

Purchasing Streetlights & LED Retrofits

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MAPC: About Us

- ▶ 101 cities and towns
- ▶ 80+ employees
- ▶ Wide range of planning services



Clean Energy Division

- Goal: Help municipalities reduce GHG emissions
- Methods:



**Policy
Advocac
y**

**Local
Energy
Planning**

**Project
Support**

Agenda

- LED Overview
- Purchasing Streetlights
- Retrofit Procurement Pathways
- Scope Considerations for Procurement
- Q&A

Streetlight Opportunity: LEDs

- Energy and Cost Savings
 - ▶ Reduce energy use 50% or more

HPS Nominal Wattage	LED True Wattage
50	20
100	42
250	101
400	130

Streetlight Opportunity: LEDs

- Energy and Cost Savings
 - ▶ Reduce maintenance costs significantly due to long life (20+ years)
 - ▶ Payback Periods ~7 years
- Additional Financing Help: Green Communities and Leasing
 - Tax Exempt Lease Purchase

Streetlight Opportunity: LEDs

- More even light distribution
- Less light pollution, light trespass
- Better color rendering
- Wireless controls enhance safety features

Step 1: Purchase Your Lights from Utility

- Utility owns unmetered lights by default
 - MLP towns already own their light



**Cobra heads:
Typically Unmetered**

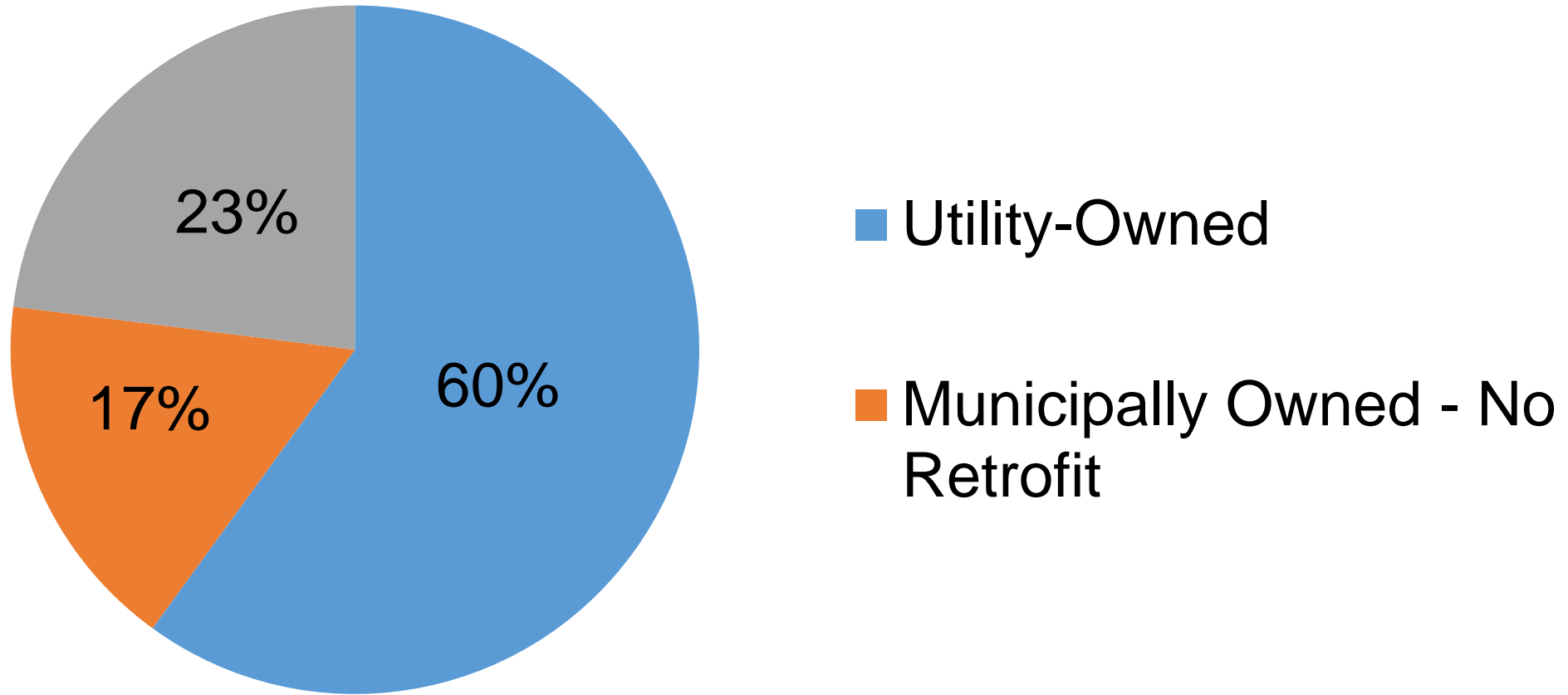


**Decoratives
Typically Metered**

Purchase Stand-Alone Poles, Too



Streetlight Ownership in MA



Step 1: Purchase Your Lights from Utility

- Prices vary depending on how much your lights have depreciated
- Utilities follow a pricing policy set and approved by the DPU

Step 1: Purchase Your Lights from Utility

- Ownership often cost-effective on its own
 - Lights are sold at their current, depreciated value
 - Municipality can competitively bid its maintenance contract (30-60% savings)
 - Savings can be used towards purchase of LEDs
- Guidance document from MAPC
 - <http://www.mapc.org/led-street-lighting>

Step 1: Purchase Your Lights from Utility

- Currently multi-month delay for Eversource and National Grid to provide price quote
- Informal quote vs formal quote
 - Formal quote freezes depreciation



