# Work Session

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| **Agenda Item #** | 2 |
| **Meeting Date** | April 20, 2015 |
| **Prepared By** | Daryl Braithwaite<br>Public Works Director |
| **Approved By** | Suzanne Ludlow<br>City Manager |

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| **Discussion Item** | Discussion of Options for LED Conversion of Street Lights in Takoma Park |
| **Background** | For many years, City staff and the Council have discussed the energy use of City street lights and the options for reducing the energy use. Recent improvements in technology of street lights through use of LEDs have further improved the possible energy savings available.<br><br>Currently, City street lights are owned and maintained by Pepco. Options for City purchase of street light fixtures have been explored and options are presented in the attached Memorandum.<br><br>The purpose of this agenda item is to start a more thorough discussion with Council of the possible options and implications and determine if the Council would like to move forward with any of the options or possibly contract with a technically competent consulting firm to further explore the issue.<br><br>City staff is looking to a street light conversion project as a cornerstone of our efforts towards winning the Georgetown Energy Challenge (GTEC). The GTEC is an extremely competitive endeavor. While it is an achievement to be in the 2 year semi-finalist stage of the competition, to be truly competitive for the $5 Million prize, Takoma Park must commit to making long-lasting, deep-impacting energy efficiency changes to the municipal structure of the city, as well as extensive engagement with the community.<br><br>The Neighborhood Energy Challenge, Green Home Certification Program, Low to Moderate Income MEA Grant, and the Solar Co-op project all work to increase residential energy efficiency. However, the municipal energy consumption must also be significantly reduced. Streetlights make up about 60% of the city's electric use each year. Converting every streetlight to LED would reduce Takoma Park's municipal energy use by 30%.<br><br>Other communities Takoma Park is competing against for the $5 Million prize are already working on high impact projects such as district energy systems and utility scale solar installations which are not possible in Takoma Park. Streetlight conversion could serve as a great capstone project for the city, one that is achievable within the time frame and means of the city. |
| **Policy** | **Sustainable Community** – Ensure a Takoma Park that is fiscally, environmentally, and economically sustainable. |

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| **Fiscal Impact** | To Be Determined |
| **Attachments** | Attached Memorandum – Evaluation of Options Convert Street Lights To LED Fixtures |
| **Recommendation** | Discuss; give direction to staff. |
| **Special Consideration** | |

To: Suzanne Ludlow, City Manager
From : Daryl Braithwaite, Public Works Director
Subject: **Evaluation of Options to Convert Street Lights to LED Fixtures**
Date: April 20, 2015

**Existing Conditions**:

Within Takoma Park, there are **1,735 street lights** owned and maintained by Pepco. These include:

- 311 Incandescent fixtures, the oldest type and most in-efficient
- 103 Mercury Vapor (MV) fixtures, no longer allowed, most have been converted to HPS
- 1,309 High Pressure Sodium (HPS), many of these are fairly new having been converted from MV within the past 5 years

These streetlights use **917,300 kWh of electricity annually**. The City pays for the electricity for these lights, through a contract with Washington Gas Light (WGL), as part of the Montgomery County electricity purchasing group. The annual **electricity costs in FY14 were $58,000**.

The City pays PEPCO for the distribution, operation and maintenance costs of these lights. The **payment to PEPCO in FY14 was $176,000**.

**Potential Annual Savings with LED Conversions:**

An evaluation of the potential energy reduction possible by converting existing streetlights to LED projects a reduction of 56%, bringing the annual electricity use to 400,000 kWh. At today's electricity costs, the electricity charges would be about $25,000 annually. The estimated O & M charges are estimated to be just over $23,500 annually. As illustrated in the Chart 1 below, conversion of existing street lights to LED could result in a reduction of costs by 79% or $185,500.

