



City of Watervliet Greenhouse Gas Inventory for Government Operations 2017-2018 Summary Report Report Completed in June 2025

BACKGROUND

The City of Watervliet Board approved Resolution No. 8551 on February 16, 2010, to become a Climate Smart Community (CSC). An action item in the CSC Certification process is *PE2 Action: Government Operations GHG Inventory*.

This GHG Inventory for Government Operations Report summarizes the GHG emissions from the City of Watervliet's consumption of energy and materials within city-owned buildings, vehicle fleets, water delivery and outdoor lighting. Developing this GHG Inventory is the first step towards tangible climate action, the development of a Climate Action Plan (CAP) and enabling the city to identify realistic goals and track progress towards reducing operation costs, energy use and GHG emissions.

DATA GATHERING AND METHODOLOGY

The City's CSC Task Force appointed Christine Chartrand to lead the GHG Inventory data collection effort, with the help of Capital District Regional Planning Commission (CDRPC) Sustainability Planner Tara Donadio. The GHG Inventory spreadsheet used was developed by Climate Action Associates, LLC (CAA).

The inventory includes Scope 1 and Scope 2 GHG emissions from government operations, as defined below. The CSC optional Scope 3, [Other Indirect GHG emissions such as City employee commuting] is not included because the minimal amount of emissions generated (perhaps a fraction of a percent) by the small community of Watervliet in this scope doesn't justify the work required to obtain this data. This scope is optional in the DEC's Climate Smart Communities Program.

- **Scope 1:** Direct GHG emissions from government-owned vehicles and onsite fuel combustion (natural gas, propane and fuel oil) for City Hall, DPW Garage, Firehouse and Pump House.
- **Scope 2:** Indirect GHG emissions from purchased electricity.

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. The data collected for this inventory represents the years 2017-2018 using the average of the two years as a baseline.

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:

$$\text{Activity Data} \times \text{Emissions Factor}_{(\text{Fuel, GHG})} = \text{GHG Emissions}_{(\text{Fuel, GHG})}$$

Activity data refers 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 city gathered and reviewed all **electricity and natural gas** bills for the **City's** accounts, as well as fuel records for gasoline and diesel used to power the **City's** 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 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 MTCO_{2e} of CO₂ equivalents (CO_{2e}).

Facilities Master List

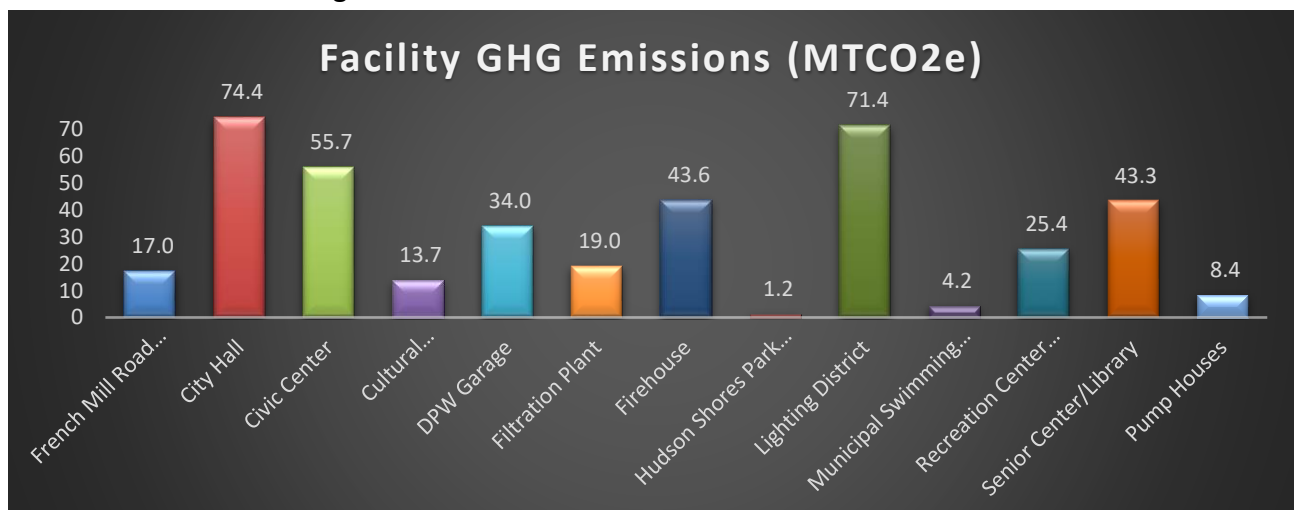
A key step in creating the GHG inventory is to compile a facility reference list that includes the **City's buildings** (including streetlights) that use at least one form of energy. Each was assigned to a category to indicate the type of infrastructure and then similar facilities along with their energy use.

This table shows the city buildings and energy providers included in the Watervliet GHG Inventory, all of which are provided by National Grid.