Step 2. Retrofit

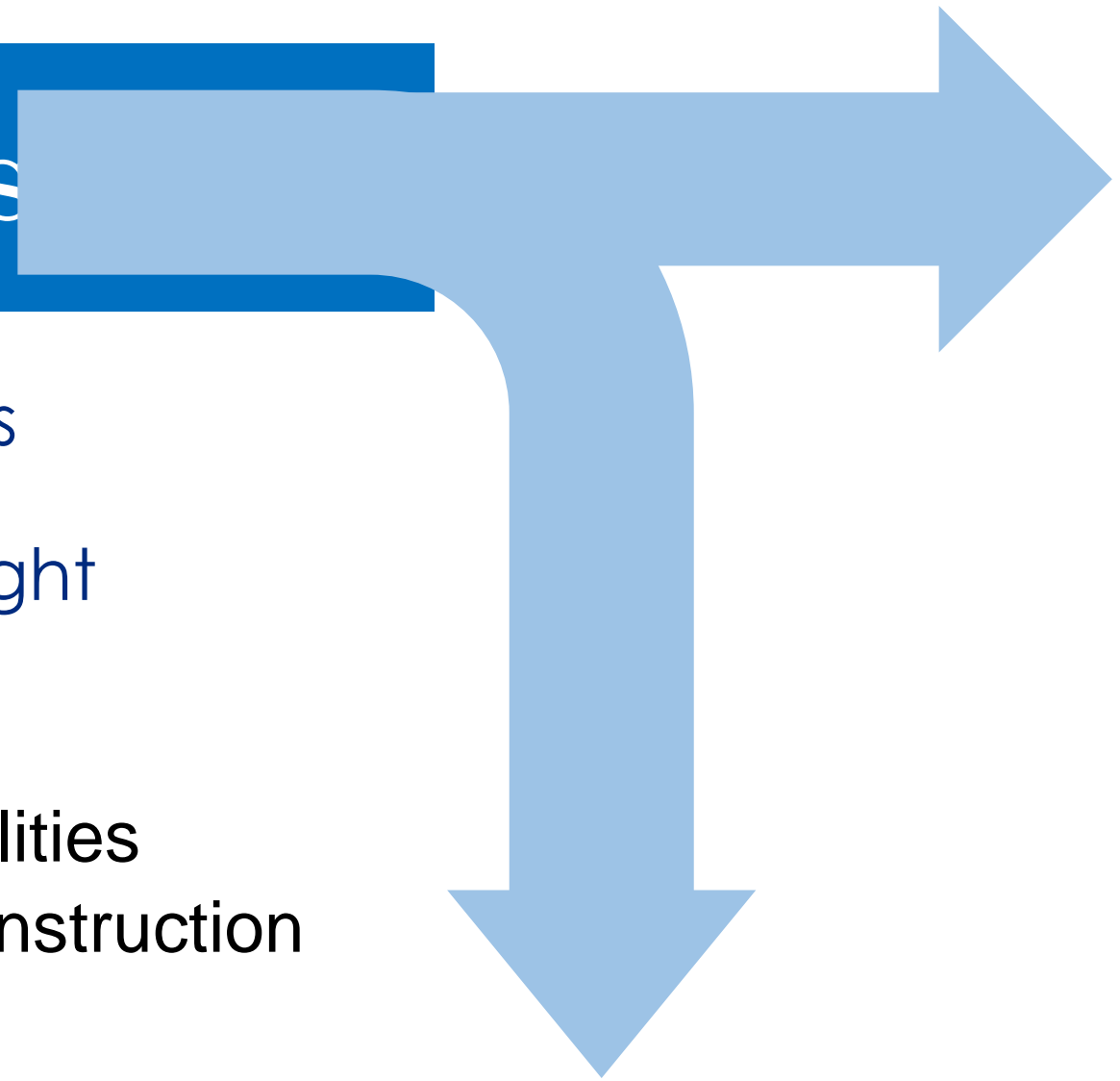


Identify Required Services

- GIS Streetlight inventory
- Investment Grade Audit Report
- Retrofit design
- Equipment: Luminaires & Photocells
- Installation
- Incentives & Billing Changes
- Maintenance

Procurement Paths

- Energy Management Services
- Design & Construction Oversight
- MAPC experience:
 - Initially: EMS – 16 municipalities
 - More recently: Design & Construction Oversight – 7 municipalities



Energy Management Services

- Turn-key delivery of all services
- M.G.L. c.25A §11C or §11I
- Designed for complex multi-building energy efficiency projects
- Bidders must have DCAMM certification
 - Large firms

Energy Management Services

- Measurement & Verification required
 - Not necessary with streetlights
- Request for Proposals
