**Village of Valatie**

** Greenhouse Gas Inventory for Government Operations**

 **2019-2021 Summary Report**

 Prepared by: Tara Donadio, Capital District Regional Planning Commission

# Background

The Village of Valatie Board approved a Resolution on November 10, 2015 to become a Climate Smart Community (CSC). This was reaffirmed at the meeting of February 8, 2022. A Climate Smart Task Force was established, and a Coordinator appointed, on August 15, 2022. An action item in the CSC Certification process is *PE2 Action: Government Operations GHG Inventory.*

This Green House Gas (GHG) Inventory for Government Operations Report summarizes the GHG emissions from the Village of Valatie’s consumption of energy and materials within village-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 Village to identify realistic goals and track progress towards reducing operation costs, energy use and GHG emissions.

# Data gathering and methodology

Village Code Enforcement Officer, Stephanie Caradine-Ruchel, and CSC Task Force Coordinator, Meg Todisco, undertook 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 Village employee commuting] is not included because the minimal amount of emissions generated (perhaps a fraction of a percent) by the small community of Valatie in this scope doesn’t justify the work required to obtain this data. This scope is an option in the DEC’s Climate Smart Communities Program.

* **Scope 1**:  Direct GHG emissions from government-owned vehicles and onsite fuel combustion (gasoline, diesel, propane and fuel oil) for Town/Village Hall, Water/Sewer Plant, Senior Center and Firehouse.
* **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 2019-2021, using the average of the two years as a baseline.  It is important to note that some Village facilities were closed or operated at a lower capacity during 2020 and 2021 due to the Covid-19 pandemic, therefore using those years solely as a baseline would misrepresent the energy used by the Village.

Quantification MethodsGreenhouse 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 x 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 Village gathered and reviewed all **electricity, propane, and fuel oil** bills for the Village’s accounts, as well as fuel records for gasoline and diesel used to power the Village’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 eGRID vintaged used was 2021.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 **Village’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 Village buildings and energy providers included in the Valatie GHG Inventory:

|  |  |
| --- | --- |
| **Village Building** | **Energy Providers** |
| Firehouse | NATIONAL GRID, Main Care, Kosco-Heritage, Paraco |
| Main Street Theater | NATIONAL GRID |
| Senior Center | NATIONAL GRID, Kosco Heritage, Paraco |
| Streetlights | NATIONAL GRID |
| Town/Village Hall | NATIONAL GRID, Main Care, Kosco-Heritage, Paraco |
| Water Pumps | NATIONAL GRID, Kosco-Heritage |
| Water/Sewer Plant | NATIONAL GRID |

# key findings

The average GHG emissions produced by the Village of Valatie’s municipal operations from 2019-2021 was 129.68 tons. The largest energy user and source of GHG emissions in Valatie is the Administrative Facilities, which produces an average of 66.1 tons of GHG emissions annually and contributes to 51% of the Village’s total GHG emissions. The highest administrative facility use is by the Town/Village Hall with 38.7 tons on average.

The energy used by vehicle fleets averaged 6 tons of GHG emissions – 1.4 tons for gasoline and 4.7 tons for diesel. Water and wastewater facilities, which include water pumps, average 52.2 tons. This includes N20 emissions from wastewater treatment. The chart below illustrates how vehicle fleet and water/sewer emissions compare to other facilities by function.

Electricity outweighs all other energy types as far as GHG emissions tons are concerned, at about 46.8% of the Village’s GHG emissions. The chart below shows the breakdown of emissions by energy type.

The Village spends an average of $113,905 annually on energy for facilities and operations. When assessing cost of energy, electricity contributes to 84% of the Village’s energy cost - outweighing fuel oil, propane, gasoline and diesel. The average annual costs for each are broken down in the pie chart below.

GHG emissions were 117.8 tons in 2019, 114.3 tons in 2020, and 137.6 tons in 2021 . This increase over time in emissions is likely due to the Administrative Facilities increase from 55.3 to 84.1 tons during this time frame, mainly due to an increase in fuel oil usage, as electricity usage remained the same or decreased during this time frame for all administrative buildings.

# Accomplishments and further opportunities to reduce greenhouse gases

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

The Village has been proactive in reducing GHG emissions and energy costs.  Lighting in the Town/Village Hall has been retrofitted with LED lighting in 2020, paid for by a NYSERDA CEC grant. The other buildings were all converted to LEDs as well. The Village also converted all streetlights to LED in 2021.

Second to electricity, the majority of Village GHG emissions come from fuel, so converting the Town/Village Hall, Firehouse and Senior Center to heat pumps, electrifying the Village heating usage, will significantly reduce GHGs.  This is the biggest opportunity for emissions reductions for the village.

Further conversion to electrified sources of energy or moving from Scope 1 emissions (propane, fuel oil, gasoline and diesel) to Scope 2 will allow the Village to offset GHGs with renewable energy, such as more on-site solar arrays or community solar.

Finally, vehicles emissions were minimal in comparison to building emissions, so converting fleets to electric will not immediately reduce usage significantly – although it is still a long term goal as the state phases out internal combustion vehicles by 2035.

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