



# Outdoor Lighting Accelerator: Challenges & Opportunities

Crystal McDonald, Policy Advisor  
Office of Energy Efficiency and  
Renewable Energy  
Partnerships & Technical Assistance Team

# Overview

- Introduction to the Better Buildings Outdoor Lighting Accelerator (OLA)
  - OLA Profile
  - OLA Partners
  - OLA Successes
- Key Focus Areas
  - Approach to Barrier Resolution: Financial
  - Approach to Barrier Resolution: Regulatory
  - Approach to Barrier Resolution: Technical
- OLA Toolkit
  - Tools and Resources
  - Enabling Legislation
  - Partner Outcomes
- Ongoing Activities
- Next Steps and Opportunities



Developing Innovative,  
Replicable Solutions  
with Market Leaders

- ▶ Better Buildings Challenge
- ▶ Better Buildings Alliance
- ▶ Better Buildings, Better Plants
- ▶ Better Buildings Accelerators
- ▶ Better Buildings Residential
- ▶ Superior Energy Performance

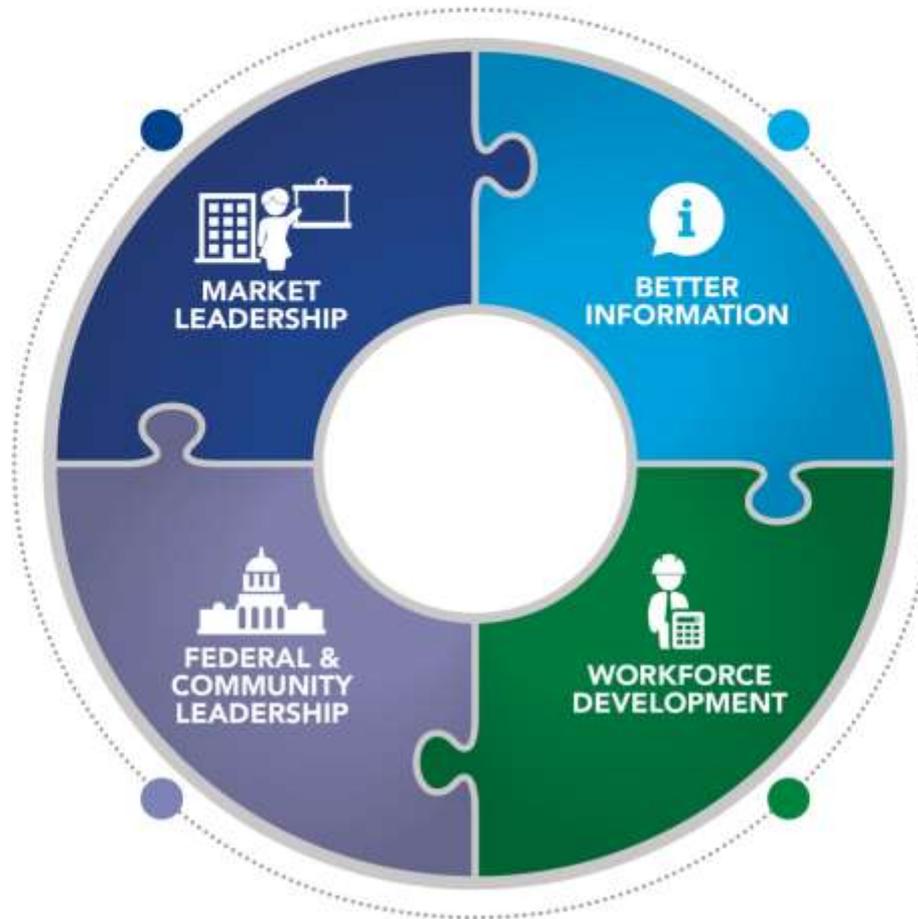


State, Local, and  
Federal Governments  
Leading by Example

- ▶ Better Communities Alliance
- ▶ Performance Contracting

# Better Buildings®

U.S. DEPARTMENT OF ENERGY



Making Energy  
Efficiency Investment  
Easier

- ▶ Better Buildings Solution Center
- ▶ Financing Navigator
- ▶ Improved Data Consistency and Access
- ▶ Tools to Assess the Efficiency of Buildings/Homes
- ▶ Tools for Energy Management



