Maryland Green Purchasing Guide
LED Lighting Equipment
May 2022

INTRODUCTION

One of the most practical sustainability strategies available to public agencies to protect human health and the environment while saving money is to replace conventional lighting equipment – including incandescent, fluorescent, and high-intensity discharge (HID) – with LED luminaires, retrofit kits, and replacement lamps. Because LEDs are highly energy efficient, they can significantly reduce electricity consumption and greenhouse gas emissions. They also minimize replacement and disposal costs because they last a very long time – up to 10 years – and are free of toxic mercury.

This guide is designed to make it easy to:

- identify high-performance LED lighting equipment on Maryland's Statewide Contracts – preferably products with a third-party certification (e.g., ENERGY STAR or DesignLights Consortium (DLC));
- specify high-performance LED lighting equipment when drafting contracts; and
- understand how LED lighting equipment will help the State of Maryland protect human health and the environment while saving money.

MARYLAND STATEWIDE CONTRACTS OFFERING LEDs

Electrical, Lighting, Data Communications and Security Products: BPO No. 001B8400425

- **Vendor:** Graybar Electric Co. (410) 342-5500, ext. 3127
- **Sample Brands:** Acuity/Halophane/Juno/Lithonia, Columbia Lighting, Cooper, Dual-Lite, Eaton, GE Current, Kichler, Philips/Signify/Day-Brite, Progress Lighting, RAB, Westinghouse

Facility Maintenance, Repair and Operations (MRO) Products: BPO No. 001B9400021

- **Vendor:** Fastenal (507) 494-3225
- **Sample Brands:** Acuity/Lithonia, Dual-Lite, Eaton, Hubbell/Columbia, MaxLite, Philips/Signify, Satco

Facility Maintenance, Repair and Operations (MRO) Products: BPO No. 001B9400023

- **Vendor:** Grainger (410) 391-9000
- **Sample Brands:** Ability One, Acuity/Juno/Lithonia, GE Current, Lumapro, MaxLite, Philips/Signify, Sylvania/LEDVance

Facility Maintenance, Repair and Operations (MRO) Products: BPO No. 001B9400024

- **Vendor:** MSC Industrial Supply Company (410) 644-1313
- **Sample Brands:** AbilityOne, Acuity/Lithonia, Cooper, Eiko, GE Lighting, Hubbell, Hylite LED, Philips/Signify, Sylvania/LEDVance

AVAILABILITY AND PERFORMANCE

LED lighting equipment is available in a wide variety of shapes, sizes, color temperatures, light output levels, and with other features.

- The DesignLights Consortium (DLC) Solid-Solid State Lighting Program has a Qualified Product List (QPL), which is "the world's largest verified list of high-performing commercial LED lighting products."[1] It includes more than 80 categories of LED lamps, retrofit kits, and luminaires that meet strong energy efficiency and technical standards. As of December 2021, there were more than 100,000 LED luminaires, 30,000 LED lamps, and 20,000 LED retrofit kits on the DLC list.

- The U.S. Environmental Protection Agency's ENERGY STAR Program maintains a list of nearly 10,000 models of compact LED lamps that can replace screw-base incandescent and halogen light bulbs as well as compact fluorescent lamps (CFLs).[2] The list also includes also nearly 30,000 ENERGY STAR-certified light fixtures.

In 2019, the U.S. Department of Energy concluded that LEDs "are revolutionizing the lighting market, "explaining that they "have surpassed, or matched, all conventional lighting technologies in terms of energy efficiency, lifetime, versatility, and color quality, and, due to their increasing cost competitiveness, LEDs are successfully competing in a wide variety of lighting applications...LED technology is expected to continue to improve, with increasing efficacy and decreasing prices while enabling new opportunities for lighting design and energy savings" (U.S. DOE, 2019).

HOW TO FIND HIGH-PERFORMANCE LEDs ON STATEWIDE CONTRACTS

Each vendor on Maryland's statewide contracts has a website (and ordering portal) that enables users to navigate to LED lighting equipment, including the ability to search by manufacturer, product type (e.g., lamp vs. fixture), and other features. Some vendors filter or label LED lighting products that are certified by ENERGY STAR or DesignLights Consortium (DLC). Below are instructions for navigating each vendor's website to find LED lamps, retrofit kits, and luminaires.


