



Climate Action Plan
Government Operations
2019



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Summary

The Town of Marbletown has made significant progress in reducing its greenhouse gas emissions since 2016 without a formal plan in place. This has been achieved by removing streetlights and converting the remainder to LED, as well as getting its electricity from the Hudson Valley Community Power CCA.

These actions were relatively easy because they did more than help the environment; they are also saving the town a measureable amount of money.

Marbletown recently completed an engineering survey of its buildings, and many are in need of repair and replacement. It's important for the town to adopt a long-term Climate Action Plan to ensure that its future investments in infrastructure are made with environmental responsibility, energy conservation, and resilience in mind.

This report will break down what Marbletown has done so far, propose short- and long-term GHG targets, and suggest actions for achieving the short-term goal.

The next section in the report will lay out why improvements are important beyond finances. If you want to jump directly to the proposed targets, they are page 10.

Background

Climate Change

Strip away the political rhetoric, click-bait articles and doomsday forecasts. What's left is a collective warning from experts that we've damaged the planet and are currently making it worse.

Ignoring climate change is easy, and also tempting, considering the possible burnout from hearing about it every single day. Complaining on social media might be cathartic, but accomplishes close to nothing. There are tangible steps we can all take, even if they're little. If every adult in America did one small thing, you can multiply that effort by about 250 million.

But even thinking on a national or global scale can destroy perspective. The numbers get too large to comprehend. What can one person, or one town do? Marbletown took a big step 45 years ago.

Marbletown's ECC

The Environmental Conservation Commission was created by Town Board resolution in 1974. It subsequently went dormant and was reformed in 2003. It is currently in the most productive phase of its short history. The purpose of the Commission was written into Town Code at its inception:



ecc
Marbletown Environmental
Conservation Commission

THE ENVIRONMENTAL CONSERVATION COMMISSION (ECC) SHALL BE INSTITUTED PURSUANT TO ARTICLE 12-F OF THE GENERAL MUNICIPAL LAW OF THE STATE OF NEW YORK FOR THE PURPOSE OF ADVISING THE TOWN BOARD IN THE DEVELOPMENT, MANAGEMENT AND PROTECTION OF THE NATURAL RESOURCES AND ENVIRONMENT OF THE TOWN OF MARBLETOWN, AND SHALL PROMOTE COMMUNITY AWARENESS AND RAISE THE VISIBILITY OF SUCH ISSUES AND ACTIVITIES.

One of the suggestions from this report is to have members of the Commission write a current Mission Statement with climate change in mind. While it doesn't have to be added to the Town Code, it could be added to Meeting Minutes as a matter of public record.

CSC

The ECC joined New York State's Climate Smart Communities program in 2015. A wide range of projects are included, which are known as "actions." Finishing each action can lead to a designated amount of points, and accumulating enough can eventually lead to becoming a Certified Community. Being involved with the program has already helped the town secure much-needed grants.

