

# LED Pilot Projects A Utility Perspective

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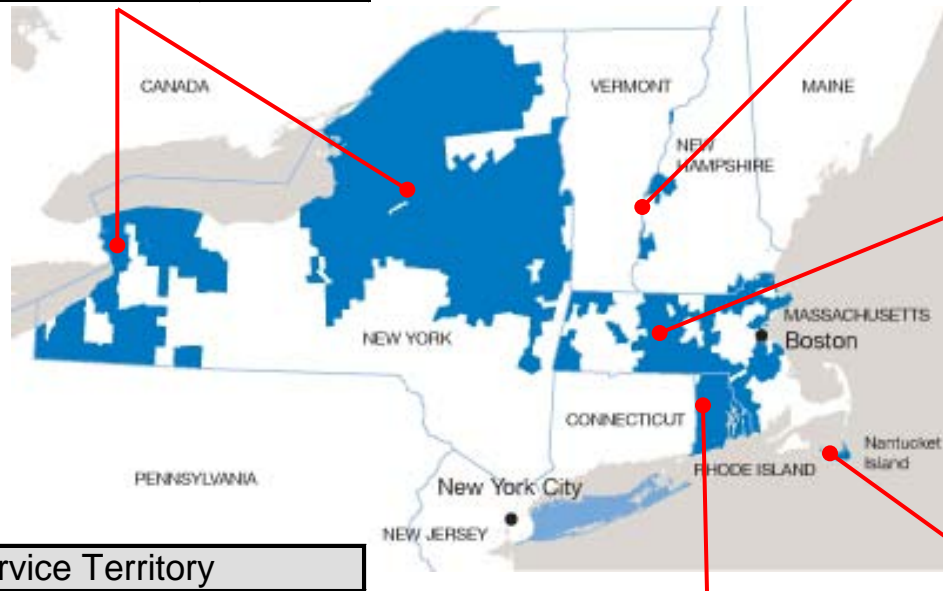
DOE Municipal Solid-State Street Lighting Consortium  
Market Introduction Workshop – July 20, 2010

- **Utility Overview**
- **Utility Perspective & Issues**
- **Pilot Projects**
  - The Challenges
  - The Foundation
  - The Agreement
  - The Plan
  - Implementation
  - Conclusion
- **Commentary**

# Outdoor Lighting Statistics

Niagara Mohawk	
Service Classifications	6
Revenue (\$M)	~\$60.40
Accounts	~12,714
Locations	~268,339
Components	~789,340
Net Book Value (\$M)	~\$82.41

Granite State	
Service Classifications	1
Revenue (\$M)	~\$0.92
Accounts	~742
Locations	~6,450
Components	~20,007
Net Book Value (\$M)	~\$1.78



Massachusetts Electric	
Service Classifications	7
Revenue (\$M)	~\$28.84
Accounts	~13,658
Locations	~214,959
Components	~652,985
Net Book Value (\$M)	~\$47.61

Nantucket Electric	
Service Classifications	4
Revenue (\$M)	~\$0.06
Accounts	~17
Locations	~863
Components	~2,548
Net Book Value (\$M)	~\$0.24

Narragansett Electric	
Service Classifications	2
Revenue (\$M)	~\$10.09
Accounts	~3,287
Locations	~105,116
Components	~316,641
Net Book Value (\$M)	~\$20.93

US Service Territory	
Service Classifications	
Revenue (\$M)	~\$100
Accounts	30,420
Locations	~600,000
Components	~1.8M
Net Book Value (\$M)	~\$153



# A Utility Perspective on SSL

<b>SSL Benefits</b>	<b>SSL Concerns</b>
<ul style="list-style-type: none"><li>▪ <b>Energy Efficient - (Supports efficiency metrics and carbon reduction targets)</b></li><li>▪ <b>Environmentally friendly – no hazardous waste, recyclable components</b></li><li>▪ <b>Operational Life –reduced maintenance, parts stock and customer complaints</b></li></ul>	<ul style="list-style-type: none"><li>▪ <b>Component product quality – LED’s, Drivers</b></li><li>▪ <b>Lack of standardization – performance variability, analytical life</b></li><li>▪ <b>Manufacturer integrity – engineering, fabrication and photometric quality, warranty</b></li></ul>
<h2 style="text-align: center;">Industry Changes</h2>	
<ul style="list-style-type: none"><li>▪ <b>Legislative Initiatives – Mandated equipment performance changes and operational criteria</b></li><li>▪ <b>Societal Issues – Sky glow and light trespass reduction, vehicle/pedestrian safety and property security</b></li></ul>	

- **Utility business models, tariffs and rates –**
  - Long term perspective
  - Extensive and lengthy regulatory process
  - Based on data, experienced performance and costs
  
- **Product variability –**
  - Operating performance, quality and cost cause difficulty in developing rates based on longevity with no experience.
  - Lack of industry standardization.
  