 - Locked into product
- Request for Qualification
 - Flexibility but mark-ups can inflate pricing

Design & Construction Oversight

- Creates a similar process to turn-key with consultant oversight for entire project
- Leverages existing services from OSD
- May reduce cost through increase opportunities for competition



Design & Construction Oversight

- Designer handles all services except
 - Municipality purchases product off of State Contract FAC76, Category 6
 - Municipality bids out installation under M.G.L. c.30 §39M
- Designer procured under M.G.L. c.30B
 - Professional Engineer not necessarily required

Design & Construction Oversight

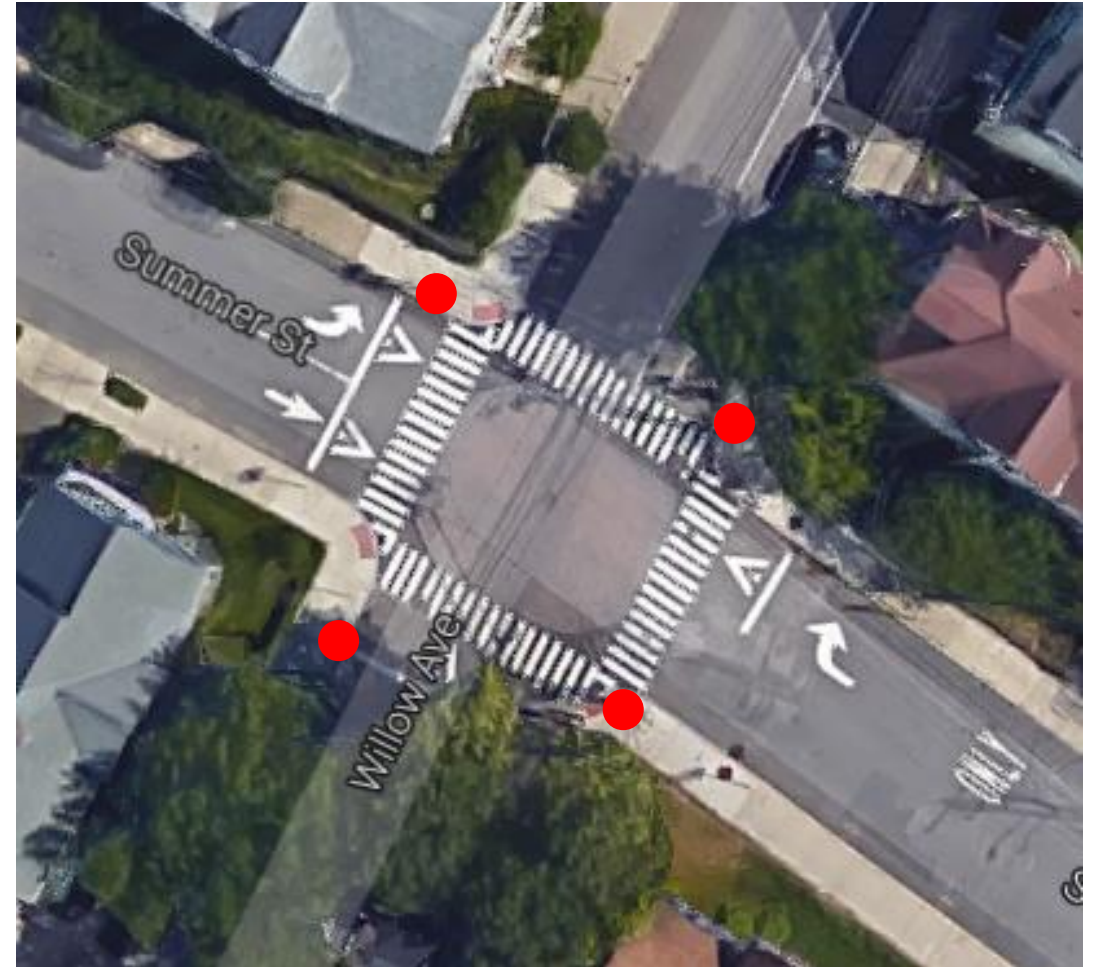
- Piloted with City of Brockton
- MAPC led collective procurement for 6 municipalities in fall of 2015

