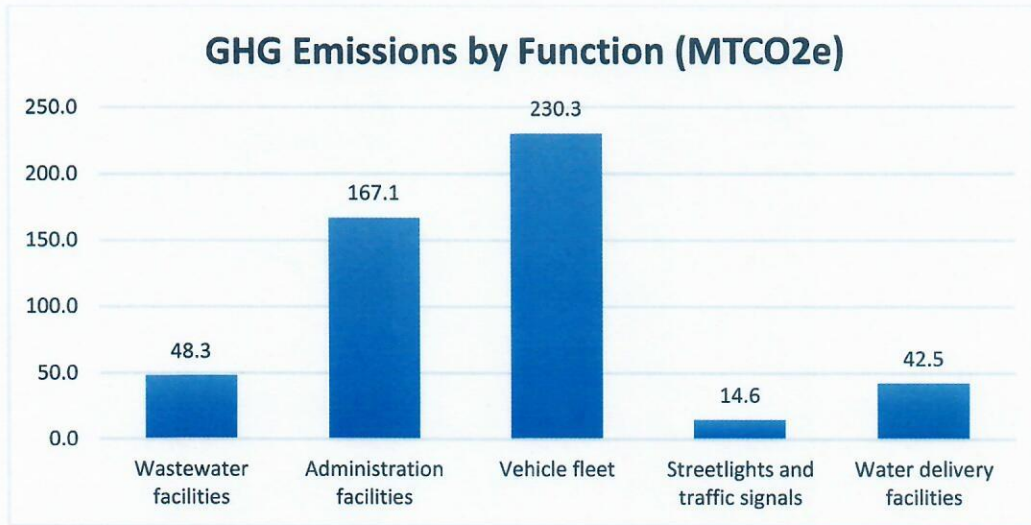
GHG Emissions by Function (MTCO2e)

Sector	MTCO2e
Wastewater facilities	48.3
Administration facilities	167.1
Vehicle fleet	230.3
Streetlights and traffic signals	14.6
Water delivery facilities	42.5

Figure 1: Town of Rosendale GHG Emissions by Sector (2019)

GHG Emissions by Source Type (MTCO2e)

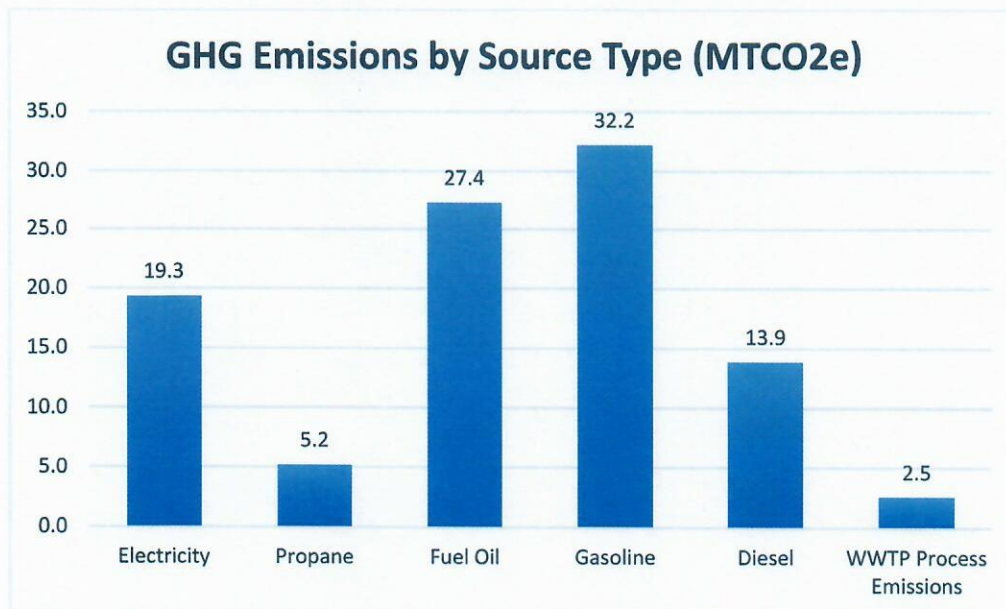| Source Type	MTCO2e
Electricity	19.3
Propane	5.2
Fuel Oil	27.4
Gasoline	32.2
Diesel	13.9
WWTP Process Emissions	2.5

Figure 2: Town of Rosendale GHG Emissions by Energy Type (2019)

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 Rosendale 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 Penny Coleman 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 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. This report is based on data from 2019 which is the most recent year that is without large distortions from the Covid-19 pandemic.