Expanding  
the Workforce

- ▶ Better Buildings Workforce Guidelines
- ▶ Industrial Energy Management Workforce

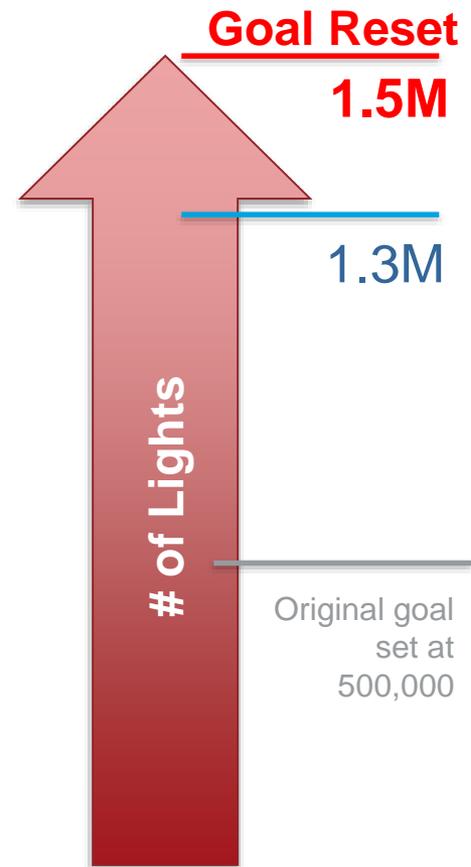
# Outdoor Lighting Accelerator (OLA) Profile

- 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: Aligned with the Presidential Challenge for Advance Outdoor Lighting to gain commitments to replace at least 1.5 million lights.
- More information available at [Better Buildings Accelerator: Outdoor Lighting](#)

# OLA Partners

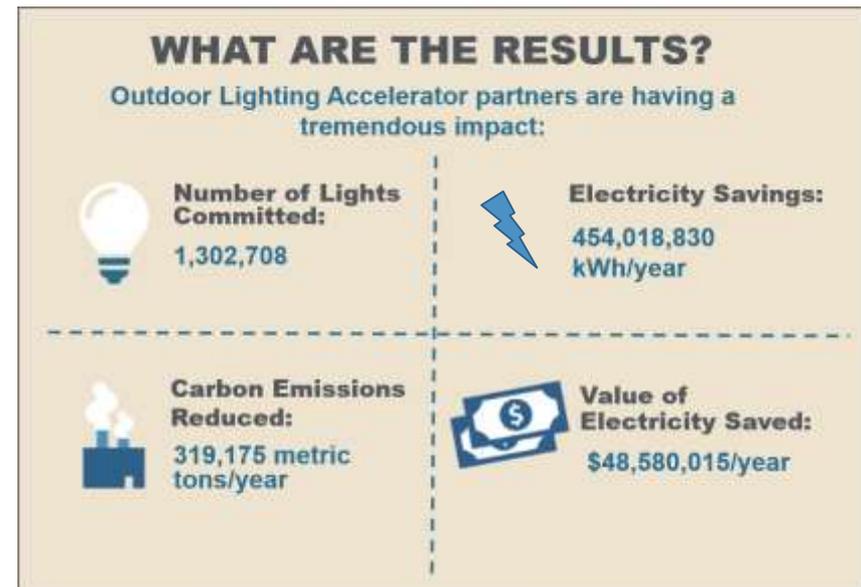
Accelerator sunset December 2016. Currently have 25 signed partners:

