



LEDS: SAVINGS OPPORTUNITIES





LED SCALE UP

Los Angeles: Replaced 4,500 miles of outdated technology took four years and cost \$57 million, but now **saves \$9 million a year** in energy costs and 60,000 metric tons of CO₂ emissions. Estimated up to **\$3m maintenance savings**.

<u>Link</u>

THE CLIMATE GROUP CALLS FOR:

ALL PUBLIC LIGHTING AROUND THE WORLD TO BE LED* BY 2025

*or as energy efficient

LED CONSULTATION COVERAGE









Outdoor Lighting Accelerator: Challenges & Opportunities

NARUC Energy, Resources and Environment Committee February 13, 2017 Crystal McDonald



Outdoor Lighting Accelerator (OLA) Profile

- Timeframe: May 2014 December 2016
- Purpose:
 - To provide state and local governments with tools and framework to enable broad deployment of energy efficient street and outdoor lighting systems upgrades.
 - Collaborate with municipalities to demonstrate best practices for the adoption of high-efficiency outdoor lighting.
 - Improve system-wide replacement processes for outdoor lighting.
- Goal: To gain commitments to replace at least 1.5 million lights.





OLA Partners

Accelerator sunset December 2016. Currently have <u>25</u> signed partners:

• 16 cities

- Albany, NY

Chicago, IL

- Detroit, MI

Portland, ME

Takoma Park, MD

- West Palm Beach, FL

Racine, WI

- Flint. MI

- Dearborn, MI

- 3 states
 - Rhode Island
 - Tennessee
 - Washington
- 6 regional energy networks
 - California Street Light Association
 - Delaware Valley Regional Planning Council (Philadelphia metro)
 - Garfield Clean Energy Collaborative (Colorado)
 - Mid-America Regional Council (Kansas City metro);
 - Southeast Michigan Regional Energy Office (Detroit metro);
 - Southern California Regional **Energy Network (Los Angeles** metro)
- Goal **1.5M** - Anchorage, AK 1.3M - Deerfield Beach, FL of Lights - Huntington Beach, CA - Little Rock, AR Los Angeles, CA # - San Diego, CA - St. Petersburg, FL

Better ildinas



Outdoor Lighting Accelerator (OLA) Toolkit

- Outdoor Lighting Decision Tree Tool
- Outdoor Lighting Challenges and Solutions Pathways Report
- □ Issue Briefs:
 - Regulatory Issues and Approaches to Municipal LED Street Lighting Conversions
 - Adopting Energy-efficient Technologies for Street Lighting: Overcoming Challenges for Utilities
- Comparison Tool for determining the business case for Municipally-owned vs. Utility-owned Street Lights (under development)
- Model Specification for LED Roadway Luminaires (updated)
- Webinar: Lessons Learned from Outdoor Connected Lighting System Installations
- Financial Analysis Quick Start Guide and Guidance for Using the Street and Parking Facility Lighting Retrofit Financial Analysis Tool
- Related REEO products: NEEP's LED Street Lighting Assessment and Strategies for the Northeast and Mid-Atlantic and MEEA's Regional Street and Outdoor Lighting Resources





Better Buildings Initiatives:

https://betterbuildingssolutioncenter.energy.gov/

State and Local Government Engagement:

https://energy.gov/eere/slsc/state-and-local-solution-center

CONTACT ME

Crystal McDonald, Policy Advisor

202.287.1799 • Crystal.McDonald@ee.doe.gov











Street Lighting Technology Implementation

Professor Robert Kramer, Ph.D., CEM, CDSM, CEA Director, Energy Efficiency and Reliability Center NiSource Charitable Foundation Professor of Energy and the Environment Professor of Physics Purdue University Northwest 219-989-2147 kramerro@pnw.edu

Use an iterative implementation process that considers the specific needs of a location

• A cooperative involvement of the parties where everyone wins dramatically increases value.

- Be certain that you have an approach that maximizes the tangible life cycle benefits of the effort.
 - There are reported successes and failures
 - Often the negative outcomes resulted from lack of a comprehensive design as well as use of equipment that was not designed for the particular application or was technically behind the current state of the art.
 - Reliability and quality are critical aspects that can not be neglected.
 - Installation must conform to standards and good practice.





















The cost of luminaires has significantly decreased and output has increased.

- Energy savings of 50%+
- Light output is trending to 130 Lumens /watt
- Cost of an LED luminaire to replace a 100W HPS luminaire is trending toward \$150 or less. Cost for other equivalent wattages also decreasing.

• 100,000 hour life

Perception of light quality

- The quality of the light as perceived by the public is essential in determining alternatives.
- Dark Sky issues
- Perception of glare can vary from person to person.
- White light improves perception of objects and ability to sense motion (human eye is the light sensor) when compared to monochromatic yellow light from HPS.
 - Improves appearance, safety, and economic development

Opportunity to introduce new luminaires that have much higher efficiency and improved light quality as an alternative to replacing aging luminaires with HPS again.

• If sequenced in a consistent manner, a graded program over time will introduce upgrades at an initial cost slightly higher than HPS but provides significant savings in energy and maintenance as well as overall improved value when all Life Cycle aspects are considered.



