TOWN OF TRUCKEE
KEEP TRUCKEE GREEN

2022 Municipal Operations Greenhouse Gas Emissions Inventory

April 2025

TOWN OF TRUCKEE

Introduction

The Truckee Town Council has set a priority for the Town to reduce greenhouse gas (GHG) emissions and become a leader in environmental sustainability. Reducing the GHG emissions generated by the Town's government operations is an opportunity to lead the community in this goal. The Town has adopted the following GHG emissions reduction targets for municipal operations relative to a 2008 baseline:

- Reduce emissions 40% by 2030
- Reduce emissions 80% by 2040
- Achieve carbon neutrality by 2045

These targets are the same as the adopted community-wide goals, but the Town will strive to achieve these sooner for municipal operations to the extent feasible. To measure and quantify progress towards these goals, the Town committed to conducting annual municipal operations GHG emission inventories beginning with the 2022 inventory year.

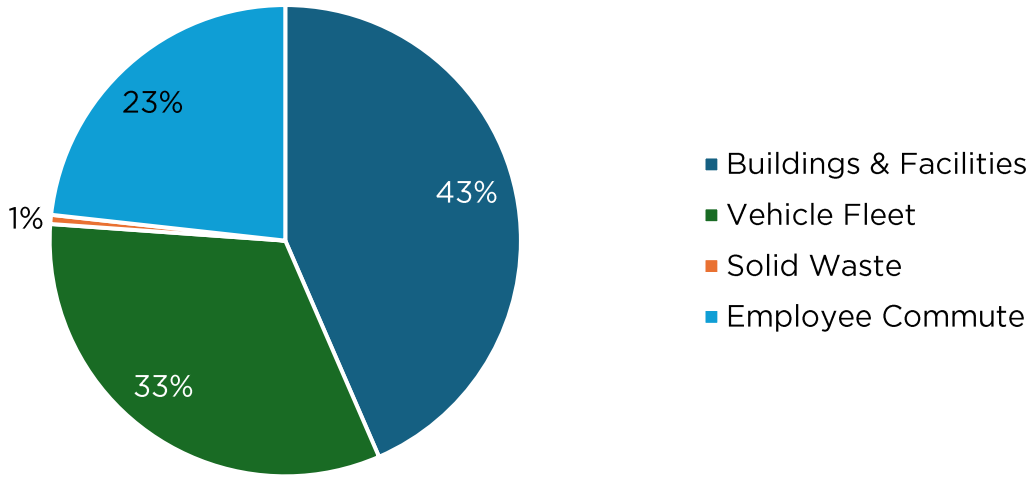
This greenhouse gas emissions inventory estimates greenhouse gas emissions resulting from the Town's municipal operations for the year 2022. This inventory measures the greenhouse gas emissions from Town buildings and facilities, streetlights and public lighting, vehicle fleet, employee commute, and solid waste generation.

All of the Town's municipal operation GHG inventories have used a national standard, the Local Government Operations Protocol (LGOP), developed by the California Air Resources Board, the California Climate Registry, and the International Council for Local Environmental Initiatives (ICLEI). This protocol provides standard accounting principles, boundaries, quantification methods, and procedures for reporting GHG emissions from local government operations. The Town used this LGOP to inventory Truckee's municipal operations inventory. The operational control framework was used, setting the inventory boundary to emissions that the Town has operational control over. Although the protocol provides a common national framework for all local governments to assess GHG emissions, any GHG inventory represents an estimate of emissions using the best available data and calculation methodologies at the time it was conducted. These estimates are subject to change as better data and calculation methodologies become available.

2022 GHG Emissions Summary

In 2022, municipal operations generated 2,070 metric tons of carbon dioxide equivalent (MT CO_2e). Buildings and Facilities became the largest contributor to municipal GHG emissions in 2022, followed by the Town's vehicle fleet, employee commute, and government-generated solid waste.

