Town of Stuyvesant
Greenhouse Gas Inventory for Government Operations
2021 - 2022 Summary Report

BACKGROUND

The Town of Stuyvesant Board approved a resolution to become a Climate Smart Community on December 9, 2021, and subsequently created a Climate Smart Task Force to undertake this effort. 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 Town of Stuyvesant's consumption of energy and materials within town-owned buildings, vehicle fleets, 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 Town to identify realistic goals and track progress towards reducing operation costs, energy use and GHG emissions.

DATA GATHERING AND METHODOLOGY

The town's CSC Task Force appointed Hannah Shepard 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 town

employee commuting] is not included because the minimal amount of emissions generated (perhaps a fraction of a percent) by the small community of Stuyvesant 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 (propane and fuel oil) for the Town Hall, Depot, and the Highway Garage.
- **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 years 2021 - 2022, using the average of the two years as a baseline. 2021 was chosen as the baseline year given that Town facilities were closed or operated at a lower capacity during 2020 due to the Covid-19 pandemic, therefore using 2020 as a baseline would misrepresent the energy used by the Town.

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, propane, and fuel oil bills for the town's accounts, as well as fuel records for 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 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 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 (CO2e).

Facilities Master List

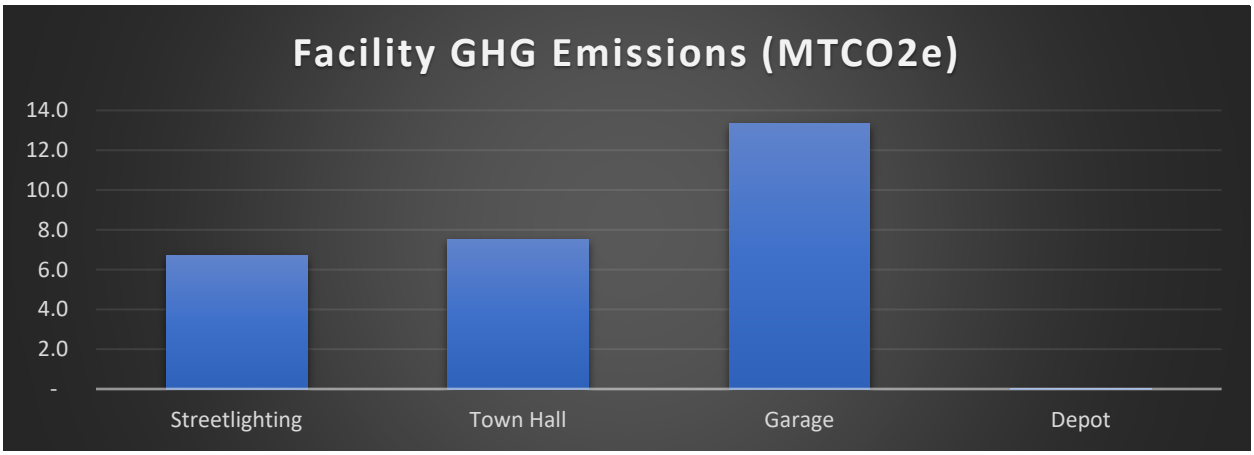
A key step in creating the GHG inventory is to compile a facility master list that includes the **town's buildings** (including streetlights) that use at least one form of energy. Each was assigned to a category to indicate the type of infrastructure and then similar facilities along with their energy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

This table shows the Town buildings and energy providers included in the Stuyvesant GHG Inventory:

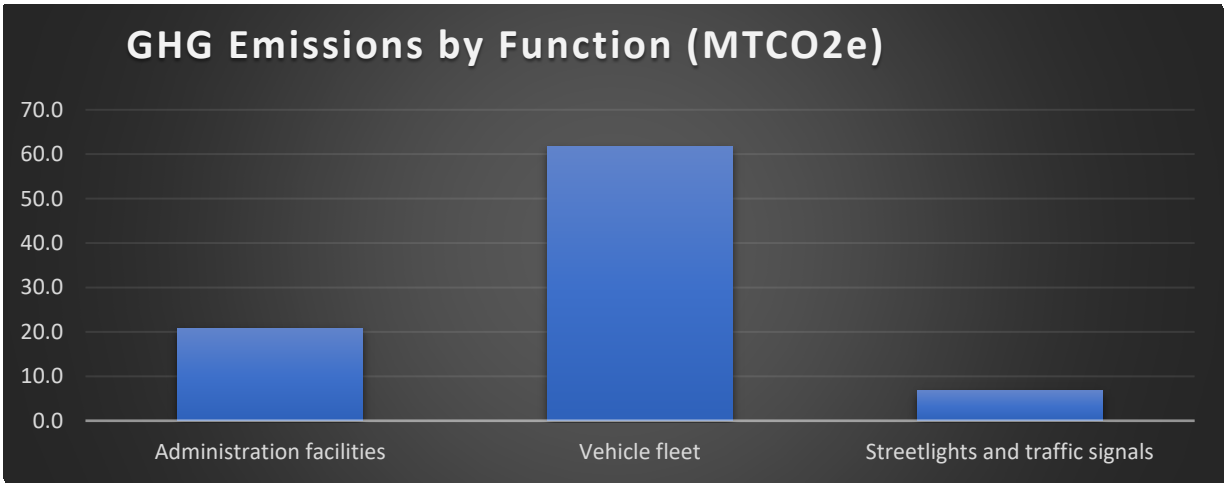
Town Building	Energy Providers
Stuyvesant Garage	National Grid, Main Care, Valley Energy
Stuyvesant Town Hall	National Grid, Nolan Propane
Depot	National Grid
Streetlights	National Grid

