

# Regional Initiative for Energy Efficient Street Lighting

Presented to

COG Climate, Energy, and Environment Policy Committee

**July 22, 2009**



# Presentation Outline

- Brief Background on Initiative
  - Working Group
  - LED Technology
- Identify What Has Been Done
  - Survey Results
  - Best Practices
- Identity Future Directions
  - Forum
  - LED Pilot Projects

# Background

- Climate Change Report identifies a range of regional greenhouse gas reduction strategies.
- To “examine options and develop plans for replacing street lights with energy efficient street lighting (LED or other options) across the region.”

# Street Light Work Group Rationale

- COG identified street lighting improvement as a great potential area for a GHG reduction strategy.
- Over 300,000 lights in Metropolitan Washington Region.
- Consumption equals about 200 million KWh of electricity .
- Cost equals an expenditure of \$12 million annually.
- Ford Foundation Report estimates that total electric use can be reduced by 100 million KWh annually.
  - Saving \$6 million.
  - Reducing CO2 emission by approximately 78,000 metric tons of CO2.

# Formation of Working Group

- Street Light Working Group Formed consisting of representatives from:
  - Local governments
  - Greater Washington Board of Trade
  - COG
  - Clinton Climate Initiative
  - Hannon-Armstrong
  - Area Utilities

# Current Street Light Technology



High Pressure Sodium



Mercury Vapor



Metal Halide

# Light Emitting Diodes (LEDs)

- LED is a semiconductor device which converts electricity into light.
- Produce directional lighting to decrease energy lost in light pollution.

# LED Street Light Examples



Ann Arbor, MI



San Francisco, CA



IntenCity Lighting Test  
Lamp



# Induction Lighting

- Use gas tubes similar to fluorescent but last longer because there is no electrode that can go bad
- Long-life and low maintenance required
- Lower initial cost than LED but still expensive compared to HPS
- Energy savings anywhere from 40% or more over HPS, MV, and MH.

# Induction Street Light Examples



Groton, CT



Groton, CT

# Cost Comparison

	Fixture Costs	Maintenance	Efficiency
HPS	Low	High	Medium
MV	Low	High	Low
MH	Low	High	Medium
LED	High <sup>1</sup>	Low <sup>2</sup>	High
Induction	Medium <sup>1</sup>	Low <sup>2</sup>	High

- 1 – The cost difference between LED and Induction is not as large as the difference between Induction and HPS, MV, or MH.
- 2 – The maintenance costs for LED and Induction are nearly zero for the fixtures lifetime.

# HPS vs. LED

This is a photo of the same street in San Francisco with HPS (left) and after the LED conversion (right).



# MWCOG Street Light Survey

- Questionnaire Issued in September and October 2008
  - Sent to 21 COG Member Jurisdictions
  - Participation Rate -- 100%
- Technology usage
  - HPS - all jurisdictions
  - MV - used in 70% jurisdictions
- Wattage
  - 50 to 750 W range
  - 1000 W fixtures reported in one jurisdiction.
- Age
  - Brand new to over 30 years old.

# MWCOG Street Light Survey

- 75% of jurisdictions report ownership of lighting belongs to Utility Companies.
- All jurisdictions expressed interest in LED technology
- LED technology in use only in a few pilot programs.
- Safety and energy costs were key drivers for LED technology in most jurisdictions.

# Concerns/Barriers to Implementing LED Projects

- Rapid Advancements in LED Technology
- Tariff Issue
  - Testing and Evaluation
  - Revenue Generation
  - Equity in pricing

# Best Practices

For a look at best practices in LED street light technology, review the Selected Street Lights Best Practices Handout

- Anchorage, AK
- Ann Arbor, MI
- Los Angeles, CA
- Oakland, CA
- San Francisco, CA



# Utility Sponsored LED Pilots

- **Dominion Power**

- Implementing LED Pilot Program
- Pilot projects in various stages of planning or design

- **Pepco Holding, Inc.**

- Lighting consultant under contract
- Developing criteria and evaluation specifications for LED Pilot Program

- **BG&E**

- LED lighting being tested
- Interested in upgrading sodium vapor municipal owned to LED
- Possible roll out in 2010

# Future Action: Promote LED Demos

## Maryland

City of Frederick

City of Greenbelt

City of Rockville

Montgomery County

Prince George's County

Town of Somerset

## Virginia

Arlington County

City of Alexandria

City of Manassas

Fairfax County

Fairfax City

Loudoun County

Prince William County

## District of Columbia

# Future Action: Design & Implement LED Technology Forum

- MWCOCG Street Lights Vendors Forum
- Will provide local jurisdictions and utility providers a detailed look at products on the market that will improve energy-efficiency.
- Timeframe – Late September or early October
- 8 – 10 manufacturers will attend