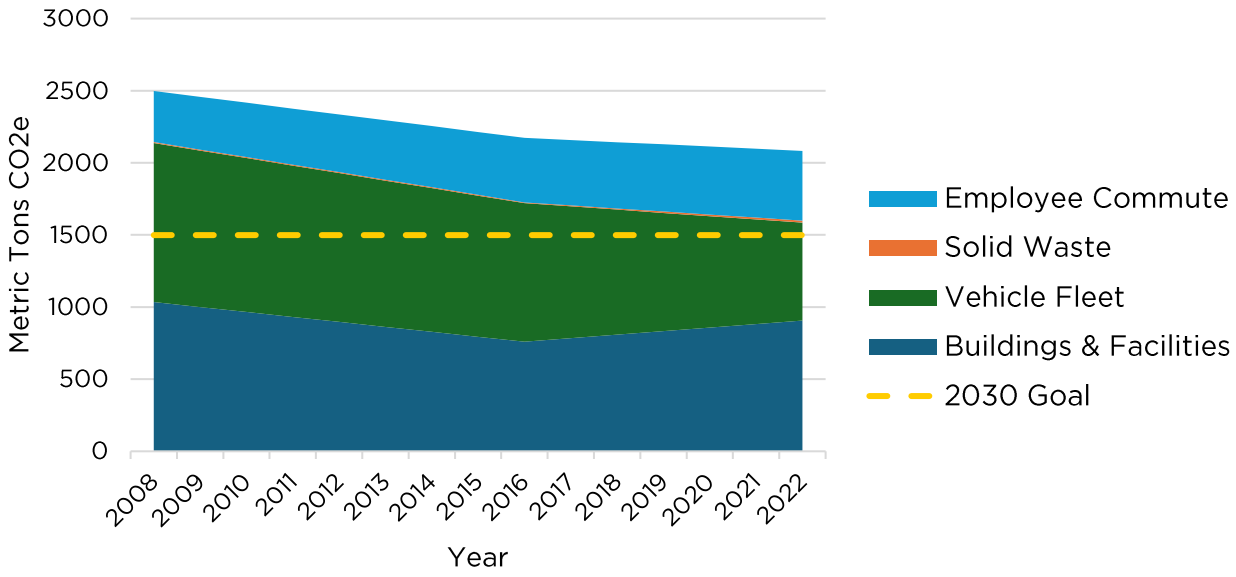
Figure 1: 2022 Municipal Operations GHG Emissions by Sector (Metric Tons CO2e)



GHG Emissions Trends

The Town has reduced municipal operations GHG emissions 17% below 2008 baseline emissions, on track towards the interim target of reducing GHG emissions 40% by 2030, and 80% by 2040. Municipal operations GHG emissions since the baseline year are shown in Figure 2, with emissions levels interpolated between inventory years.

Figure 2: Municipal Operations GHG Emissions 2008-2022



While overall emissions have decreased since 2008, the more recent upward trend in the Buildings and Facilities sector will need to be addressed to keep the Town on track towards adopted goals. More detail on each sector's emissions is in Table 1.