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 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 bills for Rosendale's accounts with Central Hudson (electricity), Heritage (fuel oil) and Paraco (propane), as well as fuel records for gasoline and diesel used to power the Town's 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, 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_2 equivalents (MTCO2e).

Facilities Master List

A key step in creating the GHG inventory is to compile a facility master list that includes the Town's 6 buildings and 3 lift stations including streetlights, 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.

1. **Town Hall**
2. **Rec Center**
3. **Highway Garage**
4. **Highway Office**
5. **Landfill/Transfer Station**
6. **Sewer Treatment Plant**

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 emissions for government operations broken down by sector. This section shows Rosendale's government operations emissions in further detail within each sector.

Vehicle Fleet

The Town's Vehicle Fleet accounted for 46% of government operations emissions. The Town has an extensive fleet of cars and heavy-duty vehicles for its various departments, such as highway, police, water districts, building & grounds, etc. Figure 3 shows the breakdown of total vehicle fuel (gasoline and/or diesel) emissions by department.
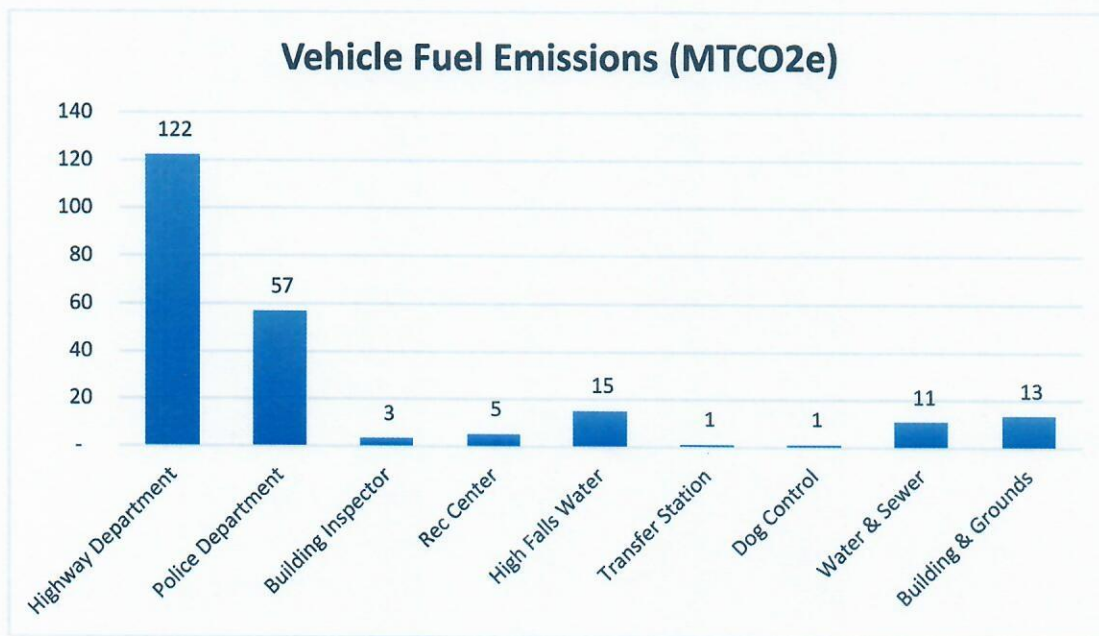

Figure 3: Town of Rosendale Vehicle Fuel GHG Emissions by Department (MTCO2)

