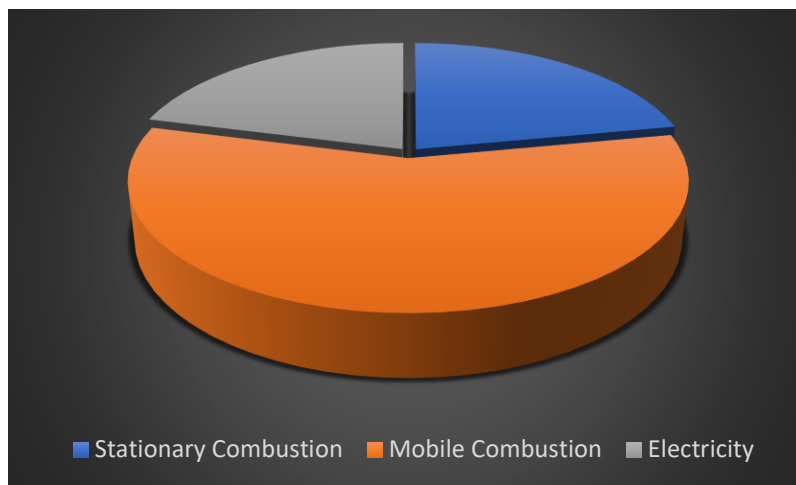




Greenhouse Gas Inventory
Government Operations
Baseline Year 2017



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Summary

Marbletown joined New York State's Climate Smart Communities program in 2015 with a commitment to climate protection and environmental sustainability.

Volunteers with the town's Environmental Conservation Commission have logged hundreds of hours incorporating numerous CSC actions (projects) into their work. By mid-2019, they were more than halfway to becoming a certified Climate Smart Community.

One of the more critical actions is the Greenhouse Gas Inventory. CSC splits this into two parts; one for government operations and the other for the community, which tracks emissions from sources such as businesses, homes, schools and vehicles.

This report focuses on the chosen baseline year of 2017 for government operations. Emissions from all fossil fuels and electricity that the town used during the year are broken down with the help of a nationally recognized protocol and macro-enabled spreadsheet. The results can assist the town as it develops an emission reduction target and tracks progress.

Total government GHG emissions for calendar year 2017 are estimated at **323** metric tons of carbon dioxide equivalent (MTCO₂E). Full results start on page 6.

Behind the Numbers

The Baseline Year

In reality, municipalities are not doing just one government GHG inventory; they will end up doing at least two. The first is for the baseline year, so any current or future inventory has a point of reference.

Marbletown chose 2017 as its baseline, as that was the earliest year to get the most accurate and comprehensive data.

The town's Environmental Conservation Commission was aware that 2015 would have been the ideal baseline. This was due to two main factors:

1. Marbletown moved most of its government operations into the Rondout Municipal Center in early 2016. With neighboring Rosendale, the towns became the first in New York State to share facilities.
2. Also in 2016, the ECC logged its first greenhouse gas reductions through the state's Climate Smart Communities program. For example, this was the year the town's first streetlights were switched to LED, and requests had started for streetlight removals.

Unfortunately, moving backward just two years would have led to making multiple assumptions within the data set. The ECC decided that accuracy was more important, and any energy savings could be addressed through separate town reports.

Emission Types

The three primary greenhouse gasses are carbon dioxide, methane and nitrous oxide, shortened to CO₂, CH₄ and N₂O respectively. All three are included here. While there are additional gasses, inventories such as this one are simple enough for smaller local governments to produce, yet still adhere to national and international standards.

Calculations

Greenhouse gas emissions can be found through direct measurement, such as from a monitoring system.

Another method puts usage amounts through mathematical equations. Either way, resulting numbers are given as units. For example, pounds of CO₂ or kilowatt-hours (kWh) of electricity. Marbletown's inventory uses this second method.

MTCO₂E

In this and other GHG reports, you will see the acronym MTCO₂E. This is also known as Metric Tons of Carbon Dioxide Equivalent. It's a way to show all reported emissions as a single unit.

There is a global warming potential of each gas, and they can all be shown for their environmental damage relative to carbon dioxide. The calculations used to convert gases to a unit like MTCO₂E are quite complex, and should not be considered exact. For this reason, numbers in reports such as this one should be considered close approximations.

Emissions by Scope

Emissions can be divided by Scope 1, Scope 2 and Scope 3 types.

Scope 1 emissions are from fossil fuels including natural gas, fuel oil and propane. The two broadest categories are "stationary" and "mobile." Stationary sources include fuel oil-fed boilers and propane-fed generators. Mobile sources are from gasoline or diesel vehicles.

Scope 2 emissions are from electricity or steam purchased from a utility.

Scope 3 emissions are from "indirect" sources beyond the scope of this inventory. They include employee commutes, solid waste disposal and wastewater treatment.

