

### Target Hits Energy Saving Bullseye with LED Troffers

Target was recently recognized for excellence and leadership in interior lighting by the Interior Lighting Campaign for major LED lighting installations that totaled nearly 130,000 troffers in 107 Target sites nationwide. Four of the Target sites recognized were new stores constructed with high efficiency LED troffers. In the remaining 103 stores, fluorescent troffers were replaced with LED retrofit kits. The retailer was recognized in five categories:

- **Largest Portfolio-Wide Annual Absolute Energy Savings:** For lighting installations at 107 Target sites nationwide, which are expected to save the retailer 26 million kWh annually.
- **Highest Absolute Annual Savings for Troffer Lighting for New Construction – Medium and Large Projects:** Sites in Maryland and New York saved 39 percent compared to minimum code requirements.
- **Highest Percentage of Annual Savings for Troffer Lighting for New Construction – Medium and Large Projects:** Sites in Massachusetts and California saved 39 percent compared to minimum code requirements.

When Target realized ballasts were beginning to fail in fluorescent troffers throughout their portfolio, they decided to invest in LEDs rather than maintaining the fluorescent systems. With LED-based troffers, Target anticipates the LED components will last more than 12 years, and there will be no ballasts to replace.

The retrofits featured in this case study are part of a larger overall project that will include more than 300 stores. Target continues to evaluate the remainder of its stores for upgrading to LEDs and is installing LED luminaires in new stores. Target's LED upgrade strategy also includes wireless dimming, which will further reduce energy usage.

A challenge which affected the retrofit but not new construction projects, was scheduling the lighting installs. Because Target stores are open long hours, retrofits had to be done between 11:00 PM and 7:00 AM, while other maintenance work and restocking were also taking place. All of the lighting equipment needed to be cleared from the floor before customers arrived and kept out of the way of products on the loading docks and in the stocking areas. With these limitations, retrofits took about four nights per store to complete.



Target was recognized for their corporate-wide LED troffer lighting retrofit and new construction installations. Annual savings from the 107 projects yielded an estimated 26 million kWh. Photo courtesy of Target Corporation.

### Interior Lighting Overall Results

<b>Energy Savings</b>	26 million kWh annually, an average savings of 48%
<b>Troffers Upgraded</b>	129,300
<b>Total Area of Project</b>	Portfolio-wide
<b>Payback</b>	1.6 years
<b>ILC Recognition Category</b>	Largest Portfolio-Wide Annual Absolute Energy Savings

**“The majority of our LED projects were driven by Total Cost of Ownership that included both energy reduction and decreased maintenance.”**

— Doyle Trankel, PE, Engineering Director, Property Management for Target Corporation

Feedback on the lighting has been positive. Target measured light levels in the retrofitted buildings and found an increase of 10 percent in the stores that were upgraded. Feedback from both employees and guests indicate that they perceive the space to be brighter.

### Keys to Success

Energy cost savings were the number one driver for these projects. Business case calculations included the reduction in energy use and also decreased maintenance, which included not needing to change fluorescent lamps or ballasts. Utility incentives also factored into the business case.

### Project Methodology

Target worked with their supplier, Acuity Brands Lighting, and their designer, The Lighting Practice, to specify the lighting products and to make necessary adjustments. Target and their partners realized that fixtures needed to be table-top tested prior to installation to ensure good color rendering and light distribution. Improperly designed LED fixtures can cause glare, so it is important to test the product's performance prior to selecting it for a project.

Acuity Brands Lighting developed a retrofit kit with an internal driver that simplified the retrofit process. In some cases, only the lamps needed to be replaced. In other cases, where older troffers were installed, the louvers were also changed out along with the lamps and ballast. Wherever new luminaires were installed, wireless controls were included to enable dimming that will further increase energy savings.

2016 ILC Recognition for Troffer Lighting New Construction - Annual Savings				
	Highest Absolute		Highest Percentage	
<b>Project Location</b>	College Park, MD	Valley Stream, NY	Boston, MA	San Diego Del Sur, CA
<b>Troffers Upgraded</b>	96	1,450	55	1,160
<b>Annual Energy Savings, kWh</b>	14,400	217,000	8,200	173,300
<b>Energy Savings</b>	39%	39%	39%	39%
<b>ILC Recognition Category (size)</b>	Medium Project	Large Project	Medium Project	Large Project

### Tips and Best Practices

- ▶ Table-top and onsite testing should be done to identify potential glare or color rendering issues.
- ▶ Consider working with a lighting design firm in addition to the manufacturer to address possible application issues.
- ▶ Pursue incentives, which can help make the case for energy efficiency projects. Hiring a third-party to handle utility incentives can make the process easier.
- ▶ Take the time to ensure that products meet the incentive requirements, since product lines and specifications are evolving quickly.
- ▶ When evaluating retrofit proposals, consider the vendor's ability and cost to conduct installations at night to avoid disruption of retail hours; this may be critical to project success.

### Learn More

Through the [Better Buildings Alliance](#), members across different market sectors work with the U.S. Department of Energy's (DOE) exceptional network of research and technical experts to develop and deploy innovative, cost-effective, energy-saving solutions that lead to better technologies, more profitable businesses and better buildings in which we work, shop, eat, stay and learn.

Learn more about how to join the Better Buildings Alliance's Interior Lighting Campaign (ILC) at <https://interiorlightingcampaign.org/>. The ILC is a recognition and guidance program designed to help facility owners and managers take advantage of savings opportunities from high-efficiency interior lighting solutions. As of January 2017, ILC participants are collectively saving close to \$13 million annually across approximately 95 million square feet by upgrading to high-efficiency interior lighting solutions.

Find more resources and guidance on lighting in the [Better Buildings Solution Center](#).