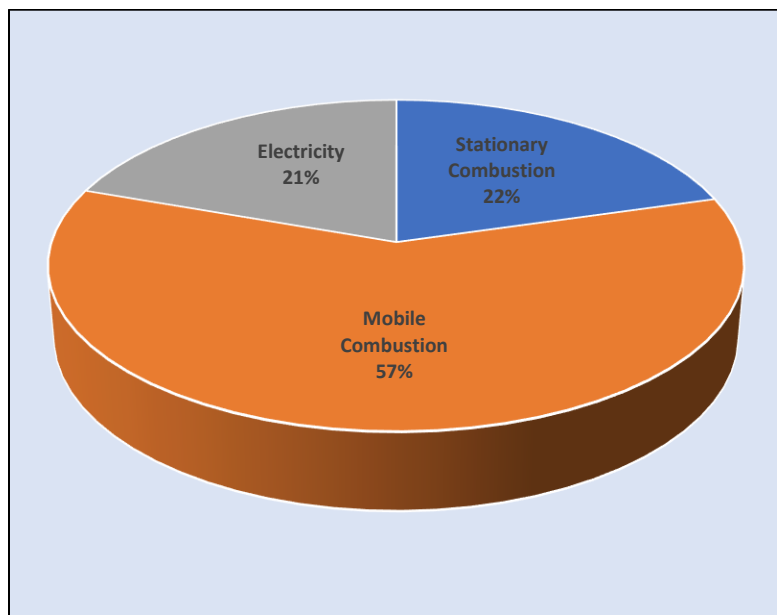


At the writing of this report, Marbletown has earned about 80% of its required points and only has three more projects to complete before applying for certification.

GHG Inventory

One of the more important actions required for CSC Certification is a Greenhouse Gas Inventory; one for government operations or one for the community-at-large. Or both. Completing the Government GHG Inventory was a prerequisite for this Climate Action Plan.

Emissions by Source



Total government GHG emissions for calendar year 2017 are estimated at **323 MTCO₂E**, or metric tons of carbon dioxide equivalent. There is a global warming potential of each greenhouse gas, and they can all be shown for their environmental damage relative to carbon dioxide. MTCO₂E allows for a single number, taking these potentials into account.

The pie chart on the previous page breaks down government emissions by type. Direct fossil fuel use accounted for 79% of the total government emissions in 2017, with the remaining 21% being from electricity.

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 above numbers are rounded. The emissions at the Peak Road Quarry, at Tongore Park and at the Transfer Station were each a fraction of a percent of the town's total.

Most of the emissions from the Highway Department come from gasoline and diesel to operate the town's vehicle fleet.

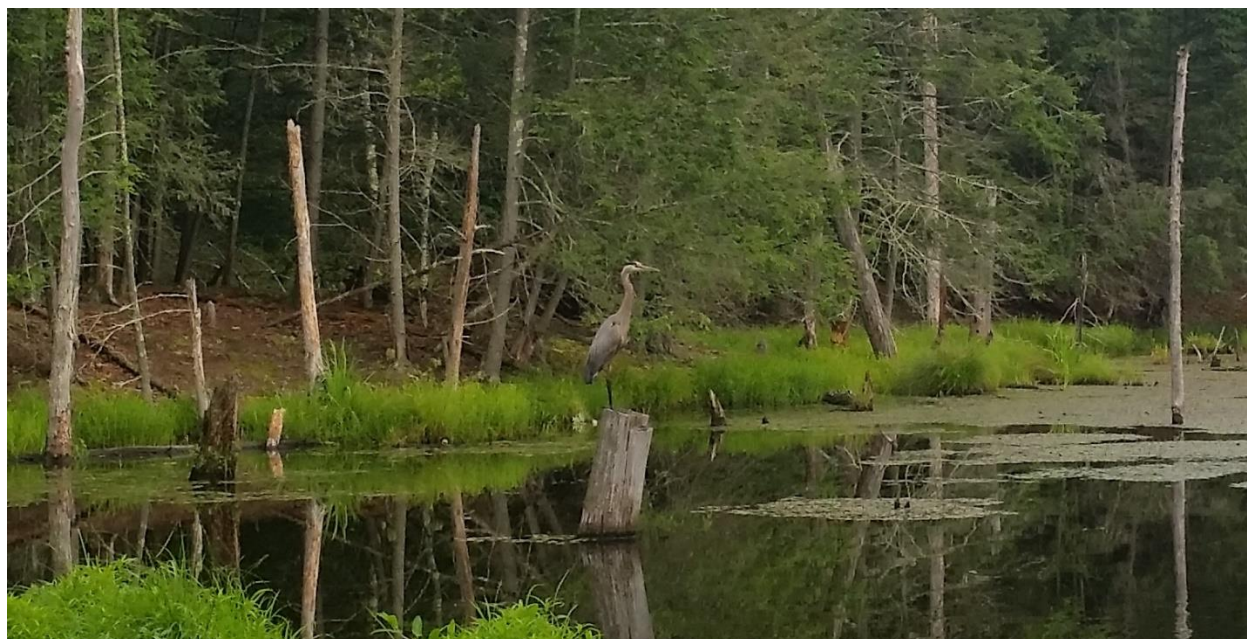
Emissions Forecast

The first step toward reducing emissions is through forecasting. The main question is whether there are any town plans in the foreseeable future that would involve increasing energy use. Factors include:

