
LED Street & Outdoor Lighting Program

Funding provided by the
District Local Technical Assistance
program

Prepared for
MAPC Municipalities

December 26, 2013

Prepared by
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Acknowledgements

This project was undertaken with funds from the District Local Technical Assistance program. MAPC wishes to express our thanks to the Governor and the members of the Legislature for their continued support and funding of this program.

This report was produced by the Metropolitan Area Planning Council. Professional technical assistance and project coordination was provided by Erin Brandt, Assistant Manager of Clean Energy. Additional project support was provided by Ani Krishnan, Energy Planner; Cammy Peterson, Energy Planner; Helen Aki, Energy Services Coordinator; David Cushman, Energy Division Intern; and Brenda Pike, Energy Division Intern. Project oversight was provided by Rebecca Davis, Manager of Clean Energy.

Special thanks for presentations, technical advice, and program support from Aimee Powelka, DOER; Eileen McHugh, DOER; Arthur Jemison, DHCD, Carol Wolfe, DHCD; Elaine Wijnja, DHCD; Edward Smalley, MSSLC; Kevin Galligan, Cape Light Compact; Joe Foti, City of Chelsea; National Grid; NSTAR; WMECO; Siemens Industry, Inc.; Dagle Electrical Construction, Corp.; Tanko Lighting; and staff and volunteers in the participating cities and towns who made this project possible.

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Executive Summary

The purpose of this project was to reduce municipal energy consumption and costs through the purchase and installation of light-emitting diode (LED) roadway and outdoor area lighting in cities and towns across the Commonwealth. Over the past year MAPC coordinated municipal demand and created group purchasing opportunities for LED replacements in outdoor lighting applications. In 2013, MAPC organized two group procurements for LED streetlight services by drafting and issuing an RFP and an RFQ for Streetlight Energy Management Services (EMS) pursuant to MGL Ch. 25A §11 on behalf of seven municipalities:

EMS 1 (RFP)

- Arlington
- Natick
- Woburn
- Chelsea

EMS 2 (RFQ)

- Somerville
- Sharon
- Winchester

Together, these seven communities are replacing approximately 15,000 streetlights with LEDs. These projects are expected to save approximately 4.3 million pounds or 1,969 tons of carbon dioxide equivalent emissions annually. The communities in the first procurement are currently installing LED fixtures, and the communities in the second procurement are currently contracting with the selected vendor to start the audit process.

In addition to the regional procurements, MAPC continued to provide educational and networking opportunities for municipalities through informational forums and MAPC's Clean Energy Toolkit. Lastly, MAPC worked closely with lighting and government stakeholders to address a significant barrier to LED streetlight projects - the lack of a National Grid tariff for LED lighting.

Regional Procurements of Streetlight Energy Management Services

MAPC completed two group procurements for LED Streetlight Retrofit Energy Management Services in 2013. These two procurements included Arlington, Natick, Woburn, Chelsea, Somerville, Winchester, and Sharon. Together, the seven communities are replacing approximately 15,000 streetlights with LEDs. These projects are expected to save approximately 4.3 million pounds of carbon dioxide equivalent emissions annually. The communities in the first procurement are currently installing LED fixtures, and the communities in the second procurement are currently contracting with the selected vendor to start the audit process.

Municipality	Lights Retrofitted	Current Energy Use (kWh)	Projected Energy Savings (kWh)	GHG Reductions (lbs CO ₂ e)	GHG Reductions (tonnes CO ₂ e)
<u>Streetlight Energy Management Services #1 (RFP)</u>					
Arlington	2,079	733,358	413,914	374,592	170
Chelsea	1,622	970,834	598,706	541,829	246
Natick	2,364	897,813	536,189	485,251	220
Woburn	1,231	840,071	567,454	513,546	233
<u>Streetlight Energy Management Services #2 (RFQ)</u>					
Somerville	4,296	4,182,994	2,103,123	1,903,326	863
Sharon	1,644	509,649	316,274	286,228	130
Winchester	1,668	467,319	260,815	236,038	107
TOTAL	14,904	8,602,038	4,796,475	4,340,810	1,969

Table 1: Projected energy savings and GHG reductions from MAPC's LED streetlight procurements.

