Town of Sand Lake

2022 Community Greenhouse Gas Inventory

Summary Report

Compiled on 11/5/2025

Credits and Acknowledgements

This report was prepared by the Capital District Regional Planning Commission, with the support of Anna Rizzo, Town Planner and CSC Coordinator.

This Community Greenhouse Gas (GHG) Inventory draws on the 2022 Regional GHG Inventory developed in 2025 by the Capital District Regional Planning Commission (CDRPC) and Climate Action Associates LLC.

Background

The Town of Sand Lake recognizes that human-caused greenhouse gas (GHG) emissions drive climate change, threatening our community's health and safety. To address this, the Town of Sand Lake adopted the New York State Climate Smart Communities (CSC) pledge on April 30, 2025 and is currently working towards Bronze Certification.

The CSC program, administered by the New York State Department of Environmental Conservation (DEC), supports local governments in reducing emissions and adapting to climate impacts. The Town is also working on a municipal operations GHG Inventory.

The 2022 Community Greenhouse Gas Inventory establishes a baseline for all emissions across sectors, including transportation, buildings, electricity, agriculture, industry, and waste. This baseline will guide emission reduction targets and a Community Climate Action Plan.

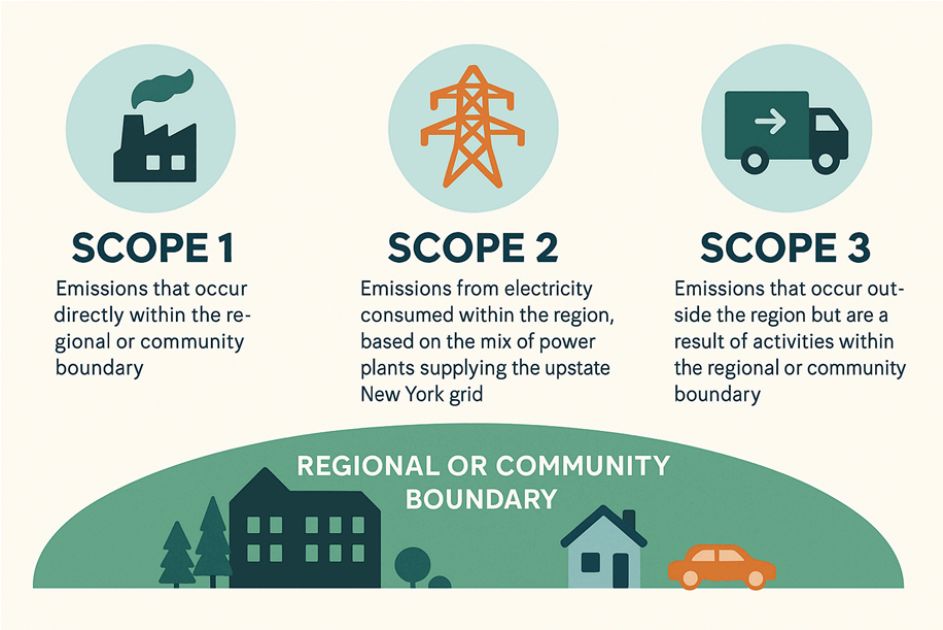
Data gathering and methodology

This inventory report presents an accounting and analysis of GHG emissions within the geographic boundary of the Town of Sand Lake. It draws on the 2022 Regional Greenhouse Gas Inventory developed by the Capital District Regional Planning Commission (CDRPC)[1], which quantifies emissions across these sectors in metric tons

[1] https://cdrpc.org/greenhouse-gas-inventories-dashboards

of carbon dioxide equivalents (MTCO2e). Emission estimates rely on methodologies and emissions factors developed by the U.S. Energy Information Administration (EIA), U.S. Environmental Protection Agency (EPA), and Climate Action Associates (CAA), LLC. The full methodology for this inventory can be found in the *2022 GHG Regional Inventory Methods Report*.[2]

Emissions Scopes



The inventory includes Scope 1, Scope 2, and selected Scope 3 emissions, as available in the regional dataset.

GHG Emissions Accounting Framework

GHG Sector	**Description**
Built Environment	All Energy-related emissions in the residential, commercial, industrial, and power generation Sectors
Transportation	Emissions from transportation-related fuels in all on-road and off-road vehicles and equipment across all modes of travel (road, rail, marine, and air)
Waste	Both solid waste and wastewater-related emissions.
Industry & Refrigerants	Non-energy related GHG emissions from using GHGs as products (like refrigerants), or from industrial processes that create emissions as a non-combustion byproduct.