- 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)
- 16 cities
  - Albany, NY
  - Anchorage, AK
  - Chicago, IL
  - Dearborn, MI
  - Deerfield Beach, FL
  - Detroit, MI
  - Flint, MI
  - Huntington Beach, CA
  - Little Rock, AR
  - Los Angeles, CA
  - Portland, ME
  - Racine, WI
  - San Diego, CA
  - St. Petersburg, FL
  - Takoma Park, MD
  - West Palm Beach, FL



# OLA Successes

- Garnered a commitment of 1.3 million lights toward the goal of 1.5 million from 25 partners. Inspired other municipalities to action in response to success of OLA partners.
- Made the strategic case for LED Street Lighting due to partners sharing data and lessons learned.
- Developed user friendly resources to assess energy and cost savings opportunities.
- Updated the equipment specifications to address mandatory versus optional criteria for equipment procurement strategies.
- Opened the conversation with utility commissions to understand conditions slowing the removal of tariff-related barriers to scaling up projects.



# Key Focus Areas

## Financial

- Identifying funding sources
- Understanding appropriateness of available mechanisms- QECBs, RLFs, ESPCs, ratepayer programs, etc.
- Supportive policy environment (tax breaks, incentives, subsidies, etc.)

## Regulatory

- Utility rate structures
- Ownership and maintenance models
- Non-metered energy billing
- Outdated public utility regulations

## Technical

- Access to proven technology information
- Pilot program results
- Technology selection for different applications
- Lack of information about network control systems

# Approach to Barrier Resolution: Financial

## Obstacle

- **Quick Assessment of Opportunities**
- **Procurement strategy**
- **Technology price ranges**

## OLA Solution

- Quick Start Guide for the Street and Parking Facility Lighting Retrofit Financial Analysis Tool
- Assist with model development-- Delaware Valley Regional Streetlight Replacement
- Compile pricing data shared by partners (declining cost curve)

# Approach to Barrier Resolution: Regulatory

Obstacle	OLA Solution
<ul style="list-style-type: none"><li>• <b>Understanding LED Tariff Offerings and Ratemaking Process</b></li><li>• <b>Buyback options and total cost consideration, undepreciated value of equipment, stranded assets (also applicable to Financial barriers)</b></li></ul>	<ul style="list-style-type: none"><li>• Brief: <i>Regulatory Barriers and Solution Pathways for Municipal LED Street Lighting Conversions</i></li><li>• Brief: <i>Adopting Energy-efficient Technologies for Street Lighting: Overcoming Challenges for Utilities</i></li><li>• LBNL Comparison Tool for Municipally-owned vs. Utility-owned Street Lights (under development)</li></ul>

# Approach to Barrier Resolution: Technical

Obstacle	OLA Solution
<ul style="list-style-type: none"><li>• <b>Technology standardization</b></li><li>• <b>How to include controls for adaptive lighting, dimming, smart cities,</b></li><li>• <b>Health and environmental concerns, blue light issues</b></li></ul>	<ul style="list-style-type: none"><li>• Description of specifications, codes and standards for recommended practices</li><li>• Webinar: <b><i>Lessons Learned From Outdoor Connected Lighting System Installations</i></b></li><li>• MSSLC - Blue Light Guidance</li><li>• Field test LED applications and sky glow implications (which may last beyond the OLA period but results will be posted)</li></ul>

# OLA Toolkit

[Home](#)[Partner Results](#)[Resources](#)[Better Buildings Outdoor Lighting Accelerator](#)

[Home](#) » [Outdoor Lighting Accelerator Home](#)

## Outdoor Lighting Accelerator Home



In 2014 the Department of Energy established the Better Buildings Outdoor Lighting Accelerator (OLA) as a means of providing technical assistance to municipalities and other public agencies, in order to overcome the particular set of barriers each faced in upgrading their street lights to modern, high-performance systems. Partners included states, cities, and regional energy networks that have upgraded street lighting systems or at minimum assessed the feasibility of a conversion project.