For both procurements, MAPC worked with the communities to draft and issue the procurement documents for Streetlight Energy Management Services pursuant to MGL Ch. 25A §11. These were comprehensive solicitations that required respondents to demonstrate experience with identifying, planning, designing, financing, installing, owning, operating and maintaining streetlight conversions (with the intent of installing LED technology). As part of the administration of the two procurements, MAPC organized the selection processes, supported the selection committees, and provided sample contract language and documents to help the process run smoother and more efficiently. Given the success of these procurements and the level of interest expressed by other communities, MAPC plans to continue to do these types of LED streetlight projects in 2014.

LED Project Support and Education

In 2013, MAPC developed a range of educational materials to support LED streetlight retrofits.

“Energy Efficiency in Gateway Cities: A Focus on Streetlights”

June 11, 2013

In an effort to support LED streetlight projects throughout Massachusetts, MAPC partnered with the Department of Energy Resources (DOER) and the Department of Housing and Community Development (DHCD) to help Gateway Cities pursue LED streetlight projects. As part of this effort, MAPC helped organize a meeting in Westborough that brought together municipal representatives from across the state, as well as state officials, and utility representatives to discuss LED streetlight retrofits and discover opportunities to team with other communities on potential projects. See Appendix 1 for the meeting agenda.

As a result of the interest generated from this meeting, MAPC submitted an application this fall for a Community Innovation Challenge to complete LED retrofit projects in 7 Gateway Cities: Brockton, Fall River, Lawrence, Lowell, Malden, Westfield, and Chicopee. These cities are in a unique position to work together as they face similar hurdles to long-term investment. If the project is proceeds, the communities will see a combined reduction in electricity costs by \$1.7 million annually, freeing up much needed capital for reinvestment in each community. If funded, this project will replace approximately 32,000 lights. These replacements have a projected savings of 15.9 million kWh and 6,111 tons of carbon dioxide equivalent emissions annually.

Clean Energy Toolkit

To increase access to information on LED technologies and the streetlight retrofit process, MAPC consolidated our LED streetlight educational materials into several easy-to-use guides on our web-based Clean Energy Toolkit, www.mapc.org/clean-energy. These guides include:

- Buy Back Streetlights from Utility (Appendix 2)
- Retrofit Streetlights with LEDs (Appendix 3)

Streetlight Buyback

MAPC continues to advise municipalities on issues that directly impact LED retrofit projects. For example, MAPC is currently helping several communities, including Hamilton, Wenham, Gloucester, and Medford, navigate the sometimes complicated process of buying back streetlights from the electric utility. This is the first step to LED streetlight retrofits and will lead to a significant reduction of greenhouse gas emissions within just a few years after retrofits are completed.

Statewide Contract FAC76

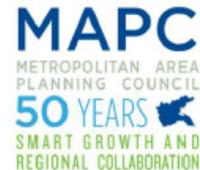
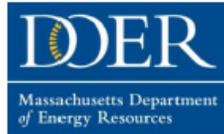
MAPC is seeing direct impacts from our work with the Massachusetts Operational Services Division (OSD), which resulted in the listing of LED lighting products on the statewide contract FAC76. This past year, several communities purchased LED fixtures off of this contract, including the Town of Amherst, which purchased approximately 850 LED fixtures in May 2013.

