



SAVE ENERGY, MONEY AND PREVENT POLLUTION WITH LIGHT-EMITTING DIODE (LED) EXIT SIGNS



Illuminated exit signs are an important and legally required safety feature in your facility. In the case of an emergency such as a fire, their operation is critical in protecting the well being of your congregation’s members. By design, exit signs operate 24 hours per day, and can consume large amounts of energy to operate. Many exit signs in today’s buildings use older, incandescent and fluorescent/compact fluorescent lighting (CFL) technology. To make matters worse, many older exit signs require frequent maintenance due to the short life span of the lamps that light them. For example, many older exit signs consume over 350 kilowatt-hours (kWh) and cost \$28 each annually to operate.

ADVANCED LIGHTING TECHNOLOGY TO THE RESCUE

The high-energy usage and maintenance of many exit signs is completely unnecessary due to advances in lighting technology. Solid-state light-emitting diodes (LED) are those small colored lights that have been used extensively in consumer electronics for decades. However recent advances in the technology have allowed exit sign manufacturers to develop signs that harness the advantages of this technology at competitive costs. In addition, exit signs are easy to install, if you can install a light switch or electrical receptacle you can install an exit sign.

LED Exit Sign Advantages

- **Ultra-Low Energy Usage:** ENERGY STAR® labeled LED exit signs use approximately 44 kWh of electricity annually to operate. Low energy use not only means less pollution but also lower electricity bills as a LED exit sign usually costs less than \$4 annually to operate.
- **Low Maintenance:** To be ENERGY STAR labeled, a LED exit sign must be guaranteed to last at least 5 years, however, many manufacturers state that their lamps will maintain National Fire Protection Association compliant levels of luminance for 10 to 25 years.

Exit Sign Energy Use by the Numbers				
Exit Sign Lighting Technology	Annual Energy Use	Annual Energy Cost	Lamp Service Life	Annual Carbon Dioxide (CO ₂) Pollution
<i>LED</i>	44 kWh	\$4	10+ Years	72 pounds
<i>Fluorescent/CFL</i>	140 kWh	\$11	10.8 months	230 pounds
<i>Incandescent</i>	350 kWh	\$28	2.8 months	574 pounds

- **Safety:** LED exit signs are usually brighter than comparable incandescent or fluorescent signs, and have greater contrast with their background due to the monochromatic nature of the light that LEDs emit.

EXIT SIGN FEATURES

- **Color:** Exit signs come in two colors, green or red. Choosing what color is right for your facility is dependent on several factors, including aesthetics and local regulations. Check with your local building codes office or fire officials before purchasing any exit sign.
- **Battery Back-up:** To ensure a powered exit sign remains lit during an emergency if the building’s electrical system is interrupted, many exit signs come with a battery back-up or offer this feature as an option. Some localities may require that a battery back-up be installed with any exit sign so consult your local building codes office or fire officials before purchasing.

- **Emergency Lighting:** Some exit signs have integrated emergency lighting; if your current exit sign has integrated emergency lighting you can replace it with a combined LED exit sign/emergency lighting unit or install emergency lighting separately from your exit sign.
- **Voltage:** LED exit signs are available that are compatible with either 120 volt or 277 volt power. Many models are variable voltage and will operate properly on both voltage levels.

IDENTIFYING YOUR EXIT SIGN

If you are buying exit signs for a building you will be constructing your choice is clear, LED exit signs should be installed. Ask your architect or designer to use only LED exit signs in your building. What about the exit signs in an existing building you already occupy? LED exit signs are an ideal replacement but you need to determine what kind of exit sign your facility already has. The following descriptions should help you identify your facility's exit signs:

- **LED Exit Signs:** These exit signs have a string of very small, typically red or green, glowing LEDs arranged in a circle or oval. The LEDs may also be arranged in a line on the side, top or bottom of the exit sign. LED exit signs provide the best balance of safety, low maintenance, and very low energy usage compared to other exit sign technologies. ENERGY STAR labeled LED exit signs will use less than 5 watts of power and last over 10 years.
- **Incandescent Exit Signs:** These exit signs contain one or two incandescent lamps, typically a clear glass bulb with a filament inside, with either a screw-in, bayonet, or push and twist style base. These are the most energy intensive exit signs and consume up to 40 watts of electricity. Signs illuminated with incandescent lamps typically require lamp replacement every 500 to 2,000 hours.
- **Fluorescent/CFL Exit Signs:** These exit signs typically contain one or two narrow U-shaped tubular lamps that appear frosted. They have a variety of bases but are typically screw-in (self ballasted) or plug in (remote ballasted). These exit signs are more efficient than incandescent exit signs, but still use up to 16 watts of electricity and have lamp life spans of 5,000 to 6,000 hours.
- **Photoluminescent Exit Signs:** These exit signs use no power and are typically pale green in color. If installed in an inappropriate location they can present problems to facility operators. Photoluminescent signs, though acceptable for a variety of installations, need to be exposed to light each day to charge. If placed in an area that does not receive adequate quantities of light, or is vacant for multiple days, these signs may not produce enough light to be discernable in an emergency.
- **Tritium Exit Signs:** These exit signs use a mildly radioactive form of hydrogen and require no electricity, but the amount of light they emit will dissipate over time. They are typically pale green in appearance. Disposal of these exit signs may be subject to local environmental ordinances. If you have one of these signs in your building please consult your state environmental office for advice.

If you need help identifying the exit signs in your current building, or have questions on LED exit signs and their features please call 1-888-STAR YES (1-888-782-7937) or email epasmallbiz@aspensys.com. You can also visit the ENERGY STAR Labeled Products page for LED exit signs at http://www.energystar.gov/index.cfm?c=exit_signs.pr_exit_signs

All calculations have been completed assuming 24 hour, 365 days per year operation at an average electricity cost of \$0.08 per kWh. Exit sign electricity consumption is assumed to be 40 watts for incandescent signs, 16 watts for fluorescent signs, and 5 watts for LED signs. Actual sign wattages may vary. Pounds of pollution are based on the national average emissions factor for electricity generation in the United States, 1.64 pounds CO₂ per kWh. For assistance determining the electricity consumption of your facilities exit signs please call 1-888-STAR YES or email epasmallbiz@aspensys.com.

The contents of this informational sheet are to the best knowledge of contract staff supporting EPA. It is the responsibility of the user to perform their own due diligence before implementing any of the above recommendations. Care should be taken when installing any electrical device, as improper installation can result in property damage and personal harm. If you have any questions about you or your staff's capability to install any electrical device please consult a qualified electrician or the product manufacture/distributor. All references to products, process, and services above by name, trademark, or manufacturer are for informational purposes only and do not represent an endorsement of any particular product or entity by EPA.