Chart 1: Costs and Savings Associated With Replacing Existing Street Lights with LEDS

| | Current Streetlights | LED Streetlights | % Change |
|---|---|---|---|
| # of street lights | 1,735 | 1,735 | none |
| Annual kWh | 917,300 | 400,000 | 56% |
| Annual Electricity Costs | $58,000 | $25,000 | 57% |
| Annual O & M payments* | $176,000 | $23,500 | 86.6% |
| ***Total Annual Costs*** | ***$234,000*** | ***$48,500*** | ***79%*** |

* The O & M charges for LED streetlights are based on Option 1 below

**Options Available For LED Conversion**

**I. Pepco Retrofits**:

Pepco now offers an LED option for streetlights. A Municipality can request the conversion of an existing streetlight to an LED fixture through Pepco. The City has made such a request for 49 streetlights along Flower Avenue. The City also intends to request conversion of a number of street

lights for the Ethan Allen project. The cost for the Flower Ave streetlight conversion is $77,549 or about $1,583 per fixture. The listed price from Pepco for LED fixtures is $2,300; however the State of Maryland is offering an incentive through EmPOWER Maryland to reduce the cost.

If the City were to pursue citywide LED street light conversion through this option, responsibility for maintenance would remain with Pepco. The existing infrastructure for service request (online reporting as well as call in) would remain with Pepco.

Chart 1 above reflects the savings in energy and O & M charges for LED street light conversion through Pepco.

The cost to convert all city streetlights to LED through Pepco is estimated to be $2,746,505. The payback period for such a project is estimated to be 15 years. If the city were to make this change, we would continue to pay electricity and O & M charges of about $48,500 annually.

## II. Third Party – Performance Contract Agreement

The City has been in communication with Johnson Controls and NextGen LED with regard to the option of arranging the conversion of street lights through a Performance Contract Agreement.

A Performance Contract Agreement is a procurement tool that enables the use of future energy savings to pay for up-front capital costs of energy saving projects. The contractor develops solutions through design, construction and commissioning and guarantees the energy and operational savings over the term of the contract.

The estimated costs and savings of a performance contract approach are not specifically known at this time. Johnson Controls has developed a cursory evaluation that indicates the cost for implementing energy savings measures would be about $2 million dollars, which would be paid over a 15 year contract period. The payment costs would be covered by initial rebates and reductions in energy and O & M charges. The City would maintain an expense rate at FY15 levels over the 15 year period. A copy of the Johnson Controls preliminary analysis is available to be shared with Councilmembers. After that 15 year contract period, the City would own the equipment and would pay the lower energy charges to our electricity supplier and maintenance and service payments presumably to a contractor.

Johnson Controls has met with Pepco to discuss their operating on behalf of the City to purchase the Pepco streetlights and convert them to an LED fixture of the contractor's choice, providing it meets Pepco standards. Johnson Controls has indicated that Pepco has agreed that a third party could serve in this manner. The City has not independently verified that understanding with Pepco.

The first step in moving forward with a Performance Contract Agreement would be to sign a Project Development Agreement with an Energy Performance contractor. This agreement would provide for development of an engineering feasibility study for the project. The execution of the Project Development Agreement would obligate the City to pay $55,838 for the engineering study. If the City agrees to move forward once the engineering study is completed, the cost would be rolled into the full project and no additional payment would be required. If the result of the engineering study shows that the project is not feasible, as was originally assumed, or does not meet the financial criteria, including a 15 year payback of the project costs, then the City would not be obligated to pay the cost of the

study. If the City chooses not to move forward with the project, even though the engineering study verifies the feasibility, then the City would be obligated to pay for the cost of the study.

Some additional considerations with this approach:

1. The Performance Contract Agreement could be expanded to include additional energy efficiency improvements beyond street lights
2. This approach would provide for a 15 year contract period, where the contractor would be responsible for service and maintenance. After the 15 year period, the City would need to determine how it would handle maintenance and service calls.
3. LED lights have a 10 year warranty and an expected life of 27 years.
4. The Pepco requirements for direct purchase of street lights by the City described below would also apply to a third party purchase.

## III. City Purchase Street Lights Directly, Contracts for Replacement and Maintenance

Pepco has established a process for jurisdictions to purchase the existing street light fixtures from the utility. The process is detailed in a Master Sales Agreement (MSA) document, developed in 2009.