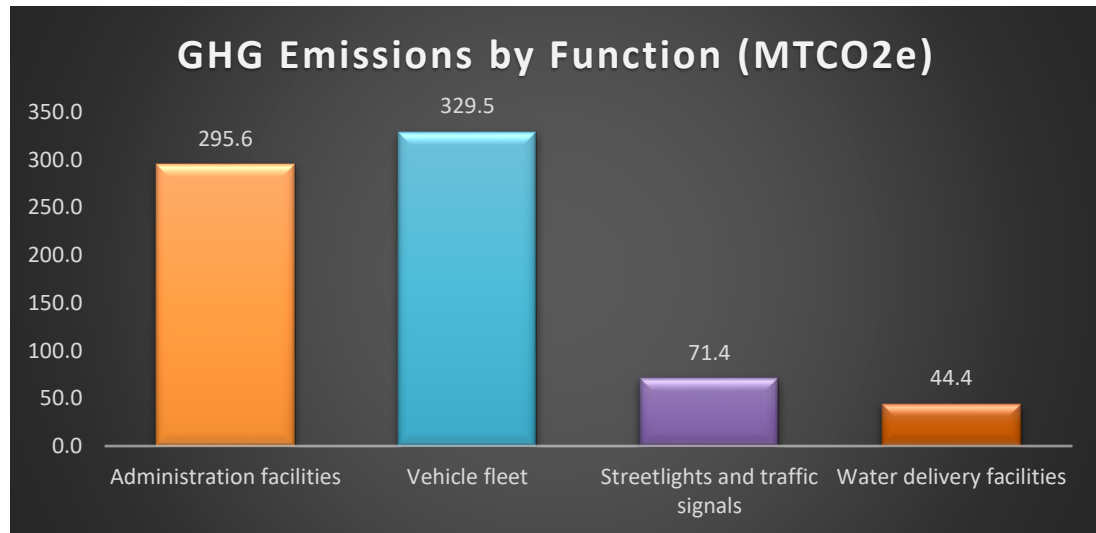
City Facility
Watervliet City Hall
Watervliet Senior Center/Library
Watervliet Firehouse
Watervliet DPW Garage
Watervliet Recreation Center (DOME)
Watervliet Civic Center
Watervliet Cultural Center/Historical Museum
Watervliet Municipal Swimming Pool
Watervliet Filtration Plant
Watervliet Hudson Shores Park Restrooms
Watervliet Lighting District
French Mill Road (Guiderland Reservoir)
Gloria Drive - Pump
Wiswall Avenue - Pump
Eastview - Pump

KEY FINDINGS

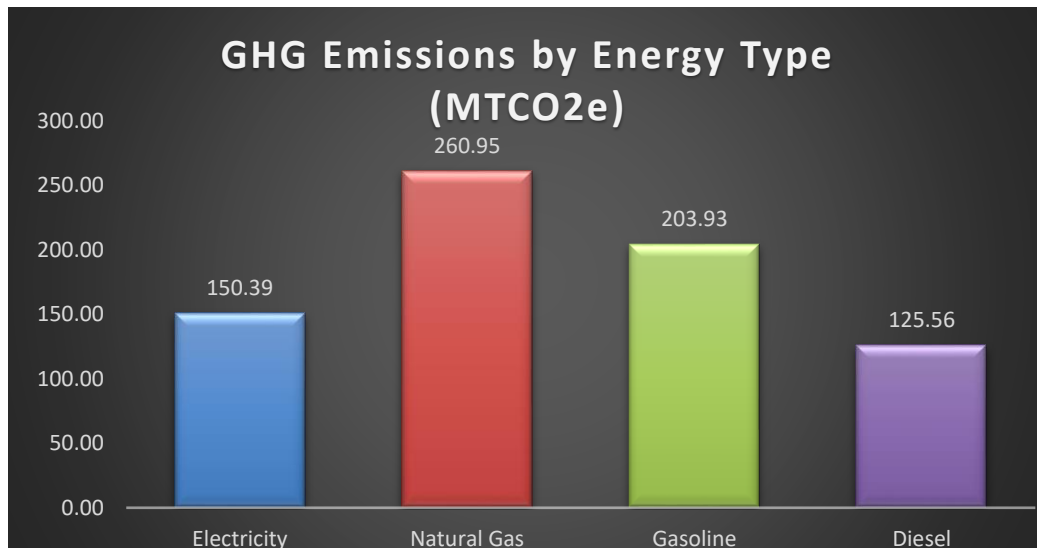
The average GHG emissions produced by the City of Watervliet's municipal operations from 2017-2018 was 740.8 MTCO₂e. This includes 15 municipal buildings and 46 municipal vehicles. The largest energy user and source of GHG emissions in Watervliet is the vehicle fleet, which produces an average of 329.9 MTCO₂e of GHG emissions annually and contributes to 54.6% of the City's total GHG emissions. The highest administrative facility use is by the City Hall with 74.4 MTCO₂e on average.



Energy used by vehicle fleets averaged 329.5 MTCO₂e of GHG emissions – 203.93 MTCO₂e for gasoline and 125.56 MTCO₂e for diesel. The chart below illustrates how vehicle fleet emissions compare to other facilities by function.