Linear LED Lamps


Screw Base LED Lamps

Recessed Fixtures


High Bay and Low Bay Fixtures

Fastenal: To find LED lighting products on the Fastenal website, click on Lighting in the PRODUCTS dropdown on the www.fastenal.com homepage. From there, choose from categories such as Lamps, Fixtures, and Outdoor Lighting and then narrow the search to sub-categories such as Linear and Screw Base LED Lamps, High Bay and Low Bay Fixtures, Recessed Fixtures, and more. On each sub-category page, products can be filtered by manufacturer and other features, including Green Certifications such as ENERGY STAR and DLC, which is one Special Interest option.

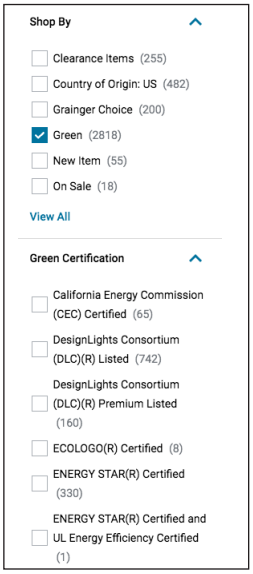
Some LED lighting products are listed on the Fastenal website with a green leaf icon, although it is not always clear what makes each product environmentally preferable. Typing ENERGY STAR LED into the Search Box pulls up only compact fluorescent lamps (CFLs), which are no longer covered by the ENERGY STAR Program, and typing in DLC LED pulls up only one LED fixture product. Consequently, this is not a reliable search strategy.

[1] The DesignLights Consortium Qualified Product List of LED (i.e., solid-state lighting) products can be accessed at https://qpl.designlights.org/solid-state-lighting.

[2] The U.S. EPA's ENERGY STAR lists of certified lamps and light fixtures can be accessed at www.energystar.gov.

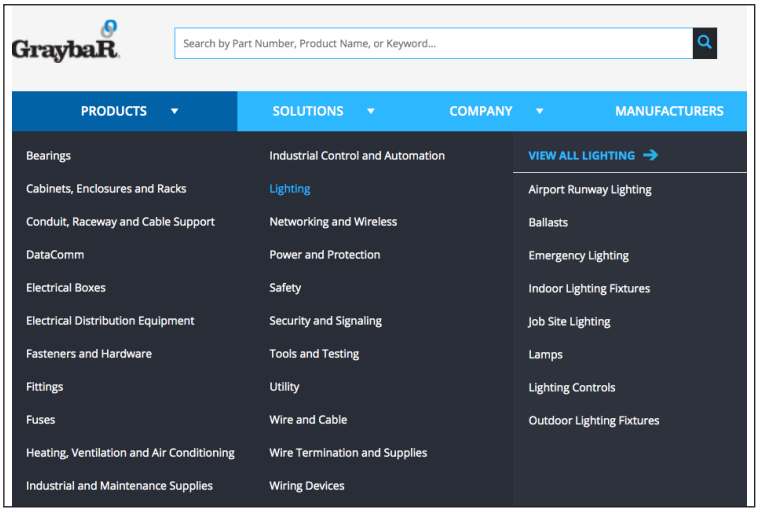
Lighting & Electrical

Grainger: To find LED lighting products on the Grainger website, click on the Lighting & Electrical category link and look for LED lighting products in several sub-categories: Light Bulbs & Lamps, Lighting Fixtures & Retrofit Kits, Outdoor Lighting, etc. Next, use the filter on the left side of each sub-category page to narrow the search to LED products (under Lighting Technology) and look for items with the attributes you want such as brand, bulb and base type, color temperature, etc.



Grainger has a Green filter, which catches many LED lighting products; moreover, the website lists the Green Certification each product has earned, including DesignLights Consortium (DLC) and ENERGY STAR. Typing these certifications into the Search Box directs the website user to a wide array of LED luminaires, retrofit kits, and lamps. Grainger also lists the applicable Green Certification in the Technical Specifications for each product.

