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Town of Olive Greenhouse Gas Inventory for Government Operations 2022 Summary Report

CREDITS AND ACKNOWLEDGEMENTS

This report was prepared by Matt Kovner, Climate Smart Community Task Force Coordinator for the Olive Conservation Advisory Council. Helping prepare this report was the essential assistance of Rebecca DeGondea and Dawn Giuditta in the Olive Town Office.

BACKGROUND

The Town of Olive 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 2016 the Town of Olive 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 2018, this GHG inventory provides a baseline for which the Town of Olive 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 Olive's consumption of energy and materials within town-owned buildings, 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 (CO₂e) 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.

KEY FINDINGS

In 2018, GHG emissions from the Town of Olive government operations totaled 328 CO₂e. Figure 1 shows the emissions for government operations broken down by sector. Vehicle fleet accounts for the largest percentage of GHG emissions at 86%. The second largest contributor is the Town's Administration Facilities with 12% of emissions. The remaining 2% is made up of the streetlights and area lights throughout the town.

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

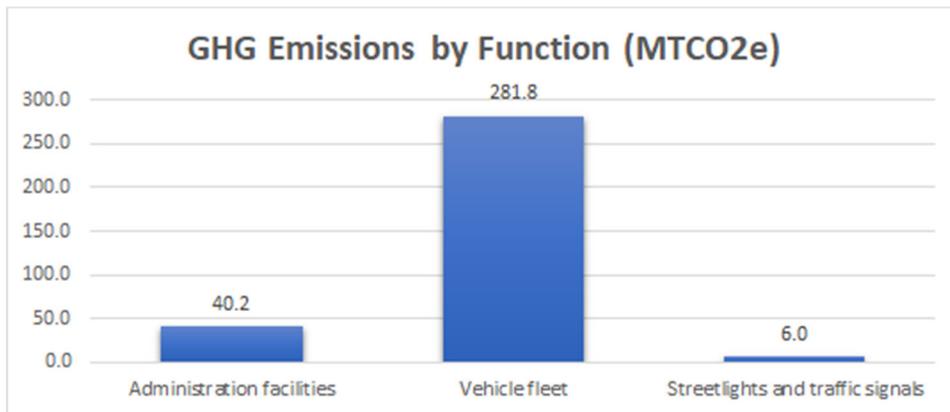


Figure 1. 2018 Town of Olive Government Emissions by Sector

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. The Town of Olive 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 Matt Kovner 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. We chose 2018 because the Town installed a solar array on the town office building in 2017 and 2018, and we wanted a baseline before that array went into operation.

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 gas-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 electric bills for the Town’s Central Hudson accounts, as well as fuel records for propane, gasoline, diesel and fuel oil from our fuel supplier, Bottini Fuel. 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 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 7 buildings 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.

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. The Tables below show the Town of Olive’s government operations emissions broken down by sector, while the remainder of this section breaks down these emissions in further detail within each sector.

The Vehicle Fleet was the largest sector of government operations emissions.

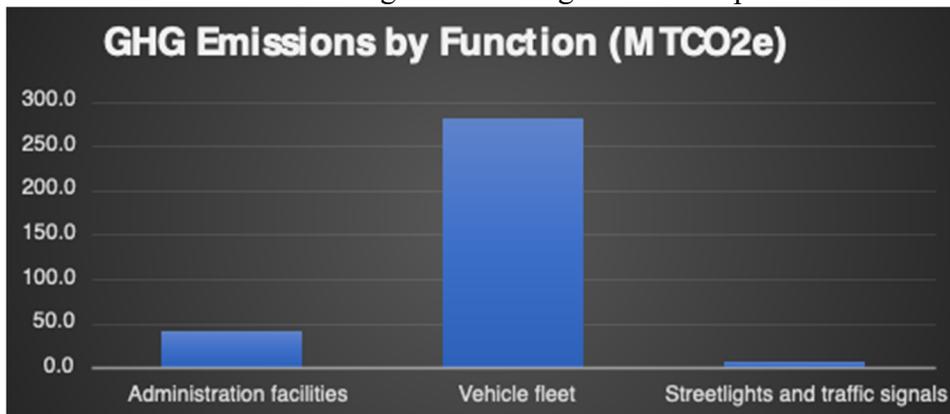


Figure 2. GHG Emissions by Function (MTCO2e)

The charts below show that gasoline was the largest energy type followed by diesel in our vehicle fleet. The Town is spending the most on gasoline, followed by electricity.

