

Town of Westford
2017 Green Community Competitive Grant
Final Report



Executive Summary

The town of Westford received an award of \$250,000 from the 2017 Green Community Competitive Grant program to continue our efforts to reduce energy consumption at each of our municipal buildings. Since the town of Westford was designated as a Green Community by the Massachusetts Department of Energy Resources (DOER) in December of 2013, we have received a total of \$887,013 to pursue and accomplish many projects aimed at reducing the town’s overall energy consumption. These projects will help us achieve the energy efficiency and sustainability goals identified in our Energy Reduction Plan (ERP). Our ERP is available online: <http://www.mass.gov/eea/docs/doer/green-communities/grant-program/energy-reduction-plan-westford.pdf>

In this report you will find a summary of each project we completed in 2017 and other related information to demonstrate how the town of Westford benefitted from this grant program. We are looking forward to monitoring and tracking the success of these projects using the MassEnergyInsight tool.



Project 1 – Water Department LED Lighting Retrofit at Main Office and Equipment Garage

Summary

This project consisted of the retrofitting of 217 light fixtures to LED technology at the Westford Water Department’s Main Office Building and Equipment Storage Garage. Replacing these fixtures with more efficient lighting is anticipated to reduce energy consumption significantly. Other benefits of this project include standardization of lighting components and reduced maintenance cost related to longer useful life of components.

Projected Annual Savings: \$7,350.70
Annual Electric Reduction: 65,749 Kwh

Project Team

Project Lead – Town	Eric Heideman, Assistant Town Manager
Project Oversight – Town	Bill Kenison, Facility Engineer
Project Lead – Vendor	Eric Hanian, EMC

Project Timeline

DOER Approval	July 2017
Town Approval	July 2017
Kick-off Meeting	July 2017
Installation Start	August 2017
Installation End	September 2017
Final Invoice Paid	October 2017

Total Project Cost: \$89,647
Green Community Funding: \$60,437
National Grid Incentives: \$23,315
Town funds: \$5,895

Procurement Process

EMC Inc. was selected as the vendor for this project in accordance MGL Chapter 25 section 14.



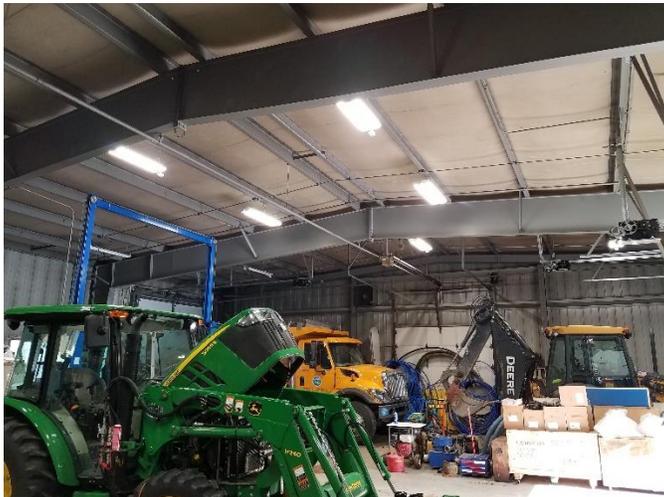
Project #1 Environmental Impact

The **65,749 kWh** saved annually by this project equates to the following positive environmental impacts:

- **6 households** is the average number of houses that can now be powered from this project. The average U.S. household consumes 11,280 kWh annually.
- **5,191 fewer gallons of oil** need to be imported, reducing our dependence on foreign oil.
- **40 tons of CO₂**
Carbon Dioxide is considered a greenhouse gas and is a major contributor to global warming.
- **795 lbs of SO₂**
Sulfur Dioxide- some major health effects associated with this pollutant are: asthma, respiratory illness and aggravation of existing cardiovascular disease.
- **405 lbs. of Nox**
Nitrogen Oxides are considered contributors to acid rain and ground level ozone (or smog).
- **27 lbs. of visible particulate**



Project #1 Photographs



Project 2 – Water Department LED Lighting Retrofit at the Nutting Treatment Plant

Summary

This project consisted of the retrofitting of 51 light fixtures to LED technology at the Westford Water Department’s Nutting Treatment Plant. Replacing these fixtures with more efficient lighting is anticipated to reduce energy consumption significantly. Other benefits of this project include standardization of lighting components and reduced maintenance cost related to longer useful life of components.

