Better Buildings®
U.S. DEPARTMENT OF ENERGY

Fact Sheet

OUTDOOR LIGHTING ACCELERATOR

The **Better Buildings Initiative** is a national leadership initiative calling on state and local officials, corporate chief executive officers, university presidents, utilities, and other leaders to make substantial commitments to improve the energy efficiency of their buildings and plants, save money, and increase competitiveness. The cornerstones are a commitment to a 20% or more savings target across the organizations' portfolios and a commitment to share strategies that work, substantiated by energy data across the portfolios. The U.S. Department of Energy (DOE) is expanding this initiative to engage leaders in a set of **Better Buildings Accelerators** designed to demonstrate specific innovative approaches, which upon successful demonstration will accelerate investment in energy efficiency.

The **Outdoor Lighting Accelerator** will work with dozens of municipalities to accelerate the adoption and use of high efficiency outdoor lighting in the public sector, replacing over 1,500,000 lighting fixtures over the next two years starting in May 2014, while developing best practice approaches to municipal system-wide replacement for this period and the longer term. The Accelerator applies to all categories of outdoor lighting for which local governments or states pay the energy bills (i.e., street/roadway, parking facility, and parks and recreation lighting) and will focus on addressing issues that limit investment in high efficiency technologies such as financing and utility models.

Accelerator Goals

- Demonstrate best practice approaches of municipal system-wide replacement to high efficiency outdoor lighting and develop road-tested examples for other public sector organizations to use.
- Provide tools and guidance to address technical issues and help establish policy and utility framework to allow more local governments to take advantage of high efficiency outdoor lighting.
- Document and share best practices on overcoming technical, regulatory, and financial barriers to encourage broad deployment of high efficiency outdoor lighting.
- Develop recommendations for post-Accelerator next steps.

Why Use High Performance Lighting?

Outdoor lighting consumes a significant amount of energy, about 1.3 quadrillion Btu annually, costing about $10 billion per year. New state-of-the-art technologies offer energy savings of about 50% over conventional lighting technologies, as well as additional savings due to lower operations and maintenance, in large part from their two to five times longer lifetimes.[1,2] An increasing number of states and municipalities are interested in making the switch to high efficiency outdoor lighting, as demonstrated by the nearly two-fold increase of LED installed stock in outdoor applications from 2012 to 2013. The Outdoor Lighting Accelerator can support these exchanges with access to credible information on the savings, procurement specifications to ensure high quality products, viable financing models, models for adjusting energy costs with power providers and regulatory commissions, and models for addressing other state or local regulations limiting newer technologies.

Market barriers this Accelerator is designed to address include:

- **Awareness of savings:** Small-scale projects are often needed to demonstrate the savings before cities are able to move forward with a larger project.
- **Uncertainty in product savings and lifetime performance:** Despite the information available on successful lighting upgrades in cities across the country, solid state lighting (SSL) technologies are still considered "unproven" and new.
- **Existing ordinances and electric rates are not applicable:** Outdated utility board requirements or municipal ordinances can prohibit the use of LEDs because they were created before cost-effective SSL technologies were available to the market.
- **High first costs / access to financing:** High efficiency technologies can cost more upfront while offering attractive paybacks of five years or less. However, lack of available funds to purchase these products is a frequently cited barrier.

- **Rate structures:** Utility rate structures commonly do not allow municipalities to easily capture cost savings from efficiency projects because utility maintenance and tariff agreements require amendment and approval by the utility and Public Utilities Commission.

Benefits of Outdoor Lighting Accelerator

Potential Savings and Other Benefits

The potential energy savings and greenhouse gas (GHG) reductions from switching to high efficiency lighting in outdoor applications are significant. High efficiency lighting has limited market penetration in parking lots, parking garages, and streetlights, with recent estimates at 3% or less. For instance, based on the installed stock LED luminaire efficacies in 2012, the potential energy savings is about 650 TBtu annually, which equates to more than $6 billion and 40 million metric tons of CO_2 emissions per year.[3]

Table 1. Potential Energy Savings with LEDs based on 2012 Installed Stock*

Outdoor Lighting Application	Energy Consumption (Source TBtu / Site TWh)	U.S. Fixtures (Millions)	Penetration of LEDs (2012)	Potential Energy Savings (Source TBtu / Dollars)
Street Lighting	452 / 43.5	44	2.3%	238 / $ 2.3 Billion
Parking Lots	355 / 34.2	16	< 1%	226 / $ 2.1 Billion
Parking Structures	267 / 25.7	38	1%	144 / $ 1.4 Billion
Building Exterior	135 / 12	62	< 1%	54 / $ 0.5 Billion
Other	4 / 3	19	80%	--
Total	**1,213 / 118**	**179**	**< 1%**	**662 / $6.3 Billion**

* 2010 U.S. Lighting Inventory; Adoption of Light-Emitting Diodes in Common Lighting Applications, Navigant, Revised May 2013.