The goal of the OLA was to work collaboratively with partners and other stakeholders to mitigate or remove technical, financial, and regulatory or utility tariff barriers to broad scale deployment of the preferred high performance technology using light emitting diode (LED) street lighting systems and controls. Numerous municipalities have already converted and their results are bearing out the technology's claimed advantages. However, while many others are similarly interested, a variety of barriers impede their moving forward. A compendium of tools and resources to help municipalities with street lighting conversion planning and implementation can be found in the [OLA Toolkit](#).

The OLA concluded in December 2016, and these [partner profiles](#) briefly describe conversion experience and reports on the progress of these efforts to date. A summary of the [OLA Accomplishments](#) describe what partners were able to achieve during the OLA period and a more detailed assessment of barriers have been captured in [The Outdoor Lighting Accelerator: Lighting the Way Forward](#).

# OLA Toolkit Elements

Home Partner Results **Resources** Better Buildings Outdoor Lighting Accelerator

[Home](#) » [Outdoor](#)

**Outdoor**

The Partner S... cumulative pro... municipal effo... Experiences c... has proven he... to provide fur... strategies. Thi... jurisdiction.

**Resources**

- Outdoor Lighting Resources
- Decision Tree Tool
- Financial Resources
- Regulatory Resources
- Technical Resources

**Reports**

- The Outdoor Lighting Accelerator: Lighting the Way Forward
- Outdoor Lighting Challenges and Solution Pathways
- LED Street Lighting Assessment and Strategies for the Northeast and Mid-Atlantic
- Restoring Detroit's Street Lighting System

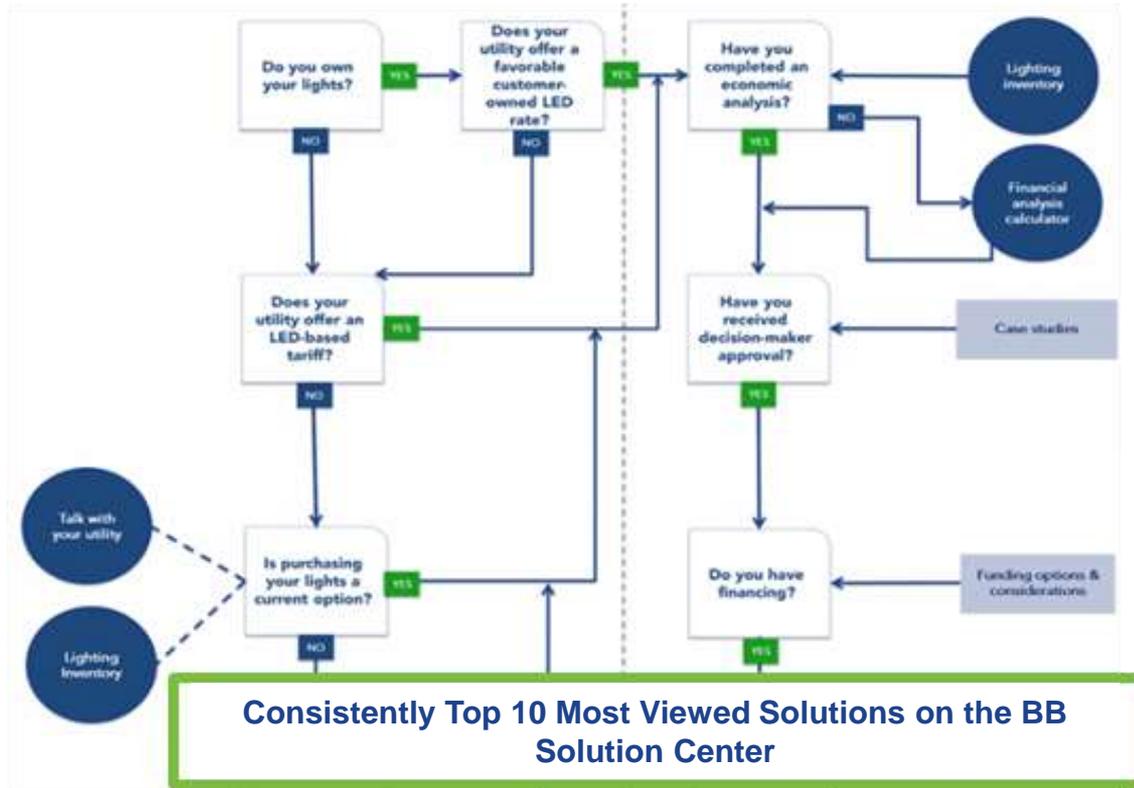
and how the identified partner addressed the scenario. The... tion of the resulting installation can add up to several years of... perspectives are present among the various parties involved... s. The extensive information sharing supported by the OLA effort... barriers similar to those they are facing. We have an opportunity... hlights of key municipal government actions and procurement... entation strategies by asset ownership, financing, and size of

