

Green Communities Grant Application City of Everett

Project Narrative Streetlight Buyback and Retrofit

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Prepared for:



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Background & Relation to 5-Year Reduction Plan

The City of Everett is a Middlesex County community situated 4.5 miles north of Boston and 1.7 miles southeast of Malden. A small city of 3.5 square miles, Everett has a population of 41,667 according to the 2010 Census. At 3.4 miles square in size, it is the sixth smallest city in the Commonwealth. The City is served by MBTA stations with public transit access, including a commuter rail link and local bus routes.

The City’s Department of Planning and Development engages in a variety of projects to enhance the viability of the community as a sustainable and desirable place to live and work. The recent addition of a Sustainability Planner to their staff has demonstrated the City’s commitment and willingness to pursue initiatives that promote sustainable development and reduce the community’s environmental impact. Everett’s designation as a Green Community in 2014 is the most recent example of such an initiative.

Table 1: Everett’s municipal energy consumption baseline and projected savings, as proposed in the City’s Green Communities Energy Reduction Plan.

Category	MMBtu Used in Baseline Year	% of Total MMBtu Baseline Energy Consumption	Projected Planned MMBtu Savings	Savings as % of Total MMBtu Baseline Energy Consumption
Buildings	65,656.7	74%	8,202.35	9.3%
Vehicles	13,963.7	16%	2,563.00	2.9%
Street/Traffic Lights	8,170.0	9%	5,068.79	4.6%
Water/Sewer/Pumping	0	0%	-	0.0%
Open Space	541.0	1%	-	0.0%
Total	88,331.4	100%	14,850.35	16.8%

Everett submitted its Energy Reduction Plan to the Department of Energy Resources (DOER) in December 2014. The plan, developed as part of the City’s Green Communities successful Designation application, outlines a comprehensive list of energy conservation measures (ECMs) that will be implemented over the course of the next five years. The ECMs include installation of weather-stripping and sweeps in multiple buildings; upgrading boilers to high efficiency models; replacement of electric hot water heaters with high efficiency gas-fired boilers; installation or expansion of new or existing energy management systems (EMS); buying back and retrofitting streetlights and traffic lights with LED technology; and many more.¹ Through these measures, as well as additional measures such as comprehensive vehicle fleet management, Everett is aiming to reduce its energy consumption across buildings, vehicles, and streetlights by 20% over the next five years.

¹ Please refer to the document “The City of Everett Energy Reduction Plan” (2014) for a complete list of ECMs.