Table 1: Municipal Operations GHG Emissions Summary

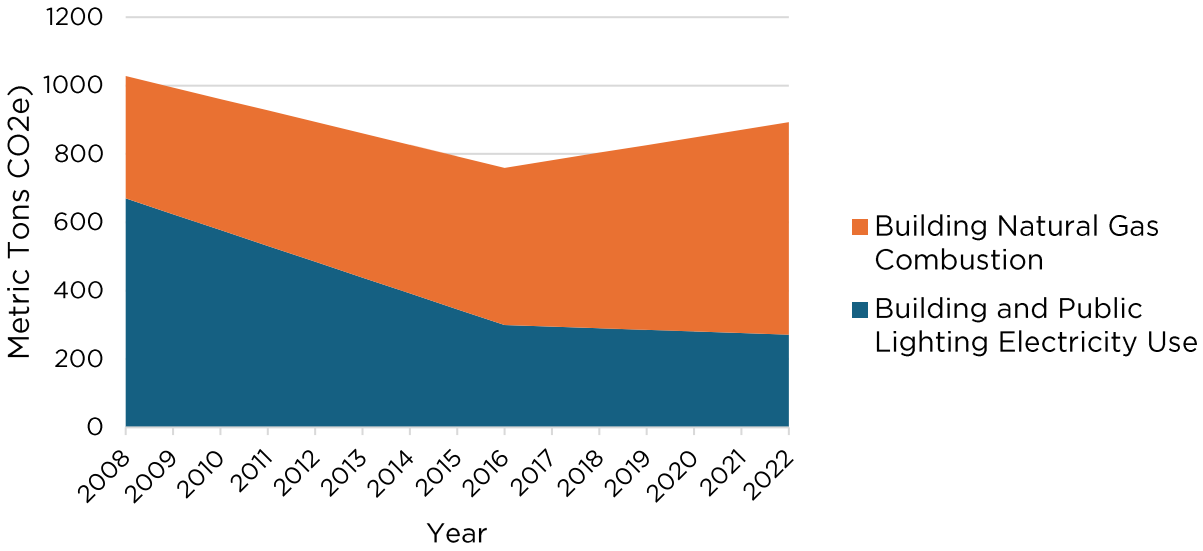
Sector	Metric Tons CO_2e			Percent Change	
	2008	2016	2022	2008-2022	2016-2022
Building Electricity Use	630	284	257	-59%	-10%
Building Natural Gas Combustion	358	460	622	+74%	+35%
Public Lighting Electricity Use	40	15	14	-66%	-9%
Total Buildings and Facilities	**1028**	**759**	**893**	**-13%**	**+18%**
Vehicle Fleet Gasoline Consumption	435	346	361	-17%	+4%
Vehicle Fleet Diesel Consumption	628	565	117	-81%	-79%
Vehicle Fleet Renewable Diesel Consumption	-	-	142	-	-
Leaked Refrigerants	39	49	60	+54%	+22%
Total Vehicle Fleet	**1,102**	**960**	**680**	**-38%**	**-29%**
Government-Generated Solid Waste	7	6	13	+86%	+117%
Total Government-Generated Solid Waste	**7**	**6**	**13**	**+86%**	**+117%**
Employee Commute Emissions	354	447	347	-2%	-22%
Total Employee Commute	**354**	**447**	**484**	**+37%**	**+8%**
Total Municipal-Operations Emissions	**2,491**	**2,172**	**2,070**	**-17%**	**-5%**

The following sections have more detail about the activities and emissions sources contributing to each sector of the Town's municipal operations GHG inventory.

Buildings and Facilities

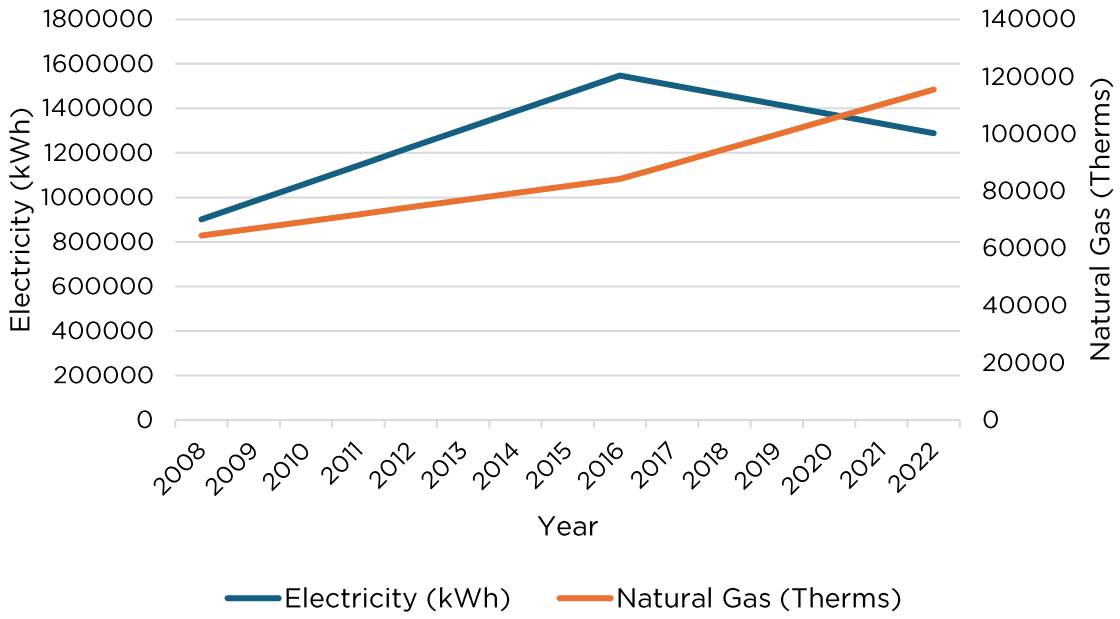
Emissions from the Buildings and Facilities sector include electricity and natural gas used to power and heat Town buildings, as well as electricity used for outdoor public lighting, including streetlights and traffic lights.