Scope Considerations for Design & Construction Oversight



GIS Inventory Accuracy

- Do you want to incorporate it into existing GIS layers?
- How will design utilize the GIS data?



GIS Inventory Scope

- Streetlights
- Other outdoor lights – parking lots, parks, etc.
- Stadium lighting
- Other assets – sewers, fire hydrants, trash cans, etc.



GIS Inventory Field Staff

- All data is gathered electronically
- Some vendors will train locals and have remote QA/QC
- Others bring veterans
- Either may be acceptable

Pilot Installs

- Typically will install two of the same light to create a space with consistent feel
- May install different color temperatures, wattages, or brands

Design Standards

- IES RP-8 is the primary lighting standard
- Not always achievable given existing pole placement
- “Typical” designs versus street-by-street design



Oversight of Project

- Common for vendors to provide installers with app to log installation data
- Some vendors provide real-time online dashboard
 - See inventory and installation progress
 - Helps with public engagement
 - Not always a necessity – weekly updates can facilitate appropriate municipal planning

Wireless Controls



- Controls allow for dimming to provide extra savings
- May facilitate other ‘smart city’ add-ons
- Utility tariffs currently do not provide financial payback for controls
- Standard to get “control-ready” fixtures

Method of Procuring Equipment

- State Contract FAC 76 allows for price competition between brands
- M.G.L. c.30 §39M could be used for both equipment and labor
 - May disadvantage smaller installers that don't have buying power

Install Oversight

- Review of change orders
- Verification of install data
- Site visit spot checks

Maintenance

- Can bid out install and maintenance at same time or separately
- Historically done as \$ per light per month
- Moving towards time and materials with LEDs
- A number of communities have purchased bucket trucks and use their own electrician

