

# Planning For Street Lights



Nathan Poore, Town Manager, Falmouth

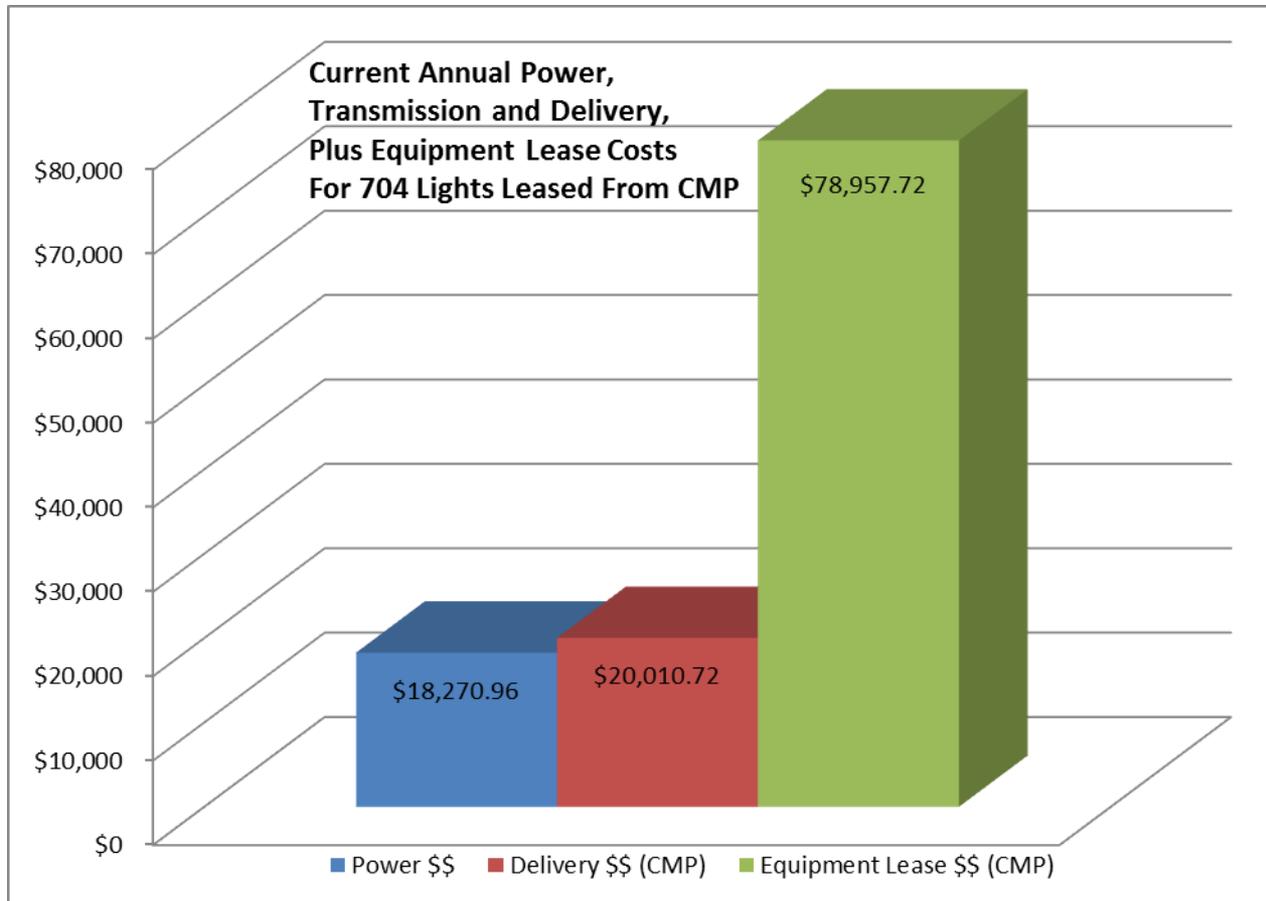
Tex Haeuser, Planning & Development Director, So. Portland

