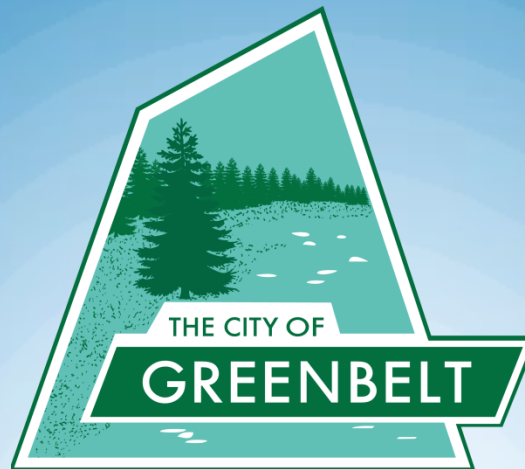


Street Light Replacement in Greenbelt



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September 19, 2013
COG - BEEAC



Funds and Considerations

- In 2010 the City of Greenbelt received an Energy Efficiency and Conservation Block Grant (EECGB) through the Maryland Energy Administration (MEA) and the American Recovery and Reinvestment Act (ARRA) of 2009.
- Green ACES (Advisory Committee on Environmental Sustainability) was asked to look into several upgrade options.
- LED and Induction lighting were considered.
- Four locations were considered – three exterior parking lots and one walkway.
 - These are under Greenbelt's jurisdiction. We were not able to work an agreement with PEPCO to upgrade their lamps.



Proposal requirements

- Contractors to follow and document all American Recovery and Reinvestment Act of 2009 (ARRA) requirements:
 - Buy American (iron, steel, manufactured goods)
 - Waste Management requirements (recycling/reusing)
 - Davis-Bacon Act (prevailing wage)
 - Copeland Act (anti kickback)
 - Whistleblower Protection Act



Before - Consumption and Cost

Table 3: Projected Consumption and Energy Cost – Existing Fixtures

Location	Rate	Annual Consumption (kWh)	Annual Cost (\$)
Schrom Hills Parking Lot	\$ 0.1227	31,886	\$ 3,913.15
Stream Valley Path	\$ 0.1168	17,345	\$ 2,026.07
Municipal & Roosevelt Parking Lots	\$ 0.1118	21,199	\$ 2,369.15
Community & Youth Center Parking Lots	\$ 0.1091	49,056	\$ 5,350.62
Total		119,486	\$ 13,658.98

Table 4: Projected Consumption and Energy Savings - LED

Location	Power Consumption (kWh)	Savings (kWh)	Savings (\$)
Schrom Hills Parking Lot	7,358	24,528	\$ 3,010
Stream Valley Path	5,046	12,299	\$ 1,437
Municipal & Roosevelt Parking Lots	5,782	15,418	\$ 1,723
Community & Youth Center Parking Lots	14,717	34,339	\$ 3,745
Total	32,903	86,584	\$ 9,915

<i>Economic Benefits</i>		
e.	Installed Cost (\$)	\$85,200.00
f.	Annual Cost Savings (\$) <i>{From estimated cost and savings table}</i>	\$9,915.00
g.	Simple Payback (years) <i>{ e÷f }</i>	8.59
h.	Lifetime Cost per Million Btu (\$) <i>{ e÷d }</i>	\$5.47
<i>Environmental Benefits</i>		
i.	Annual carbon dioxide emission reductions (kg)	44,677.34
j.	Lifetime carbon dioxide emission reductions (Metric Ton) <i>{(i * c)/1000}</i>	804.19
k.	Lifetime cost per metric ton of carbon reduced (\$) <i>{ e÷j }</i>	\$105.94

Table 5: Projected Consumption and Energy Savings – Induction

Location	Power Consumption (kWh)	Savings (kWh)	Savings (\$)
Schrom Hills Parking Lot	16,005	15,882	\$ 1,949
Stream Valley Path	10,365	6980	\$ 815
Municipal & Roosevelt Parking Lots	12,575	8624	\$ 964
Community & Youth Center Parking Lots	32,009	17,047	\$ 1,859
Total	70,953	48,533	\$ 5,588

<i>Economic Benefits</i>		
e.	Installed Cost (\$)	\$42,600.00
f.	Annual Cost Savings (\$) <i>{From estimated cost and savings table}</i>	\$5,588.00
g.	Simple Payback (years) <i>{ e÷f }</i>	7.62
h.	Lifetime Cost per Million Btu (\$) <i>{ e÷d }</i>	\$3.82
<i>Environmental Benefits</i>		
i.	Annual carbon dioxide emission reductions (kg)	25,043.03
j.	Lifetime carbon dioxide emission reductions (Metric Ton) <i>{(i * c)/1000}</i>	575.99
k.	Lifetime cost per metric ton of carbon reduced (\$) <i>{ e÷j }</i>	\$73.96



Project Description

Location	Fixture Type (old)	Count	Bulb Watts (old)	Fixture Watts (old)	Fixture Type (new)	Bulb Watts (new)	Fixture Watts (new)
Schrom Hills Parking Lot	High Pressure Sodium	14	400	520	LED	120	120
Stream Valley Path	High Pressure Sodium	24	150	165	Induction	85	98.6
Municipal & Roosevelt Center Parking Lots	Metal Halide	12	400	440	LED	120	120
Community & Youth Center Parking Lots	Metal Halide	30	400	400	LED	120	120
Total		80	1350	1525		445	458.6



Project Completion

- RFPs
- Street lights were replaced from April to July 2012
- Additional savings came from Pepco's C&I Energy Savings Program. Rebates were received for all LED fixtures but not for Induction lighting.
- Additional benefits:
 - Fixtures are Dark Sky Compliant
 - They look cool



- Thank you!
- Questions?