Graybar: To find LED lighting equipment on the Graybar website, click on Lighting in the PRODUCTS dropdown menu on the www.graybar.com homepage. From there, click on View All Lighting, which goes to a webpage featuring LED Lighting, or choose a specific type of LED product you are looking for such as Lamps, Indoor Lighting Fixtures, etc. Next, use the filter on the left side of each page to identify products by manufacturer, product name, order number, bulb shape, color temperature, and other features.



Graybar does not offer a Green product filter and typing ENERGY STAR LED or DLC into the Search Box does not reliably navigate to LED lighting products with these third-party energy-efficiency certifications. However, some products display these certifications in the product description or specifications, or in marketing materials that are linked under Documents.

MSC Industrial Supply: To find LED lighting products on the MSC Industrial Supplies website, click on Lighting & Electrical in the PRODUCTS dropdown menu on the www.mscdirect.com homepage. From there, click the Lighting category link and look for LED lighting products in several sub-categories: Lamps, Light Bulbs & Accessories, Light Fixtures & Lamp Holders, Parking Lot & Roadway Lighting, etc. Next, use the filter on the left side of each sub-category page to narrow the search to LED products (under Lamp or Technology Type) and to items with the attributes you're looking for such as brand, wattage, size, etc.

Lighting & Electrical Lighting

MSC has an Eco-Friendly filter that catches some LED lighting products, although it is not always clear what makes each product environmentally preferable. Typing ENERGY STAR LED into the Search Box pulls up many non-LED lighting products such as flashlights, batteries, tools, and motors, while typing in DLC LED pulls up only one brand of LED lamps. Consequently, this is not a reliable search strategy.

MARYLAND GREEN PURCHASING SPECIFICATION FOR LIGHTING EQUIPMENT

Minimum Requirements

- All general-purpose lamps, retrofit kits, and luminaires must be LEDs and either:
  - On the DesignLights Consortium (DLC) Qualified Products List (QPL); OR
  - ENERGY STAR-certified

  Exceptions include LED products that are not covered by these two programs (e.g., T12s, 2-pin compact LEDs, miniature LED lamps, exit signs, and other emergency luminaires). In such cases, LED lighting equipment should be used unless it is found to be impractical to do so.
- All exterior luminaires must be nighttime-friendly (i.e., full cutoff).
- Vendors must offer recycling services for mercury- and PCB-containing lighting equipment.

Additional Desirable Attributes to Look For

- Lighting equipment labeled "RoHS-Compliant," which means it complies with the EU's Restriction of Hazardous Substances (RoHS) Directive and is free of lead solder and several other highly persistent toxic chemicals.
- Outdoor LED luminaires certified by the International Dark Sky Association (IDA).
- LED products with the longest rated life and warranty.

Look for These Eco-Labels!

For more details about Maryland's Green Lighting Specification, go to https://dgs.maryland.gov/Pages/GreenPurchasing/Resources/Lighting.aspx.

Did you know?

The State of Maryland documented over $700,000 in lifetime cost savings – plus reductions in greenhouse gas (GHG) and other emissions – from its FY 2020 purchases of LED lamps. (*Source: Maryland 2021 Green Purchasing Annual Report*)

	Emissions Avoided/ Resources Conserved	Pollutants & Toxic/ Hazardous Materials Avoided	Lifetime Cost Savings
LED Lamps	**911** tons of CO_2 **1.18** gWh of Electricity	**1,394** lbs. of SO_2 **874** lbs. of NOx	**$ 711,640**

SUSTAINABILITY BENEFITS

Environmental Benefits

LEDs use about 90% less electricity than incandescent lamps – and about half as much electricity as fluorescent lamps – while providing the same level of illumination. They prevent greenhouse gas emissions and other air pollutants from power plants while providing a higher quality of light.

Human Health Benefits

Unlike fluorescent lamps, LEDs are mercury-free, eliminating all risk of mercury exposure from breakage. LEDs labeled RoHS-compliant have eliminated or reduced lead, brominated flame retardants, and several other highly persistent toxic chemicals.