## This is How They Did It: Pathways to Energy Savings with Street Lights

Characteristics of your street lighting project environment	Municipally-owned, municipally-maintained	Utility-owned, utility-maintained
Evaluating economies of scale, project scope, and technical preferences	<a href="#">State of Tennessee, Garfield Clean Energy Collaborative (CO)</a>	<a href="#">Southern California Regional Energy Network (SoCalREN)</a>
Justifying "smart city" street light elements such as controls, adaptive lighting, and dimming	<a href="#">Los Angeles, CA</a>	<a href="#">San Diego, CA</a>
Managing multiple street light owners using LED controls		<a href="#">Anchorage, AK</a>

# Outdoor Lighting Decision Tree Tool

## Decision Tree Tool



[The Outdoor Lighting Decision Tree Tool](#) is an interactive, visual representation of the decisions needed when upgrading a public, outdoor lighting system.

# Enabling Legislation

Given the energy savings associated with more efficient forms of outdoor lighting, some state legislatures have passed enabling legislation to:

- facilitate the ability of municipalities to pursue LED retrofits,
- mandate that a utility offer an LED option to municipalities in their territories,
- enable municipalities to purchase their lights from the utility if desired, and
- offer a cost-effective rate tariff for non-metered lights

# Street Lights Legislation

- The State of Massachusetts passed [legislation](#) in 1997 that required municipalities to have the right to purchase and own their street lights. This legislation included a buy-back calculation (price of new fixture minus depreciation). As a result more than 75 municipalities purchased their street lights and more than half of those have converted to LEDs, resulting in nearly 28,000 MWh of savings over a period of three years.
- [State of North Carolina: North Carolina Utility Commission](#) — 2014 mandate, supported by the North Carolina Municipal League, that Duke Energy Carolinas provide an LED rate for replacement of HPS and MH lighting. The mandate further stipulates that the energy consumption and cost data used in developing the LED offering is to be made publicly available. A companion proposal to require that the utility offer a customer ownership option was denied.
- The State of Rhode Island enacted the [Municipal Streetlights Investment Act](#) in 2013 establishing formal procedures for municipalities to purchase their utility-owned outdoor lighting systems and directing electric distribution companies to file a tariff incorporating rates for customer-owned dimmable lighting. State of Rhode Island General Assembly News: '[RI first in nation with utility tariff so municipalities can own streetlights](#)' — A state media brief announcing that Rhode Island will be the first in the nation with a utility tariff that offers street lighting controls as an option to all municipal customers.