In 2019, the Town used 18,337 gallons of gasoline and 6,801 gallons of diesel. The highway department used approximately three quarters of all gasoline usage and almost all diesel usage. Figure 4 shows gasoline and diesel consumption by department. The gasoline used at the REC Center is for lawn mowing equipment.
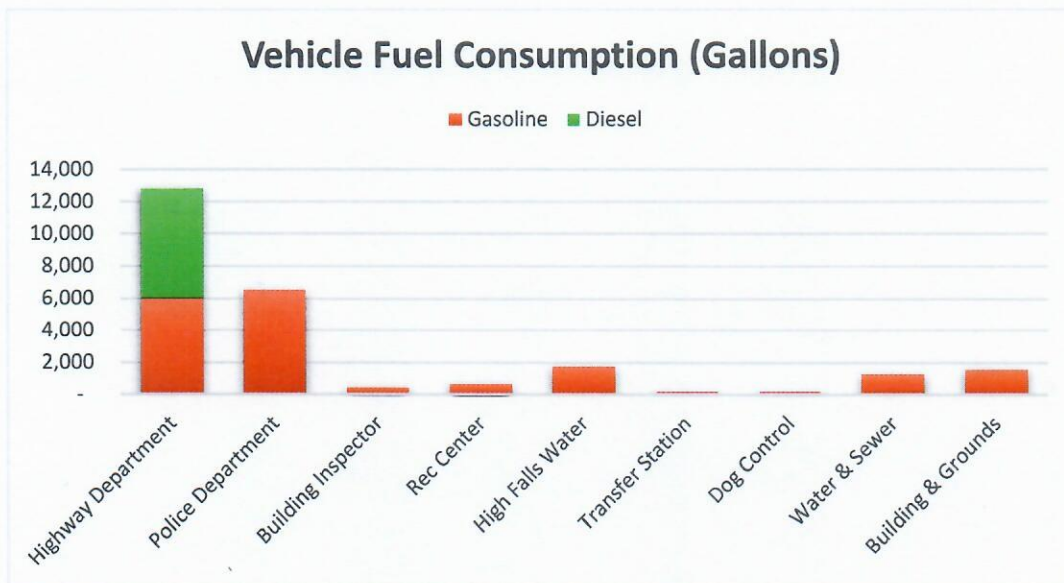
Figure 4: Town of Rosendale Vehicle Fuel Consumption by Department (gallons)

Building Facilities

The Town's administration facilities accounted for 33% of government operations emissions, with Town Hall and the Sewer Treatment Plant equally having the highest emissions. Figure 5 shows the total GHG emissions for each Town Department.
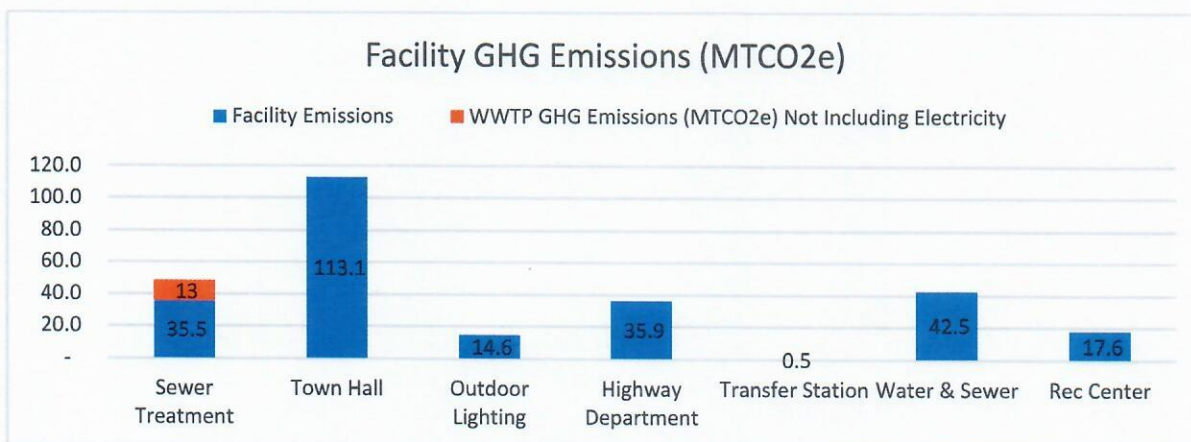

Figure 5: Town of Rosendale GHG Emissions by Facility (2019)

The Town of Rosendale and the Town of Marbletown share space and expenses split evenly in the Municipal Building. The Town Hall building energy usage is combined and therefore divided by two to account for Rosendale's usage. That building includes offices for the town supervisors, the town clerks, planning and zoning boards, building departments, water and sewer departments, highway departments, bookkeepers, police, shared court rooms, meeting spaces, a

gymnasium, a kitchen, and the offices of the Arc of Ulster-Greene. Town Hall has high electricity and fuel oil usage plus uses propane in the kitchen and for the emergency generators, which accounts for its overall high emissions. The fuel oil data at Town Hall was estimated from 2018 data as the Town does not have records for 2019 fuel usage.

