



**TOWN OF CLINTON
GOVERNMENT OPERATIONS
GREENHOUSE GAS INVENTORY
2023 SUMMARY REPORT**



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

CREDITS AND ACKNOWLEDGEMENTS

This report was prepared by and with the support of the following members of the Town of Clinton's Climate Smart Communities Program Task Force: Michael Whitton, Town Supervisor; Joe Phelan, Task Force Chair; and other members of the Task Force – Jack Persely, Jean McAvoy and Richard Marshall. Additional support was provided by members of Clinton's Conservation Advisory Council, in particular by Barbara Mansell, Chair. The following municipal staff provided information and data necessary for the completion of this Report: Todd Martin, Highway Superintendent; Melissa Karchmer, Highway Secretary; Carol Mackin, Town Clerk; and Mary Molloy, Executive Assistant. Finally, special thanks to Melanie Patapis, Climate Smart Communities Coordinator, Hudson Valley Regional Council.

BACKGROUND

The Town of Clinton 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 July 2017, Clinton 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, 2020 and 2021, this GHG inventory provides an averaged baseline for which Clinton 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 Clinton's consumption of energy and materials within town-owned buildings, vehicle fleet, outdoor lighting, and other facilities. This data was generated from electric, heating oil, diesel, gasoline and propane bills for all Town-owned buildings and operations, as well as fuel records for the Clinton'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 GHG Inventory Tool developed by Climate Action Associates (CAA), LLC's.

KEY FINDINGS

The GHG emissions from Clinton’s government operations from 2019-2021 averaged 810.655 MTCO₂e. Figure 1 shows the emissions for government operations broken down by sector. Administration Facilities account for the largest percentage of GHG emissions at 82%. The second largest contributor is the Town’s Vehicle Fleet with 18% of emissions. Outdoor Lighting, recently converted to LED, barely makes up the remaining 1%.

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

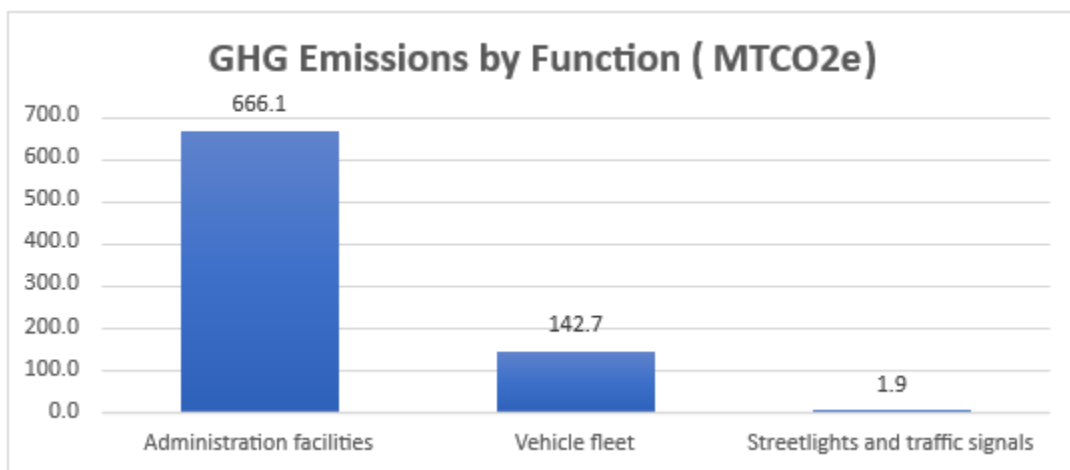


Figure 1. Town of Clinton Government GHG Emissions by Sector

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. Clinton is focusing first on government operations emissions to lead by example and will inventory community-wide emissions in a future report.

Joe Phelan (CSC Task Force Chair) and Jean McAvoy (CSC Task Force member) lead the GHG Inventory data collection effort, with the help of Melanie Patapis (CSC Coordinator, 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 Clinton’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 years - 2019, 2020 and 2021. Clinton chose these three years (by way of averaging data) as the baseline “year” due to the skewing of data during the COVID pandemic which occurred during this period.

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, Clinton gathered and reviewed all bills for Clinton's accounts with Central Hudson (electricity), Bottini (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 CO₂ equivalents (MTCO₂e).