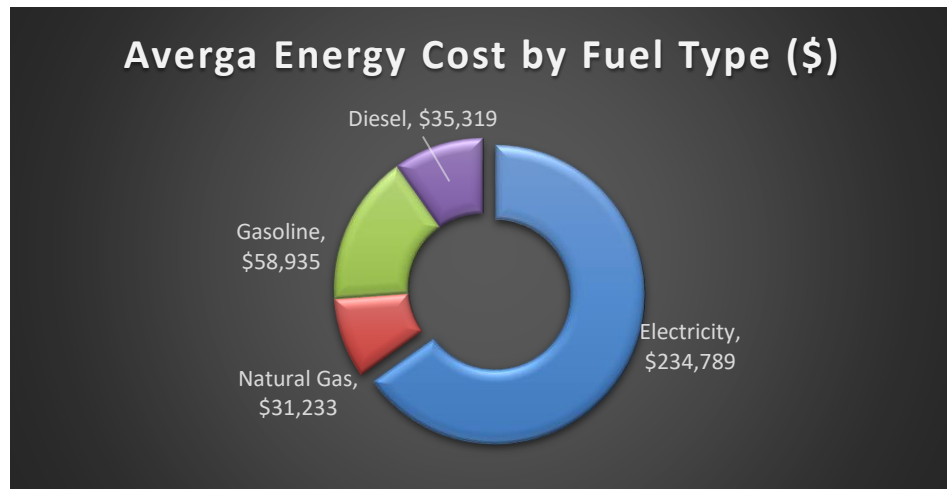


As a source, Natural Gas outweighs all other energy types as far as GHG emissions MTCO₂e are concerned, at about 35.2 % of the City's GHG emissions. The chart below shows the breakdown of emissions by energy type.

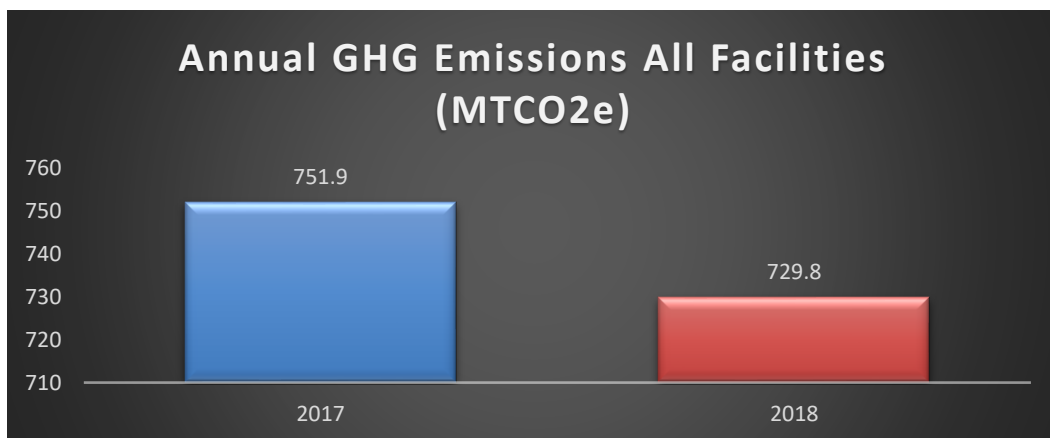


The city spends an average of \$360,276 annually on energy for facilities and operations. When assessing the cost of energy, electricity contributes to 65% of the City's energy cost -

outweighing natural gas, gasoline and diesel. The average annual costs for each are broken down in the charts below.



GHG emissions were 751.9 MTCO₂e in 2017 and 729.8 MTCO₂e in 2018 – a 2.9% decrease. This was the result of a decrease in vehicle emissions and water delivery facilities, but an increase in administrative facilities. The last inventory prior to this was completed in 2008. The City's 2008 inventory totaled 1128.51 MTCO₂e. The city has decreased their emissions by 387.71 MTCO₂e since 2008, which is a 34% reduction. This is due to a number of factors, including the addition of onsite municipally owned solar panels at 4 locations and a cleaner upstate NY grid.



ACCOMPLISHMENTS AND FURTHER OPPORTUNITIES TO REDUCE GREENHOUSE GASES

Developing a GHG emissions baseline enables the city to set goals and targets for future reduction of GHG emissions. Since this inventory was completed with 8-year-old data as of 2025, the city is looking to update this in the near future.

Since 2018, lighting in all interior buildings has been retrofitted with LED lighting. City hall was completely outfitted with heat pumps. Additionally, the city's streetlights were all converted to LED in 2023. These projects are likely to show a significant reduction in emissions.

Further conversion to electrified sources of energy for existing buildings using natural gas or moving these emissions to "Scope 2" will allow the city to offset GHGs with renewable energy, such as more on-site solar arrays in addition to the 4 they currently have.

An updated inventory Climate Action Plan is a next step for the city to identify reduction targets and strategies/funding to achieve these targets.