KEY FINDINGS

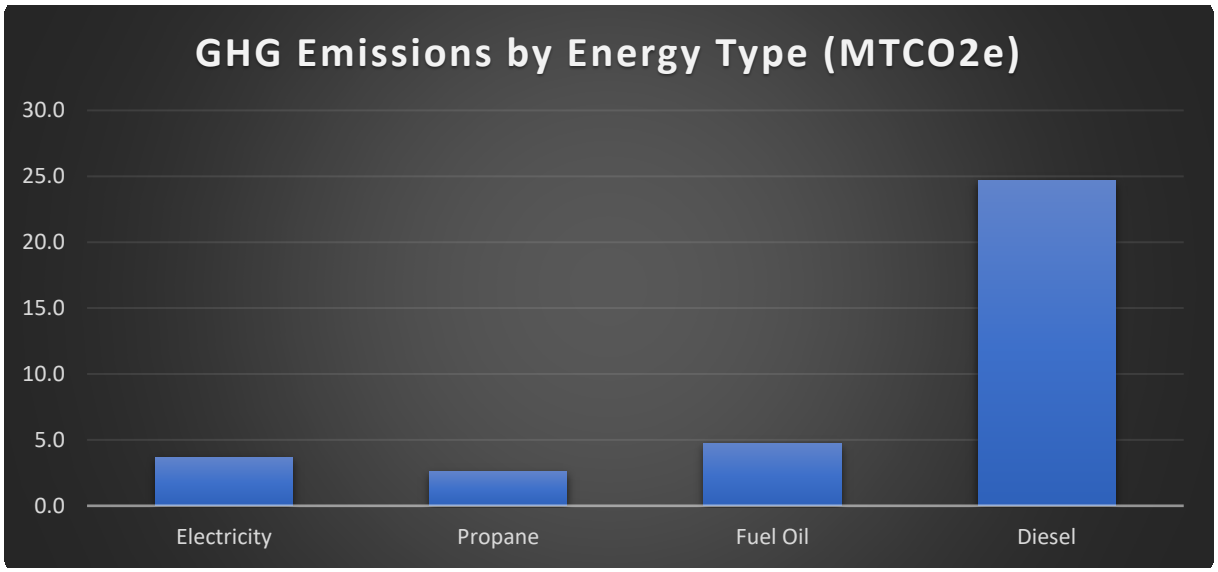
The average GHG emissions produced by the Town of Stuyvesant's municipal operations from 2021-2022 was 180 tons The largest energy user and source of GHG emissions in Stuyvesant is the vehicle fleet, which produces an average of 62 tons of GHG emissions annually and contributes to 68% of the Town's total GHG emissions. The highest administrative facility use is by the Highway Garage with 13.3 tons on average.



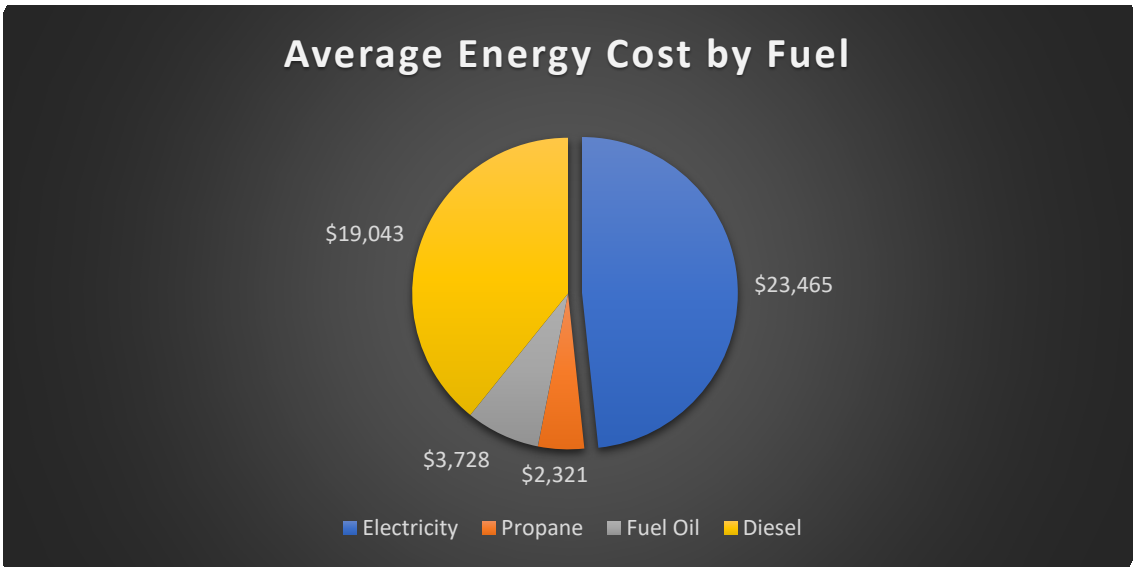
As noted above, energy used by vehicle fleets averaged 62 tons of GHG emissions annually for diesel. The chart below illustrates how vehicle fleet emissions compare to other facilities by function.