Facilities Master List

A key step in creating the GHG inventory is to compile a facility master list that includes buildings on the Town's municipal campus as well as streetlights and the Town's vehicle fleet, all of which 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 (includes Masonic Hall, Library, Town Court)
2. Town Garage
3. Old Town Garage
4. Schoolhouse
5. Frances Mark Park
6. Friends Park

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 emissions for government operations broken down by function. Figure 2 shows emissions broken down by facility. Figure 3 shows emissions broken down by energy type.

Administrative Facilities were the largest sector of government operations emissions. The Highway Department has significantly higher emissions than the rest of the Town's facilities due to the use of fuel oil and propane at the Town's two garages.

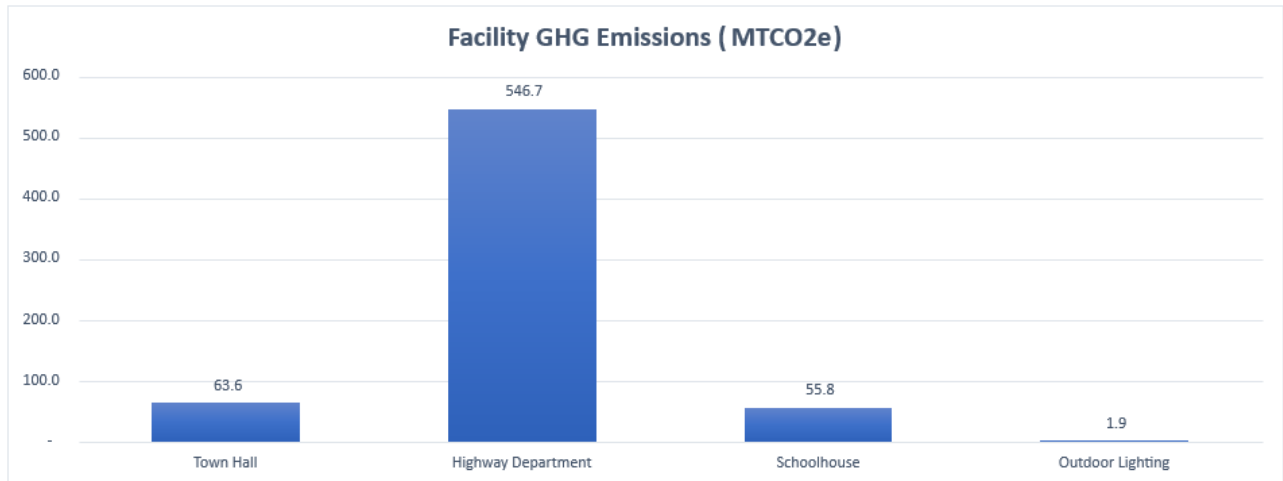


Figure 2. 2019-2021 Town of Clinton Facility GHG Emissions (MTCO2e)