Larry Pritchett, City Councilor, Rockland

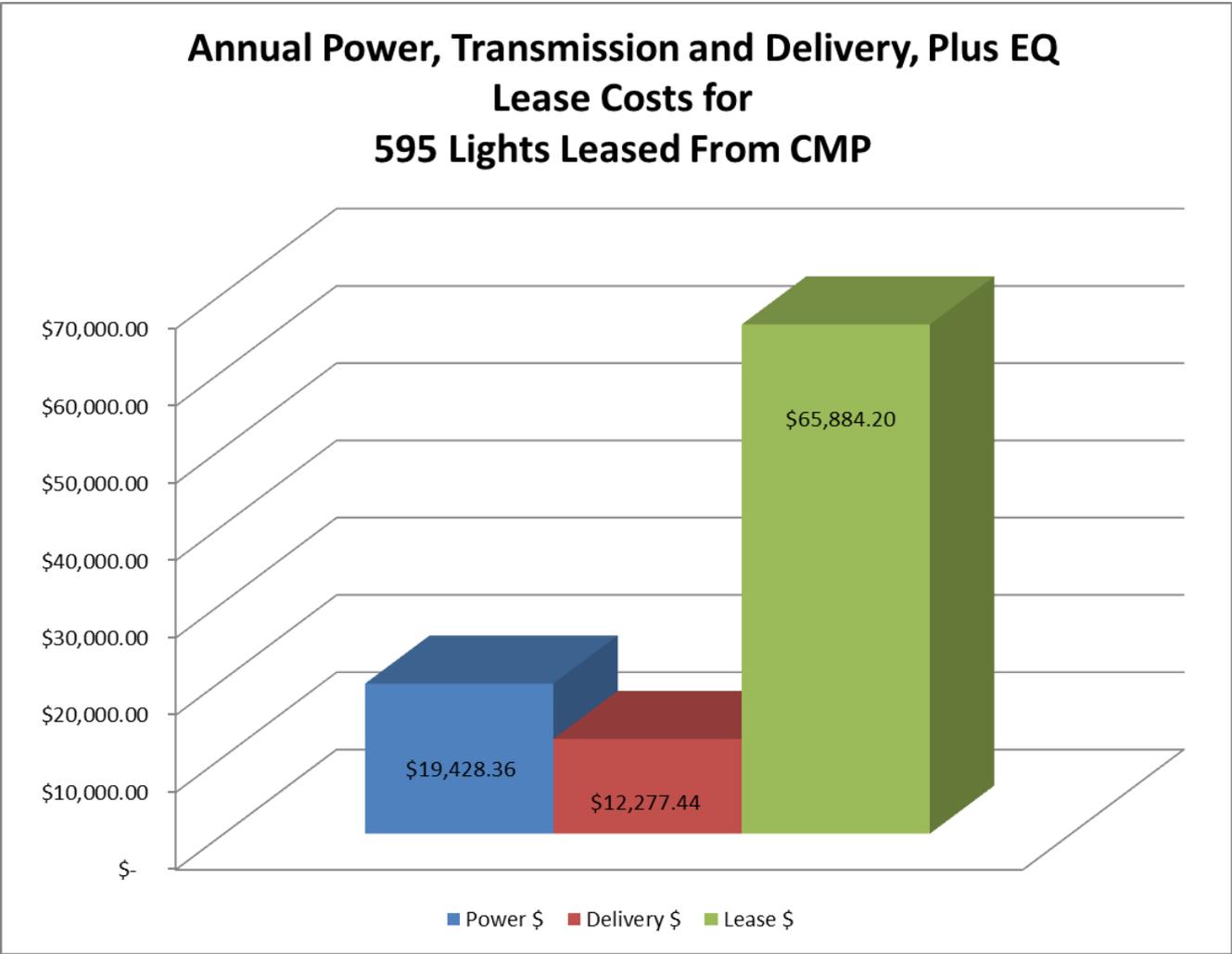
# Why Should a Town Own and Maintain Streetlights?

