



## Village of Lake Placid Climate Smart Communities Government Operations Greenhouse Gas Inventory 2017-2020

### Executive Summary

The Village of Lake Placid Climate Smart Communities Task Force conducted an inventory of the local government operations Greenhouse Gas (GHG) emissions. The inventory included the following elements:

- Records of energy use by the following departments:

Electric department
Sewer Plant
Water department
Fire department
Beach house
Town hall
Street lights
Police
Highway
Beautification

- Local government operations usage of the following energy sources:
  - Gasoline
  - Diesel Fuel
  - Electricity: The Village of Lake Placid has a municipal electric department
  - Fuel Oil (N/A - the Village of Lake Placid does not use fuel oil)
- Calculated climate impact: the estimated metric tons of carbon dioxide emissions equivalent (CO<sub>2</sub>e) using EPA standard methodology

The inventory includes 2017-2020, and 2019 will serve as the baseline year for calculating future energy efficiency improvements and emissions reductions. Available data sets from 2017-2018 were incomplete.

This summary and the complete data set are available to the public on the Village's Climate Smart Community website at

<http://villageoflakeplacid.ny.gov/content/Generic/View/168>

## **Methodology**

Village of Lake Placid NY records of Diesel Fuel, Gasoline, and Electricity consumed for Local Government Operations from 2019-2020 were collected by the Climate Smart Community Task Force. The Task Force created a master list of Village facilities and compiled corresponding data from the Village Clerk and municipal electric department. Quantities of each fuel source were converted to Green House Gas emissions expressed in metric tons of carbon dioxide equivalent (CO<sub>2</sub>e), using formulas and factors from US EPA and other sources. The baseline year for data analysis was 2019 because that was the most complete data set available. Data analysis was conducted using data from 2019 and 2020. This methodology complies with established GHG inventory protocols.

## Greenhouse Gas Emissions by Energy Source 2019-2020

The following charts display the Greenhouse Gas emissions by energy source (electricity, diesel fuel, and gasoline), calculated as a percentage of the total Metric Tons of Carbon Dioxide equivalent (MTCO<sub>2</sub>e). This data shows which energy sources produce the greatest proportion of total GHG emissions in the Village of Lake Placid's Local Government Operations.

### GHG Emissions by Energy Source 2019

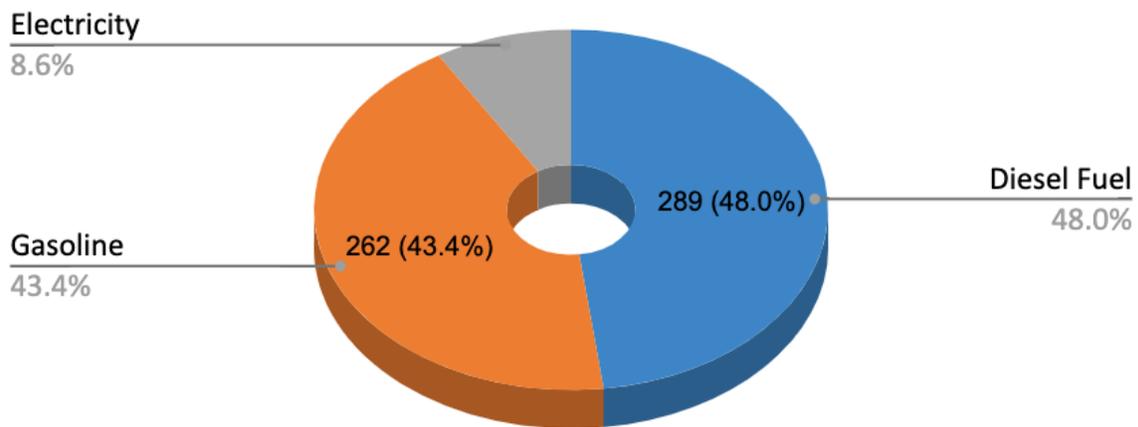


Figure 1: Local Government GHG Emissions by energy source (MTCO<sub>2</sub>e), 2019

