LED Street Lights: The Path Forward to Unprecedented Energy & Cost Savings

November 30, 2016
Scarsdale Village Hall
Thanks to Our Co-Sponsor:

And to:

Village of Scarsdale
The Greenburgh Nature Center
Mid-Hudson Street Light Consortium

COURTNEY STRONG

CITIZENS FOR LOCAL POWER

LIGHT SMART NIGHT

abundant efficiency

NEW YORK STATE OF OPPORTUNITY

NYSERDA

Supported

Mid-Hudson Streetlight CONSORTIUM
Agenda

• **MHSC Introduction and Context**, Nina Orville, Abundant Efficiency

• **Successful Municipal Strategies: Optimizing Your Savings and Project Success**, George Woodbury, LightSmart Consulting

• **NYPA Streetlight Conversion Services**, Jesse Scott, NYPA

• **Clean Energy Communities Program**, Pat Courtney-Strong

• **Q&A**: George Woodbury, Jen Metzger and Team

• **Streetlight Tour**: Ron Schulhoff with George Woodbury
MHSC Basics

• Two-year initiative (2016-2018), funded by NYSERDA and partners, to support street light conversion throughout Mid-Hudson.

• Support for municipalities through: streetlight conversion guide, targeted support for municipalities, aggregated procurement support, education and outreach.

• Benefits: Access to expert advice and decision support (streetlight design, financing options, technical and maintenance considerations), financial savings (joint procurement, specification guidance).

• Cost to join: None.
Mid-Hudson Streetlight Conversion

- Municipalities in ConEd territory own their streetlights.
- Others must purchase *existing* lights from utility for expedited LED conversion.
- Presentation will focus on procurement of LED lights.
Westchester Streetlight Conversion

20+ municipalities in ConEd territory have converted since 2012.

Early adopters spurred/facilitated other conversions.

Contracting includes: piggybacking off New Rochelle/Elmsford contract, NYPA, Honeywell, or US Communities contract. Most doing complete conversion in single project.

Expect similar growth in LED adoption throughout MH region now that municipal streetlight ownership is possible and utilities also beginning to install.
Benefits of LED Technology

- Reduced Energy Consumption 60%-70%
- Improved Lighting and Safety
- Improved Reliability
  - HID System average 18% service rate/year
  - LED System average .5% to .8% service rate/year
- Future Applications-Control Technology
Successful Municipal Strategies - The Process

Acquisition of Existing Lights (If Required)
Preliminary Analysis
Detailed Design
Final Project Costs and Savings
Financing
Project Approaches / Form of Contract
Detailed Analysis-Cost Estimate

One for One or Design Approach-Ulster Example
Multiple Wattage Streets-IESNA
Detailed Audit
  Billing Errors
  Asset Management
  Project Management
Design
  Road Classification
  Pedestrian Conflict
  Special Considerations-Schools, parks, crime, accident rates
Setting Standards vs. Guidelines
LED Product Selection

Flexibility-”Q” Dialer
Control Ready-5-pin vs. 7 pin
Color Temperature
Wattage
Distribution Pattern
Utility Tariffs
Final Cost and Savings Estimates
Financing

How Much to Finance
  Timing in FY
  Other needs

Bonding
  Legal/Financial Advisor Fees
  Paper/Printing Costs
  Underwriter Fees/Commissions
  Accounting/Bank Fees

Bond Anticipation Notes

Lease Purchase
  Operating Expense - Subject to Annual Appropriation
    No Fees
    No Impact On Bond Capacity or Debt Limit

Cash Reserves

Appropriation
Financing Considerations

Assess options for best fit. Considerations include:

- Cost of financing
- Municipal borrowing capacity
- Project management capacity
- Benefits vs. higher cost of performance guarantee

Collaborative procurement efforts reduce project costs (and the amount that must be financed to effect conversion).
Form of Contract

Turn Key
Multiple Contract-Consultant/Clerk of the Works
Phased Approach
Collaboration
US Communities
NYPA
Form of Contract: Turn Key

Single company to Manage and Guarantee-General Contractor
Shared Savings or Fixed Costs
Standard Mark-up-Open Book
Menu Approach
Important Contractor/Community Risks are Well Defined
Warranty and Performance Bonds
Typically most expensive
Lowest Risk with right firm and well defined contract
Form of Contract: ‘Multiple’ Contracts

Required Tasks

Design
Financial Analysis
Financing
Bid/Contract Documents
Evaluation of Proposals - due diligence
Project Management
Coordination with Utility
Closing out Project
Contracts

Installation Service
   Experience
   Qualifications
Fixed Unit Pricing
Menu of Services
Time and Materials for Post Conversion
Equipment
   Formal Bid vs. State Contract
Phased Approach

Reinvest Savings - Levelize Budget
High Wattage Streets First
How to Structure Contracts-Mixed System
  CPI
  Technology Change
Collaboration

Simplified procurement
Reduced Staff time
Buying Power
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Furnish and Turnkey / BANs: Dobbs Ferry

Two Phases:

- 2011 – First significant LED installation in Westchester. Cost of $100K + for 300 LED lights financed via Bond Anticipation Note. Installation by DPW. 3-year payback was shorter than term of financing.