Figure 3: Building and Facilities GHG Emissions 2008-2022



Emissions from Town buildings and facilities decreased 12% since 2008 but increased 19% between 2016 and 2022. The increased emissions can be attributed to an increase in overall usage of energy, primarily from the expansion of the Town's building portfolio. From 2008-2016, the Town constructed several new facilities including the current animal shelter, the main Public Works building and a new sand barn at the Stevens Lane Corporation Yard. Two new maintenance garages were added to the Corporation Yard between 2016 and 2022, further increasing the number and square footage of Town facilities.

Figure 4: Energy Usage 2008-2022



Natural gas usage at Town buildings and facilities has been increasing steadily since 2008, and emissions associated with its use have subsequently increased. Although Town buildings and facilities also used more electricity in 2022 compared to 2008, GHG emissions associated with this usage have decreased over time. The majority of emission reductions in this sector can be attributed to the electric grid getting cleaner. In 2008 only 4.5% of the power Truckee used came from renewable sources. In 2022, that was up to 45.5%.

While there has been an increase in overall electricity use since 2008, reductions since 2016 can be attributed to energy efficiency initiatives implemented between 2019 and 2021, including the conversion of all lighting to efficient light-emitting diodes (LEDs). This project is saving over 77,000 kWh per year. The impact of these upgrades is most evident at Town Hall, where electricity usage has decreased 30% since 2008.

Table 2 provides a more detailed look at energy use changes in Town buildings. It's important to note that this energy use data is not weather-normalized, and there can be significant variation in building energy use due to weather. The impact of this year-to-year weather variability on GHG emissions will be more apparent as the town shifts to conducting annual municipal operations inventories. Staff will seek out additional tools to support weather normalization of energy use data and distinguish between changes in GHG emissions due to weather and other factors in future inventories.

Table 2: Building Energy Use

Activity / Source	2008	2016	2022	Change 2008-2022	Change 2016-2022
Town Hall - Truckee Airport Road					
Electricity (kWh)	656,160	503,280	457,502	-30%	-9%
Natural Gas (Therms)	27,529	9,094	5,531	-80%	-39%
Public Works Corporation Yard - Stevens Lane					
Public Works Main/Admin					
Electricity (kWh)	N/A	444,960	451,154	N/A	+1%
Natural Gas (Therms)	N/A	31,496	24,918	N/A	-21%
Public Works South Garage (Police)					
Natural Gas (Therms)	N/A	N/A	17,543	N/A	N/A
Public Works North Garage (Facilities)					
Natural Gas (Therms)	N/A	N/A	16,867	N/A	N/A
Public Works - Sand Barn					

Natural Gas (Therms)	N/A	N/A	8,933	N/A	N/A
Stevens Lane Animal Shelter					
Electricity (kWh)	N/A	318,840	339,697	N/A	+7%
Natural Gas (Therms)	N/A	24,467	26,323	N/A	+8%
Old Corporation Yard/Animal Shelter – River View Drive					
Electricity (kWh)	206,248	261,142	21,510	-90%	-92%
Natural Gas (Therms)	25,242	8,592	7,926	-69%	-8%
Tahoe Donner Corp Yard					
Electricity (kWh)	38,959	19,409	19,255	-51%	-1%
Natural Gas (Therms)	11,680	10,536	7,409	-37%	-30%
Truckee Depot (Main)					
Electricity (kWh)	79,753	90,195	68,900	-14%	-24%
Natural Gas (Therms)	2,823	2,403	1,747	-38%	-27%

Between 2008 and 2022, energy use at the old corporation yard and animal shelter on River View Drive decreased significantly, as these operations moved to the new facilities on Stevens Lane. Use of the old facilities remains minimal, though some buildings at this site are currently used by TART Connect.

Natural gas use at the Stevens Lane Corporation Yard has significantly increased since 2016, as nearly 40,000 square feet of new garage space was constructed in 2021. The South Garage, North Garage, and Sand barn are all new buildings that utilize natural gas radiant heating. Natural gas use also increased at the animal shelter, and the reason is unknown. Natural gas use at all buildings at Stevens Lane account for 82% of the Town's natural gas use, making these facilities good candidates for decarbonization retrofits.