- Increasing the size of current government buildings
- Constructing or buying additional government buildings or sites
- Adding to the vehicle fleet
- Adding additional electric meters or more than several streetlights
- Increasing energy-dependent services that the town offers

Though the resulting answers, it would be safe to say that Marbletown is expecting business-as-usual operations through the foreseeable future.

One current plan within town borders would be adding a water-supply pipeline from the High Falls Water District plant to SUNY Ulster. If the plan comes to fruition, the Marbletown Highway Department would not be using any of its vehicles, gasoline or diesel to assist in the construction. This would not be a town project.



Reduction Progress

Streetlights

Marbletown's first large project under the Climate Smart Communities program was LED streetlight conversion. The inventory in late 2015 identified a number of misbillings, which netted the town about \$6,500 in credit. Eventually, 28% of the streetlights were removed. All others were converted to LED by early 2019.

In the middle of the conversion process, Marbletown passed a resolution stating that it wanted the lowest-wattage LEDs available from the utility, no matter what wattage incandescents were currently in place. Exceptions were for lights at the intersections of county and state roads, and for higher-wattage lights at the town Fire Departments.

Months of misbillings has forced the ECC to wait on conducting its post-conversion inventory. In turn, this has delayed the ECC's reporting of the final energy and cost savings.

Building Upgrades

Marbletown has four municipal buildings with a total of 18,924 square feet. They conveniently match NYSERDA's definition of a municipal building, which is a...

...municipal building that is owned or occupied by the applying jurisdiction that is 1,000 square feet or larger.

Building	Upgrades and Audits	Sq. Ft.	Sq. Ft. %
Rondout Municipal Center	Lighting, HVAC, pollinator gardens	7,695	41%
Highway Department Garage	Lighting	5,600	30%
Marbletown Community Center	Energy Audit	2,900	15%
Old Town Hall	Energy Audit	2,729	14%
TOTAL		18,924	100%

Percentages are rounded. All of these upgrades and audits have occurred within the last 5 years.

The Rondout Municipal Center used to be Rosendale Elementary School. Rondout Valley School District stopped using it in mid-2012. Rosendale moved its offices there in January of 2014. At the start of 2016, Marbletown also moved in and the towns became the first two municipalities in the state to share facilities. The square footage for the RMC above is for Marbletown's wing. The towns also share certain areas, such as the courtroom. When it comes to taking responsibility for the emissions, the two towns split it down the middle.

As for the Community Center, Marbletown has received bids for upgrades to the building. Due to budget constraints and the poor condition of the building, the desired work can't be completed all at once.

Both the Community Center and Old Town Hall have had energy audits, which fall between ASHRAE Level 1 and 2. As more bids come in for the Community Center, the ECC is expecting to get the equivalent of an ASHRAE Level 2 audit; just not in a single report.

In 2018, the ECC began assisting in the effort to get town buildings tied to renewable electricity.

Site Upgrades

In addition to its four town buildings, Marbletown is also responsible for other sites: the Transfer Station, Tongore Park, the Shale Bank (Quarry) in Stone Ridge, and the High Falls Water District.

The Water District is a separate legal entity, and responsibilities for it are shared between Rosendale and Marbletown. The structures there are the filter plant and water tower, and have been in use since 2007. They were built on top of a brownfield; the Superfund site next door made drinking well water dangerous for residents of both towns who live inside the plume.