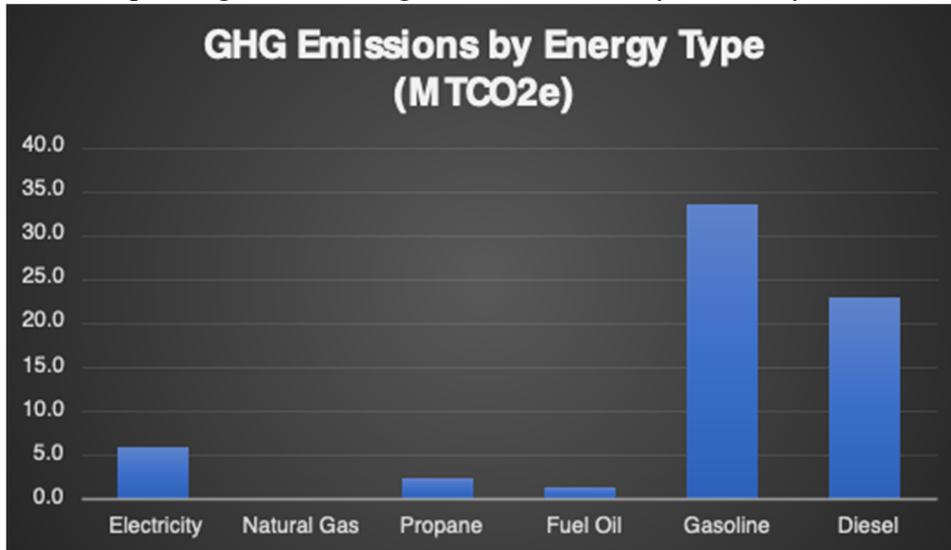


Figure 3. GHG Emissions by Energy Type (MTCO2e)

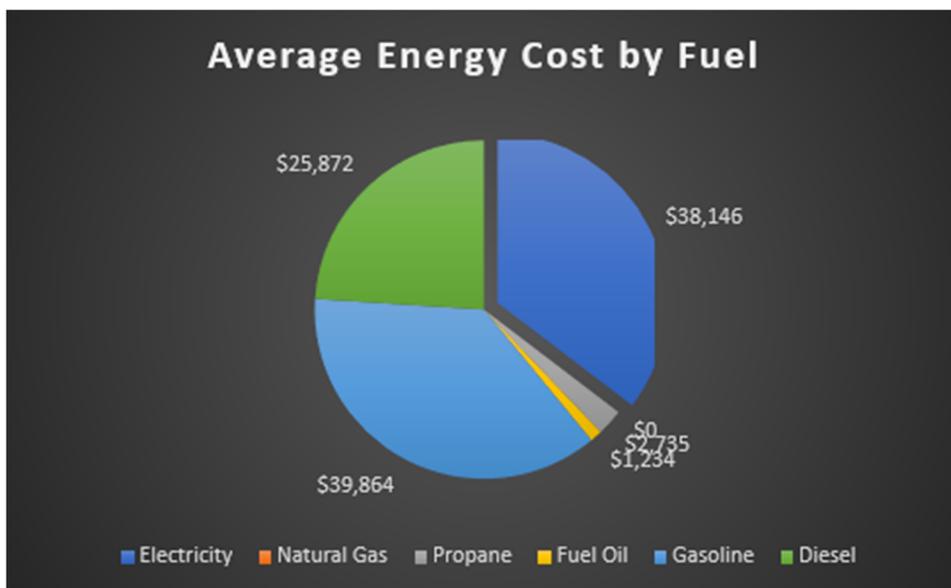


Figure 4. Average Energy Cost by Fuel Type

After our Vehicle Fleet, Olive's Administration Facilities were the next largest source of government operations emissions, with a total of 40.18 MTCO2e. This data was collected from Central Hudson and Bottini Fuel bills for 2018.

OPPORTUNITIES TO REDUCE GREENHOUSE GASES

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

The Town has been proactive to reduce GHG emissions and energy costs. Our biggest energy efficiency program was the installation of a solar array on the roof of the Town Office building in 2017-2018. The reason we chose 2018 as our baseline for this study was to see what specific energy reductions this solar array allowed us to take. When we do our next GHG Inventory, we will be able to use this baseline year and compare it moving forward.

The highest use of energy was by our Vehicle Fleet, and this will allow us to begin conversations about replacing gas and diesel vehicles with electric vehicles.

We are currently discussing replacing Town streetlights, park, and recreation lighting with LED lighting, which we hope will offer us a substantial reduction in electric usage for these lights.

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, the Town of Olive 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 increasing the efficiency of town vehicles, and perhaps electrifying a portion of our Vehicle Fleet. Future emissions reductions strategies for The Town of Olive to consider for its climate action plan include increasing energy efficiency in all our buildings, including replacement of interior lighting with LED lighting and well as vehicle fuel efficiency. Other key data points to collect and track might include government employee vehicle trips and employee commuter miles, as well as solid waste collection rates.