

# ***Boston's LED Street Lighting Initiative***



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# Project Overview

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## ◆ **Boston's Street Lights**

- ◆ 64,000 electric street lights
  - ◆ Mercury Vapor (42,000 as of 2010)
  - ◆ High Pressure Sodium (22,000 as of 2010)

## ◆ **Mercury Vapor lights phased out NEPAAct of 1992**

## ◆ **Streetlights account for 18% of the GHG emissions from Boston municipal operations**

## ◆ **Spend \$8 million annually on electricity and \$1.3 million on gas street lights**

# The Opportunity

- ◆ Replacement of High Pressure Sodium, Mercury Vapor, and Incandescent Light with LED lighting technology





## ◆ 2009

- ◆ Pilot LED program in 2009 in section of the Boston Common and Jamaica Plain
- ◆ Feasibility analysis of LED technology and life cycle costs from the Public Works Department Street Lighting Division, Environment & Energy Services Cabinet and the Clinton Climate Initiative



## L.E.D

- ◆ One of the most efficient light to date
- ◆ Negligible lamp lumen depreciation over same period of Mercury Vapor lights
- ◆ Lamp Life 60,000 hours
- ◆ Minimal loss due to design of LED chips

## Mercury Vapor

- ◆ Least energy efficient of the HID lamp family
- ◆ High lamp lumen depreciation over the life of the lamp
- ◆ Lamp life 24,000 hours
- ◆ Design of MV luminaire results in up to 30% initial light loss due to absorption by the luminaire.

## Public Safety Impacts

- **100 % of light emitted is utilized to light roadway**
- **Better color rendering for identifying objects**
- **All streets satisfy ANSI/IES RP-8 National Standards for Roadway Lighting, accounting for:**
  - Type of roadway
  - Area classification
  - Pavement type
  - Pedestrian conflict
  - Roadway width
  - Luminaire height





# Timeline

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## ◆ 2010

- ◆ NSTAR rebate agreement reached to convert Mercury Vapor fixtures to LED
- ◆ 2,800 fixtures converted on residential streets in Brighton, Jamaica Plain, East Boston and South Boston

## ◆ 2011

- ◆ Wide-scale installation of 12,000 additional MV fixtures throughout City
- ◆ New fixtures allowed for replacement of higher wattage units on arterial streets & areas of public safety concern

## ◆ 2012

- ◆ Goal is to complete remaining 8,200 cobrahead fixtures throughout the City (MV and HPS)
- ◆ Begin converting MV Acorn and MV Rectilinear (shoe box) fixtures (Fall 2012)



# Financial Impacts (Cobrahead Conversion)

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- ◆ **Total Project Cost:**
  - ◆ Materials: \$6.8 million
  - ◆ Installation: \$742,000 (projected)
  
- ◆ **Utility (NSTAR) Incentive:** \$3.8 million
  
- ◆ **City of Boston Cost:** \$3.7 million
  
- ◆ **Annual Energy Savings:**
  - ◆ \$2.8 million (upon completion)
  
- ◆ **This project paid for itself in less than 1.5 years**



# Questions?

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