

## **Streetlights Working Group**

### **July 19, 2010**

#### **Meeting Highlights- DRAFT**

**Attendance:** J. Davis, Chair; Shahid Abbas, Arlington County; Vivian Li, Arlington County; Chip Rupp, Maryland SHA; Kanti Srikanth, Virginia DOT; Luke Wisniewski, Maryland DE; Jennifer Langfield, MDE; Luke Wisniewski, MDE; Mike Lizza, Pepco; Dave Howser, BGE; Robin Auchterlonie, VeriGreen Energy

**On Conference Call:** Ernie Baker, Pepco; Tom Shoemaker, Montgomery County; Kutty Menon, Montgomery County; Lee Ingram, Prince George's County; Alan Hedgepeth, Prince William County; Curt McCullough, City of Fairfax

**MWCOG Staff:** Joan Rohlf, Jeff King, Jeannine Altavilla

#### **Call to Order, Introductions: Chair J. Davis, Mayor of Greenbelt**

- Should think about name cards
- Let's put together a group webpage to post documents and reports

#### **Purpose of Meeting, Background on Street Lights Workgroup, Mission: Jeff King, MWCOG**

- This group is an initiative started by George Nichols, who recently retired. Jeff King is taking over as the lead MWCOG staff.
- It is a forum to share best practices and learn about existing technologies
- Bob Grow of the Board of Trade started working on street lights in the Washington region several years ago. He examined the technologies, potential cost savings, and environmental impacts.
- The COG Climate, Energy, and Environment Policy Committee (CEEPC) is meeting this Wednesday and will be discussing their 2012 Action Plan
  - Street lights are in the action plan with a goal of having 60% of jurisdictions having a program in place to replace older lights with new efficient technology by early 2012; the program doesn't have to be completed by early 2012
  - Jay Fiset, Chair of CEEPC, has suggested that we should even move this date sooner

#### **Street Light Survey Results: Jeannine Altavilla, MWCOG**

- Have received responses from 11 of 21 jurisdictions
- 77.8% of lights are High Pressure Sodium (HPS) and all jurisdictions reported having some of these fixtures
- Mercury vapor is recommended to be replaced, 17.8% of lights are mercury vapor
- Bob Grow's report estimated about 300,000 lights in the region; 272,695 reported in half of jurisdictions, so that may be a little low
- 4 jurisdictions have LED lights currently in place, 4 jurisdictions shared plans to install some LED lights

- 56% of lights are owned, 44% of lights are leased: presents a challenge with refitting entire systems
- kWh usage and cost per light varies quite a bit; may need to ask exactly what the jurisdictions used to complete survey
- 2 jurisdictions that reported separate kWh usage for LEDs showed an average of 64% savings in kWh consumed over the total average
  - (Shahid Abbas) Suggestion to include maintenance cost in the cost per light; the lumens are different for LEDs so it's not a direct comparison; LED viewed as brighter even with less lumens
- (Jeff) This will go into the progress report for the Action Plan. We are collecting this data as a baseline in order to gauge improvements
- (Curt McCullough) Fairfax City error in reporting- \$510,000, not \$51,000 operating expenses; LEDs don't show savings if lumens are kept the same
- (J Davis) why was there a problem collecting information?
  - (Jeff) We sent out several requests through SharePoint and email. Big Counties may have better resources to have someone report this type of information.
- (Kanti Srikanth) Who received the survey? DOTs? Are we including the states in the workplan?
  - (Jeff) not positive, but the DOTs have recently gotten the survey. DDOT responded for the District.
  - (J Davis) Including states may be hard to do. We have representatives on the board, but is there a link to have them join us?
- (Jeff) Jeannine has also been doing some research to examine the business case of installing the LEDs

#### **Utility presentations- Dave Howser, BGE and Mike Lizza, Pepco**

##### **BGE- Dave Howser**

- Personally has 8 years of experience in outdoor lighting
- BGE covers parts of Prince George's and Montgomery counties
- Has been working for several years examining LEDs in street lighting
  - Working with manufacturers and testing the function and durability of various LEDs at the Rutherford Business Center since 2008
  - Electric operations parking lot was switched entirely from 70W HPS to LEDs in 2009
    - Feedback from employees has been mostly favorable, especially with color improvement, but some find them too harsh or bright
  - The Outdoor Lighting Technology workgroup meets regularly with employees, leadership, and vendors in the field
- BGE is now confident enough in LED technology to move past pilot projects
  - Targeted first half of 2011 to initiate offering LED street lighting products
  - Currently drafting their LED offerings for presentation to the MD PSC, and in the process of creating pricing and business plans

