Climate Smart Gardiner

# Net Zero Gardiner Town Hall



## Background

It may be hard to believe that Gardiner's Town Hall could become a net zero building as it started its life as a one-room schoolhouse that was rolled into the hamlet on logs in 1875. It is an historic building that was added to the National Register of Historic Places in 2000. And seven years later an addition was added to the schoolhouse to consolidate town offices in one location.

That the Gardiner Town Hall could be made Net Zero shows that most buildings can achieve the same.

For a building to be considered a net zero building, it must produce as much renewable energy on-site as it consumes annually, resulting in zero net climate pollution. This is usually achieved by insulating and air sealing the structure, deploying energy efficiency upgrades, replacing any fossil fueled devices with electric ones and installing on site renewable electricity generation.

## Plan Creation

In 2024, the Climate Smart Gardiner (CSG) taskforce, an all-volunteer town committee, created a plan to make the Town Hall a net zero building.

The prize was worthwhile. The building emitted over 14 tons of climate pollution annually. It also emitted air pollution locally by burning natural gas for heating and remotely from the portion of the town's electricity supply generated by fossil fuels. The town also stood to save on their energy bills.

To eliminate the climate and air pollution and to save money, CSG developed and deployed a three-phase plan:

1. Reduce energy usage through efficiency measures
2. Make the Town Hall "all electric" by replacing fossil fueled devices
3. Install solar arrays to generate the electricity required to run the all-electric Town Hall

This plan required funding, planning and project management, so the CSG taskforce set up a subcommittee to earn the grants and execute the projects from 2024-2026. The projects were funded almost exclusively by NYSERDA grants, federal tax credits from the Inflation Reduction Act (IRA) and Central Hudson rebates.

## Phase 1: Implement Energy Efficiency Projects



We implemented three of four recommended actions to reduce energy consumption.

1. The replacement of the Town's interior fluorescent lighting with LED fixtures decreased electricity usage by c. 2,300 kWh annually.
2. The replacement of the Town's exterior metal halide lighting with LED fixtures decreased electricity usage by c. 6,200 kWh annually.
3. Temperature control setbacks saved c. 150 kWh & c. 200 gal. propane annually.

CSG did not implement the last recommendation, to insulate heating and domestic hot water pipes, as the equipment was to be replaced with a heat pump system in Phase 2.

These upgrades were completed in 2025 and reduce electricity consumption by c. 8,500 kWh and propane consumption by c. 200 gallons per year. The energy study and LED lighting project were funded by NYSERDA grants.

## Phase 2: Upgrade the Mechanical Systems



The Town Hall's mechanical systems are separate for the schoolhouse and the 2007 addition. The schoolhouse utilizes a ground source heat pump system and electric water heater, so it was already all-electric. As for the new addition, the space heating was provided by an 18-year-old propane furnace with a forced air ducted system. The similarly aged air conditioners utilized the same forced air ducted system. Hot water was generated with propane.

Our contractor performed a Manual N calculation to determine the load requirements of the space and then installed a high efficiency cold weather ducted air source heat pump system that would provide heating and cooling. They also installed a backup mini split system for the coldest days. The propane water heater was replaced with a high efficiency heat pump water heater.

This project was completed in March 2026 and will eliminate the remaining propane use of c. 1,600 gallons per year while adding c. 17,000 kWh of electricity use. This project made the Town Hall an all-electric building and was funded by NYSERDA grants and Central Hudson's Clean Heat rebate program as well as c. $1,600 funding from the Town.

## Phase 3: Power the all-electric building with renewable electricity





The last step to make the Town Hall a net zero building was to supply the Town Hall with 53,500 kWh or more of locally produced solar electricity to meet the Town Hall's electricity demand. This figure was calculated by adding the new heat pump demand of 17,000 kWh to the pre-upgrades consumption of 45,000 kWh then subtracting the impact of the efficiency upgrades of 8,500 kWh.

The CSG taskforce installed solar capacity in two phases. First, a 37 kW DC system which is expected to supply 45,000 kWh p.a. was installed at the Town Hall in April 2025. Then, a 40 kW DC system which is expected to supply 48,500 kWh p.a. was installed at the Highway Garage in January 2026. As this system operates on VDER metering with 50% of the benefit going to the Town Hall, it provides another 24,250 kWh of local solar electricity for the Town Hall.

The Town Hall will now get 69,250 kWh of electricity supply from the two arrays, which is 15,750 kWh more than the projected demand. This is enough electricity to power about 5 electric vehicles driving an average of 12,000 miles a year. In fact, this excess electricity will be used to fuel the municipal EV with solar energy at our new EV charging stations.

The Town Hall solar went live in April 2025 and the Highway Garage solar went live in January 2026. Both were funded by NYSERDA grants & federal tax credits from the IRA. The EV and the EV Charger were funded by NYSERDA grants, Central Hudson Make Ready rebates and federal tax credits.

### Benefits

- Climate pollution from the Town Hall is zero, a reduction of 14.3 metric tons annually.
- Air pollution created by remote fossil fueled electricity generation & local propane burning have been eliminated.
- The Town avoided the cost of the impending lighting and mechanical system upgrades which would have cost the Town between $50,000 - $100,000.
- The Town Hall's energy costs are reduced by c. $10,000 annually.
- The only energy costs are the Central Hudson delivery charges; they are more stable and not subject to the fluctuation or inflation of global fossil fuel prices.
- The ongoing savings and cost certainty help make the Town more affordable for residents.
- The Town Hall's exterior lighting & decorative streetlamps are more attractive and Dark Sky lighting compliant.

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**Thanks**

*This project was completed with the hard work, collaboration and support of the local community:*

- Climate Smart Gardiner Taskforce
- Town Supervisors Marybeth Majestic and Michael Hartner
- Highway Supervisor Brian Stiscia
- Local resident and lighting specialist, James Brigagliano
- The Gardiner Town Board and Town Staff
- Funding:
  - NYSERDA
  - US Inflation Reduction Act
  - Central Hudson
- Guidance:
  - The Hudson Valley Regional Council
  - the State Historical Preservation Office
- Local businesses:
  - Conscious Energy
  - HWS
  - Lighthouse Solar
  - SunCommon

*If you are interested in participating in a project like this, please consider joining the Climate Smart Gardiner Taskforce by sending an email to climatesmartgardinerny@gmail.com.*

*References:*

- Municipal Facility Benchmarking
- Municipal Greenhouse Gas Inventory
- The CEC energy study can be requested by sending an email to climatesmartgardinerny@gmail.com