COMPARISON OF COMMON FLUORESCENT LIGHTING TO LED OPTIONS

LAMP TYPE	TYPICAL HOUSEHOLD COMPACT FLUORESCENT LAMP (CFL)	REPLACEMENT LED	TYPICAL WORKPLACE T8 LINEAR FLUORESCENT LAMP (LFL)	REPLACEMENT LED
Watts for equivalent light	15W	7.5W	32W	15.5W
Energy efficiency	Low	High	Low	High
Typical lifespan*	4.8 years	10.3 years	5.5 years	13.7 years
Yearly electricity cost*	$3.04	$1.52	$13.51	$6.55
Contains mercury	Yes	No	Yes	No

Economic/Social Benefits

LED lamps, retrofit kits, and luminaires can significantly reduce energy bills over the life of the product and have a relatively short payback period – often less than a year. Utility rebates (discussed in the RELATED RESOURCES section below) can often help lower the initial price.

In addition, LEDs last 2-3 times longer than fluorescent lamps. As a result, they don't need to be changed as often, which significantly reduces maintenance costs and generates less waste.

APPLICABLE POLICIES

- **Mercury and Products that Contain Mercury (COMAR: 21.11.07.07(A)):** "All procurement agencies shall give a preference under this regulation to procuring products and equipment that are mercury-free...."
- **ENERGY STAR Purchase Requirement (Executive Order 01.01.2001.02(C)(3), Effective date: March 13, 2001 (28:7 Md. R. 675)):** "The State shall purchase ENERGY STAR products when purchasing energy–using products, including computers, printers, copiers, and other office equipment, or shall purchase products in the top 25% in energy efficiency for products where labels are not available."

WHAT AM I REQUIRED TO DO WITH OLD LIGHTING EQUIPMENT?

Fluorescent light bulbs can contain mercury (a hazardous material), so it is important to manage them safely and responsibly to limit impacts on public health and the environment.

Grainger: offers Light Bulb Prepaid Recycling and Disposal Kits, Light Bulb Recycling Boxes, and Light Bulb Recycling Stamps. You do not need to have a Grainger product to use these services. Learn more and purchase these fluorescent lamp recycling kits, boxes, and stamps here.

Graybar: offers Veolia recycling boxes for fluorescent lamps. You can purchase the appropriate box that comes with pickup instructions for recycling. Please contact your Graybar representative for information on box sizes and pricing. To learn more about Veolia recycling boxes, click here.

RELATED RESOURCES

Utility Rebates

Several utilities in Maryland offer rebates when their customers purchase LED lamps, retrofit kits, or luminaires. Find out what's available at https://energy.maryland.gov/pages/facts/empower.aspx.

More Information on This Topic

- *Farewell to Fluorescent Lighting: How a Phaseout Can Cut Mercury Pollution, Protect the Climate, and Save Money* (Appliance Standards Awareness Project, 2022)
- *Mercury in Fluorescent Lighting: Unnecessary Health Risks and Actionable Solutions* (Clean Lighting Coalition, 2021)
- *LED Retrofit Kits, TLEDs and Lighting Controls: An Application Guide* (U.S. Department of Energy, March 2017)

Did you know?

- Many LED tube lamps are "plug and play" (UL Type A) models that can easily replace fluorescent lamps without re-wiring or replacing the fixture. Most are compatible with existing fluorescent ballasts.
- Other upgrade options include LED lamps that can be hardwired directly into a building's electrical source (UL Type B or C); LED retrofit kits, which include lamps and drivers that can be installed in the existing fixture; and LED luminaires, which have the highest upfront cost but offer the greatest potential for long-term energy savings, particularly when paired with "Smart" lighting controls.
- In December 2021, the European Commission adopted new rules phasing out the sale of most general-purpose fluorescent lamps from the European marketplace.
- "LEDs emit very little heat. In comparison, incandescent bulbs release 90% of their energy as heat and CFLs release about 80% of their energy as heat." (U.S. EPA)

RPN
Responsible Purchasing Network

This fact sheet was developed for the Maryland Department of General Services by the Responsible Purchasing Network.