# GHG Emissions by Energy Source 2020

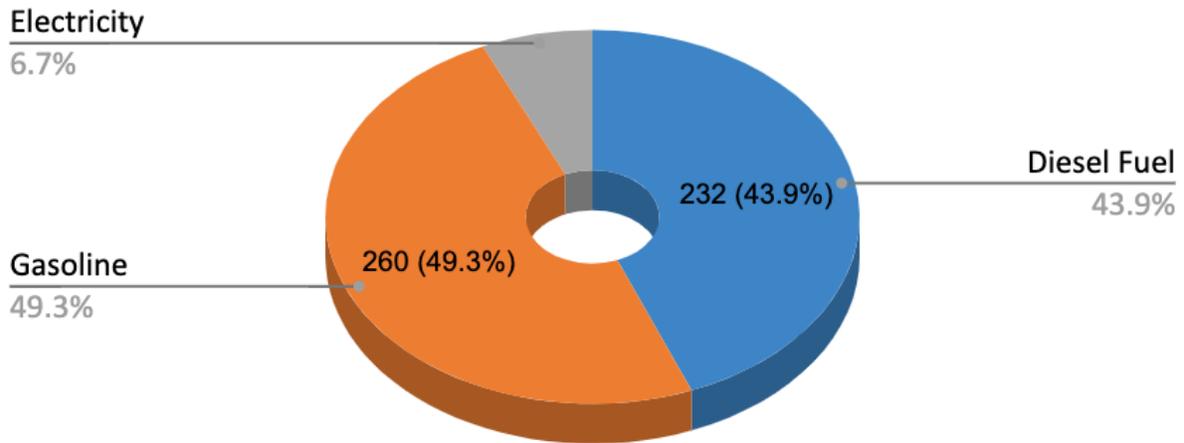


Figure 2: Local Government GHG Emissions (CO2e) by energy source (MTCO2e), 2020

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## Greenhouse Gas Emissions by Facility

The following charts (pg. 5-7) display the Greenhouse Gas Emissions for each local government facility, organized by energy source, calculated as a percentage of the total Metric Tons of Carbon Dioxide equivalent (MTCO2e). The data shows which facilities produce the most greenhouse gas emissions, and which energy source produces those emissions.

## GHG Emissions from Gasoline

2019

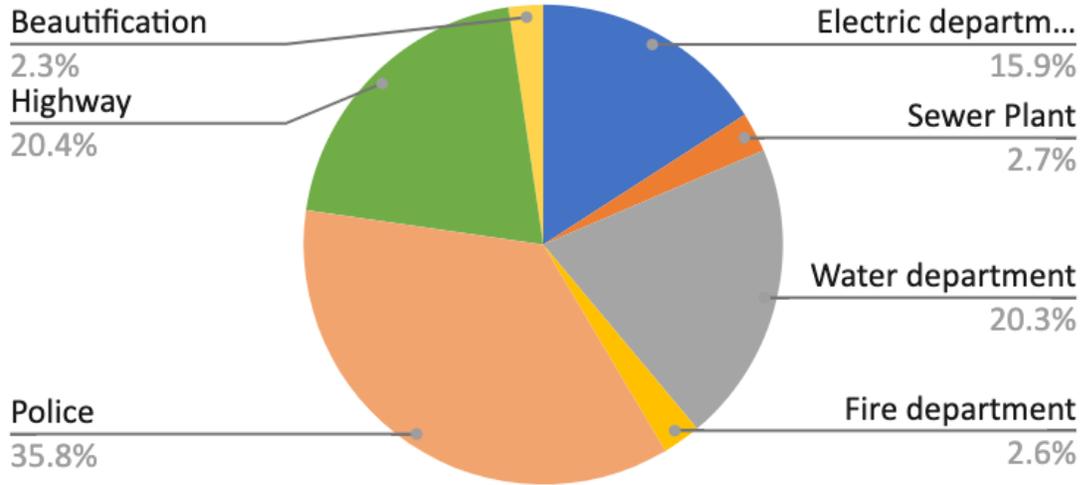


Figure 3: Local Government GHG Emissions (CO<sub>2</sub>e) from Gasoline by facility, 2019