# Partner Outcomes

## This is How They Did It: Pathways to Energy Savings with Street Lights

Characteristics of your street lighting project environment	Municipally-owned, municipally-maintained	Utility-owned, utility-maintained
Evaluating economies of scale, project scope, and technical preferences	<a href="#">State of Tennessee, Garfield Clean Energy Collaborative (CO)</a>	<a href="#">Southern California Regional Energy Network (SoCalREN)</a>
Justifying "smart city" street light elements such as controls, adaptive lighting, and dimming	<a href="#">Los Angeles, CA</a>	<a href="#">San Diego, CA</a>
Managing multiple street light owners using LED controls		<a href="#">Anchorage, AK</a>
Financing street light upgrades	<a href="#">Mid-America Regional Council (MARC), KS*</a>	<a href="#">West Palm Beach, FL*</a>
Acquiring ownership of your street lights	<a href="#">Huntington Beach, CA*</a>	<a href="#">Portland, ME</a>
Assessing a utility master sales agreement		<a href="#">Takoma Park, MD</a>
Designing a regional bonding authority or joint purchasing program	<a href="#">Delaware Valley Regional Planning Council (DVRPC), PA</a>	<a href="#">Detroit, MI</a>

More details can be found in the [The Outdoor Lighting Accelerator: Lighting the Way Forward FINAL REPORT](#)

# Next Steps and Opportunities

- **Monitor** how cities and utilities are addressing localized risks such as infrastructure stabilization (pole and wiring repairs) and costs, stranded lighting assets, and city-wide lighting networks with mixed ownership, and connected lighting platforms for smart city technologies.
- **Communicate** the benefits of properly implemented high quality LED street lighting to overcome public perceptions based on sky glow and blue light critiques.
- **Collaborate** with partners and stakeholder groups to promote ideal LED tariff assumptions used in the rate making process (i.e., participating in forums, serve on panels, share our resources, etc.)

