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How to:

Specify Emergency Lighting For Your Facility

Emergency lighting is one of the most important parts of your building's life safety system. Yet, it is often the most overlooked.

If it's time for an emergency lighting retrofit in your building, this article will help bring you up to speed on the basics of today's emergency lighting requirements. You will also learn the different types of egress lighting solutions available, as well as important considerations for lowering maintenance liabilities and costs.



Photo Courtesy of Orbit Electric

In a power outage, exit signs "point the way" to safety for people escaping your building.

Code Analysis

The first step in your retrofit process should be a thorough code analysis. This will determine the specific codes and standards that apply to your jurisdiction and building type.

Your local authority having jurisdiction (AHJ) will likely use a mix of the following codes:

- UL-924: Standard for Emergency Lighting and Power Equipment
- International Building Code (IBC)
- NFPA 101: Life Safety Code
- NFPA 70: National Electrical Code
- NFPA 110: Standard for Emergency and Standby Power Systems
- NFPA 111: Standard on Stored Electrical Energy Emergency and Standby Power Systems.

Thankfully, you only need to know which codes your jurisdiction follows, and which revision (year) they've



Photo Courtesy of Orbit Electric

adopted. A call to your local fire marshal or buildings department is the best place to start.

Emergency Lighting Product Selection

The second step in your retrofit process should be to familiarize yourself with the different types of emergency egress lighting that are available, along with some of their basic requirements.

- **Exit Signs.** In a power outage, exit signs "point the way" to safety for people escaping your building. Exit signs are required by NFPA 101 Article 7.10 and must comply with UL 924 for luminance. Signs must be visible in all directions from the exit access and must not be spaced more than 100 ft. apart. You may need low-level exit signs, which are visible through dense smoke, in certain parts of the building (see NFPA 101 Chapters 11 through 43).

There are two standard types of exit signs:

1. Battery powered
2. Self-luminous

Battery-powered exit signs use Light Emitting Diodes (LED) to illuminate their 'EXIT' legend. These signs will revert to battery power when normal AC power fails. These signs typically use nickel-cadmium (NiCad) batteries which can last from 10-20 years.

Self-luminous exit signs do not need a battery, or hookup to an electrical circuit. They come in two forms: *self-powered* and *energy-storage type*.

Self-powered luminous exit signs contain tritium gas that stays illuminated for at least 10 years. Since tritium is radioactive, special procedures must be followed for their disposal.

Stored energy type, or photoluminescent exit signs, absorb energy from nearby ambient light (general lighting). When the ambient source is turned off, these signs will glow-in-the-dark at sufficient levels for 90 minutes. Photoluminescent exit signs are an excellent way to "go green" in your facility. They last more than 20 years without any maintenance and are safe for the environment.

- **Emergency Lighting Units.** Emergency lights must lay a minimum of 1.0 foot-candle (fc) of light along the entire path of egress. These "bug-eye" units activate when a power outage occurs; and remain on for at least 15 minutes after power returns. Emergency lights typically

use sealed lead acid (SLA) batteries, which must be replaced every 5-7-years.

- General Lighting with Emergency Backup. Concerned about clunky “bug-eyes” ruining your building aesthetics? If so, you can purchase backup battery packs for local general lighting fixtures. These “emergency ballasts” work with many types of fluorescent or LED luminaires.
- Uninterruptible Power Supply (UPS) and Generator System. One centralized emergency lighting option is to have an uninterruptible power supply (UPS). The second option is an on-site generator. Both are expensive; however, sometimes a single UPS or generator can be more cost-effective than many emergency battery units scattered throughout your facility.



Photo Courtesy of Orbit Electric

Emergency lights activate when a power outage occurs; and remain on for at least 15 minutes after power returns.

it possible to efficiently test a large number of devices. You must also inspect each individual unit for damage or misalignment. The annual test must be performed after hours, which may incur overtime.

Finally, it very important that you keep written documentation of these tests. These logs will be required during inspections.

Options for More Efficient Maintenance

The third step in your retrofit process should be to think about maintenance. Most likely, your team is spending far more time than they need to on emergency lighting maintenance. Luckily, there are some options that can drastically reduce these maintenance costs.

- Self-Testing and Self-Diagnostic Options. Self-diagnostic options are available with many emergency lighting units on the market. When enabled, these units will run the monthly and yearly tests automatically, and alert staff the moment there is a problem. With self-testing battery units, your team will only need to walk through the facility every 30 days. All maintenance can all be done during normal business hours, with no overtime.
- Remote Lamp Heads. Some emergency lights and exit signs come with “remote capable” options. This means you can install separate lighting heads away from the parent unit and have them share the same battery.



Photo Courtesy of Orbit Electric

Exit signs are required by NFPA 101 Article 7.10 and must comply with UL 924 for luminance.

- Combination Units. Another way to cut maintenance costs is to install combination exit sign and emergency lighting units. Sometimes called “exit lights”, these two-in-one units eliminate the need for a second run of electrical conduit or battery to test.

Specifying the emergency lighting solution that’s right for your facility requires analysis of local codes and knowing the available solutions that are within your budget. Most importantly, it requires taking a hard look at your current maintenance regimen. Because when testing, maintenance and documentation is made simpler, compliance (and ultimately safety) will improve overall. **ESW**

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Required Testing for Emergency Lighting

NFPA 101 Article 7.9.3 requires periodic tests in the following intervals:

- Monthly, for a minimum of 30 seconds. All emergency lights and exit signs feature an integral test switch. Personnel must press and hold this test button for 30 seconds to satisfy the monthly test requirement.
- Annually, for a minimum of 1.5 hours. For the extended, annual inspection, you’ll need to shut off power for 90 minutes. This makes

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