Data Collection

Most of the usage data came from monthly utility bills. Some electricity bills were not readily available, so account numbers were given to provider Central Hudson, which returned the necessary numbers via email.

Local government elected officials and employees who assisted in the process were the Supervisor and Supervisor's Assistant, as well as the Bookkeeper, Clerk and Building Manager.

The Highway Department assisted with road statistics, with additional road information found online from the state Department of Transportation.

Specific streetlight information came from the ECC's streetlight inventory it conducted in late 2015, and was cross-referenced with Central Hudson's billing tables.

GHG inventories from other municipalities were either available online or received through employees via email.

Population estimates came from the United States Census Bureau.

Protocol

Marbletown used the Local Government Operations Protocol (LGOP; Version 1.1, May 2010) to inventory GHG emissions from government operations, its buildings and sites with electric meters.

Inventory Tool

The town looked at four popular versions of the inventory tool before finally settling on one from the EPA. The federal version is similar to one supplied by New York State's Climate Smart Communities.

The EPA's zipped folder was downloaded on May 11, 2019. The included spreadsheets had last been updated on March 13, 2019. The User's Guide had a date of March 8, 2018.

Inventory Results

Total Emissions

Total government GHG emissions for calendar year 2017 are estimated at **323** metric tons of carbon dioxide equivalent (MTCO₂E).

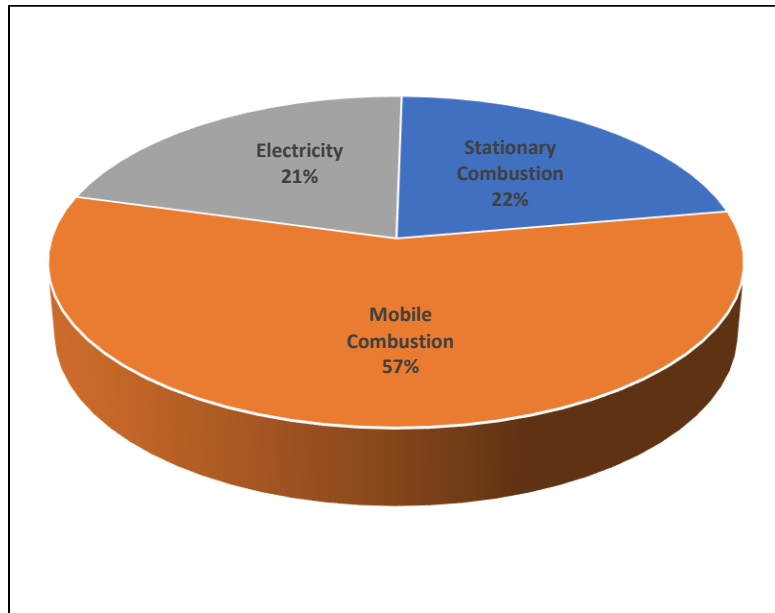
Comparisons from Around the State

NY Municipality	Inventory Year	MTCO ₂ E	Population
Town of Niles	2010	177	1,161 (est 2016)
Town of Hamilton	2011	237	4,122 (est 2016)
<i>Marbletown</i>	<i>2017</i>	<i>323</i>	<i>5,520 (est 2016)</i>
Village of Minoa	2010	558	3,492 (est 2016)
City of Geneva	2009	3,490	12,762 (est 2018)
City of Rochester	2008	31,634	206,284 (est 2018)

Keep in mind that every municipality has different needs. For example, when the City of Long Beach, NY tracked its government emissions for 2015, it found that wastewater treatment accounted for about 40% of the total. The Village of Piermont, NY reported that heating government buildings accounted for 82% of its 2011 emission total.

Keeping track of smaller details can contribute to higher numbers. The Town of Hamilton, NY (shown above) added 3% to its 2011 government GHG inventory because it tracked employee commutes.

Emissions by Source



Direct fossil fuel use accounted for just under 80% of the total town emissions. Those fuels included propane, fuel oil, gasoline and diesel. Electricity emissions were about 20% of the total.

Emission Breakdown by Source

Source	CO ₂	CH ₄	N ₂ O	MTCO ₂ E	Percent
Stationary Combustion	69	0	0	70	22%
Electricity	66	0	0	67	21%
Mobile Combustion	185	0	2	186	57%
TOTAL	321			323	100%

Emissions by Department

Department	MTCO ₂ E	Percent
Hwy Dept Garage	194	60%
RMC	67	21%
Hwy plus OTH	26	8%
Community Center	17	5%
Streetlights	10	3%
Old Town Hall	4	1%
High Falls Water	3	1%
Peak Rd Quarry	1	.5%
Tongore Park	1	.5%
Transfer Station	0	0%
TOTAL	323	100%

The Highway Department and Old Town Hall needed to be combined for parts of this inventory because they share a fuel oil tank. The HWY office is located inside OTH, but a majority of the space has been rented out since Marbletown moved its offices to the Rondout Municipal Center.