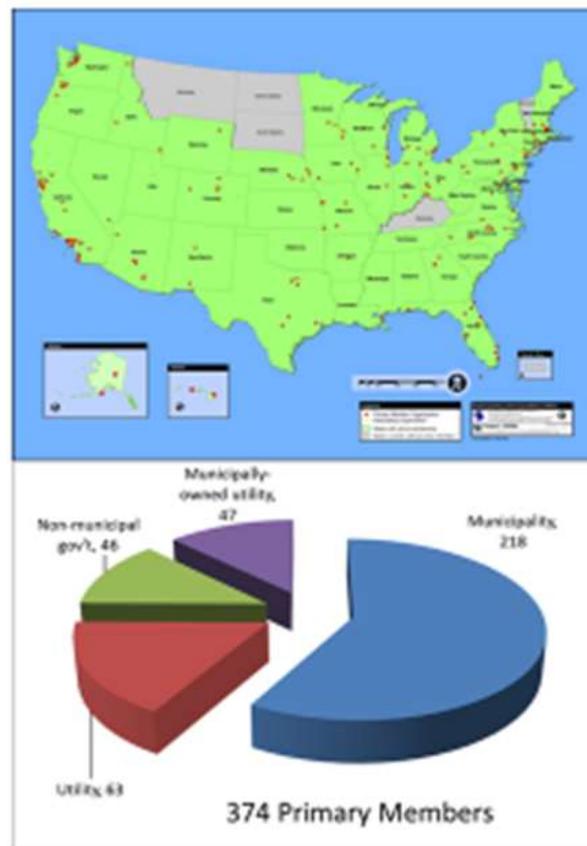
# Technical Resource

Municipal Solid-State  
STREET LIGHTING  
**CONSORTIUM**

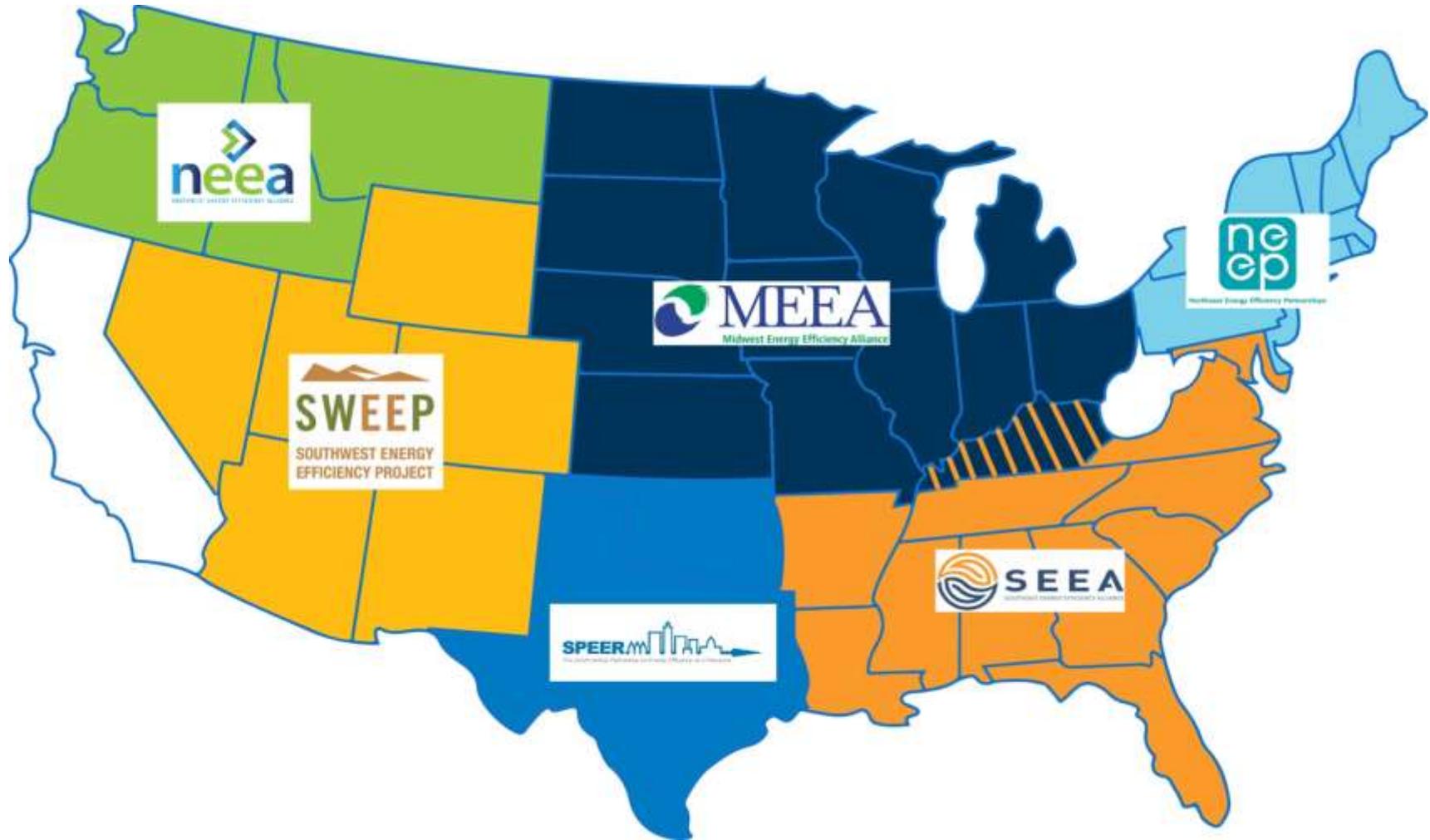
U.S. Department of Energy

## Who We Are

- The MSSLC:
  - 374 member orgs
  - User-focused
  - Purpose is sharing information and tools
  - Membership is free but not required for access to most materials



# Regional Resources – Regional Energy Efficiency Organizations (REEOs)



# For More Information

## **Better Buildings Outdoor Lighting Accelerator:**

<https://betterbuildingsolutioncenter.energy.gov/accelerators/outdoor-lighting>

## **Better Buildings Initiatives:**

<https://betterbuildingsolutioncenter.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](mailto:Crystal.McDonald@ee.doe.gov)