Efficiency and Use

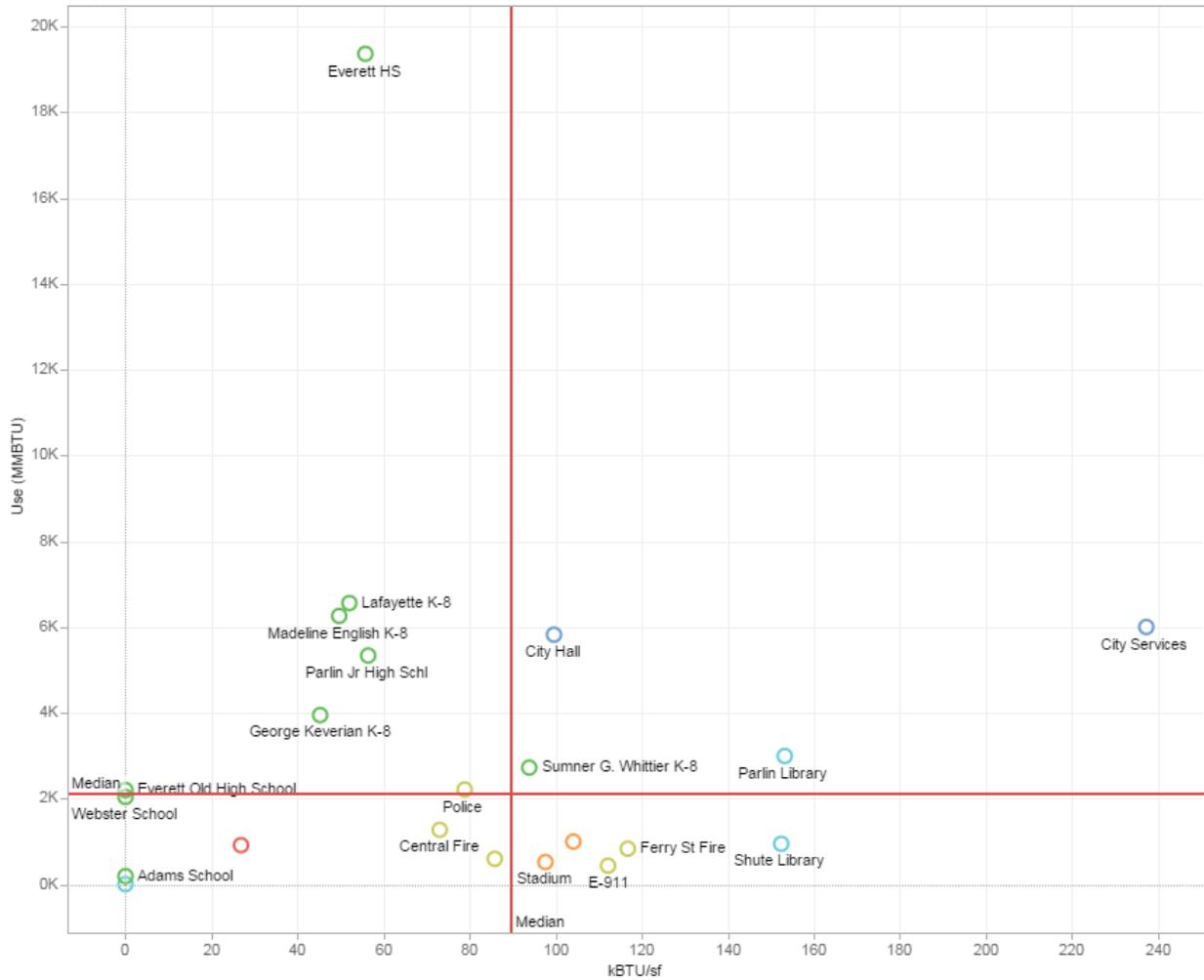


Figure 1: Energy use per square foot for municipal facilities in the City of Everett, FY 2014.

Project Narrative

The proposed project for the first round of Green Communities grant funding is buying back and retrofitting the City of Everett’s entire streetlights inventory with LEDs. The following narrative describes the purpose, benefits, timeline, procurement status, and anticipated impact of the project.

Streetlights Buy-back and Retrofit

The City of Everett currently requires around 2.4 million kWh of energy (8,170 MMBtu) to operate its 2,931 streetlights on an annual basis, accounting to around 9% of the municipality's annual energy consumption. All but two of these streetlights utilize high-pressure sodium (HPS) fixtures, which are far from efficient. The potential for energy and cost savings through retrofitting these lights with LEDs is significant. Everett intends on using the Green Communities grant funding to purchase streetlights back from National Grid, and retrofit all streetlights with LEDs.

Energy Savings

According to the Everett's most recent streetlight inventory, the City is serviced by 2 400W Mercury Vapor Flood lights; 9 250W HPS Flood lights; 119 400W HPS Flood lights; 16 50W HPS Roadway lights; 2,200 100W HPS Roadway lights; 2 150W HPS Roadway lights; 195 250W HPS Roadway lights; and 388 400W HPS Roadway lights. All of these lights can be replaced with lower-wattage LED lights that greatly reduce the energy consumption and cost for the City. A more detailed breakdown of the proposed replacement lights is in the table below:

Table 2: City of Everett - potential energy savings from an LED streetlight retrofit.

Existing Fixture Type	Nominal Wattage	Quantity	Billed kWh/year*	True Wattage Based on Ngrid Billing	Potential Replacement LED	Replacement Wattage	Wattage That National Grid will Bill for*	Wattage Reduction	Potential Annual kWh Reduction
MV Fld	400	2	3,982	476.89	Cree HOAF	267	275	202	1,686
HPS Fld	250	9	11,421	303.95	Cree 304	105	125	179	6,724
HPS Fld	400	119	233,478	469.94	Cree HOAF	267	275	195	96,851
HPS Rdw	50	16	4,080	61.08	Cree XSPR	26	25	36	2,410
HPS Rdw	100	2,200	1,084,600	118.08	Cree XSPR	42	25	93	854,975
HPS Rdw	150	2	1,444	172.93	Cree XSP1	53	75	98	818
HPS Rdw	250	195	247,455	303.95	Cree XSP2	153	150	154	125,336
HPS Rdw	400	388	761,256	469.94	Cree XSP2L	200	225	245	396,779
		2,931	2,347,716						1,485,579

*Source: https://www.nationalgridus.com/maselectric/non_html/rates_tariff.pdf

Everett stands to save around 1.48 million kWh annually after retrofitting all its streetlights with LEDs, representing a 63% reduction in annual streetlight electricity use.

Cost Savings

MAPC estimates the total cost of retrofitting Everett's streetlights with LEDs to be around \$1,051,575. This number includes the streetlight buyback price of \$75,000 from National Grid's quote to the City in February 2014; a \$325-per-light purchase and install cost for the retrofit, which is a conservative estimate based on MAPC's past regional LED procurements; and an

administrative cost of \$24,000, which will go towards Everett's and MAPC's staff time to facilitate the streetlight buyback, develop an RFP for a streetlight vendor and installer, general project management, and final reporting. The net cost savings associated with the energy reduction and maintenance costs amounts to \$210,526 per year.

After accounting for National Grid incentives and Green Communities funding, the City can expect a simple payback of just 1.77 years on the project.

Project Timeline and Status

Everett has already initiated discussions with National Grid regarding purchasing their streetlights back, and received an official cost estimate from the utility in February 2014. Upon award of the Green Communities funds, the City intends on requesting a revised quote from National Grid, which is expected to include at least one more year of depreciation. The process of buying back the streetlights is hoped to be completed by the third quarter of 2015.

Concurrently, Everett intends on working with MAPC to develop and issue – either individually or with other interested communities – a request for proposals for a vendor to purchase and install the LED lights. The execution of a contract and consequent installation work is expected to take place in the fourth quarter of 2015.

Supporting Documents

The following supporting documents are included as attachments to this application:

- Everett Streetlighting Summary – Excel Workbook
 - Summary sheet
 - Detailed Inventory
 - LED Conversion Potential
- Everett Streetlight Buyback Purchase Enquiry – PDF
- National Grid Streetlight Tariff – PDF

Contacts

This document was prepared by staff at the Metropolitan Area Planning Council (MAPC) on the behalf of the City of Everett. City of Everett staff provided all supporting information. Inquiries should be addressed to:

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