



Town of Bethlehem Community Greenhouse Gas Inventory Report

Based on data from the Capital District 2010 Regional GHG Inventory Report
Compiled January 27, 2025

BACKGROUND

The Town of Bethlehem Board approved Resolution No. 20 on April 22, 2009 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 Bethlehem'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 Bethlehem to identify realistic goals and community reduction of greenhouse gases.

DATA GATHERING AND METHODOLOGY

For this report, Town of Bethlehem is utilizing baseline data from 2010 as reported in the [Capital District 2010 Regional Greenhouse Gas Inventory](#)ⁱ. 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, reports on community-level emissions of various sectors in metric tons of carbon dioxide equivalent (MTCDE). 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 January 27, 2025. 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.

LIST OF ACRONYMS

CAP = Climate Action Plan
CDRPC = Capital District Regional Planning Commission
CSC = Climate Smart Community
EPA = Environmental Protection Agency
GHG = Greenhouse Gas
MTCDE = Metric Tons of Carbon Dioxide Equivalent

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:

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

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 *NY 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 unique to each gas as defined in the Intergovernmental Panel on Climate Change 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 kilograms 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)

Municipality	County	Roll Up GHG Emissions By Sector (MTCDE)							
		Res.	Com.	Indust.	Process	Transport	Waste	Ag.	Totals
Bethlehem	Albany	92,935	50,595	138,831	13,881	172,624	10,561	2,626	482,053

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

Municipality	County	Electricity (MWh)				Natural Gas (Therms)			
		Total	Res.	Com.	Indust.	Total	Res.	Com.	Indust.
Bethlehem	Albany	441,651	106,494	78,626	256,531	17,432,493	8,129,000	2,473,122	6,830,371

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

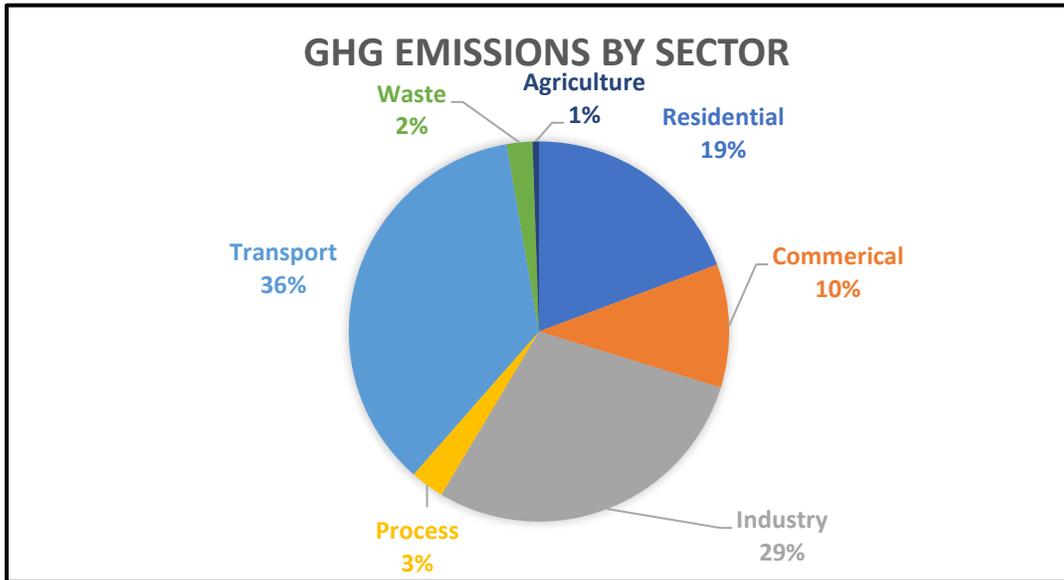
Municipality	County	Vehicle Miles Traveled & Fuel Consumption (gallons)			
		Vehicle Miles Traveled	Gasoline	Ethanol	Diesel
Bethlehem	Albany	359,198,482	13,952,741	1,550,305	1,638,551