[2] https://cdrpc.org/wp-content/uploads/2025/04/2022-GHG-Inventory-Methods-Report-Final.pdf

Agriculture	Agricultural emissions from livestock and soil practices, and emissions removals or emissions from land uses including forests and urban trees.

Baseline Year

This inventory uses 2022 as the baseline year, consistent with the data used in CDRPC's regional inventory.

Quantification Methods

GHG emissions are calculated using a calculation-based approach, in which emissions are estimated using activity data and published emissions factors:

Activity Data x Emissions Factor (Fuel, GHG) = GHG Emissions (Fuel, GHG)

Activity data refers to actual energy consumption or process data such as:

- Annual electricity consumption (kWh)
- Natural gas usage (therms)
- Fuel consumption (gallons of gasoline, diesel, propane, heating oil)
- Vehicle miles traveled
- Solid waste tonnage

Emissions Factors

Each GHG and fuel type has a distinct emissions factor used to convert activity data into emissions:

- Electricity: 2022 EPA Emissions and Generation Resources Integrated Database (EGRID) grid-average emission factor for the upstate New York region[3]
- Fuels (natural gas, propane, heating oil/diesel, gasoline): EIA Carbon Dioxide Emissions Coefficients by Fuel[4]

All emissions are expressed in metric tons of carbon dioxide equivalents ($MTCO_2e$), accounting for carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), using 100-year Global Warming Potential (GWP) factors from the Intergovernmental Panel on Climate Change (IPCC).

Data Sources

[3] https://www.epa.gov/egrid/historical-egrid-data
[4] https://www.eia.gov/environment/emissions/co2_vol_mass.php

The inventory draws on the following data sources by sector. Detailed methodology and data usage are outlined in the *2022 GHG Regional Inventory Methods Report*.

- Built Environment
    - 2022 Utility Energy Registry (UER)[5]
    - *U.S. Energy Information Administration - EIA - Independent Statistics And Analysis* DOE State Energy Data System (SEDS)[6]
    - American Community Survey (ACS) 2022[7]
    - EPA's Mandatory Greenhouse Gas Reporting Rule (MMR)[8], EPA Title V Air Quality Program[9], and EIA Form 923 – Electric Utility Generation Reporting[10]
- Industry & Refrigerants
    - Product use per capita emissions derived from the 2022 New York State Greenhouse Gas Inventory – NYSDEC[11]
    - EPA's Mandatory Greenhouse Gas Reporting Rule (MMR), EPA Title V Air Quality Program, and EIA Form 923 – Electric Utility Generation Reporting
- Waste
    - EPA's Mandatory Greenhouse Gas Reporting – Waste Sector[12]
    - Per capita waste generation number from the updated 2023 New York State Solid Waste Plan – *Building the Circular Economy through Sustainable Materials Management*[13]
- Transportation
    - NYSDOT Traffic Data (VMT) at a county level[14]
    - Federal Highway Administration – Highway Statistics Series[15]
    - US EPA – 2020 National Emissions Inventory (NEI)[16]
    - EPA Motor Vehicle Emissions Simulator (MOVES)[17]

[5] publish.utilityregistry.org/app/#.
[6] www.eia.gov/state/seds.
[7] https://www.census.gov/programs-surveys/acs/
[8] https://www.epa.gov/ghgreporting
[9] https://www.epa.gov/title-v-operating-permits
[10] https://www.eia.gov/electricity/data/eia923/
[11] https://www.dec.ny.gov/energy/99223.html
[12] https://www.epa.gov/ghgreporting/waste
[13] https://www.dec.ny.gov/chemical/114499.html
[14] https://www.dot.ny.gov/divisions/engineering/technical-services/highway-data-services/information-system
[15] https://www.fhwa.dot.gov/policyinformation/statistics.cfm
[16] https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data
[17] https://www.epa.gov/moves

- Federal Aviation Administration – Flight Miles / Trends[18]

- Agriculture
  - EPA State Inventory Tool (SIT)[19]
  - USDA National Agricultural Statistics Survey (NASS)[20]

Additionally, comparison data was used from the Capital District 2010 Regional GHG Inventory.[21]

Town of Sand Lake Inventory Results

This section of the report provides a detailed profile of emission sources within the community boundary of the Town of Sand Lake. This data will also provide a baseline from which the Town will be able to compare future performance and demonstrate progress in reducing emissions.