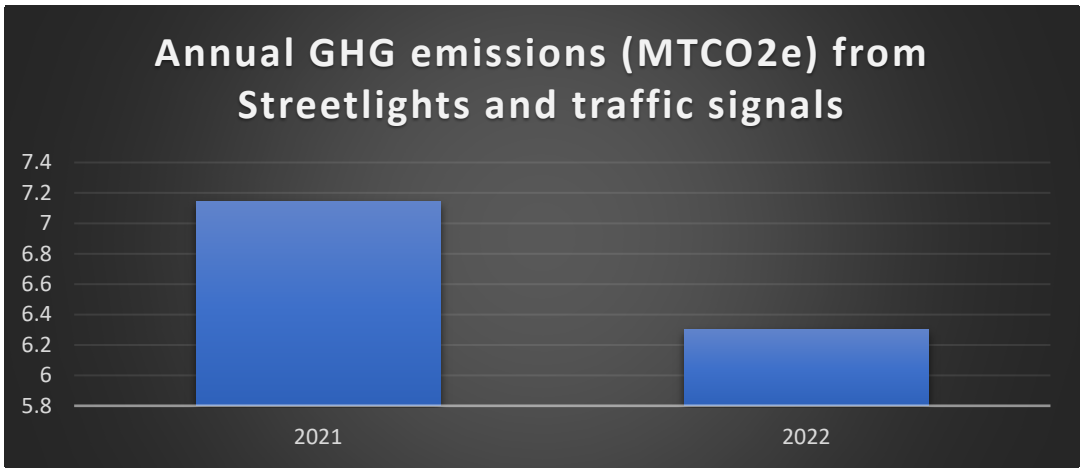
Diesel also outweighs all other energy types as far as GHG emissions tons are concerned, at about 68% of the town's GHG emissions. The chart below shows the breakdown of emissions by energy type.

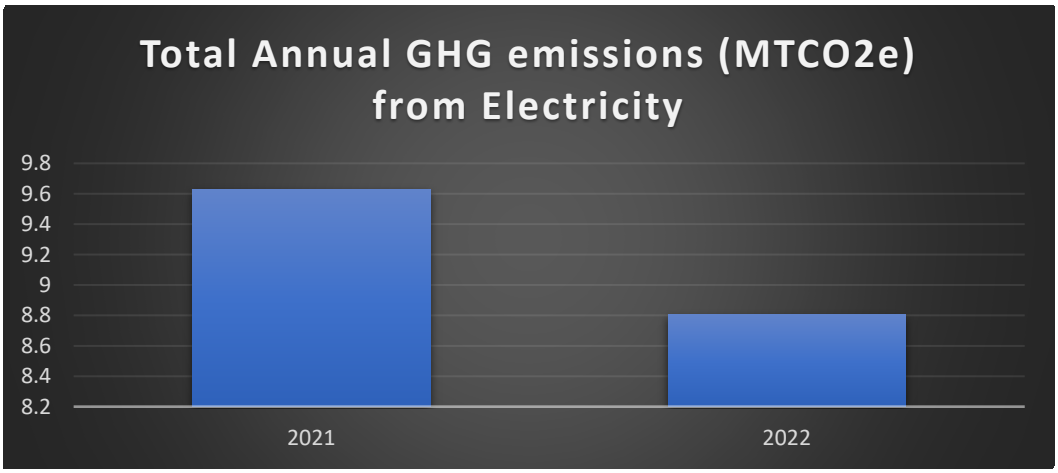


The Town spends an average of $97,114 annually on energy for facilities and operations. When assessing cost of energy, diesel contributes to 19% of the Town's energy cost. The average annual costs for each are broken down in the charts below.



GHG emissions were 89 tons in 2021 and 91 tons in 2022 – an increase of 2 tons. Facility energy use dropped by two tons during this time, while diesel consumption increased by 6 tons in the same time frame. Annual GHG emissions from streetlights, traffic signals and electricity use generally, dropped from 2021 to 2022, largely due to the installation of LED lights.





ACCOMPLISHMENTS AND FURTHER OPPORTUNITIES TO REDUCE GREENHOUSE GASES

Lighting in the Town Hall has been retrofitted with LED as have the streetlights in the Falls and the Landing.

The installation of solar panels at the Town Hall has greatly reduced electricity cost there, and the installation of heat pumps in that building has lowered GHG emissions as well.

The majority of the Town's GHG emissions comes from diesel for the town fleet. How to reduce the use and consumption of diesel needs to be addressed.

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

Climate Action Planning is the next step for the Town to identify reduction targets and strategies/funding to achieve these targets.