- The workgroup will continue to meet to review manufacturer offerings and ensure BGE is offering the most advanced, durable, energy saving utility grade products available

### **Pepco- Mike Lizza**

- Pepco Holdings is comprised of Pepco, Delmarva, and ACE
- Doing LED pilots in 4 locations in each company area
  - Using 10 different manufacturers
  - Pepco has 33 LED lights with 3 of 4 installations complete
  - Replacing 100W mercury vapor with LED equivalent
  - Looking at replacing metal halides; 70, 100, 150, and 250 watt HPS
  - Following IES standards, they are testing lumens output of existing lights and the LEDs
  - All locations are on track to be able to issue a findings report by the end of 2010
  - 1 pilot project is in the National Harbor where 12 100W metal halide teardrop lights are being replaced
    - (Chip Rupp) We have HPS there so that will be a good direct comparison
  - Another project in Somerset is replacing mercury vapor
  - Working with the Counties
- (J Davis) Are the Pepco and BGE pilots on par with each other?
  - (Dave) they complement each other. BGE is testing the luminaires, while Pepco is monitoring lumens level in actual settings. We will compile our findings to find what we need to reach standards
  - (Mike) Pepco is examining cost data, as well. Right now they are between \$450 and \$1,400 per light, which adds some complexity.
    - (J Davis) Are the costs going down?
      - Yes. The standards group began in 2006/07 and costs have seen a significant drop since then. Costs will probably continue to decrease as volume increases
  - We are not necessarily going to choose just 1 manufacturer in the end
  - We are gathering more technology information before we move forward with policy
- (J Davis) Are the manufacturers American?
  - (Mike) Yes.
- (Tom Montgomery) Are BGE and PHI doing tariff pricing for metal halide and HPS?
  - (Dave) We have an internal draft but haven't presented anything on LEDs. We have started to do some metal halide pricing but haven't presented yet. Metal halide presentations will come sooner than LEDs
- (Kanti) Are metal halides an alternative to LED?
  - (Mike) Yes. Metal halides are already in existence in our system. We are replacing some with LEDs to compare
- (Kanti) Why don't we have high power LEDs?
  - (Mike) They were not there when we selected the lights for the pilots at the end of 2009
- (Kanti) Are you considering legal issues in not complying with the lumens standards?

- (Mike) Pepco can't match lumens per lumens
- (Schumaker) LED manufacturers are trying to estimate conversions because they are about ½ of the IES standards but have the illusion of greater light.
  - (Chip) IES announced they will not establish different lumens standards for LEDs
- (Shahid) How many of your roads meet the standards? Ours do not. We are trying to improve, but probably only 10% of roads meet standards. There is not consistency across the year. In the winter roads may be overlit and customers may complain that it is too bright, whereas in the summer trees may block and customers will complain that it is too dark.
- (Shahid) The standards are not mandatory, so road designers may not consider them.
  - (Chip) Maryland meets or exceeds standards on all roads.
  - (Dave) BGE meets IES, but they are reviewing the issue of difference in perception. People may complain that the roads are too bright if they meet lumens standards. There are glare issues in the snow. Right now 100W is the lowest they are testing except in the parking lot. They are playing mostly in the middle ground lights.
- (Jennifer Langfield) What kind of stakeholder feedback have you received?
  - (Mike) We have a plan developed where customers can get information or provide feedback on a website, they can send a text message to give input, or they can send an email. So far it is mostly positive feedback and people like the bright, clean look.
- (J Davis) What about Dominion?
  - (Jeff) They have historically had close participation with the group
  - (Shahid) Arlington works with them. Dominion has a pilot program but a big consideration is who will pay. They have a draft to present to VEPGA next month to estimate LED pricing for cobra and decorative lamps. Local jurisdictions would be able to pick from 2 lights. If they want a different light Dominion will install them if the jurisdiction provides them. They are fairly flexible. Graham Cecil is the contact person.

### **Barriers and Opportunities: All**

- (Tom Shoemaker) Looking into manufacturers right now, there are only 70W and 100W HPS equivalents that we could convert. We can't do 150, 250 or 400 W HPS.
- (Jennifer) Funding
  - (J Davis) At some point maybe the prices will drop enough that this won't be as big of an issue
- (Kanti) I'm not aware of any DOT challenges in the programs underway, but I will report if I find anything.
- (Chip) Haven't seen 250 W HPS replacements. Biggest problem is that the manufacturer specs are not always accurate, there are a lot of discrepancies