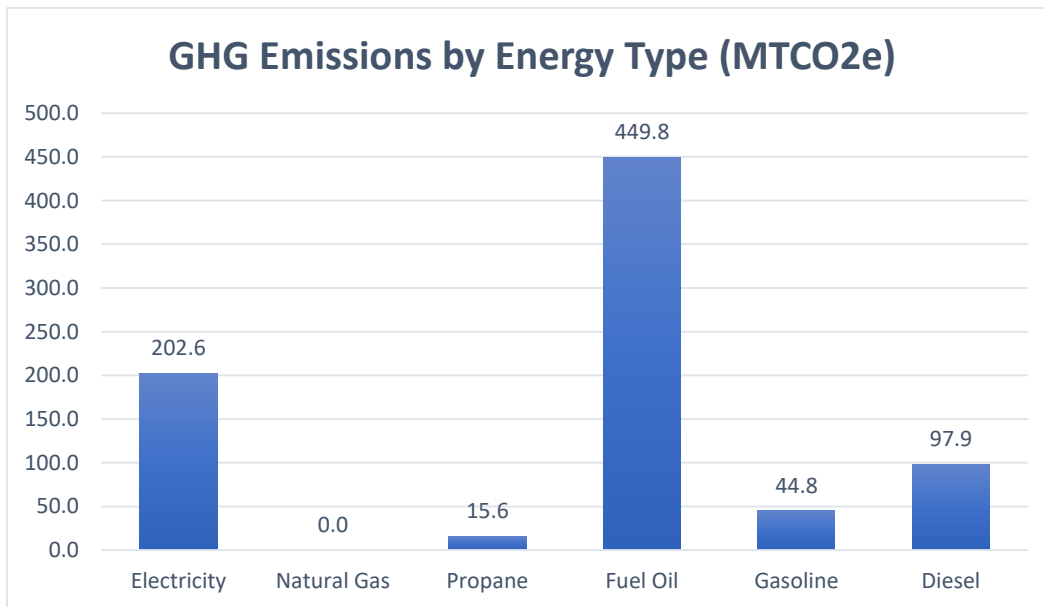


Figure 3. 2019-2021 Town of Clinton GHG Emissions by Energy Type (MTCO2e)

OPPORTUNITIES TO REDUCE GREENHOUSE GASES

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

Clinton has already been proactive to reduce GHG emissions and energy costs on its municipal campus and for its governmental operations:

- **CSC Program:** CSC Pledge signed on behalf of Town, July 7; 2017. Town Board creates CSC Task Force, 2021.
- **Clean Energy Community:**
 - **high-impact actions performed:** benchmarking, energy code enforcement, unified solar permit, 100% renewable electricity (but see “Renewable Electricity” below).
 - **Town certified** as a Clean Energy Community in 2021.
- **Renewable Electricity:** electricity was 100% renewable for duration of the Community Choice Aggregation Program (approximately from June 2020 to July 2022). Hopefully, the Program (and the Town’s participation in it) will be re-started in 2023.
- **Efficient Electric Lighting:** LED upgrades installed in municipal buildings, April 2019; LED upgrades installed for indoor and outdoor lighting at the Town’s two parks recently.
- **Heating:** geothermal heat pumps installed to supply entire heating needs for Administrative Facilities. (Approval process, installation, and start-up, from April 2012 to May 2013).
- **Benchmarking (advanced reporting and for municipal buildings):** reports submitted to Town’s Board in June 2019, and June 2022, with addendum in September, 2022; 2022 report submitted to NYSERDA, September 13, 2022; NYSERDA approves submission, October 3, 2022.
- **Gasoline/Diesel:** since 2020, the Highway Department has been engaged in an on-going effort to replace equipment and vehicles with ones that are more fuel-efficient or to switch to battery-operated replacements.

The main contributors to GHG emissions from governmental operations in Clinton: as measured by MTCO_{2e} (see Figures 1,2 and 3 above), the main energy-use contributors to GHG emissions are: fuel oil (274.2); electricity (120.9); and gas/diesel (87.4). The use of fuel oil (for heating) is attributable to the Town’s two garages. The relatively low use of electricity has been attributable to 100% renewable electricity through the CCA Program. Since the CCA Program terminated in 2022 (termination occurred after the Base Year for this GHG Inventory Report), electricity use should increase. The Town hopes that the CCA Program will be continued in 2023.

Measures already taken to reduce the use of heating oil in the two, town garages: in October 2022 (after the Base Year for this GHG Inventory Report), the Town installed for use in

the two garages, a new heating system (forced-air, propane gas burner), which should have already reduced the use of heating oil in those two facilities from the use indicated for the Base Year.

Proposals under Consideration by the Town:

- **To reduce use of gasoline/diesel:** replace current equipment and vehicles with battery-operated equipment and vehicles; or with equipment and vehicles that use gasoline/diesel more efficiently.
- **To reduce heating oil use in the two Town Garages:**
 - Purchase an audit of energy use and energy efficiency.
 - Implement recommendations provided by the audit.
 - Install fans and other circulation equipment to redistribute heat more efficiently.
 - Insulate the roofs with foam.
- **To reduce the use of electricity:**
 - Participate in a renewed CCA Program
 - Purchase an audit of energy use and energy efficiency for the Administrative Facilities
 - Implement recommendations provided by the audit.

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, Clinton 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 heating oil. Future emissions reductions strategies for Clinton to consider for its climate action plan include increasing energy efficiency and renewable energy investments, as well as vehicle fuel efficiency.