The Sewer Treatment Plant process emissions are shown in orange and the remainder of the bar accounts for the electricity and fuel oil usage at the facility. The REC Center data includes usage for the Youth Center, which a separate structure, but immediately behind, the REC center.

Cost Breakdown

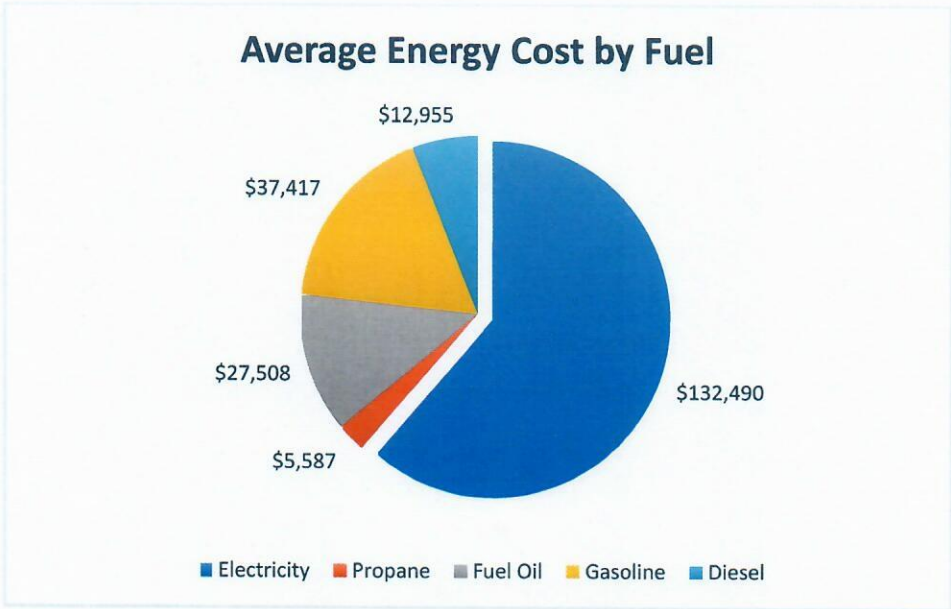Figure 6 shows the average cost Rosendale spent per fuel type in 2019.

Figure 6: Town of Rosendale Average Cost by Fuel Type (2019)

OPPORTUNITIES TO REDUCE GREENHOUSE GASES

Developing a GHG emissions baseline enables the Town of Rosendale to set goals and targets for future reduction of GHG emissions, while maintaining its essential inviting character.

The Town of Rosendale has proactively sought to reduce GHG emissions and energy costs, including the LED Streetlight conversion, completed in 2020, and which is expected to save the Town $40,000 a year. The Rec Center has been renovated to provide a year-round place for showers and bathrooms when power outages are not resolved quickly. The Town also invested in a Tesla Model 3 for use as a patrol vehicle in 2021.

The Town's Wastewater Treatment Plant is currently undergoing a major $5.3 million renovation that will allow a 50% increase in the daily flow rate. The renovation includes a BDF pump, UV filtration system, HVACs throughout and many other state-of-the-art green elements.

In 2018, the Town of Rosendale entered into a contract with Natural Power Group of Wallkill to provide locally generated hydroelectric power for use in all municipally owned facilities and pledged to procure 100 percent of electricity consumed by municipal buildings from renewable sources.

The 2019 completion of a retaining wall to replace flood damaged infrastructure included the installation of a new linear creek-side park along the one-way block of James Street, creating a two-lane promenade that will serve both pedestrians and cyclists and provide additional flood control. The Town also spent over a million dollars in further flood control efforts that included redoing the culverts and drainage pipes around Washington Park, where flooding of homes and road closures along Rt 32 were far too frequent occurrences.

The updated Natural Resources Inventory will help the Town set goals and targets for future reduction of GHG emissions, as will the ongoing pursuit of Benchmarking/Advanced Reporting in the Clean Energy Communities Program.

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 CAP that identifies specific quantified strategies that can cumulatively meet that target. In the meantime, Rosendale 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 reducing emissions from the Vehicle Fleet. Future emissions reductions strategies for Rosendale to consider for its climate action plan include increasing energy efficiency and renewable energy investments, as well as vehicle fuel efficiency. Other key data points to collect and track might include waste and wastewater emissions, water delivery rates, government employee vehicle trips and employee commuter miles, as well as solid waste collection rates.