- Energy savings
- More options for fixture selection and photometric design
- Significant cost savings (lease > own)
- Advanced control options
- Greater flexibility with placement and removal

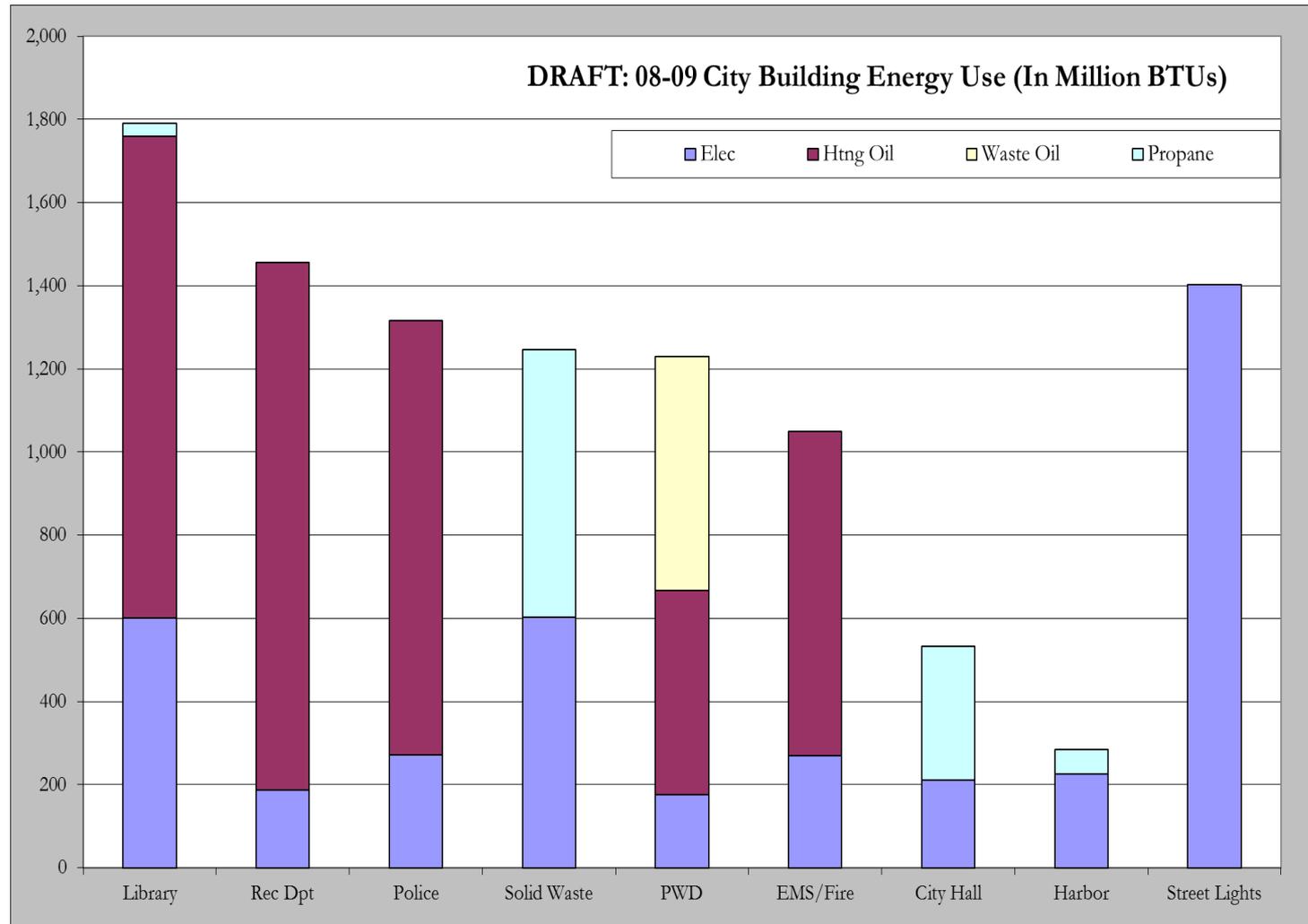
# Cost to Lease City of Rockland



# Cost to Lease Town of Falmouth



# Share of Energy Costs City of Rockland



# Historical Background

## Enabling Legislation and Regulation

- **2002 The Beginning** - K'Port desired different bulb than what was provided by utility.
- **2003 and 2005 First and Second Attempt to Change State Law** - Based on MA law and realization that choice and energy savings was important.
- **2011 Third Attempt to Change State Law** - Based on previous attempts but with added municipal interest.
- **2013 Fourth Attempt to Change State Law** - Passed as part of energy omnibus bill. Relied on PUC to develop details.
- **2013 – 2016 PUC Process** - Reliance on collaboration of PUC staff, MSLG (staff and consultants), and utility representation.

