

Greenhouse Gas Emissions Inventory: Village of Clinton – 2017-2021

Methodology

This Government Operations Greenhouse Gas Emissions Inventory for the Village of Clinton documents emissions from the Village over the five-year period from the beginning of 2017 to the end of 2021. This inventory analyzes and reports **Scope 1 Emissions** (on-site emissions from building heating and transportation fuels, but not including fugitive refrigerants or fertilizer-associated emissions) and **Scope 2 Emission** (emissions from purchased electricity) from government operations for the Village. All data are reported in metric tons of carbon dioxide equivalent (CO_{2e}).

There are four government buildings included in this inventory: the two fire houses located on Franklin Avenue and North Park Row, the Department of Public Works (DPW), and the Village's Wastewater Treatment Plant (WWTP). To estimate Scope 1 emissions from building heating, records for natural gas usage for each of these buildings were obtained from National Grid monthly bills. Therms of natural gas were converted to units of CO_{2e} using EPA's greenhouse gas conversion factors (EPA 2019). For Scope 1 emissions associated with transportation, records of fuel purchases of diesel and gasoline by the fire department and Department of Public Works were obtained for 2017 through 2021. Gasoline and diesel usage was converted to units of CO_{2e} using EPA emissions factors (EPA 2019).

Scope 2 emissions come from the purchased electricity used by the Village in the four government buildings, as well as to operate the Wastewater Treatment Plant, the drinking water pump stations on Sanford Ave, Bourne Ave, Bristol Rd., the pumps for the water tank on Kellogg Street, and for streetlights and other miscellaneous lights, including lights on the Village Green. Monthly records of purchased electricity in kilowatt-hours were obtained from National Grid bills for all sources of electricity for which the Village is responsible. Emissions for each year were calculated using New York State eGRID data for emissions factors for each year (EPA 2020). For 2021, published emissions factors for 2020 were used.

Inventory Results

Over the past five years, total emissions from government operations ranged from 448.01 tons CO_{2e} (2021) to 493.78 tons CO_{2e} (2020), with Scope 2 contributing a larger portion of the emissions than Scope 1. Overall, total emissions have remained relatively constant over this five year period, with no increasing or decreasing trends.

Figure 1 shows total Scope 1 and Scope 2 emissions over the past five years.

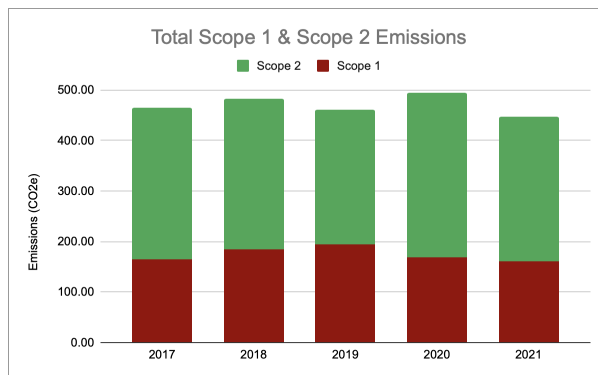


Figure 1. Total Scope 1 and Scope 2 Emissions from 2017 to 2021 for the Village of Clinton Government Operations.

Scope 1 emissions come from two sources: building heating and fossil fuel (gasoline and diesel) combustion for transportation. Scope 1 emissions from all of these sources were summed up per year from 2017-2021 and are shown in **Figure 2** below.

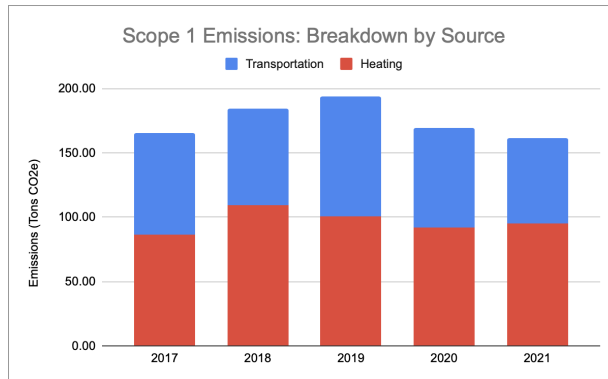


Figure 2. Scope 1 Emissions for the Village of Clinton, broken down between building heating (natural gas) and transportation emissions.