In 2021, the Town installed an additional 23.1 kW photovoltaic system on the north garage building at the Public Works Corporation Yard at Steven's Lane. This is in addition to the existing system installed in 2012. These new systems should help the corporation yard reduce GHG emissions associated with electricity use. The Town does not have production data available from these systems, so the usage data is incomplete, but this data should be available starting in early 2025.

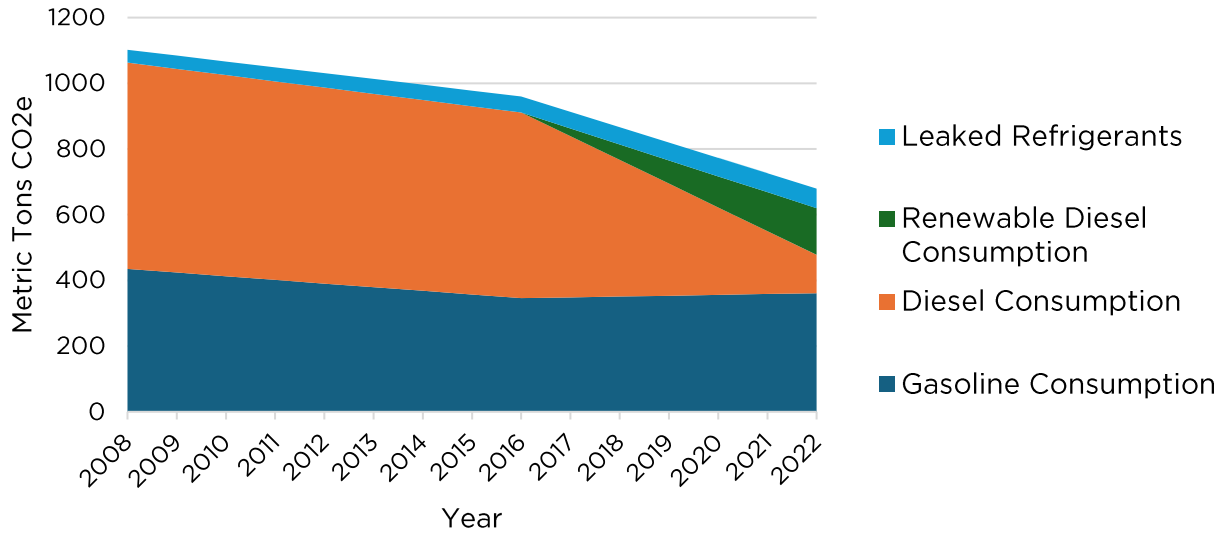
The Town has also incorporated solar-powered lighting for new public lighting installed. New solar-powered pedestrian crossing lights were installed on Brockway Road in 2018 and the Town has since installed solar lighting in the Envision DPR project and on the Stockrest Springs roundabout. Solar lighting has also been installed on the Soaring Way/Joerger Drive/Raley's roundabout, which was built as a requirement of the Soaring Ranch development. These upgrades contribute to 66% emission reductions for public lighting throughout the Town.

Per the Local Government Operations Protocol (LGOP), electricity transmission and distribution (T&D) losses, and tenant energy usage at the train depot were not accounted for in this inventory. According to the LGOP, emissions associated with T&D losses should be reported by the entity that owns or controls the T&D lines, not by the end-user of power. The Town utilized the operational control framework of the LGOP, setting the inventory boundary to only include emissions the Town has operational control over, which does not include space occupied by a tenant. These emissions were included in the Town's previous municipal inventories and have been removed from previous emission totals in this report for standardization and to allow for more accurate assessment of GHG emissions trends.

Vehicle Fleet

This category includes emissions associated with the gasoline and diesel fuel combustion used in Town vehicles and mobile equipment, as well as refrigerants from vehicle air conditioning.

Figure 5: Vehicle Fleet GHG Emissions 2008-2022



GHG emissions from the Town's vehicle fleet decreased 38% since 2008, and 29% between 2016 and 2022. This sector had the most significant decrease across all municipal operations, in large part due to the introduction of renewable diesel, which has 57% less GHG emissions compared to fossil fuel diesel. Renewable diesel was introduced in 2021, and while used for much of 2022, did not fully replace regular diesel use until 2023.