# Do your Homework Without Knowledge – Risk of Higher Costs

- Read the law
- Read the PUC ruling
- Read the PUC approved terms and conditions for utility standard form contracts and understand the utility fee structure
- Consider whether to hire help – at the initial phase and/or at implementation

# The Law

- Prior to the law, municipalities had only one option when locating a fixture on a shared use utility owned pole – lease fixtures from the utility
- New law expands to three options –
  1. **Status quo – lease lights from utility**
  2. **Municipal ownership of lights with utility providing the maintenance**
  3. **Municipal ownership and maintenance**
- New law required PUC to develop details for implementation.

# PUC Order & Tariffs

- PUC rulings occurred over a three year period.
- Process relied upon MSLG testimony and many sessions with PUC staff and utility representatives
- Developed a standard form contract
- Negotiated Net Book Value to establish value of existing system
- No pole location fee
- Fusing to be done by utility
- Insurance requirement

# Preparation for New Streetlights

## The Playbook

- Understand the law
- Understand the PUC rulings
- Understand the standard form contract with the utility
- Develop an RFQ for professional services – audit of existing system; GIS mapping; design of new system (each light); selection of fixture; procurement; public process; and installation/construction management.
- Develop contract
- Conduct an updated financial analysis or ROI – savings likely at 40% to 50% of annual cost resulting in a 4 to 6 year pay back on initial investment.

# First Step - Inventory Installed Lighting Plant

- What to include: pole numbers, wattage, mast arm type, decorative, stand alone lights, etc.
- A detailed inventory will form the basis of ongoing utility contracts and/or management by the municipality
- Inventory needs to be in GIS and coordinated with the utility

## Second Step – Design

### Photometric Analysis - Some or all areas?

- Consider the value of correctly targeting and appropriate sizing (in terms of lumen output and direction of light)
- Are there areas where you add or reduce the number of fixtures?
- Are there locations where accident data (especially pedestrian/car accidents) or where crime data suggests light levels should be reviewed?
- Are there community questions/concerns that may need to be addressed (public input process)?
- Experts will understand the difference in calculating lumens and the various nuances associated with different types of lights when compared to new LED

## Second Step Considerations in the Design Process - Color temperature (Kelvin Scale)

- Street and area lighting is available in color temperatures from 2700 Kelvin up to 5700 Kelvin
- There are good technical reasons for choosing a specific temperature (typically lower values around 3000). And there are good reasons for choosing a higher value in other areas.

## Second Step Considerations in the Design Process - Coordinate with other projects

- Is the town or MaineDOT planning a project that could or will include lighting?
- Are there public or private projects that will include lighting that could be coordinated with the project?

## Second Step Considerations in the Design Process - Finalize Lighting Replacement Fixture Schedule

- Answering the preceding questions should help a municipality with all aspects of the project including fixture selection and location
- The project should include all types of lighting – building, parks, parking lots, street lights, decorative, specialty, etc.
- But, the biggest change will be fixtures on shared use utility owned poles

## Third Step – Installation and Transition Process

- Does the town intend to acquire all existing lighting and request the utility install fusing, and then transition later to new lighting (in phases)?
- Does the town want the utility to remove existing lighting and install fusing with a town contractor following the utility crews to install new lighting?
- Does the town want the utility to remove existing lighting, install fusing and install new lighting concurrently?

# Third Step Considerations with Installation and Transition Process - Standard Form Contract With Utilities

- Regardless of plan, this will be necessary – such as fusing mandate
- Your selected plan will dictate what level of service will be needed from the utility

# Maintenance After The Transition

- Quality LED fixtures are highly reliable and last a long time, provided you select a high quality fixture- (how will you know that it is a high quality fixture?)
- Appropriately specified photocells have longer life expectancy than older technology but selecting a quality product is important.
- A small percentage of fixtures will be defective and some will be damaged by weather related events and vehicular accidents.

# Town/Cities Consultant Selection

## RealTerm Energy

- RealTerm Energy is a division of RealTerm Global with offices in several locations in the US and Canada.
- RealTerm has completed or partially completed 149 street lighting conversion projects that include 157,437 streetlights.
- RealTerm Energy has partnered with George Woodbury (consultant relied upon by MSLG since 2002). Mr. Woodbury has helped lead 85 projects in New England (mostly MA and RI) and serves on the ANSI board.

