

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

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 (building heating and transportation fuels) and Scope 2 (purchased electricity) emissions from various government operations for the Village. For heating, the fire houses on Franklin Avenue and North Park Row, the Department of Public Works (DPW), and most notably the Wastewater Treatment Plant (WWTP) were the sources of emissions. For transportation, the use of diesel and gasoline at the fire department and the DPW made up the rest of the emissions sources. The emissions associated with transportation come from the combustion of gasoline and diesel fuels for government vehicles. For Scope 2, the purchased electricity for all of these buildings and the lights used in the Town were the major sources of emissions. The data used in this report were sourced directly from the municipal government, including its fuel receipts and National Grid utility bills. All data are reported in metric tons of carbon dioxide equivalent (CO₂e). For the heating data, this report uses the conversion formula from the United States Environmental Protection Agency (EPA).¹ For the electricity data, this report uses the conversion factors from the United States Energy Information Agency (EIA). These conversion factors vary by year based on the cleanliness of the grid.²

Over the past five years, total emissions from government operations ranged from 448.01 tons CO₂e (2021) to 493.78 tons CO₂e (2020), with Scope 2 contributing a larger portion of the emissions than Scope 1. **Figure 1** shows total scope 1 and scope 2 emissions over the past five years.

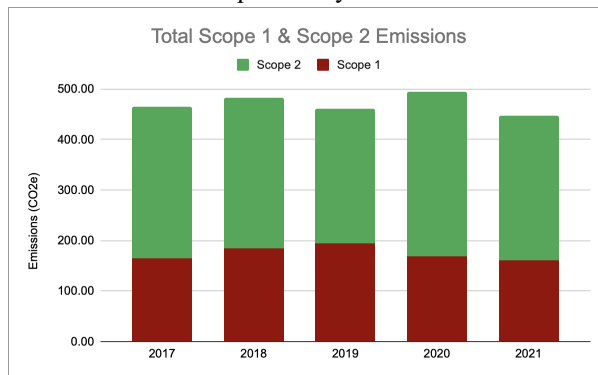


Figure 1

Scope 1 emissions came from two sources: heating and transportation. Scope 1 emissions were from all of these sources were summed up per year from 2017-2021 and are shown in **Figure 2** below.

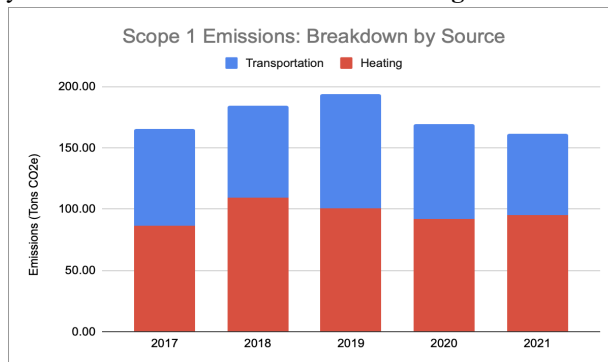


Figure 2

¹ Heating data conversion factor: $0.1 \text{ mmbtu}/1 \text{ therm} \times 14.43 \text{ kg C}/\text{mmbtu} \times 44 \text{ kg CO}_2/12 \text{ kg C} \times 1 \text{ metric ton}/1,000 \text{ kg} = 0.0053 \text{ metric tons CO}_2/\text{therm}$

² Electricity data conversion factor: $464 \text{ lbs CO}_2/\text{MWh} \times 4.536 \times 10^{-4} \text{ metric tons}/\text{lb} \times 0.001 \text{ Mwh}/\text{Kwh} = 2.10 \times 10^{-4} \text{ tons CO}_2/\text{kWh}$

Scope 2 emissions come from the purchased electricity used by the village and the town in government buildings, pump stations on Sanford Ave, Bourne Ave, Bristol Rd., and the water tank on Kellogg Street, the WWTP, and for streetlights and other miscellaneous lights. A breakdown of scope 2 emissions from government operations over the past five full years is shown in **Figure 3**.

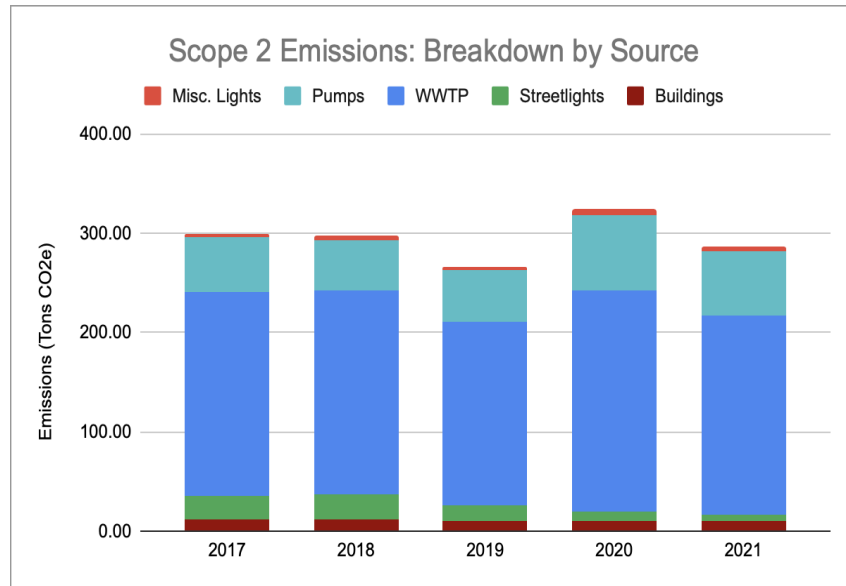


Figure 3

One of the main actions the village and town have taken to reduce our emissions was to switch to LED-powered streetlights in the middle of 2019. As shown in **Figure 4**, this has led to a 74.14% reduction in scope 2 emissions coming from streetlights since the switch 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.

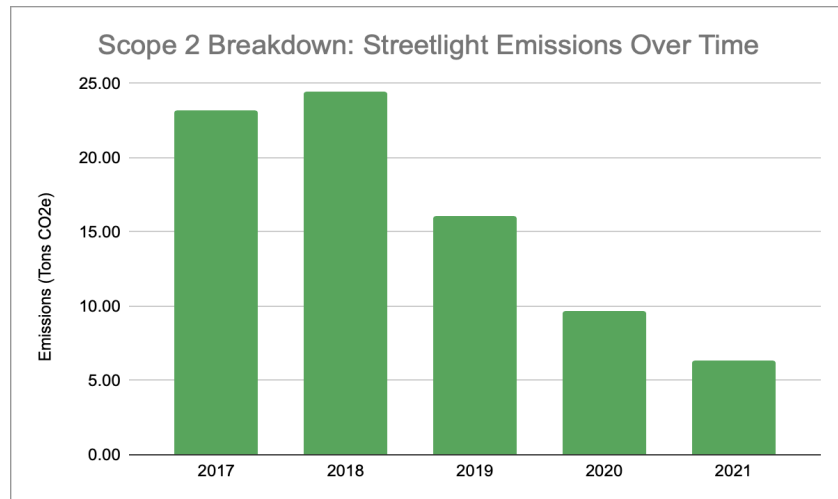


Figure 4