National Grid LED Tariff

One of the biggest challenges to LED streetlight projects in Massachusetts this past year was the lack of a LED tariff available to National Grid electric customers. Without this tariff, communities could not realize the cost savings associated with LED retrofits. To address this barrier, MAPC and 10 municipalities sent a letter to National Grid in March 2013 that requested that such a tariff be established for unmetered streetlights. See Appendix 4 for a copy of the letter. In response to this request, National Grid approved a new tariff in June that allows communities that retrofit their streetlights to LEDs to receive a reduced rate for the more efficient fixtures. The National Grid “Street and Area Lighting – Customer Owned Equipment S-5 Retail Delivery Service” tariff applies to any municipality that owns their street lights in National Grid's jurisdiction.

With the National Grid LED tariff in place, MAPC is now working to help National Grid communities retrofit their streetlights with LED technology. However, while these communities are eager to complete LED retrofit project, there remain uncertainties regarding the S-5 tariff that have prohibited the communities from being able to move forward with LED projects to date. This uncertainty is related to how the utility is administering their Lighting Service Fee and their requirement to install fusible links on all newly installed lights. MAPC is currently working with DOER and National Grid to resolve this uncertainty so that cities and towns within the National Grid territory can proceed with retrofit projects.

Appendix 1- “Energy Efficiency in Gateway Cities” Meeting Agenda



ENERGY EFFICIENCY IN GATEWAY CITIES A FOCUS ON STREETLIGHTS

June 11, 2013 – 10:00 AM - 1:30 PM
Massachusetts Technology Collaborative (MTC)
75 North Drive, Westborough, MA 01581

Organized by: DHCD, Department of Energy Resources (DOER), and the Metropolitan Area Planning Council (MAPC)

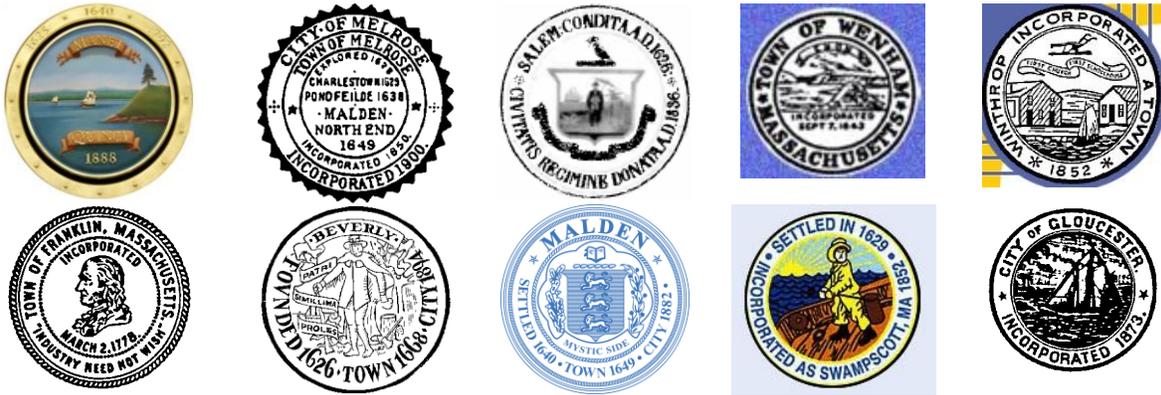
AGENDA

- 10:00 - 10:10 *Welcome & Opening Remarks*
Arthur Jemison, Undersecretary, DHCD
- 10:10 - 10:45 *Presentations on Conversion of Streetlights to LED*
Kevin Galligan, Cape Light Compact
Joe Foti, City of Chelsea
- 10:45-11:00 Q&A with presenters
- 11:00-11:15 *Break and transition to break-out sessions*
- 11:15 - 12:00 *Break-out sessions:*
- Group A: Gateway Cities with municipally-owned streetlights in NStar/National Grid/WMECO/Unitil/CLC territories*
- Group B: Gateway Cities with municipally-leased streetlights*
- Group C: Gateway Cities with Municipal Light Plants for electric service*
- 12:00 - 1:00 *Report outs from Break-out sessions and Take-aways from the meeting*
- Light lunch will be served. Utility company representatives invited for informal discussion of energy efficiency issues and initiatives in Gateway Cities, to inform C&I Program improvements for municipalities, to be advanced per the 2013-2015 statewide Energy Efficiency Plan*