# Financial Analysis

## One Provider's Approach

REAL TERM ENERGY: DETAILED FINANCIAL ANALYSIS INCLUDED FOR ALL PROJECTS

- ✓ Number of streetlights being replaced and installed
- ✓ Service life of LEDs
- ✓ Appropriate discount rate (rate of borrowing)
- ✓ Capital cost of LED luminaires
- ✓ Complete lifecycle cost analysis
- ✓ Installation costs (including cost of roadway closures if required)

- ✓ Project timeline (phased retrofit or turnkey solution)
- ✓ Maintenance costs of replacing luminaire components (including warranty agreements)
- ✓ Estimated energy costs throughout service life of LED (incl. inflation)
- ✓ Energy efficiency incentives
- ✓ Financing options

# Conceptual Financial Model – Unmetered Lights Pre-inventory Estimate

Town of Falmouth				
Purchase and Intall 595 Street Lights				
<b>Initial Cost of New Lights and Installation</b>				
<b>Item</b>	<b>Units</b>	<b>Price</b>		<b>Cost</b>
Fixture Cost	595	\$ 275.00		\$ 163,625
1st Install (20%)	59	\$ 180.09	Flaggers	\$ 10,625
	59	\$ 143.92	No Flaggers	\$ 8,491
2+Install (80%)	238	\$ 156.03	Flaggers	\$ 37,135
	239	\$ 119.86	No Flaggers	\$ 28,647
Audit	595	\$10.50		\$ 6,248
Design, Procurement, and Construction Management				\$ 42,249
<b>Total Installed Price</b>				<b>\$ 297,020</b>
<b>Annual Costs (If Owned by Town)</b>				
<b>Item</b>				<b>Cost</b>
Annual Maintenance Cost				\$ 2,700
CIP Contributions - Fixture Replacements				\$ 11,156
CIP Contributions - Photo Cell Replacements				\$ 5,355
Insurance				\$ 5,000
Annual Energy Cost				\$ 20,000
<b>Annual Cost (Fixtures Owned by Town)</b>				<b>\$ 44,211</b>
<b>Current Cost with Utility Owned Fixtures</b>				<b>\$ 97,590</b>
<b>Annual Savings</b>				<b>\$ 53,379</b>
(Annual Town Owned Costs - Costs if Utility Owned)				
<b>Payback (Years)</b>				<b>5.6</b>

# Financial Model – Metered Decorative Lights City of Rockland

Replace 73 Leased Decorative Main St Lights With 64 City Owned LEDs With Digital Controls			
		<b>Annual Power \$\$</b>	<b>Annual Lease \$\$</b>
<b>Leased Lighting</b>		\$7,265.87	\$64,970.04
			<b>Total Annual \$\$</b>
		<b>Annual Power \$\$</b>	<b>Depreciation &amp; Maintenance</b>
<b>City Owned LED's</b>		\$1,965.34	\$8,872.36
<b>Power Savings \$\$</b>		\$5,300.54	
<b>Power Savings %</b>		72.95%	
<b>Total Savings (Power &amp; Lease \$\$)</b>			\$61,398.22
		<b>Total Project Costs</b>	
		(Bid Spring/Summer 2016)	\$220,157.10
		(Installed September 2016)	
		<b>ROI (Years)</b>	3.59

# Suggestions for Working Together

- The cost of professional services may be a higher percentage for smaller communities due to the need for the same level of public input, staff meetings and public meetings
- Consider working with other communities and holding joint meetings to lower costs
- If going out to bid, ask prospective providers for guidance on how to save money by better utilizing their time
- Bottom line – find qualified assistance.

# Resources

- Nathan Poore: [npoore@falmouthme.org](mailto:npoore@falmouthme.org)
- Tex Haeuser: [CHAEUSER@southportland.org](mailto:CHAEUSER@southportland.org)
- Larry Pritchett: [larrypritchett.council@gmail.com](mailto:larrypritchett.council@gmail.com)
- This slideshow and other materials available at:  
<http://www.falmouthme.org/finance/streetlight-conversion-process>

# Questions