The benefits of high efficiency lighting go beyond savings. For example, LED lighting offers extremely long lifetimes, are directional light sources and thus able to limit light pollution and light trespass, are highly efficacious, function well in cold temperatures, are not affected by vibration, and are able to provide a high quality light.

Benefits to Accelerator Partners

- **Access tools and resources to help states and municipalities navigate the transition to high efficiency outdoor street lighting.**

Examples of tools and resources include:[4]

- **Model specifications** for roadway luminaire acquisitions, and separately for outdoor parking lot and garage luminaries as well as lighting control systems, to help local public and private sector entities issue requests for proposals (RFPs) for products most likely to meet their needs, and achieve a high level of performance and reliability.
- **Financial analysis tools** to help organizations analyze the cost effectiveness of LED conversions.
- **Results** from technology demonstrations to document product performance in various settings.

- **Access and leverage technical expertise developed under other DOE efficient outdoor lighting programs.**

  DOE has made progress developing tools and resources to assist public and private organizations to upgrade to high efficiency outdoor lighting through several ongoing efforts, as well as through programs carried out under the Recovery Act. The Accelerator will draw on lessons learned and resources from the following efforts:

  - **Municipal Solid-State Street Lighting Consortium (MSSLC):** The MSSLC shares technical information and experiences related to LED street and area lighting demonstrations, and serves as an objective resource for evaluating new products on the market intended for those applications.
  - **Lighting Energy Efficiency in Parking (LEEP) Campaign:** LEEP is a program conducted under the Better Buildings Alliance offering free guidance and recognition to facility owners interested in implementing energy-efficient lighting solutions in their parking facilities.
  - **Lessons Learned through the Recovery Act:** More than 150 Recovery Act-funded Energy Efficiency and Conservation Block Grant (EECBG) activities included LED retrofits for indoor and outdoor luminaires and controls.
  - **Better Buildings Challenge:** The Better Buildings Challenge includes a number of municipal leaders that are working to improve the efficiency of outdoor lighting among their efforts.

- **Create collaborative solutions to address financial, regulatory, and technical barriers that constrain broad technology deployment.**

  The Accelerator will serve as a forum to share information and experiences with peers. Small group peer exchange through the Accelerator enables Partners to be efficient yet flexible with creating replicable roadmaps to success by:

  - Identifying policy levers and successful models that support accelerated deployment of energy-efficient street and outdoor lighting projects in diverse geographies, population sizes, and utility service areas.
  - Understanding the appropriateness of available financial mechanisms such as QECBs, RLFs, ESPCs, ratepayer programs, etc. for outdoor lighting projects.
  - Determining best practices for ongoing sustainability of outdoor lighting systems energy efficiency upgrades.
  - Developing recommendations for post-Accelerator next steps.

- **Receive public recognition from DOE as a national leader in municipal system-wide replacement to high efficiency outdoor lighting.**

  Receive national recognition from DOE for demonstrating your commitment to reducing energy use through system-wide replacement of high efficiency outdoor lighting and develop road-tested examples for other public sector organizations to use. Raise the visibility of your efficiency efforts with your employees, community, and stakeholders.

Partnerships to Achieve Goal

Outdoor Lighting Accelerator Partners, in collaboration with DOE, will demonstrate practical and effective best practices to accelerate the adoption of high efficiency outdoor lighting. Accelerator Partners and DOE enter into this partnership agreement to improve system-wide replacement processes at the municipal level.

Municipal Partner Agrees to:

- **Appoint** an Accelerator point of contact.
- **Develop** an outdoor lighting roadmap incorporating a system-wide analysis and with the objective of replacing a significant portion of the city's portfolio of outdoor lighting within two years.
- **Share** results and lessons learned with DOE and other Accelerator Partners as approaches are implemented, including tracking baseline and improved energy and non-energy benefits.
- **Identify** a key barrier within three months of joining the Accelerator, to be addressed with peers and DOE technical assistance over a 12-month period.

In Addition, State/Regional Partner:

- **State/Region commits to collaborating with three or more municipalities** to develop an outdoor lighting roadmap incorporating a system-wide analysis and with the objective of replacing a significant portion of each municipality's portfolio of outdoor lighting within two years.

U.S. Department of Energy Agrees to:

- **Appoint** a point of contact.
- **Facilitate** peer exchange on models for utility engagement and financing solutions.
- **Develop** additional technical tools and/or assistance necessary to meet the goals of the Accelerator, subject to resources.
- **Provide technical assistance** to Partner to overcome a key barrier.
- **Provide national recognition** to Accelerator Partners for their leadership in addressing these issues.

For a complete list of all participating Partners, visit our Partners page.

1. Adoption of Light-Emitting Diodes in Common Lighting Applications, Navigant, May 2013.
2. http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/lifetime_white_leds.pdf.
3. Using EPA's GHG conversion factors: http://www.epa.gov/cleanenergy/energy-resources/refs.html.
4. Resources can be found at http://www1.eere.energy.gov/buildings/ssl/resources.html and http://www.leepcampaign.org/tools--information.html.