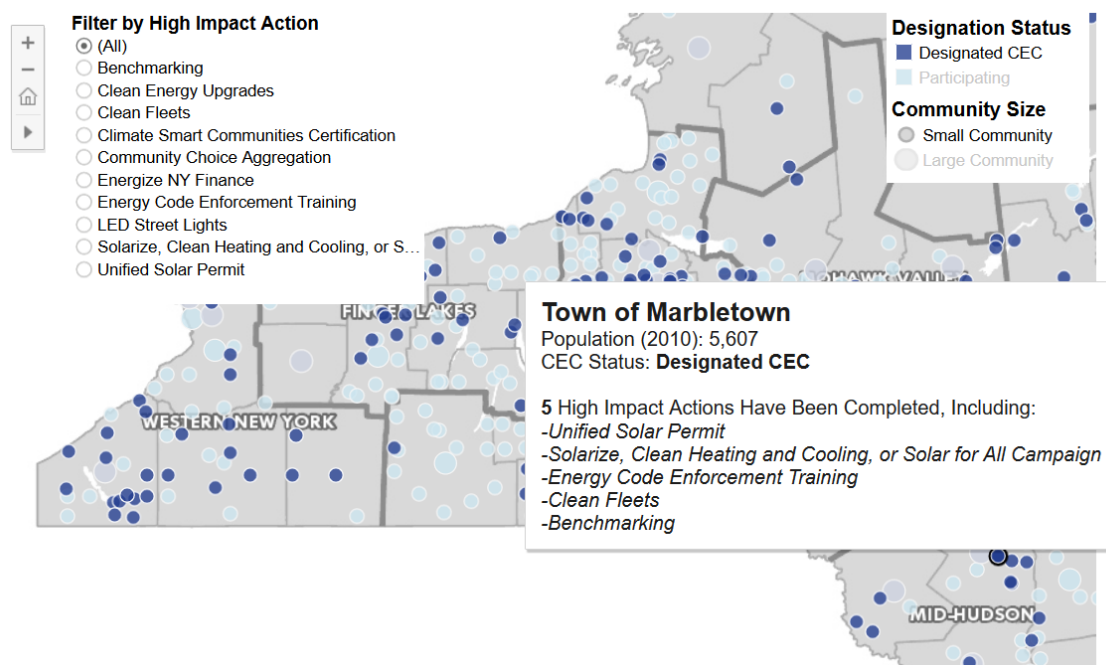
Marbletown upgraded the lighting for the Water District site less than 10 years after the plant went online. This is the only one of Marbletown's sites that have had any significant energy upgrades.

CEC

Marbletown is a designated Clean Energy Community through the similarly named NYSEERDA program. It received the designation by:

- Creating a Unified Solar Permit
- Holding a Solarize campaign
- Attending energy code enforcement training
- Installing EV charging stations
- Passing an energy benchmarking plan

Completing the program allowed Marbletown to apply for and receive a \$50,000 grant, which it is using for improvements to the Community Center.



Reduction Targets

Climate Leadership and Community Protection Act

The Governor of New York signed the state's CLCPA into law in July of 2019. Among the goals of the Act:

1. Decrease the state's greenhouse gas emissions to 40% below 1990 levels by 2030 and 85% below 1990 levels by 2050.
2. Achieve net-zero emissions economy-wide by 2050.
3. Finalize a plan to achieve this by January 1, 2023.

The ECC's Proposed Targets

Taking this Act's timeline into consideration, the ECC's suggested targets are:

Short-Term Target

Using Baseline Year 2017 as the starting point, cut government emissions 20% by January 1, 2023.

Interim Goals

- Begin developing more aggressive targets based on evolving technology.
 - Create a Mid-Range Target for 2030 based on this technology.
 - Submit a plan to achieve the Mid-Range Target by January 1, 2023.

Long-Term Target

Operate the Marbletown government with net-zero emissions by 2050
in alignment with the state's CLCPA.

The immediate step to achieve these targets would be adopting strong environmental standards for all new government buildings and upgrades. This step is included in the next section, which highlights the actions Marbletown can take to achieve the short-term 20% reduction target. The first action is considered the easiest to implement.