In 2022, community-wide greenhouse gas (GHG) emissions in the Town of Sand Lake totaled 71,370 metric tons of carbon dioxide equivalent ($MTCO_2e$). For the purpose of developing targeted emissions reduction strategies, it is often most effective to analyze emissions by sector, as each sector presents unique opportunities and approaches for reducing GHG emissions.

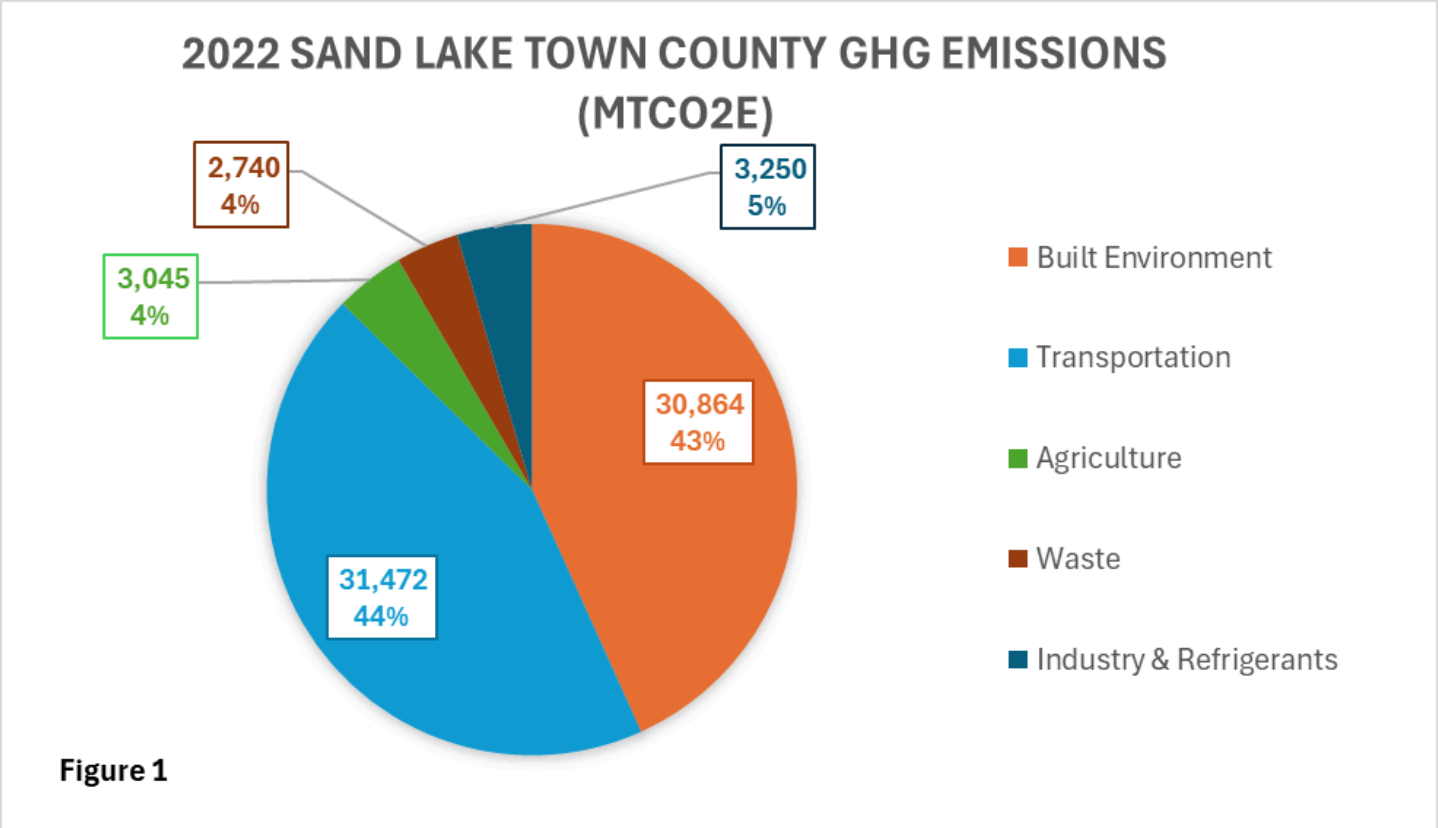
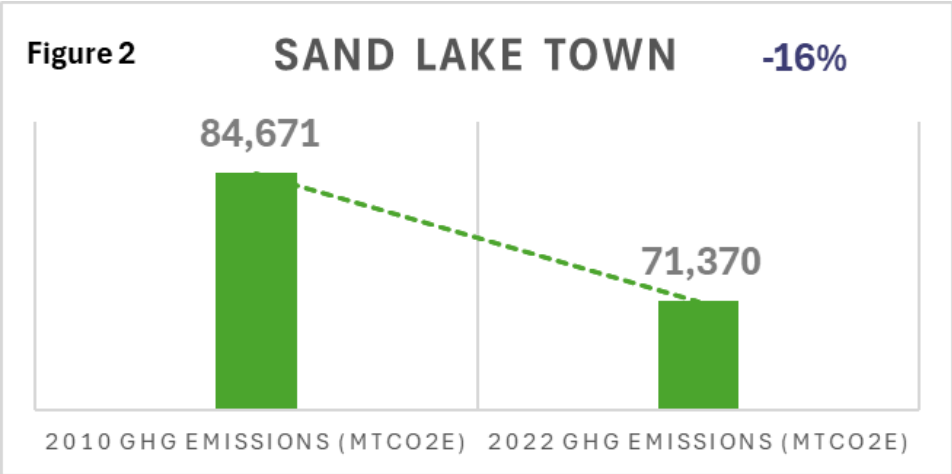