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

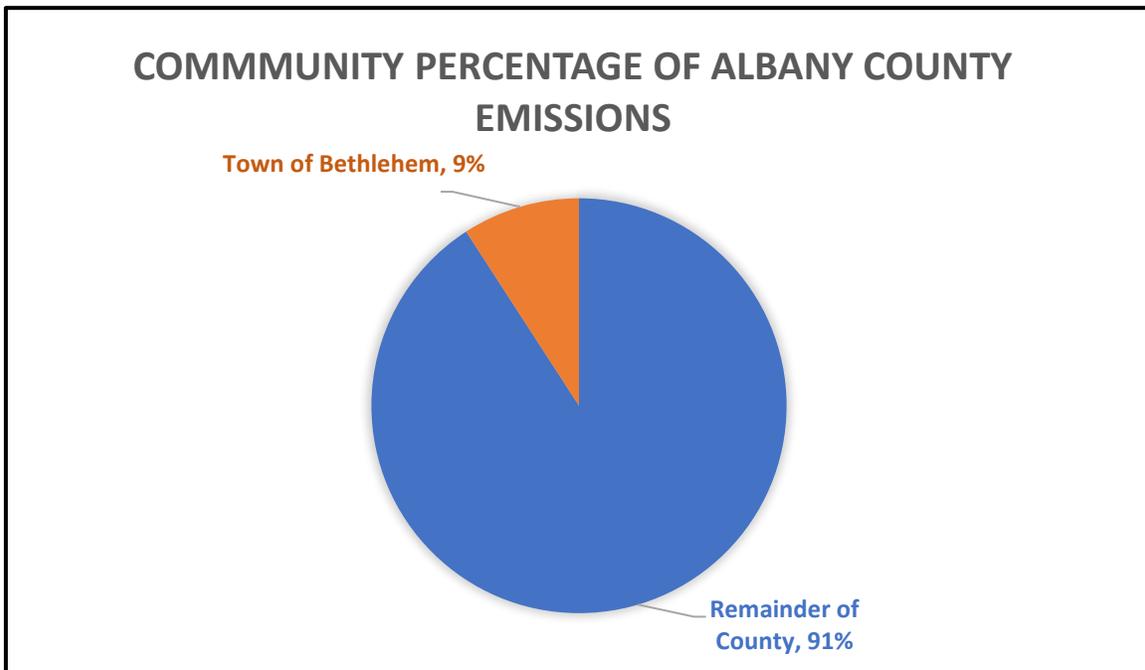
Municipality	County	Per-Household GHG Footprint (MTCDE)			Energy Cost of Living (ECOL)		
		Energy	Transport	HH Total	ECOL (\$)	Income (\$)	% income
Bethlehem	Albany	7.2	6.7	13.8	5,717	101,025	6%

KEY FINDINGS

In 2010, the Town of Bethlehem emitted 482,053 Metric Tons Carbon Dioxide Equivalent greenhouse gas emissions. Transportation fuels accounted for 36%, followed by energy consumption in the industrial (29%), residential (19%), and commercial (10%) sectors. Fugitive emissions contributed 3%, defined in the figures as the sum of industrial process, product use, and transmission/distribution loss emissions. Agriculture and waste sectors were the smallest, contributing 1% and 2% respectively.



These emissions for Town of Bethlehem account for 9% of Albany County, which emitted 5,268,456 Metric Tons Carbon Dioxide Equivalent (MTCDE).