- 2016 - $167K turnkey project financed with capital funds ($85K balance from first LED conversion) and bond anticipation note. 400 lights furnished and installed by vendor.
EPC / Lease: City of Yonkers

- 12,000 lights – first in region to convert all lights.
- RFP issued in 2012 for energy performance contract (audit, procurement, installation).
- $8.7 million project cost repaid through 10-year lease from energy savings.
- Net savings almost $1 million/year.
- Municipal GHG reduced by 10%
EPC / Bonding:
Town of Mamaroneck

- 20-year $7.35 million EPC for portfolio of projects (boiler upgrades, ice rink improvements, building envelope measures and a generator upgrade, in addition to streetlights and other measures).*

- Savings generated through the streetlight replacements – largest source of combined energy and operational savings - help fund other project components.

- Town financed the EPC through bonding, rather than securing funding through the ESCO.

* Town of Mamaroneck Honeywell Agreement.
Cooperative Procurement / Self-Funding: Village of Rye Brook

- Village contracted through US Communities program, piggybacking on contract issued by LA County. Had used program for other procurement previously.
- Turnkey project with $250K cost for 640 lights - self-financed.
- Energy savings of 59% result in $50K savings and simple payback just under 5 years.
- Chose 3000 kelvin lights and included 56 lights with “smart” controls as pilot. Installation complete in December.
The New York Power Authority
Who We Are

• Country’s largest state public power organization
• Generate some of the cheapest renewable electricity in North America
• Maintain 16 generating facilities and over 1,400 circuit-miles of transmission lines
• National leader in promoting energy efficiency and the use of renewable and clean energy technologies
• Diverse customer base includes large and small businesses, not-for-profit organizations, community-owned electric systems and rural electric cooperatives and government entities
• Our low-cost power helps support hundreds of thousands of jobs statewide while reducing public-sector costs
NYPAPA’s Authority

Public Authority’s Law (PAL) 1005 (17) authorizes NYPAPA to finance and design, develop, construct, implement, provide and administer energy-related projects, programs and services for:

- Any public entity
- Any not-for-profit institute of higher education within NYS
- Any public or nonpublic elementary or secondary school
- Any recipient of NYPAPA’s economic development power programs
- Any municipal distribution agency power
NYPA Energy Services Profile

• Delivery of Energy Services to New York State public entities and municipalities for over 25 years
• Over $2 billion has been invested in over 5,200 facilities state-wide
• NYPA services can be provided in any combination to meet specific customer needs:
  • Site identification, screening and auditing
  • Design
  • Construction Management
  • Commissioning
  • Financing
  • Incentive Acquisition Assistance
  • Advisory Services
  • Retrocommissioning
Measures

- Lighting upgrades and lighting controls – indoor and outdoor
- Heating, ventilation & air conditioning (HVAC) improvements: central boiler / chiller plant replacement
- High efficiency motors, motor controls, variable speed drives
- Energy management / building management systems (EMS/BMS)
- Distributed generation, combined heat & power (CHP), fuel cells, battery storage
- Renewable energy: solar panels, wind power and geothermal
- Compressed air system upgrades
Financing

Loan models offered:
- General Obligation Loan
- Municipal Lease Loan

No upfront capital needed: For qualified participants, NYPA will finance all up-front development and project milestone costs with a competitive-interest rate loan.

Rates: Interest rate determined by type of loan and fiscal stress score.

Flexible term: Term of loan structured based on payback of project for positive cash flow.

On-bill financing: For NYPA power customers only
New York Power Authority

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NYPA Example: Town of Clarkstown

After 5+ years, negotiated purchase of 3,880 streetlights from O&R for $670,000. Fall 2016, Town entered into agreement with NYPA for LED conversion. Total savings from town-ownership and LED conversion expected to be $900K+ annually.
NYSERDA Clean Energy Communities

Local governments in New York State can use the Clean Energy Communities program to:

• Implement clean energy actions
• Save energy costs
• Create jobs
• Improve the environment
NYSERDA Clean Energy Communities

Provides

• Tools
• Resources
• Technical assistance
• Recognizes and rewards leadership for the completion of clean energy projects.
10 High Impact Actions

Benchmarking
Unified Solar Permit (municipal)
Energy Code Training
Clean Fleets
Solarize
Climate Smart Communities Certification
Clean Energy Equipment Upgrades
Community Choice Aggregation
Energize NY Finance
LED Street Lights
Street Light Assistance Across NYS

NYSERDA **Clean Energy** Communities: LED Street Lights as ‘High Impact Action’

= Financial Incentives for Municipalities
Initial steps / CEC

Demonstrate completion of LED Street Lights by submitting documentation:

• Minimum of 50% of municipal and utility-owned cobra-head-style street lights converted to LED within the geographic jurisdiction.

• Include # street lights converted + proportion of converted cobra-head lights to total cobra-head street lights

• Minimum of 10 fixtures must be converted to qualify.
# NYSERDA Clean Energy Communities Coordinators

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How to get started

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