Timeline

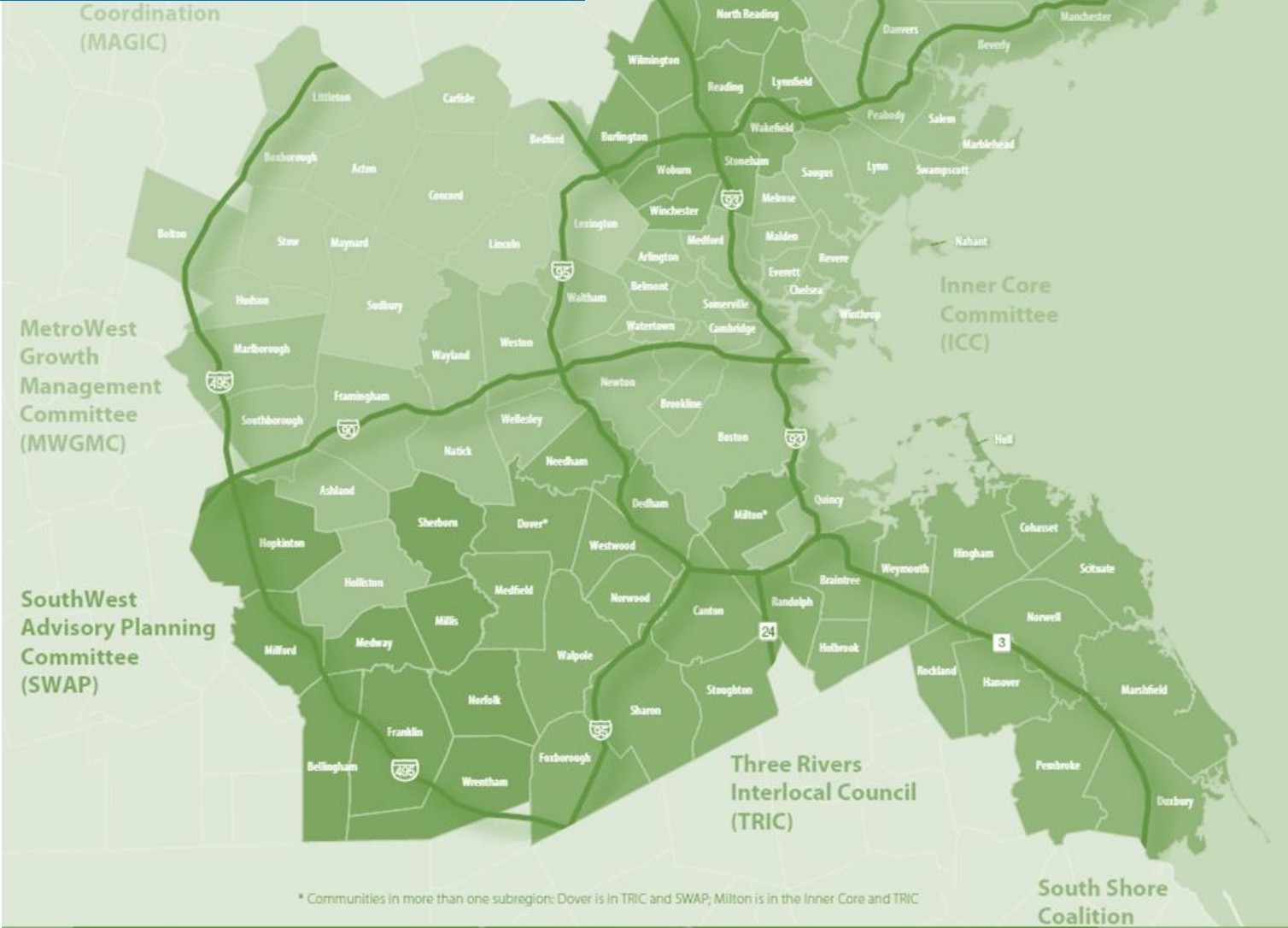
A green double-headed arrow pointing left and right, containing the text "Own Lights: 8-10 Months".

Own Lights: 8-10 Months

A blue double-headed arrow pointing left and right, containing the text "Utility Owns Lights: 12-16 Months".

Utility Owns Lights: 12-16 Months

Thanks



Purchasing Lights Cost-Effective On Its Own

National Grid Rate Tariff	Delivery Rate (\$/Annual kWh)	Delivery Cost for 50w HPS	Luminaire Charge for 50w HPS	3 rd Party Maintenance Cost	Total Annual Charges
S-1	\$0.04387	\$11.19	\$60.71	N/A	\$71.90
S-5	\$0.06207	\$15.83	N/A	\$12.00	\$27.83
Saving					\$44.07

50w HPS billed for 255 kWh/year be the S-1 and S-5 tariffs

3rd party maintenance plans common at \$1/light/month for HPS fixtures; **however this only includes ROUTINE maintenance like installing replacement lights, managing call center/database, and doing drive throughs.**