Figure 6: Fleet Fuel Usage 2008-2022

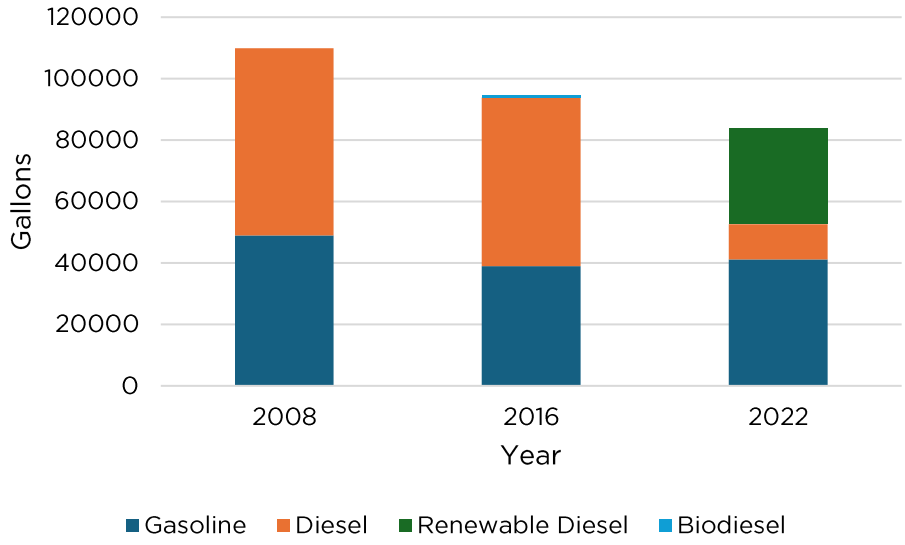


Figure 7 shows how the amount of fuel used for the Town's vehicle fleet can be highly dependent on weather, as a large percentage of overall fleet usage is for snow removal operations. This means that annual GHG emissions from the Town's vehicle fleet, like those from energy use, may have significant year-to-year variability due to factors beyond the Town's control. The impact of year-to-year differences in temperature and snowfall will become more noticeable as the Town begins conducting annual inventories. Unlike building energy use, there is no standard methodology for weather-normalizing vehicle use, but Town staff is exploring supplemental data sources that may assist in identifying how snow removal operations impact this sector.

Figure 7: Fuel Use 2022

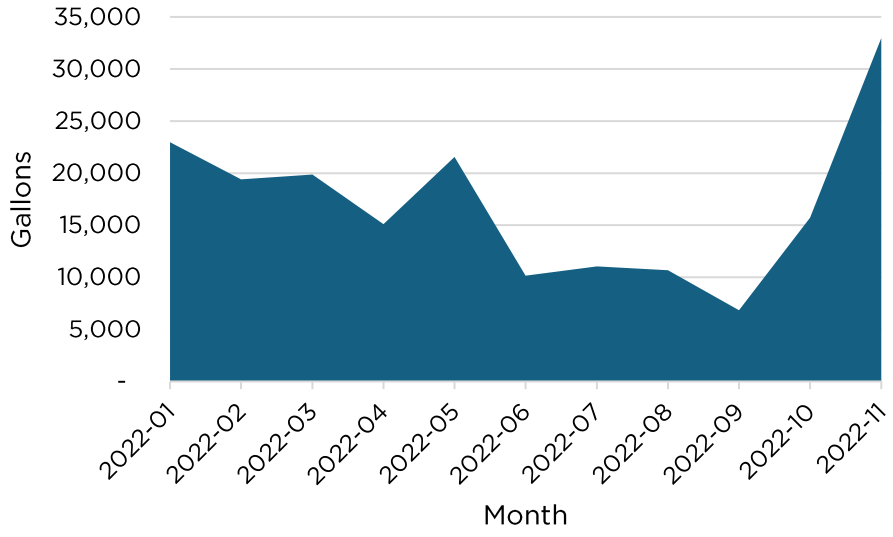


Table 3: Vehicle Fleet Fuel Usage

	2008	2016	2022	% Change 2008-2022
Gasoline (Gallons)	48,999	38,970	41,101	-16%
Diesel (Gallons)	60,932	54,881	11,468	-81%
Renewable Diesel (Gallons)	-	-	31,273	-
Total Fuel Use (Gallons)	**109,931**	**93,851**	**83,843**	**-24%**
Total Vehicle Miles Traveled	456,270	503,691	787,456	+73%
Biodiesel (Gallons)	-	887	-	-