Proposed Actions

Renewable Electricity

About one-fifth of Marbletown's government emissions are from electricity.

2017 Electricity Use by Department

Department	kWh	kWh %	MTCO ₂ E	MTCO ₂ E %
RMC	168080	57.1%	38	56.7%
Streetlights	43008	14.6%	10	14.9%
Hwy Dept Garage	32887	11.2%	7	10.4%
Old Town Hall	15673	5.3%	4	6.0%
High Falls Water	12616	4.3%	3	4.5%
Community Center	11325	3.9%	3	4.5%
Tongore Park	6230	2.1%	1	1.5%
Peak Rd Quarry	3447	1.2%	1	1.5%
Transfer Station	1161	0.3%	0	0%
TOTAL	294,427	100%	67	100%

Marbletown currently has two options for renewable electricity at its properties. One is local renewable power, which the town is currently using for some of its government buildings. At the time of this report, not all town buildings were receiving this electricity.

Another option is using the town's CCA. Hudson Valley Community Power is a community choice aggregation program that allows six municipalities to pool their energy demand for better prices on renewable electricity. This service was automatically rolled out to all eligible Marbletown homes and businesses in July of 2019.

Lights that aren't connected to meters need to be addressed separately. Those include:

- All town streetlights
- The parking lot light at the Community Center
- The area light at the Peak Road Quarry
- The area lights at Tongore Park

Because of this, off-meter lights need to be broken out of the town's total electricity emissions. The chart below shows that the town can achieve 17% of its short-term 20% target by taking this action. Finding a way to get off-meter lights on renewable electricity would cut emissions another 4%.

Removing Off-Meter Lights from Total Electricity Emissions

Emission Type	MTCO ₂ E	MTCO ₂ E %
Off-Meter Electricity	11	4%
Metered Electricity	56	17%
Fossil Fuel Use	256	79%
TOTAL EMISSIONS	323	100%

In Marbletown's 2017 Baseline Greenhouse Gas Inventory, the off-meter lights that weren't included in the 2015 Streetlight Inventory were added to the energy use of the corresponding department. For example, adding the off-meter area lights at Tongore Park to its 2017 meter reading ended up tripling its emissions.

LED Streetlight Conversion

Marbletown will be able to report a streetlight emission savings once the post-conversion inventory is complete. The kWh reduction can be calculated by adding columns to the 2015 Inventory spreadsheet. The separate 2017 Government GHG Inventory spreadsheet can be quickly altered to handle the resulting emissions conversion.

Approving a Zero-Energy Building Standard

The concept of cancelling out a building's energy use includes a dizzying list of names worldwide. "Zero-Energy Building" and "Net-Zero Energy Building" are two of the most common in the United States. In broad strokes, here's what it involves:

- Design an energy-efficient building.
- Create enough renewable energy on-site, or acquire enough from elsewhere, so the energy use cancels out.
- Success is usually measured after a year to account for peaks and valleys of energy use.

Some buildings can be fully electrified. In Marbletown's case, any building running off 100% electricity could use renewable energy from the CCA. Just one example of removing fossil fuel from a building is by purchasing a heat pump instead of a furnace.

Shifting to this concept would require the Town Board to adopt a zero-energy standard for any new government buildings or upgrades.

Since up-front costs are higher for these buildings, the town budget and return-on-investment dates need to be carefully considered.

Marbletown Community Center

An energy audit of the Community Center revealed that the building is in desperate need of repair. It's essentially leaking money. Contractor proposals have shown what work needs to be done, and the price is well beyond the \$50,000 grant Marbletown received in 2018. Due to budgeting, the upgrades will need to be done in steps.

A breakdown of potential energy savings was not included in the proposals. The chart below shows how the Community Center stacks up in relation to total town emissions.

Community Center Emissions

Emission Type	MTCO ₂ E	MTCO ₂ E %
Community Center Electricity	3	1%
Community Center Fossil Fuels	15	5%
All Other Town Emissions	305	94%
TOTAL EMISSIONS	323	100%

Local company Peak Engineering conducted an inspection of Marbletown's buildings and structures, and assembled a report dated July 9, 2019. The report focused mostly on structural improvements, and did not address energy savings directly.