Projected Annual Savings: \$3,065
Annual Electric Reduction: 24,550 KwH

Project Team

Project Lead – Town	Eric Heideman, Assistant Town Manager
Project Oversight – Town	Bill Kenison, Facility Engineer
Project Lead – Vendor	Eric Hanian, EMC

Project Timeline

DOER Approval	July 2017
Town Approval	July 2017
Kick-off Meeting	July 2017
Installation Start	August 2017
Installation End	September 2017
Final Invoice Paid	October 2017

Total Project Cost: \$34,874
Green Community Funding: \$25,934
National Grid Incentives: \$6,780
Town funds: \$2,160

Procurement Process

EMC Inc. was selected as the vendor for this project in accordance MGL Chapter 25 section 14.



Project #2 Environmental Impact

The **24,550 kWh** saved annually by this project equates to the following positive environmental impacts:

- **2 households** is the average number of houses that can now be powered from this project. The average U.S. household consumes 11,280 kWh annually.
- **1,932 fewer gallons of oil** need to be imported, reducing our dependence on foreign oil.
- **15 tons of CO₂**
Carbon Dioxide is considered a greenhouse gas and is a major contributor to global warming.
- **295 lbs of SO₂**
Sulfur Dioxide- some major health effects associated with this pollutant are: asthma, respiratory illness and aggravation of existing cardiovascular disease.
- **151 lbs. of Nox**
Nitrogen Oxides are considered contributors to acid rain and ground level ozone (or smog).
- **10 lbs. of visible particulate**



Project #2 Photographs



Project 3 – Cameron Senior Center LED Lighting Retrofit Project

This project consisted of the retrofitting of 280 light fixtures to LED technology at the Cameron Senior Center. Replacing these fixtures with more efficient lighting is anticipated to reduce energy consumption significantly. Other benefits of this project include standardization of lighting components and reduced maintenance cost related to longer useful life of components.

Projected Annual Savings: \$6104.90
Annual Electric Reduction: 53,599 Kwh

Project Team

Project Lead – Town	Eric Heideman, Assistant Town Manager
Project Oversight – Town	Bill Kenison, Facility Engineer
Project Lead – Vendor	Eric Hanian, EMC

Project Timeline

DOER Approval	July 2017
Town Approval	July 2017
Kick-off Meeting	July 2017
Installation Start	August 2017
Installation End	September 2017
Final Invoice Paid	October 2017

Total Project Cost: \$68,547

Green Community Funding:
\$52,468

National Grid Incentives:
\$13,170

Town funds: \$2,909

Procurement Process

EMC Inc. was selected as the vendor for this project in accordance MGL Chapter 25 section 14.

Project #3 Environmental Impact

The **53,599 kWh** saved annually by this project equates to the following positive environmental impacts:

- **5 households** is the average number of houses that can now be powered from this project. The average U.S. household consumes 11,280 kWh annually.
- **4,234 fewer gallons of oil** need to be imported, reducing our dependence on foreign oil.
- **33 tons of CO₂**
Carbon Dioxide is considered a greenhouse gas and is a major contributor to global warming.
- **649 lbs of SO₂**
Sulfur Dioxide- some major health effects associated with this pollutant are: asthma, respiratory illness and aggravation of existing cardiovascular disease.
- **330 lbs. of Nox**
Nitrogen Oxides are considered contributors to acid rain and ground level ozone (or smog).
- **22 lbs. of visible particulate**



Project #3 Photographs



Project 4 – Blanchard School Energy Management Upgrades – Phase 2

This project consisted of a second phase of energy management system upgrades at the Blanchard Elementary School. These upgrades to the energy management system will allow Facilities Department personnel to maximize energy conservation efforts at this public school. Additionally, these upgrades will allow for remote notifications when critical HVAC systems fail during inclement weather.