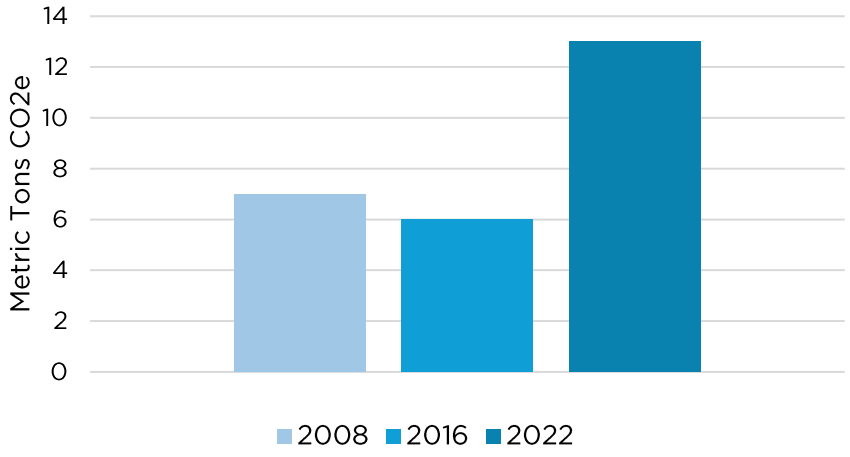
The Town has also started transitioning towards utilizing electric vehicles and equipment in the vehicle fleet. In 2016, the Town purchased a zero-emissions electric motorcycle and electric utility vehicle for the Police Department. In fiscal year 2020–2021, the Town purchased one electric vehicle (EV) for the municipal fleet, and in fiscal year 2021–2022, the Town installed three EV charging stations at Town Hall for fleet, employee, and public use. The Town's transition towards electric vehicles will contribute to reduced vehicle fleet emissions in future years.

Emissions from leaked refrigerants are estimated based on the number of vehicles in the fleet. Consistent with Local Government Operations Protocol (LGOP), emissions from EV charging are included in the building and facilities emission sector.

Government-Generated Solid Waste

This sector estimates the methane emissions from landfill disposal of organic material produced by local government operations.

Figure 8: GHG Emissions from Government Generated Solid Waste 2008-2022



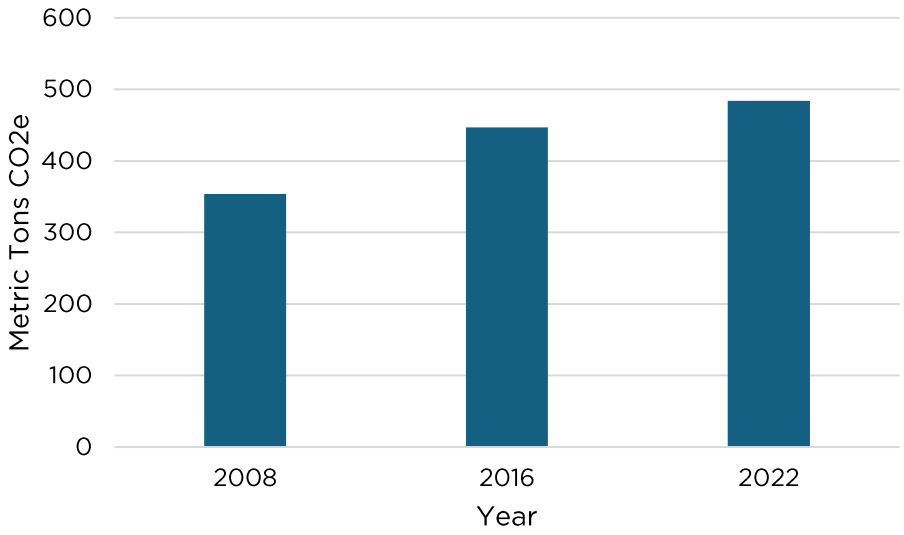
Calculated GHG emissions from government-generated solid waste increased by 117% since 2008. Given trash service levels at Town facilities have not significantly increased since 2016, the increase is likely due to differences in calculations between inventory years. Landfilled tonnages are estimated based on trash service levels at each Town facility, and emissions are calculated using local waste diversion rates, and the percentage of organic waste in the landfilled material based on statewide data for public administration waste composition. Waste diversion rates utilized in previous inventories resulted in an underestimation of total tonnage sent to landfill. The correct diversion rates for 2008 and 2016 were not available to correct the calculations. Going forward, a more accurate diversion rate will be utilized, which will show more accurate emission estimates. This sector accounts for only 0.06% of municipal emissions, meaning these differences in methodologies have not had a significant impact on overall trends.