## GHG Emissions from Gasoline

2020

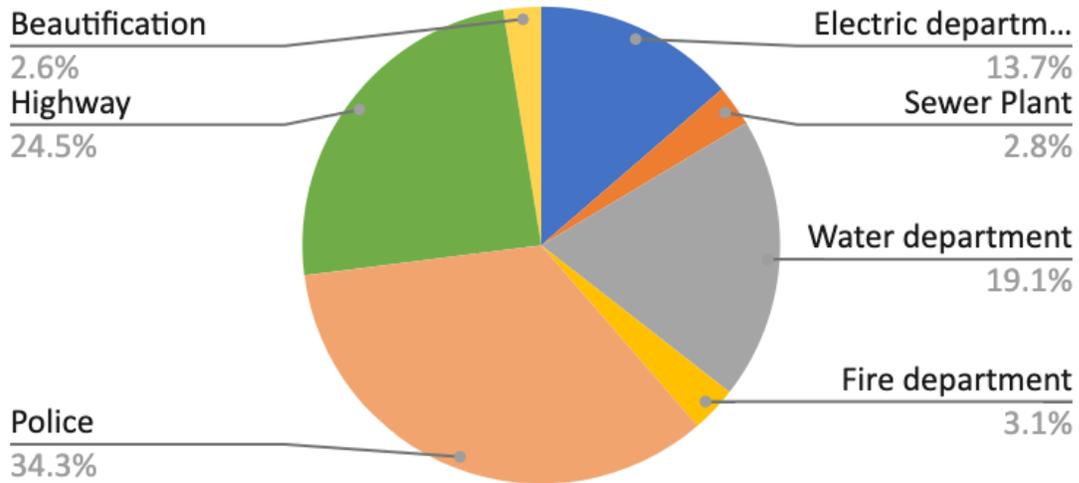


Figure 3: Local Government GHG Emissions (CO<sub>2</sub>e) from Gasoline by facility, 2020

## GHG Emissions from Diesel

2019

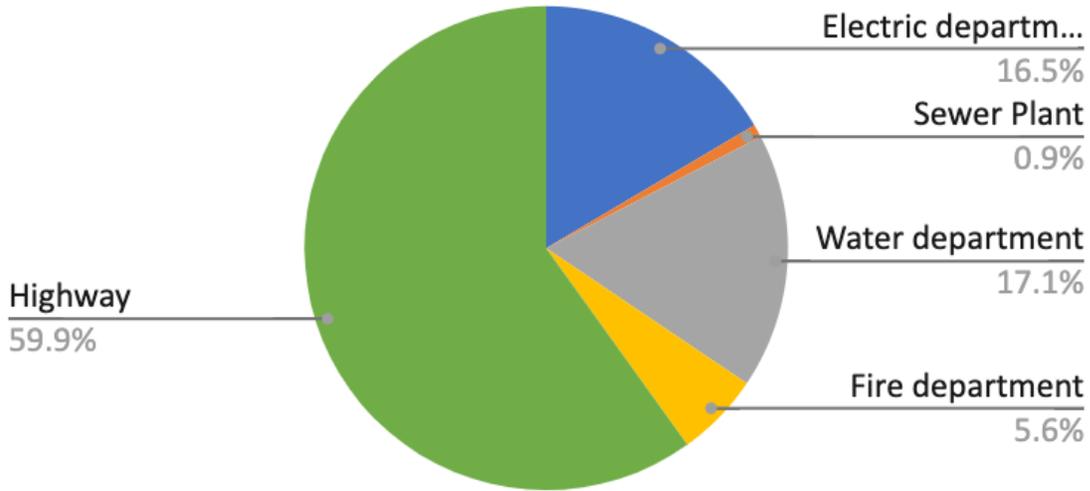


Figure 3: Local Government GHG Emissions (CO<sub>2</sub>e) from Diesel by facility, 2019