Projected Annual Savings: \$15,216
Annual Electric Reduction: 51,614 Kwh
Annual Natural Gas Reduction: 6,658 therms

Project Team

Project Lead – Town	Eric Heideman, Assistant Town Manager
Project Oversight – Town	Bill Kenison, Facility Engineer
Project Lead – Vendor	Andrew Coffin, Siemens

Project Timeline

DOER Approval	July 2017
Town Approval	July 2017
Kick-off Meeting	July 2017
Installation Start	August 2017
Installation End	September 2017
Final Invoice Paid	November 2017

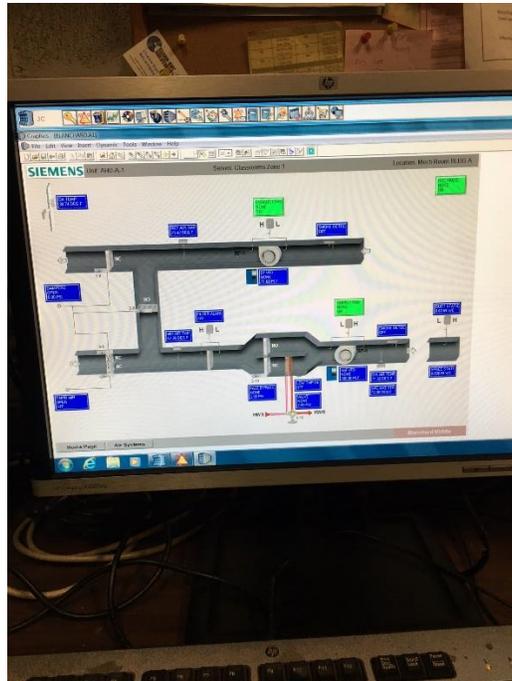
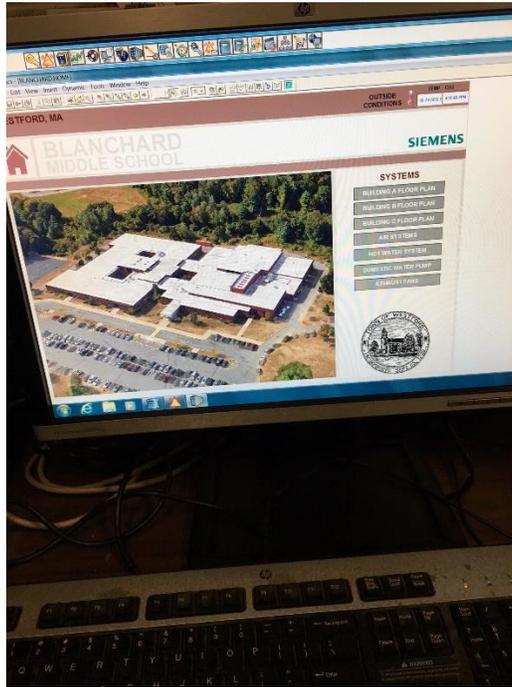
Total Project Cost: \$92,203
Green Community Funding: \$65,148
National Grid Incentives: \$20,693
Town funds: \$6,362

Procurement Process

EMC Inc. was selected as the vendor for this project in accordance MGL Chapter 25 section 14.



Project #4 Photographs



Project 5 – Westford Academy LED Lighting Retrofit Project

This project consisted of the retrofitting of 287 light fixtures to LED technology at Westford Academy. Replacing these fixtures with more efficient lighting is anticipated to reduce energy consumption significantly. Other benefits of this project include standardization of lighting components and reduced maintenance cost related to longer useful life of components.

Projected Annual Savings: \$8,700.30
Annual Electric Reduction: 77,503 KwH

Project Team

Project Lead – Town	Eric Heideman, Assistant Town Manager
Project Oversight – Town	Bill Kenison, Facility Engineer
Project Lead – Vendor	Eric Hanian, EMC

Project Timeline

DOER Approval	July 2017
Town Approval	July 2017
Kick-off Meeting	July 2017
Installation Start	September 2017
Installation End	November 2017
Final Invoice Paid	December 2017

Total Project Cost: \$99,784
Green Community Funding: \$46,013
National Grid Incentives: \$46,300
Town funds: \$7,471

Procurement Process

EMC Inc. was selected as the vendor for this project in accordance MGL Chapter 25 section 14.