This data does not necessarily reflect updates to waste and recycling programs, including source-separated recycling collection implemented at all Town facilities in 2018.

Employee Commute

Emissions from employee commutes are estimated based on employee commute surveys to determine the typical commute methods and distances for Town staff.

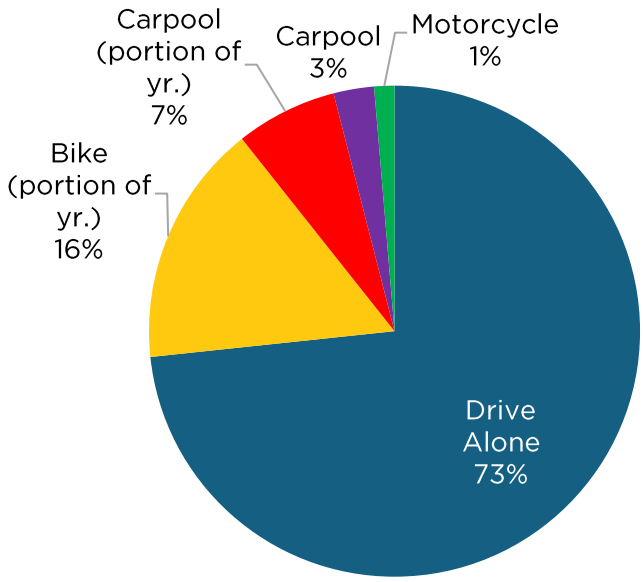
Figure 9: Employee Commute Emissions 2008-2022



Total GHG emissions from employee commutes increased by 8% between 2016 and 2022. However, it must be noted that the data used for 2022 employee commute numbers came from a 2021 employee survey, which was undoubtedly impacted by COVID. This may have resulted in more remote workdays due to emergency telework policies and there was likely a disincentive to carpool, since some employees may not have wanted to be in confined spaces with others.

Employee commute emissions are affected by the number of employees, the number of days they commute to work, transportation mode they use to commute to work, and the distance of commutes. Employee numbers have steadily gone up for each of the years measured. In 2008, the Town had 136 employees, compared to 168 in 2016, and 158 employees in 2022. In 2022, the Town switched to hiring fewer seasonal employees and switching to more full-time employee positions in the Roads and Snow Division. Employee counts and emission estimates include full-time, part-time, and seasonal employees. Seasonal employee emissions are based on the number of days worked.

Figure 10: Employee Commute Methods



The predominant commute method was surveyed as driving alone, which results in the highest emissions per mile compared to other modes. If employee behavior continues with this trend, emissions in this sector may continue to increase. However, alternative transportation incentives, as well as the Town's Friday work from home policy, both implemented in 2022, could help reduce the number of vehicle trips and associated emissions. The Town increased the incentive for employees to utilize alternative transportation in May 2022. Previously, employees that logged ten round-trip work commute trips using alternative transportation were rewarded with one additional hour of vacation. In May 2022, the incentive was increased to one hour of vacation per five alternative commute trips. Participation in the incentive program increased by 58% in the year following, increasing the number of alternative trips from 910 trips in FY 21-22 to 1,550 trips in FY 22-23.

The Town also implemented a remote work policy in April 2022, allowing eligible Town staff to work remotely on Fridays. 43% of survey respondents occasionally work remotely on Fridays. Remote work options for eligible staff will continue to provide an opportunity to significantly reduce employee commute emissions.

Increased EV adoption by Town employees will also reduce GHG emissions from vehicle commutes. Programs to support local workforce housing can also address these GHG emissions by significantly shortening commute lengths, which also makes it easier for employees to choose alternative transportation methods.