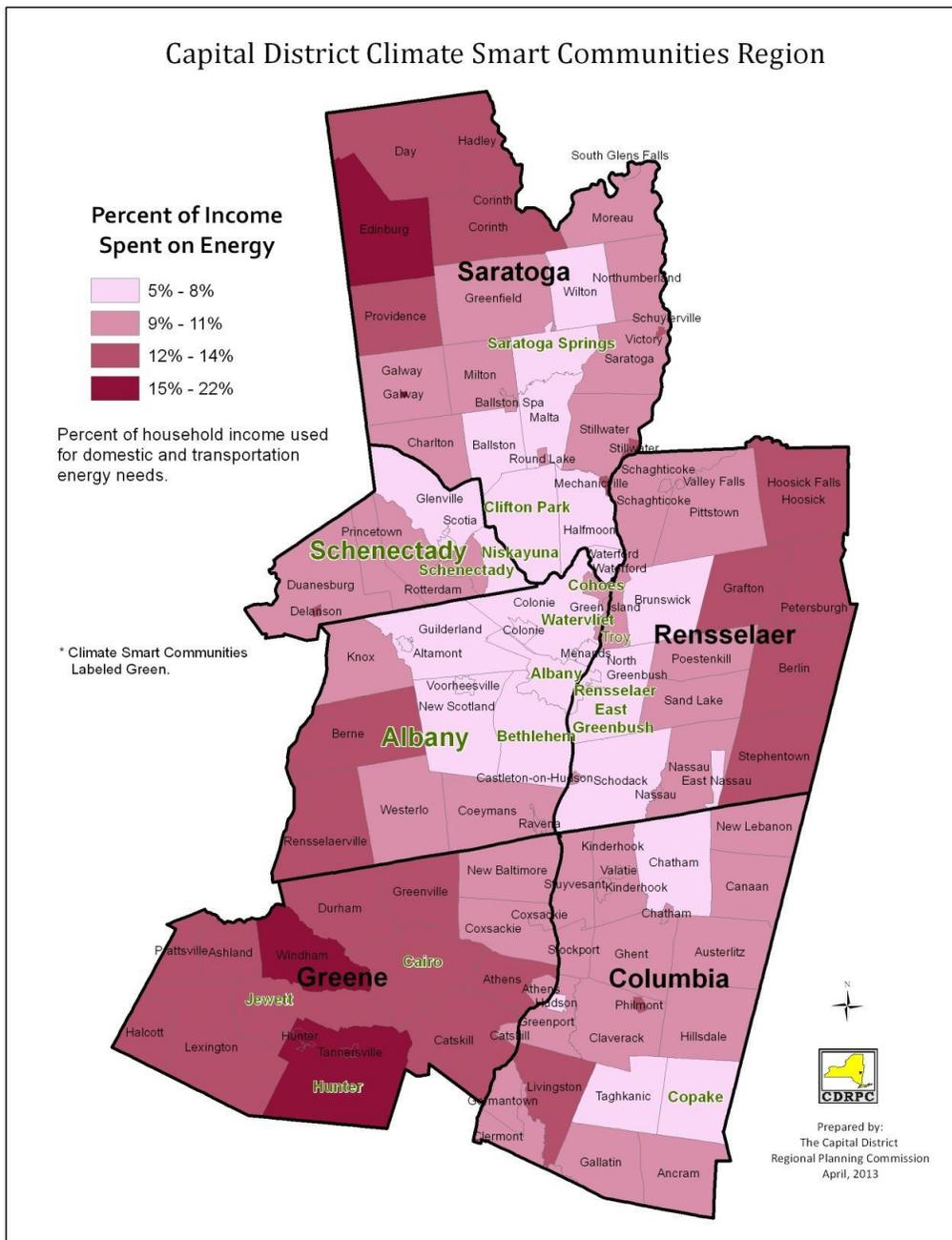


The Town of Bethlehem's per-capita emissions were 14.3 MTCDE / person, based on the 2010 Census for the town (33,656 residents). This is compared to 17.3 MTCDE / person for Albany County and 14.8 MTCDE / person for the entire Capital Region.



**Town of Bethlehem
14.3 MTCDE / person**

Energy cost of living as a percentage of income is 6%. 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 Bethlehem to set goals and targets for future reduction of GHG emissions.

The Town of Bethlehem has been proactive in reducing GHG emissions and energy costs for residents and businesses, including:

- Made upgrades at the Dinmore Road Wastewater Treatment Plant that reduced electricity usage by 460MW hours annually
- Replaced all of the lights in Town Hall with LEDs, reducing electricity usage by 111MW hours annually
- Installed public electric vehicle charging stations at 3 locations
- Began transitioning the Town fleet to cleaner vehicles with the purchase of 7 electric cars and pickup trucks
- Updated the Town code to make solar installation easier
- Expanded our state-of-the-art Compost Facility to accept food waste, including from private haulers

The majority of Town of Bethlehem GHG emissions come from transportation. Further conversion to electric vehicles and moving these emissions to “Scope 2” will allow the Town of Bethlehem 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 Bethlehem to identify reduction targets and strategies/funding to achieve these targets, as well as participating in the updated Regional GHG Inventory for 2022, being conducted by the Capital District Regional Planning Commission.

ⁱ NYSERDA, CDRPC, & Climate Action Associates. (2013, May 20). *Capital District 2010 Regional GHG Inventory - Government of New York*. Capital District 2010 Regional GHG Inventory. Retrieved November 18, 2022, from https://climatesmart.ny.gov/fileadmin/csc/documents/GHG_Inventories/capdistghginven.pdf