- **Inconsistent Energy Rate Development –**
  - Industry standard unmetered model (fixed criteria) vs. Variable consumption/operating time/dimming/overdrive condition model (Potential solution is SMART controls)

- **Utility Objective –**

- Participate in LED Pilots through collaboration with municipal customers and other interested constituencies to obtain the data and experience to support a defensible business model, tariff structure and rate design. (Paradigm shift?)

# The Challenges

<p><b>Financing –</b></p> <ul style="list-style-type: none"><li>▪ Federal Stimulus Funds,</li><li>▪ Energy Efficiency Programs</li></ul>	<p><b>Vs.</b></p>	<p><b>Project Objectives –</b></p> <ul style="list-style-type: none"><li>▪ Lighting Design,</li><li>▪ Cost Savings,</li><li>▪ Environmental</li></ul>
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## **Objective Situation Evaluation –**

- **Finance Application –**
  - Realistic Goals & Objectives or Marketing Rhetoric
- **Customer Knowledge and Awareness –**
  - Lighting Knowledge,
  - Project Scope Diversity & Costs,
  - Ownership and Maintenance Responsibilities,
  - Utility Tariff Compliance
- **Schedule –**
  - Funding Deadlines vs. Realistic Implementation Plan

## Customer Education –

### ▪ Outdoor Lighting Technologies –

- HID vs. LED, Illumination basics, measurements, costs, performance

### ▪ Utility Tariff Options –

- Applicability or Special Agreement

### ▪ Objectives –

- Definition and Understanding of Realistic Goals and Objectives

### ▪ Project Concept Evaluation –

- Site selection, quantity and type of lighting changes, assessment plan, term, cost and function responsibilities, billing, electrical sourcing, energy measurements.

## Memorandum of Understanding

- To provide a high level framework, establishing mutual intent and guidelines to support the various tasks, functions and objectives associated with the project, and promote the recognition of roles and responsibilities of all involved parties.

## ▪ Key MOU Elements:

- Project intent, scope and clear objectives
- Define funding sources, compliance criteria, and schedule
- Identification and functional description of all active parties
- Relationship agreement of the parties to mutually conduct the pilot; partnership, cooperative, alliance.
- Identification and description of geographic/demographic locations, specific light locations and existing and proposed equipment.
- Roles and responsibilities of each party regarding existing and planned lighting: installation, removal, maintenance, operation, monitoring, billing, planned metering/control applications and measurements.
- Project term period and post pilot conditions
- Rights and ownership of pilot information
- Responsibilities and approval rights of all forms of communication and media coverage
- Liability and indemnification

## Pilot Project Scope Document

- To provide a functional structure with clear roles and responsibilities of all participants to achieve the designated objectives, defined component infrastructure and location details, requirements and specifications for planning, engineering, installation, operation, maintenance and removal, established criteria for materials and procurement, and duties to perform unbiased measurement, testing, analysis and documentation
- **Project Description**
- **Goals and Objectives**
- **Responsible Parties**
- **Project Location**
- **Existing Conditions**
- **Proposed Conditions**
- **Material Criteria, Specifications, Validation and Warranty**
- **Manufacturer/Vendor Requirements**
- **Procurement/Stocking/Staging**

- **Implementation Plan**
  - Installation
  - Operation
  - Maintenance
  - Removal
  - Restoration
- **Measurement & Testing Plan**
  - Photometric
  - Cognitive Perception (Human Conditions)
  - Energy Consumption
    - Metered, Adaptive Controls, Un-metered
  - Testing Schedule
    - Baseline, Initial, Progression, Final
- **Results - Compilation, Analysis and Comparative Assessment**
- **Documentation and Communication Plan**
  - Pre-project, Project Application, Post-project
  - Reporting and Presentation

## ▪ Plan Implementation –

- Dedicated and committed resources focused on the objectives will achieve a better result.

## ▪ Conclusion –

- The pilot must be a collaboration of knowledgeable parties, equally supporting the project, and having the appropriate commitment to achieve the established objectives.

- **Consortium participation:**
  - Involvement in the strategic development of this changing industry
  - Share and learn from successes and experiences of others
  - Influence on legislative and regulatory policies
  
- **LED adoption status:**
  - Continued investigation, research
  - Select pilot applications
  
- **Implementation Issues:**
  - Variable Consumption Energy Measurement (Rate/Tariff)
  - Industry standardization
  - Stabilization of technology / costs