Project #5 Environmental Impact

The **77,503 kWh** saved annually by this project equates to the following positive environmental impacts:

- **7 households** is the average number of houses that can now be powered from this project. The average U.S. household consumes 11,280 kWh annually.
- **6,123 fewer gallons of oil** need to be imported, reducing our dependence on foreign oil.
- **47 tons of CO₂**
Carbon Dioxide is considered a greenhouse gas and is a major contributor to global warming.
- **938 lbs of SO₂**
Sulfur Dioxide- some major health effects associated with this pollutant are: asthma, respiratory illness and aggravation of existing cardiovascular disease.
- **477 lbs. of Nox**
Nitrogen Oxides are considered contributors to acid rain and ground level ozone (or smog).
- **32 lbs. of visible particulate**



Project #5 Photographs



2017 Grant Summary Spreadsheet

Building Name and/or Location	Project Name (description) ^[1, 7]	Projected Annual Cost Savings ^[2] (\$)	Total Project Cost (\$) ^[4]	GC Grant Funding (\$) ^[5]	Natural Gas Incentives (\$)	Electricity Incentives (\$)	Town Contribution (\$)
Water Department 60 Forge Village Road	Project #1 LED Lighting Retrofit Project at the Water Department Main Office and Equipment Garage	\$7,350.70	\$89,647.00	\$60,437.00	\$0.00	\$23,315.00	\$5,895.00
Water Department 17 Nutting Road	Project #2 LED Lighting Retrofit Project at Nutting Treatment Plant Facility	\$3,065.00	\$34,874.00	\$25,934.00	\$0.00	\$6,780.00	\$2,160.00
Cameron Senior Center 20 Pleasant Street	Project #2 LED Lighting Retrofit Project at the Westford Cameron Senior Center	\$6,104.90	\$68,547.00	\$52,468.00	\$0.00	\$13,170.00	\$2,909.00
Blanchard School 20 West Street	Project #4 Phase 2 of Energy Management Upgrades at the Blanchard School	\$15,216.00	\$92,203.00	\$65,148.00	\$6,658.00	\$14,035.00	\$6,362.00
Westford Academy 30 Patten Road	Project #5 LED Lighting Retrofit Project at the Westford Academy (High School)	\$8,700.30	\$99,784.00	\$46,013.00		\$46,300.00	\$7,471.00
Westford, Massachusetts		\$40,436.90	\$385,055.00	\$250,000.00	\$6,658.00	\$103,600.00	\$24,797.00

Public Involvement

All of the projects in this report were presented and discussed at public meetings with the Board of Selectmen and open for public comments and/or concerns. Our recent energy reduction efforts has motivated several residents to become more involved with future projects. We have already begun meeting to discuss what will be submitted for the 2018 Green Communities grant opportunity.

Lessons Learned

The town has now completed its 4th round of Green Communities grants. We have become quite comfortable with the grant application process and the coordination of various projects. We have learned that LED lighting retrofit projects tend to be the least time consuming for our internal town staff. We often refer to these as the “low hanging fruit” projects, which is a common term in the energy conservation field. We have completed a few energy management upgrades at various buildings. These projects can often be more difficult to pursue simply because we usually don’t have funding appropriated to complete the necessary engineering work required to document the estimated therms or natural gas savings related to the project. We are often asked by our board and committee members if we are actually seeing the energy savings we hoped for with Green Communities projects. The short answer is that we believe we are seeing the savings, especially when we are targeting our focus on lighting projects. Energy management projects have many variables and can be difficult to show a direct correlation to energy savings. Another problem we’ve run into is trying to identify savings from relatively small energy efficiency projects within large buildings, such as a public school. Most of our school buildings have one electric meter for the entire power usage at the building. There are many factors within a public school that can increase and/or decrease energy consumption. The smaller buildings that the town owns are much easier to document actual energy savings.

Other Energy Related Initiatives

The town is currently in the process of adding a request to the upcoming Town Meeting warrant to seek funding for the retrofitting of the town’s streetlighting to LED. This project is part of another grant application the town is applying for working collaboratively with the Massachusetts Area Planning Council (MAPC), who is managing the grant administration for the Department of Energy Resources (DOER). Westford currently owns roughly 20% of it’s street lighting and the remaining 80% is owned by National Grid. We plan to purchase these fixtures from National Grid and then convert all fixtures in town to LED. Additionally, we are exploring the installation of WIFI lighting controls to replace the standard streetlight photocell. The DOER grant will provide the town with 30% of the funding required to purchase and install LED fixtures and 15% towards WIFI lighting controls. We hope to have funding approved at the March 2018 Town Meeting and plan to get this project started shortly thereafter.