- (Dave) Lots of testing has shown that some are accurate, some not. One was stated to be equivalent to 140W but measured at 160W
- (Jeff) heard a rumor a while ago that in core DC color was an issue, because they like the orange glow
  - (J Davis) Not in Greenbelt. They feel that the LEDs are a different feeling. They think the white lights feel safer.
  - (Chip) People think that HPS attracts crime
  - (Dave) Some historic areas wanted incandescent light for a softer look compared to the starkness of the LEDs. LEDs will probably get there though. For the highways the daytime equivalent with LEDs may be more popular, whereas residential areas may like the incandescent look.
- (Shahid) There is room to play with the lights. There are 4 classification systems that are all accepted for different things, and the systems have a lot of variation
- (Shahid) Arlington is requiring independent lab certification for LED specs. It won't be the same as in the field, but we've identified 150W and 250W replacements. Feel free to come and see what we have; our most popular manufacturer is Hadco.
  - The efficiency varies starting at 49 lumens
  - We selected a manufacturer that produces solely LEDs, and uses 89 lumens
  - We have a 7 year warranty, where if even 1 LED goes out they will replace the entire fixture
  - It is between \$549 and \$649 per fixture
  - They have a 100 year life in a contained environment, and a practical life of 40-45 years
  - The system will pay for itself in less than 4 years
  - We are using an intelligent lighting system controlled remotely so that we can dim based on the demand. We are using the existing public safety FCC link.
  - Cobra lights are more expensive.
- (J Davis) Have we done research on grants available to utilities and municipalities?
  - (Jeff) We submitted a Climate Showcase Communities proposal last year that failed. They said there weren't interested in street lights.
  - (J Davis) DOT offerings? Virginia municipalities can consider purchasing street lights to enable conversion. Greenbelt is negotiating to buy; the utility is reluctant to negotiate. Right now due to safety we can only buy lights on wooden posts.
- (Mike) Pepco is also testing the smart streetlights in the pilot in each region. Somerset is using ROAM (Remote Operations Asset Management) technology.
  - Also offering induction cobra heads in 55W and 80W.
  - We have an existing project to replace mercury vapor with HPS. There are quite a few with about 37% savings in energy efficiency there.

#### **Induction Technologies- Robin Auchterlonie, Verigreen**

- Plasma induction technology is the answer for a lot of your issues with lumens. They offer consistency

- They offer 100,000 hour life. If keeping a light lit 24 hours a day, 7 days a week this is 12 years
- They are electrodeless, no filament, resistant to wind, vibration, and have instant restrike
  - Makes them ideal for parking lots and tall poles
  - Completely recyclable
- 78% of LEDs don't make it to their 50,000 hour limit. When you replace them you have to replace the whole fixture, but not with induction
- You can dim induction lights and they actually use less electricity, unlike dimming LEDs
- The return on investment based on energy use and maintenance is 1-3 years
- Verigreen is also looking at the lumens for old lights versus the new induction lights installed
- Plasma induction offers a broad CRI range, you can see colors in the presentation pictures
  - In one picture you can see colors much better with the induction, this is better for safety
- (Chip) You talk about scotopic values, what about photopic?
  - Can send them.
- You can replace any light with a kit for induction, you don't have to replace the entire fixture
- We have done pilots in Sayville, NY and Wyomissing, PA
- We review interested clients on a case by case basis. Sometimes LED is the answer.
- We have 5 lenders that can assist in funding with programs ranging from up-front cash to lease-own.
- Maintenance costs decrease dramatically because you do not have to work on them as frequently
- Talking with a local power supplier who will use induction
- Spoke with a large convenience store/gas chain. They were looking at both LED and induction 2 years ago and started an LED rollout six months ago due to the cash savings.
  - Be careful, because just like with computer technologies things change very quickly and you have to use current data and technology comparisons
- Plasma induction may be new in the US but it has been used in Asia and Europe for years. 84% of the exterior lighting in Shanghai is induction.
- (Chip) Is induction similar to sulfur?
  - No. A small mercury bead is excited by the electricity which stimulates argon gas encapsulated in the rest of the system to produce visible light
- Verigreen also has solar/wind components that can allow you to produce your own power, but connect to the grid when you don't have enough to run the lights
- Conducting a pilot in Loudoun County
- Pentagon Memorial
- Doing a demo at Reagan International Airport in the rental car area. Some customers complained that before they couldn't figure out what color their car was before.
- Working on discussions with Metro.

### **Wrapping Up- J Davis**

- No time for local government updates today, move to top of agenda next time

- Need participation of all utilities
- If anyone has any agenda ideas, send them to Jeff
- Frequency
  - Every other month has been alternating between in person and conference call
    - All present at COG prefer face to face
    - All on conference call prefer to phone in
      - Need to work a bit on getting everyone heard on conference call
  - Propose to maintain the option to either come in person or call in
  - Meet in September at 10am. Jeff and J Davis will discuss some dates and circulate.