The first step in the process for a direct purchase is for the City and Pepco to sign a Master Sales Agreement with Pepco. Once authorized, Pepco would perform a full audit of the street light fixtures, including identifying type, location, pole ownership, condition, etc. The cost for the audit is $25 per street light, or an estimated $43,375, payable by the City. Once the audit is complete, Pepco would determine the cost for purchase of the street lights. Pepco and the City would then sign a Supplemental Sales Agreement (SSA) which specifies the purchase price for the street lights. Based on our review of the Pepco Master Sales Agreement document, the cost for street light purchase is $440 per fixture. The cost for purchase of all City street lights is estimated to be $763,400.

Additional requirements include that the purchasing municipality would need to post a surety bond to cover the cost to remove the purchased street lights at $500 per pole. The Surety Bond would be required within 2 weeks of signing a Supplemental Sales Agreement with Pepco.

Any change to the street light fixture would need to be approved by Pepco, as the utility pole still remains theirs and the electricity distribution system is carried on the poles. Attachment of new lights and maintenance activity requires Pepco permission and scheduling to enter the power zone of the pole. Pepco requires certification that any contractor doing the work meets Pepco standards.

Pepco states that it will perform bi-annual inspection of all street lights and if any emergency maintenance is required it will be performed by Pepco. The Agreement states the Pepco will bill the municipality for the inspection and maintenance services. Any non-emergency maintenance issues will be referred to the jurisdiction to resolve in a timely manner. It is not clear what the cost for the bi-annual inspection of street lights would be. However, Pepco does require the municipality to maintain a draw down account with a balance of $2,000 to pay for the cost of any required Pepco maintenance.

Pepco requires that the municipality assume sole responsibility for handling trouble and service calls for all street light fixtures within the jurisdiction – even those that were not purchased by the municipality. The municipality is responsible for forwarding repair requests for Pepco owned fixtures to Pepco.

The Master Sales Agreement has an initial term of 5 years, and can be extended for two additional five year periods. It also states the purchaser or Pepco can terminate the agreement with 9 months' notice. Any SSA entered into prior to MSA termination shall remain in full force. An SSA may be terminated with 6 months written notice. However, if the MSA is terminated, the purchaser shall have no further rights to purchase additional street lights. The MSA identifies a default provision which results in the termination of the agreement if either party fails or neglects to keep and perform any required actions. In the event that the City would be determined to be in default, Pepco would give 60 days' notice to remove our street lights and associated equipment from the poles. If after 60 days the equipment was not removed, it would be considered abandoned and Pepco would remove and dispose of equipment and charge the City a $500 removal fee for each street light.

The Master Sales Agreement further states that the location on the pole where the street light is attached is permitted by Pepco and continued availability of the space for the purchaser's street lights is not guaranteed. If Pepco determines that the pole should be moved or removed, it would provide space on the pole as available, but that space is offered to those with attachment agreements date back the longest first. The cost for street light removal and re-installation would be a responsibility of the City.

The City as purchaser would be required to maintain Commercial General Insurance Liability of Two Million Dollars annual aggregate and Workers Compensation Insurance in an amount not less than One Million Dollars.

The Master Sales Agreement also states that the MSA and any executed SSA will not be recorded in any public record. It is not clear at this time whether that means the costs and requirements would not be allowed to be discussed publicly.

If the City were to pursue a direct purchase option of the street lights with Pepco, it would also need to determine what replacement street lights it would purchase and how maintenance of those street lights, and response to trouble or service calls, would be handled. Given the technical nature of the service and requirements for qualifications approved by Pepco, it is clear the City would have to enter into a contract with a service provider to perform installation and maintenance services. The process to receive approval by Pepco for these services would need to be further clarified.

Chart 2: Costs for Direct Purchase of Pepco Street Lights:

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| Audit | $43,375 |
| Purchase | $765,400 |
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| Costs for Purchase of LED Fixtures | $500,000 - $800,000 |
| Annual Maintenance Costs for Street Lights | $ unknown |
| Costs to establish outage reporting mechanism | $ unknown |