Some repair suggestions from the report could lead to energy savings, such as replacing flashing around the Community Center windows, as well as repairing damaged siding on the exterior walls. One suggestion for Old Town Hall (next page) is to insulate plumbing pipes above the restrooms.

Old Town Hall

The town government was based here through the end of 2015. The building is currently housing the Highway Department office, while the rest is rented out to the Rondout Valley Food Pantry.

Like the Community Center, Old Town Hall needs a substantial upgrade. Since there has been some level of discussion about selling the building, the options are:

- Keep the building with no upgrades.
- Keep the building and pay for upgrades.
- Upgrade the building and sell it.
- Sell the building as-is.

Old Town Hall shares a fuel oil tank with the Highway Department garage, so an estimate is needed to determine fossil fuel emissions. The Community Center's square footage and fuel-oil use created a ratio to apply. Here is the breakdown:

Old Town Hall Emissions

Emission Type	MTCO ₂ E	MTCO ₂ E %
Old Town Hall Electricity	4	1%
Old Town Hall Fossil Fuel (estimated)	12	4%
All Other Town Emissions	307	95%
TOTAL EMISSIONS	323	100%

The energy audit for Old Town Hall did not include estimates for cost, emission savings or return on investment. These would be needed for future planning.

Town Vehicles

So far, these reduction proposals have focused on the short term 20% reduction target. Looking ahead to 2050, the Highway Department fleet will be a major focus. There are several steps the ECC can take now to prepare before the suggested long-term plan would be due at the beginning of 2023.

Fleet Inventory

Keeping an updated fleet inventory is the first step. The Highway Department currently has an inventory template highlighting the data that would be required. This includes make/year/model, fuel type and mpg rating.

Anti-Idling Measures

These could range from a non-binding resolution to an enforced anti-idling law. To put it bluntly, these are a hard sell. If budgets permit, there are anti-idling technologies already available, but would require a wait for return-on-investment. These technologies can automatically shut off the engine but keep auxiliary power available, while monitoring the battery to make sure the voltage doesn't drop too low.

EV or PHEV

It would be important to get an early start on tracking the availability of heavy duty electric vehicles or plug-in hybrids. For multiple reasons, development of these vehicles has lagged behind that of light-duty cars and trucks.

Conclusion

The ECC is already off to a positive start to reach its proposed short-term 20% emission reduction goal. Here is a summary of this report's suggestions:

- Approve an updated ECC Mission Statement.
- Upload all Meeting Minutes to the town website.
- Shift all Marbletown properties to 100% renewable electricity.
- Look into shifting all off-meter lighting to 100% renewable electricity.
- Complete the post-conversion streetlight inventory and update the town.
- Decide on a zero-energy building standard and work toward Town Board approval.
- Get upgrade proposals that include financial/energy savings and ROI.
- Continue assisting the town on upgrades to the Community Center and OTH.
- Begin discussing the Highway Department fleet inventory and vehicle upgrades.
- Prepare and release the long-term emission reduction plan.



Acknowledgements

Rich Parete, Marbletown Supervisor -- Inventory and budget approval.

Michelle Solcberg, Assistant to the Supervisor -- Support with town logistics.

The Town of Marbletown, multiple departments -- Assistance with usage data.

Tom Konrad, Marbletown ECC Chair -- Technical support and assistance with usage data.

Marbletown ECC -- Budget and report approval; work on CSC actions.

Jim Yienger, Climate Action Associates LLC -- Technical support.

Climate Smart Communities, NYDEC -- Inventory parameters and guidance.

Anne E. Spaulding, Manager of Environmental Quality, City of Rochester, NY --
Assistance with report and layout.

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Completed for the Town Board on September 8, 2019.

Accepted by the Town Board on September 17, 2019 through Resolution #76-2019.