Scope 2 emissions are seaparted between the four buildings, as well as government operations electricity used for the operation of the wastewater treatment plant, the operation of the well pumps for drinking water, streetlights and miscellaneous additional lights on the Village Green. A breakdown of Scope 2 emissions from government operations over the past five full years is shown in **Figure 3**.

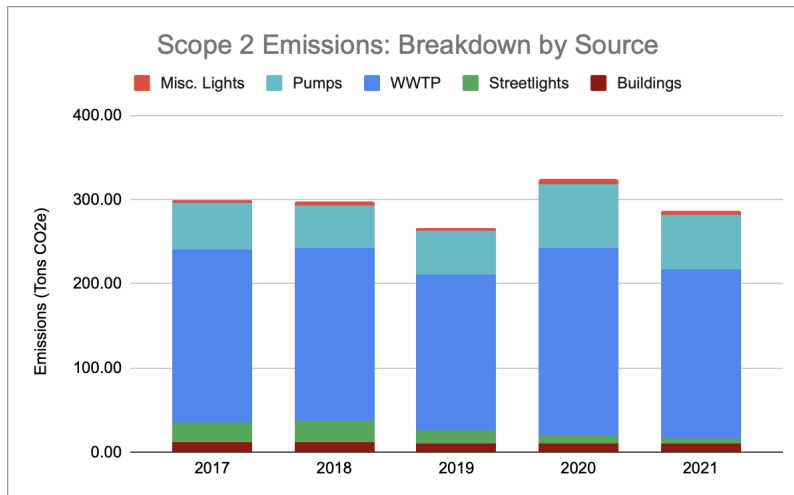


Figure 3. Scope 2 Emissions for the Village of Clinton, broken down between different uses of electricity.

One of the main actions the Village has taken (as part of its Clean Energy Communities high impact actions) to reduce our emissions was to switch to LED-powered streetlights in the middle of 2019. As shown in **Figure 4**, this conversion of streetlights to LEDs has led to a 74.14% reduction in Scope 2 emissions coming from streetlights since the switch. Streetlight Scope 2 emissions have declined from 24.48 metric tons CO₂e in 2018 to 6.33 metric tons CO₂e in 2021. This is an example of the significant reductions in emissions that can be achieved with government action.

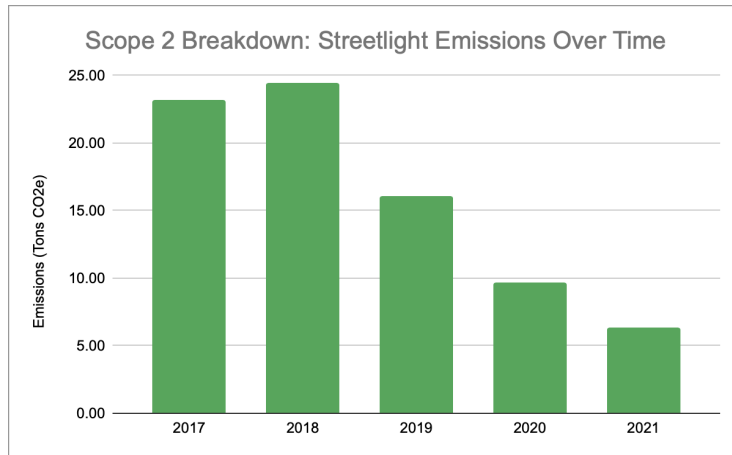


Figure 4. Scope 2 Emissions associated with streetlights in the Village of Clinton. Streetlights in the Village of Clinton were converted to LEDs, part way through 2019.

Sources

EPA, 2019. Greenhouse Gas Equivalencies Calculations and References. Accessed at: <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>

EPA, 2020. Emissions & Generation Resource Integrated Database (eGRID) Emissions Factors Data. <https://www.epa.gov/egrid>

Authors: Jason Kauppila and Dr. Aaron Strong (astrong@hamilton.edu)
 Hamilton College Environmental Studies Program
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