Figure 1

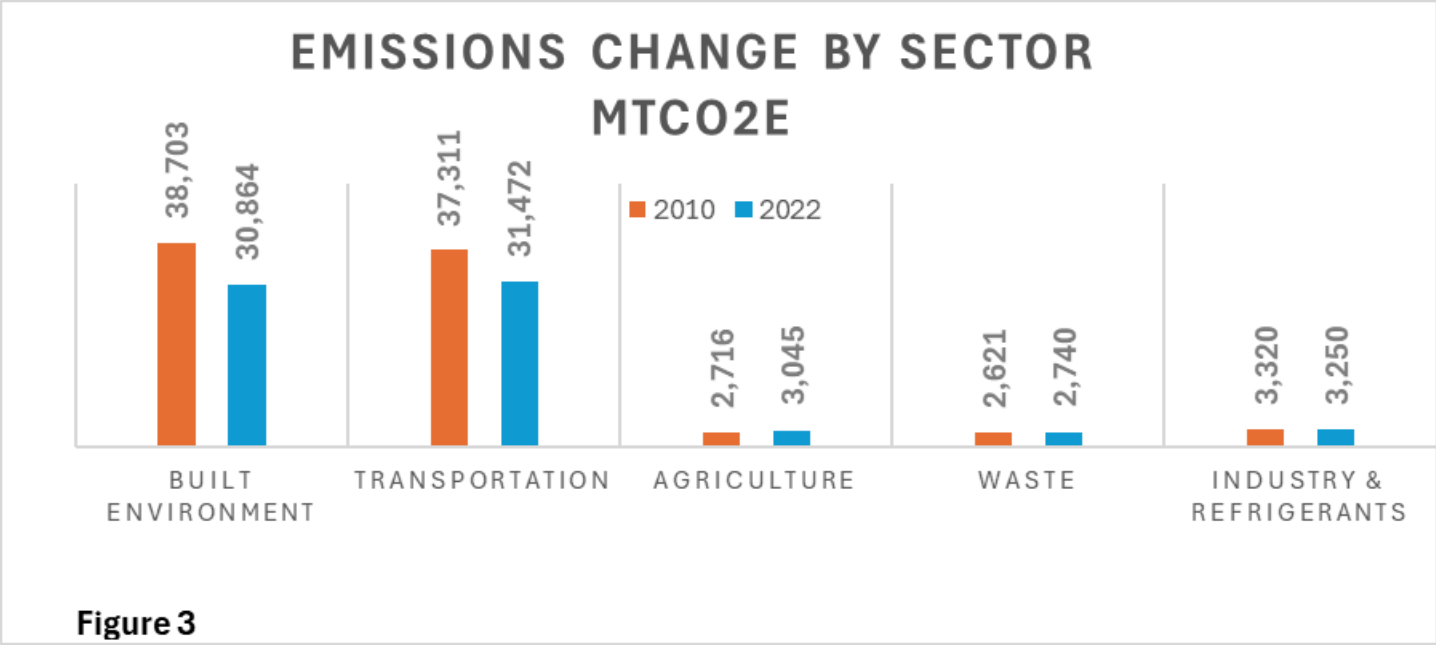
[18] https://www.faa.gov/data_research/aviation_data_statistics
[19] https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool
[20] https://www.nass.usda.gov/
[21] https://cdrpc.org/data/2010-ghg-inventory