Town Vehicles

It might initially concern some observers that gasoline and diesel from Marbletown's Highway Department fleet made up 60% of the town's GHG emissions. To repeat an earlier statement... every town has different needs. For example, the town of Niles, NY reported that its vehicle fleet made up 85% of government emissions in 2010.

When compared to the average municipality in Ulster County, Marbletown has 31% more road-miles to plow, and needs to use about 60% more county roads to reach them. In addition to the 28 (center-line) miles of county roads, the town also uses 10 miles of State Route 213 and 8 miles of US 209.

The Highway Department chip-seals and repaves a portion of its roads annually, and also assists with the maintenance of Marbletown's section of the O&W Rail Trail.

Emissions by Scope

Source	CO ₂	CH ₄	N ₂ O	MTCO ₂ E	Percent
Scope 1	254	0	2	256	79%
Scope 2	66	0	0	67	21%
TOTAL	321	0	2	323	100%

As mentioned on page 4, Scope 1 is direct fossil fuel use. Scope 2 is electricity.

For fossil fuels, Old Town Hall uses fuel oil. The Community Center uses fuel oil and propane. The Highway Department uses fuel oil, gasoline and diesel.

Electricity Use by Department

Department	kWh	kWh %	MTCO ₂ E
RMC	168080	57.1%	38
Streetlights	43008	14.6%	10
Hwy Dept Garage	32887	11.2%	7
Old Town Hall	15673	5.3%	4
High Falls Water	12616	4.3%	3
Community Center	11325	3.9%	3
Tongore Park	6230	2.1%	1
Peak Rd Quarry	3447	1.2%	1
Transfer Station	1161	0.3%	0
TOTAL	294,427	100%	67

More than half of the town government's electricity use is from the Rondout Municipal Center. In addition to a wing for Marbletown and a wing for the Town of Rosendale, the campus also includes shared meeting rooms, a courtroom, a gymnasium, a bistro, outdoor lights and more recently, a charging station for electric cars. There is also a third wing that is rented out to The Arc Mid-Hudson. The energy bill is split in half, which means both towns share an equal responsibility for the resulting emissions.

Another item of note is the energy used for streetlights. Starting in 2016 and ending in 2019, the ECC helped remove 28% of Marbletown's streetlights and converted the rest to LED. In the chart above, the 43,008 kWh for streetlights is a 25% reduction from peak usage before the removal and conversion process started.

Numbers in the above chart are rounded. The Community Center entry includes the building's annex and parking lot light. Tongore Park includes the meter and pole lights. The Quarry includes the meter and pole light.

Fossil Fuel by Department

Department	Fuel	Gallons	MTCO ₂ E	MTCO ₂ E %
RMC	Fuel Oil	2819	29	11%
Community Center	Fuel Oil	1199		
Community Center	Propane	383		
Community Center			15	6%
Highway plus OTH	Fuel Oil	2565	26	10%
Highway Dept	Diesel	14460		
Highway Dept	Gasoline	4220		
Highway Dept			186	73%
TOTAL			256	100%

For the Rondout Municipal Center, Marbletown splits its fuel oil emissions with Rosendale. See the previous page for what is included inside the building.

Forecasting and Reduction

Marbletown's Environmental Conservation Commission will use this report to determine an emission reduction target and what measures to prioritize.

The ECC is comprised of local volunteers, and their workload is linked to their available time. Being that the town is a Climate Smart Community, there is more than enough work to do, and prioritizing is carefully considered.

Some of the ECC's accomplishments since 2016 include:

- Achieving the goal of 100% LED streetlight conversion
- Launching Hudson Valley Community Power Community Choice Aggregation, bringing 100% renewable electricity to all eligible Marbletown homes and businesses on an opt-out basis.
- Organizing a successful Solarize campaign in 2017
- Advising the town on multiple lighting upgrades
- Completing the state's Clean Energy Communities program, which helped toward the goal of being certified in the similar CSC program
- Installing multiple EV charging stations
- Assisting the town with solar laws and its Unified Solar Permit
- Performing an energy audit for the Marbletown Community Center and assisting with upgrades
- Banning fossil fuel power plants through the zoning code

Efforts at the town's Transfer Station should also be noted. Those include:

- Pay-as-you-throw trash disposal
- Dual-stream recycling
- Tire recycling
- Brush and yard waste collection
- Kitchen-scrap composting
- E-waste recycling

When the next GHG inventory becomes a priority, the ECC will need to decide whether to work on a second round for government operations or start on the community side with another baseline inventory.

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