## GHG Emissions from Diesel

2020

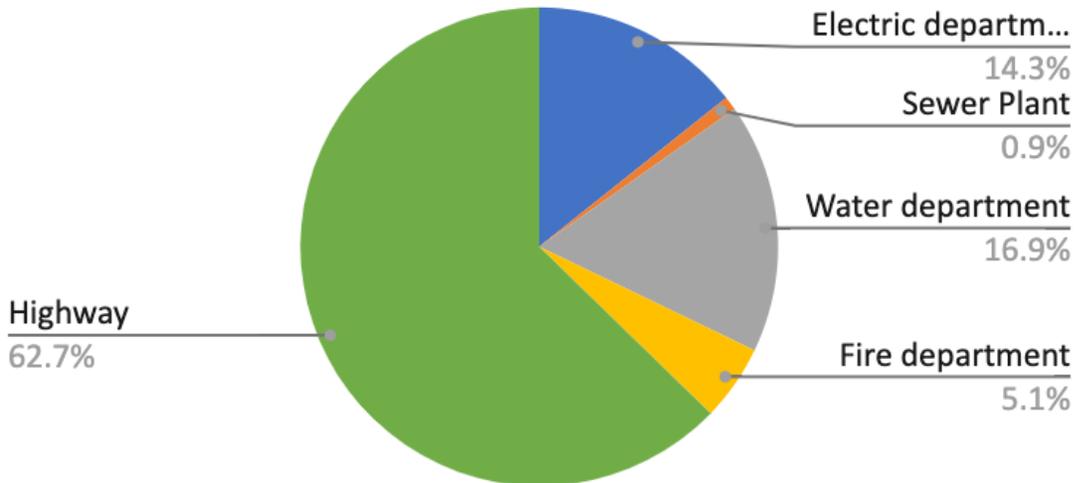


Figure 3: Local Government GHG Emissions (CO<sub>2</sub>e) from Diesel by facility, 2020

Electricity

**Note:** The Police and Highway Departments are within the Town Hall, therefore do not have their own categories in the Electric data.

## GHG Emissions from Electric

2019

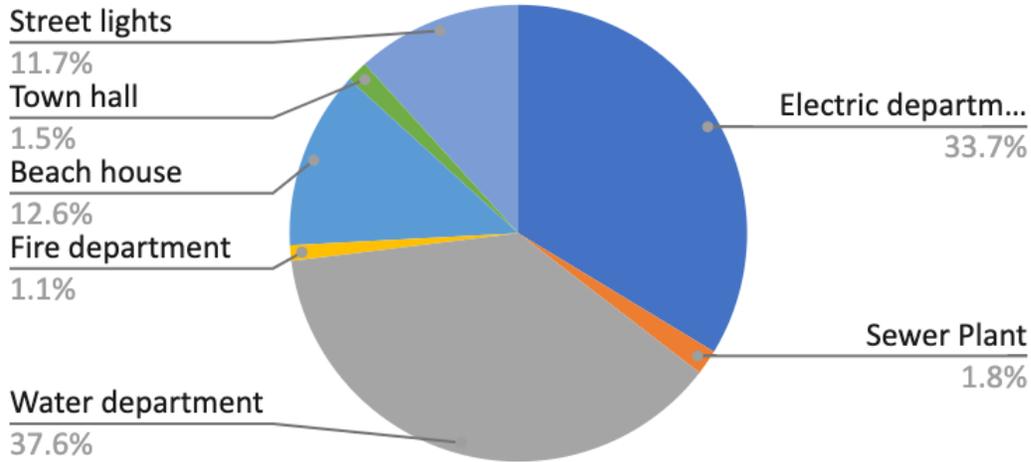


Figure 3: Local Government GHG Emissions (CO<sub>2</sub>e) from Electricity by facility, 2019

## GHG Emissions from Electric

2020

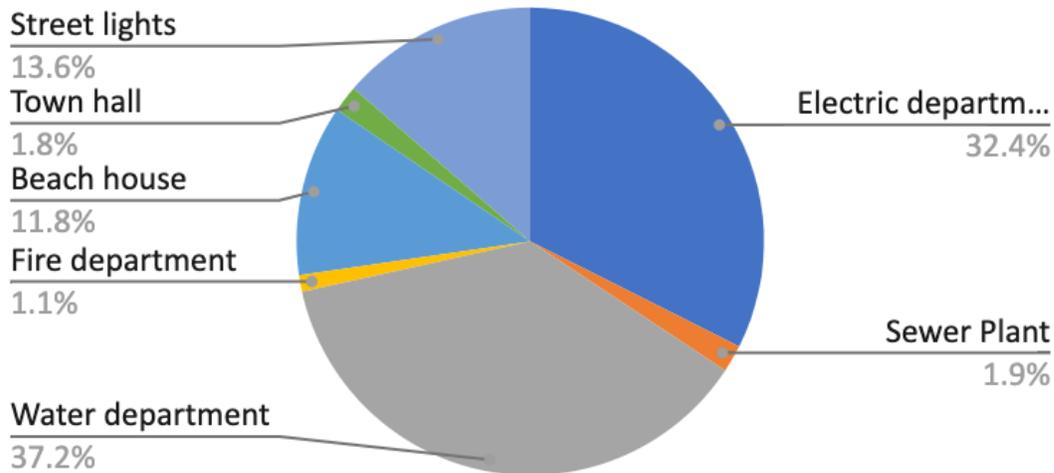


Figure 3: Local Government GHG Emissions (CO<sub>2</sub>e) from Electricity by facility, 2020