Figure 1 demonstrates that the Transportation sector is the largest contributor to community-wide GHG emissions, accounting for 44% of total emissions. The second-largest contributor is the Built Environment, responsible for 43% of emissions. The remaining emissions are distributed across other sectors, including Agriculture, Waste, and Industry & Refrigerants, each contributing a smaller share to the overall total.

The Town's per-capita emissions were 8.4 metric tons of carbon dioxide equivalent ($MTCO_2e$) per person, based on the 2020 Census population of 8,455. This is lower than the per-capita emissions of 13.1 $MTCO_2e$ per person for the entire Capital Region.



Looking at the 2010 Community GHG Gas Inventory, total emissions have decreased by 16%, primarily driven by reductions in both residential and commercial energy use, as well as reductions in the transportation sector. This is demonstrated in *Figures 2, 3, and 4.*



MTCO2e Emissions by Sector/Subsector and Year

Sector	Subsector	% Difference from 2010 to 2022 (Subsector)	# Difference from 2010 to 2022 (Subsector)	2010	2022
Agriculture	Agriculture	11.89%	5,885	49,502	55,387
Built Environment	Commercial Energy	-19.00%	-49,802	262,165	212,363
	Industrial Energy	8.37%	7,129	85,154	92,283
	Residential Energy	-14.26%	-50,029	350,784	300,754
	T/D losses	2.17%	833	38,474	39,307
Industry & Refrigerants	Product Use	1.10%	689	62,408	63,097
Transportation	Air	-12.55%	-9,872	78,682	68,810
	Marine	-20.57%	-1,040	5,055	4,015
	Non-Road	-12.35%	-7,187	58,212	51,025
	On-Road	-13.44%	-83,232	619,263	536,031
	Rail	-13.07%	-3,222	24,656	21,434
Waste	Sewage Treatment	1.07%	165	15,489	15,654
	Solid Waste Management	11.17%	3,742	33,494	37,236

Figure 4

The full dataset for all community emissions, including breakdowns of the sectors and sources for all data, can be explored on CDRPC's Greenhouse Gas Inventories Dashboard: https://cdrpc.org/greenhouse-gas-inventories-dashboards.

OPPORTUNITIES TO REDUCE GREENHOUSE GASES

Developing a comprehensive GHG emissions baseline enables the Town to set informed goals and targets for future emissions reductions.

The community has already undertaken several initiatives to reduce emissions, including upgrading the streetlights and interior Town Hall lights to LED's, passing a recycling and shaded structures policy, hosting solar facilities on town property, and implementing biking and walking infrastructure where possible. Additionally, there are promising projects and policies currently proposed or in development that are expected to further reduce emissions. The Town is currently applying for a Transportation Alternative Program grant through DOT. This project would further support biking and walking infrastructure. Once these projects are implemented and other Climate Action Plan (CAP) priorities are identified and pursued, total GHG emissions can be lowered.

The next critical steps include setting clear emissions reduction targets and developing a detailed Community Climate Action Plan. This plan will identify specific, quantified strategies that collectively achieve the community's reduction goals. Meanwhile, the Town of Sand Lake will continue to monitor key energy consumption and emissions indicators.

This inventory highlights that it will be especially important to focus efforts on Transportation and the Built Environment sectors. Future emissions reduction strategies for Town of Sand Lake could include increasing energy efficiency across residential, commercial, and municipal buildings, expanding renewable energy generation and use, improving vehicle and fleet fuel efficiency, and/or enhancing waste diversion and wastewater treatment processes.