

Town of Canaan

Community Greenhouse Gas Inventory

Data from Capital District 2010 Regional GHG Inventory

Report Compiled November 22, 2022

Background

The Town of Canaan Board approved a Resolution on #56 on November 9, 2020 to become a Climate Smart Community (CSC). An action item in the CSC Certification process is *PE2 Action: Community GHG Inventory*.

This Community GHG Inventory Report summarizes the GHG emissions from the Town of Canaan's transportation fuels, waste, energy usage in buildings, and other sources within a given geographic boundary. Developing this GHG Inventory is the first step towards tangible climate action, the development of a Community Climate Action Plan (CAP) and enabling the Town of Canaan to identify realistic goals and community reduction of greenhouse gases.

Data gathering and methodology

For this report, Town of Canaan is utilizing baseline data from 2010 as reported in the Capital District 2010 Regional Greenhouse Gas Inventory. This inventory, completed by Climate Action Associates LLC, a sub-consultant to the Capital District Regional Planning Commission for the New York State Energy Research and Development Authority (NYSERDA), reports on community-level emissions of various sectors in metric tons of carbon dioxide equivalent (MTCO_{2e}). This data is meant to provide a baseline which can be used to measure future progress in reducing the broader community's collective emissions. In order for the inventory report to be valid for submission it must be completed within 5 years of submission; this inventory report was completed November 22, 2022. The inventory includes Scope 1, Scope 2 and Scope 3 GHG emissions for the community, as defined below.

- **Scope 1:** Direct GHG emissions that physically occur within the regional or community boundary such as those emitted by burning natural gas or fuel oil in homes and businesses.
- **Scope 2:** Indirect GHG emissions from purchased electricity.
- **Scope 3:** Indirect GHG emissions attributed to region or community activities that cause emissions whether the emissions physically occur in-boundary or not.

Baseline Year

The inventory process requires the selection of a baseline year. The year chosen for this regional inventory was 2010.

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:

$$\text{Activity Data} \times \text{Emissions Factor}_{(Fuel, GHG)} = \text{GHG Emissions}_{(Fuel, GHG)}$$

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.

Emissions Factors

Each GHG has an emission factor unique to each fuel. The electricity emission factor is based on the EPA eGRID (2012) 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. Non-CO2 GHGs are converted to an equivalent amount CO2 using a global warming potential (GWP) unique to each gas as defined in the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report. All GHG emissions in this report are reported in units of Metric Tons Carbon Dioxide Equivalent (MTCDE) which is the convention for reporting regional GHG inventories. One MTCDE is equal to 1000 kgs of CO2.

Data

Data for each category for the community, provided from the Capital District 2010 Regional Greenhouse Gas Inventory, Appendix B was as follows:

Table B 1. Municipal Roll-Up GHG Inventories (MTCDE)

| | County |
|----------|---|
| | Roll Up GHG Emissions By Sector (MTCDE) |
| | Res |
| | Com |
| | Industry |
| | Process |
| | Transport |
| | Waste |
| | Ag |
| | Totals |
| Canaan | |
| Town | |
| Columbia | |
| | 7,443 |
| | 4,793 |
| | 73 |
| | 686 |
| | 42,840 |
| | 525 |
| | 4,053 |
| | 60,411 |

Table B 2. Utility-Supplied Energy Consumption Data for 2010 by Municipality

County
Electricity (MWh)
Natural Gas (Therms)

| Total |
|----------|
| Res. |
| Com. |
| Indust. |
| Total |
| Res. |
| Com. |
| Indust. |
| Canaan |
| Town |
| Columbia |
| 16,409 |
| 10,579 |
| 5,640 |
| 189 |
| 341,081 |
| 0 |
| 341,081 |
| 0 |

Table B 3. Vehicle-miles-traveled and Fuel Consumption (gallons) by Municipality

County
Vehicle Miles Traveled and Fuel Consumption (gallons)

| VMT |
|------------|
| Gasoline |
| Ethanol |
| Diesel |
| Canaan |
| Town |
| Columbia |
| 95,128,023 |
| 3,660,888 |
| 406,765 |
| 837,551 |

Table B 4. Household GHG emissions and Energy Cost of Living

County
Per-Household GHG Footprint (MTCDE)
Energy Cost of Living (ECOL)

Energy
Transport
HH Total
ECOL (\$)
income
% income
 Canaan
 Town
 Columbia
 10.8
 10.4
 21.2
 8,805
 98,704
 9%

key findings

In 2010, the Town of Canaan emitted 60,411 Metric Tons Carbon Dioxide Equivalent (MTCDE) greenhouse gas (GHG) emissions. Transportation fuels accounts for 71%, followed by energy consumption in the residential (12%), commercial (8%), and agricultural (7%) sectors. Fugitive emissions contribute 1%, defined in the figures as the sum of industrial process, product use, and transmission/distribution loss emissions. Industry and waste sectors are the smallest contributing 0% and 1% respectively.

These emissions for Town of Canaan account for 7% of Columbia County, which emitted 887,247 Metric Tons Carbon Dioxide Equivalent (MTCDE).

Town of Canaan’s per-capita emissions were 35.3 MTCDE / person, based on the 2010 Census for the town, 1,710. This is compared to 14.1 MTCDE / person for Columbia County and 14.7 MTCDE / person for the entire Capital Region.

35.3 MTCDE / person

35.3 MTCDE / person

Energy cost of living as a percentage of income is 9%. This is at the median to lower end of percentages in the Capital Region, as displayed on the map below.

Accomplishments and further opportunities to reduce greenhouse gases
 Developing a GHG emissions baseline enables the Town of Canaan to set goals and targets for future reduction of GHG emissions.

The Town of Canaan has been proactive in reducing GHG emissions and energy costs for residents and businesses. They completed a community solar campaign in 2021, signing up 70 residents and educating the public about renewable energy. The town is also undertaking a clean heating and cooling campaign to educate residents about heat pumps and electrification in 2023.

The majority of Town of Canaan GHG emissions come from transportation. Further conversion to electric vehicles and moving these emissions to “Scope 2” will allow the Town of Canaan to offset GHGs with renewable energy. This could include a public education campaign on electric vehicles and additional EV charging stations in the town.

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