## **Analysis**

### *Electricity*

Due to the inexpensive electric rate in Lake Placid, nearly all the buildings within the Village, including municipal buildings, are electrified. The Village is slowly working towards converting street lighting to LED and HVAC systems to heat pumps which should result in increased energy efficiency over time. Energy audits can also help increase building energy efficiency. Even though electricity is a relatively small portion of overall greenhouse gas emissions, increased efficiency will support Village-wide electrification efforts.

The focus on building electrification has also resulted in no fuel oil usage, a rarity for buildings in the North Country region. This places the Village of Lake Placid at a significant advantage in continuing to reduce emissions.

### *Gasoline and Diesel*

The Village of Lake Placid is also similar to other North Country communities in that the Highway Department is the largest emitter of carbon emissions. The Highway Department consumes about 60% of total diesel use and 22% of total gasoline use. This is primarily due to the need for road maintenance, particularly during winter months. Diesel usage primarily comes from heavy-duty vehicle use. Currently, there are no practical options for electrification of these vehicles.

The Police Department is the largest consumer of gasoline at nearly 36% of total gasoline use. As the majority of the police fleet are sedans, there are electric options available for these vehicles. Electrifying police vehicles could be a cost-effective emissions reduction strategy given the inexpensive electric rate in the Village of Lake Placid. More research on electrifying police vehicles is needed to determine if this is an appropriate strategy to reduce emissions from gasoline in the Village of Lake Placid.

Diesel use fell significantly during 2020, a direct result of reduced travel and in-person work due to the coronavirus pandemic. Continued data collection and analysis are needed to determine diesel usage patterns as the pandemic declined.

### *Cost Analysis*

Cost analysis was beyond the scope of this GHG inventory and would significantly improve the utility of the analysis. Though cost data is displayed for gasoline and diesel, an overall cost analysis was not conducted due to the need for standardized cost tracking systems at the municipal electric department. The Task Force determined a need for a consistent method for tracking cost across various meters and accounts, which would make it possible to weigh the cost-benefit analysis of emissions reduction and energy efficiency projects, critical information for municipal decision-making.

### *Future Analysis*

For the purposes of this report, analysis was conducted using percentages of total GHG emissions. The full data set displays these totals both annually and overall. Further analysis and future climate improvements will take into account the quantities of carbon emissions in addition to the proportions analyzed above.

## **Conclusions**

The Village of Lake Placid's three energy sources are electricity, gasoline, and diesel. Electricity is by far the cleanest and most affordable energy option in the Village, which is a tremendous opportunity to encourage the electrification of buildings and transportation. Nearly all of the Village's greenhouse gas emissions come from diesel and gasoline, in particular from the Highway and Police departments. The Village should consider pursuing electrification options when appropriate for vehicles in those departments to make the most impactful emissions reductions. In addition, the Village should consider installing additional electric vehicle charging stations to support an increasingly electrified municipal fleet.

## Factors and Sources

Emissions factors and their sources used in this analysis are listed below:

Formulas obtained from:

<https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>

[https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors\\_2014.pdf](https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf)

<https://www.epa.gov/eGRID/power-profiler#/NYUP>

Electricity GHG Formula:

$233.5 \text{ lbs CO}_2/\text{MWh} \times (4.536 \times 10^{-4} \text{ metric tons/lb}) \times 0.001 \text{ MWh/kWh} = 1.06 \times 10^{-4} \text{ metric tons CO}_2/\text{kWh}$

NYUP eGrid 2019 factor for NY Upstate = 233.5 CO<sub>2</sub>e

Gasoline GHG Formula:

$8,887 \text{ grams of CO}_2/\text{gallon of gasoline} = 8.887 \times 10^{-3} \text{ metric tons CO}_2/\text{gallon of gasoline}$

Diesel Fuel GHG Formula:

$10,210 \text{ grams of CO}_2/\text{gallon of Diesel Fuel} = 10.210 \times 10^{-3} \text{ metric tons CO}_2/\text{gallon of Diesel Fuel}$