Appendix 2 – “Buy Back Streetlights from Utility” Clean Energy Toolkit

Appendix 3 – “Retrofit Streetlights with LEDs” Clean Energy Toolkit

Appendix 4 – National Grid Tariff Letter



March 11, 2013

Marcy Reed, President
National Grid USA
40 Sylvan Road
Waltham, MA 02451



Dear Ms. Reed:

We are writing to respectfully request that National Grid file a rate tariff for unmetered streetlights with the Massachusetts Department of Public Utilities that includes LED luminaires, and additionally establish an incentive program for LED streetlights based on the potential for energy savings that they represent. As part of our commitment to leading the way in environmental sustainability by investing in energy efficiency in our municipal infrastructure, we are eager to move forward with energy-efficient LED street light retrofit projects. However, since National Grid offers neither a rate tariff nor an energy efficiency incentive for LED streetlights, it is currently impossible to capture the energy cost savings associated with installing these more-efficient fixtures, rendering our projects economically unviable. In order to ensure the success of these and other projects, it is crucial that National Grid align its policies and incentives with the efforts of local municipalities.

Recent retrofits in other Massachusetts communities have been successful at achieving significant savings. The City of Boston will save over \$2.8 million annually as a result of the LED streetlight conversions completed in 2012. Smaller communities can also achieve significant savings: the four communities of Arlington, Chelsea, Natick and Woburn—all served by NSTAR—together expect to save around two million kWh and over \$300,000 annually as a result of a retrofit project of more than 5,000 fixtures currently underway. Especially during times like now when municipal budgets are so tight, these types of savings can make large impacts on municipal operations, including continuing other energy efficiency efforts.

The 2013-2015 Joint Statewide Three-Year Electric and Gas Energy Efficiency Plan filed by the eight Program Administrators, including National Grid, calls for an electric savings target of 2.5% of electric sales each year over the three-year term. Part of the Commercial & Industrial Retrofit Program described in the plan for implementing these targets includes evaluating and launching major retrofit initiatives for municipally-owned streetlights (p. 168). Our communities are prepared to undertake such initiatives upon removal of key barriers, namely, the lack of an LED rate tariff and incentive for retrofits of unmetered lights. These retrofit initiatives can result in not only electricity savings that support National Grid in meeting these targets, but also in reduced maintenance costs across the board due to the greater longevity of LED luminaires.

As National Grid moves forward with its rigorous product evaluation, engineering analysis, and the other requirements that we appreciate are necessary to implement a rate tariff and incentive program for LED streetlights, we would be glad to work together and support this work with findings through a pilot/demonstration effort. A pilot tariff and incentive amount could be used to enable implementation of LED streetlight upgrades for the streetlights we own in our communities, the results of which we hope could be used to launch widespread similar efforts upon adoption of a statewide rate tariff and incentive program.

Thank you for your consideration of this issue. We look forward to working with you in the future. Should you wish to discuss this issue further, please contact Helen Aki, Clean Energy Program Coordinator at the Metropolitan Area Planning Council (MAPC), at 617-933-0714.

Sincerely,



Mayor William F. Scanlon
City of Beverly



Jeffrey Nutting
Town Administrator
Town of Franklin



Mayor Carolyn A. Kirk
City of Gloucester



Mayor Gary Christensen
City of Malden



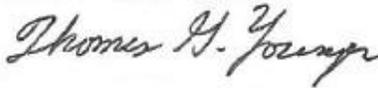
Mayor Robert Dolan
City of Melrose



Mayor Thomas P. Koch
City of Quincy



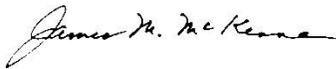
Mayor Kimberly Driscoll
City of Salem



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Town of Swampscott



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Town Administrator
Town of Wenham



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Senator Benjamin Downing
Representative Robert DeLeo