



Wayland, Massachusetts

Energy Efficiency Case Study

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-Dan Knapik, Director, Green Communities Division, MASSDOER

Major cities have long been frontrunners when it comes to reducing energy consumption in municipal infrastructure. Limited resources, related specifically to funding and manpower, in smaller communities create a much tougher road, generally leading to their inability to match the energy reduction measures taken in larger cities.

This, however, does not always hold true. With a group of dedicated town officials, volunteers, and residents, making major improvements to the way a town operates is achievable. One of these small towns making big changes is Wayland, a town in Middlesex County, Massachusetts with a population of nearly 13,500.

Wayland was designated as a [Green Community](#) in 2010, signifying the town's commitment to reduce energy consumption (by 20 percent) and impact on the environment. "With the passage of the Green Communities Act of 2008, the Commonwealth established an opportunity for municipalities to blaze a new path in the clean energy field. Wayland, was one of our earliest designations as a Green Community and I am pleased to see the town utilize the powerful opportunity provided by an energy management services program" said Dan Knapik, Director of the Green Communities Division at the Massachusetts Department of Energy Resources. As of January 2017, 185 communities in the Commonwealth have received the Green Community designation.

Energy Improvement Highlights

11% **\$100K**

energy reduction by entering in a **\$2.4MM ESCO** for municipal building improvements

reduction per year in municipal electric costs

1.5MW **25%**

of solar at four sites including three parking lot canopies and one rooftop array

of the town's municipal energy load offset by solar

74 **\$60K**

households installed solar under the SolarizeMass program

anticipated savings from ongoing LED streetlight conversion

Collaboration: the key to unlocking energy savings at the municipal level

"Wayland's success is directly attributable to the volunteer Energy and Climate Committee, comprised of volunteers who are not only passionate about energy savings and carbon reduction but also have energy sector expertise. Working with them is terrific; they push the agenda and help get the work done."

- Ben Keefe, Public Buildings Director

Wayland as a Green Community

Since becoming a Green Community, Wayland has successfully implemented a number of projects through grants and by entering in an energy saving performance contract with Ameresco. This has allowed the town to maintain its status as an energy leader in the state. As a first step, a detailed audit of municipal buildings was conducted and various projects were selected that produce guaranteed energy savings. The program was designed to replace vital building equipment at the end of its useful life, generate financial savings, and to help the town meet its obligation as a Green Community. Through the performance contract, efficiency upgrades were made at eight school and municipal buildings. Some examples of these measures include:

- Lighting system improvements including addition of controls
- Water conservation measures
- Weather-stripping and air sealing
- Variable frequency drives for pumps
- Improve ventilation and indoor air quality
- Boiler replacements and improvements
- Energy efficient motors
- Transformer replacements
- Oil-to-gas conversion
- Refrigerator/Freezer fan controls
- Building energy management systems
- Rooftop heating and cooling unit replacements

Altogether, the \$2,400,000 ESCO used for municipal building improvements resulted in an energy reduction of approximately 11 percent. In addition to the measures listed above, the town also partnered with the Metropolitan Area Planning Council (MAPC) to convert streetlights to LED technology. Once complete, Wayland will have converted 714 streetlights to LED technology accounting for 2287,616 kWh or 60,000 saved annually.



In addition to the efficiency improvements made in the town, Wayland has opted to go after further reductions by turning to solar powered energy. Through the SolarizeMass program, the town partnered with two other nearby municipalities to offer homeowners the opportunity to purchase renewable energy in bulk. Seventy four households participated in the program back in 2012 by installing PV arrays on their properties. The town is participating in the program again in 2017 to increase the number of homeowners receiving clean, renewable solar power.



Solar has been installed on more than just residential property in Wayland. Through the performance contract with Ameresco, Wayland has solar generation taking place at four locations throughout the town including three parking lot canopies and one rooftop array. To date, installations have been made at Wayland High School, Wayland Middle School, the Department of Public Works Facility and another town building. The four installations include a total of 4,214 PV panels that generate over 1,500,000 kWh per year. The energy generated by these systems is enough to offset

approximately 25% of the town's municipal electric needs. The town currently receives net-metering credits from Eversource in exchange for the electricity generated by the arrays which is then transferred to the grid. Solar installations provide additional benefits such as solar canopies installed above parking areas provide protection from rain and snow to parked vehicles. The solar project also contributes towards Wayland's reduction of greenhouse gas emissions.

\$100,000 savings per year due to the installation of solar at four sites in Wayland.

What's Next?

In June 2017, Wayland received its third grant under the Green Communities Program. The town is planning to purchase two electric vehicles and one hybrid vehicle for its municipal vehicle fleet. One town-owned school bus will also be converted into a hybrid vehicle. Additionally, lighting and other efficiency upgrades are planned for one town building. The LED streetlight conversion process will also be completed using funds from this grant.

A Win-Win Situation for the Town of Wayland

"Wayland has shown that it's possible to pursue projects that both save the Town money through reduced energy use and help to address climate risks. It has been a win-win for us. Our Energy and Climate Committee, composed of dedicated volunteers, along with our strong facilities staff identified impactful projects and helped us find the resources to get the work done." - Cherry Karlson, Wayland Board of Selectman

This case study was prepared by NEEP with input from the Town of Wayland's Energy Committee. For more information about Wayland's initiatives, please contact Ellen Tohn at etohn@tohnenvironmental.com. To learn more about how NEEP can support community level energy efficiency programs, contact John Balfe at jbalf@neep.org.