



# The Code Authority

2009 ISSUE 4



## Spotlight on Safety

### LED Signs and Luminaires by Lee C. Hewitt

Light emitting diode (LED) technology is being used in an ever-increasing number of lighting products including luminaires, electric signs, lamps and even flashlights. Although LEDs are typically powered by low voltage sources, there are a number of potential safety hazards that must be

addressed so products containing them can be installed and used in a safe, code-compliant manner.

#### Hazard analysis

In 2006 UL held an LED summit meeting with representatives of lighting and sign associations, government agencies,

users, product specifiers and other stakeholders with an interest in LED technology. Over two days participants discussed the safety and certification issues related to using LED products in lighting and signs.

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### UL-ese

Definitions of terms frequently used at UL

#### Network Equipment Building Systems (NEBS) compliant

Equipment used in telecom central offices which adheres to telecom industry standards. Most equipment must be NEBS certified before it can be integrated into carrier facilities. NEBS specifications deal with power management, electrical shielding, disaster preparation and hardware interfaces.

UL has been providing NEBS services to the North American telecommunications industry since 1992. Regional Bell Operating Companies and other telecom network service suppliers and producers place a high priority on NEBS compliance because telephone system reliability is a national security issue and a basic requirement of consumers.

# Holiday Decorative Lighting Safety

Soon after Thanksgiving, it's time to pull down boxes from the garage, get my UL Classified ladder out, and put up holiday decorations and lighting. Soon after the New Year begins, it's time to put these decorations away.

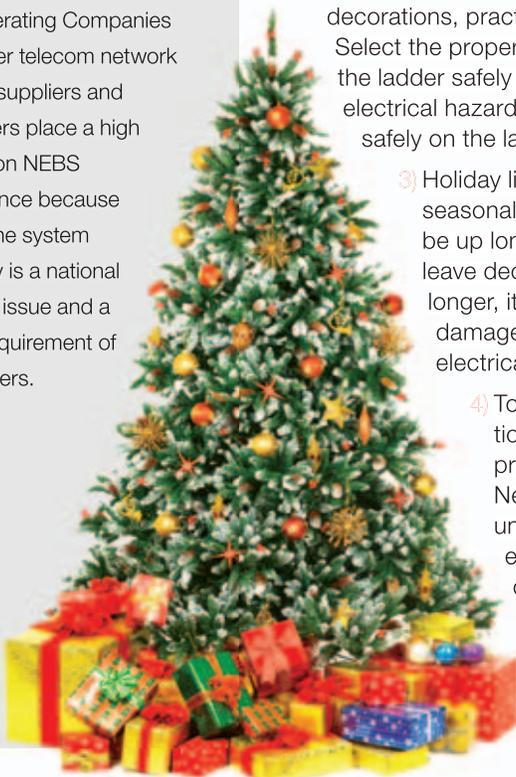
Due to potential fire and shock hazards associated with these products, it's prudent to understand and follow safe decorative lighting practices. Consider the following seven safety tips

- 1) As you're unpacking electrical light strings, take time to inspect each for flaws. Throw out light sets if they have loose connections, broken or cracked sockets, or frayed or bare wires.
- 2) If you are using a ladder to place your decorations, practice good ladder safety. Select the proper ladder for the job, handle the ladder safely to prevent injury or electrical hazards, and position yourself safely on the ladder.
- 3) Holiday lights are intended for seasonal use only, and should not be up longer than 90 days. If you leave decorative lighting out any longer, it will be more prone to damage, which can cause an electrical shock or fire hazard.
- 4) To unplug electric decorations, use the gripping area provided on the plugs. Never pull the cord to unplug a device from electrical outlets. Doing so can damage the cord's wire and insulation and lead to an electrical shock or fire.
- 5) Do not place a faulty set of lights back into the storage box for next year's use. Take the initiative and throw out worn or damaged light strings. Shop for replacements during after-holiday sales or add lights to your decoration purchase list for next year.
- 6) Pack lights appropriately. No one likes to untangle a web of lights. When preparing your holiday lights for storage, consider purchasing a holiday light storage reel or create your own system.
- 7) Store electrical decorations in a dry place, where they cannot be damaged by water or dampness. Keep them away from children and pets to ensure that cords and wires are not damaged in storage.

Keep these safety tips in mind when putting up and taking down decorative holiday lighting.

For more holiday safety information, check out our consumer safety site at **SafetyAtHome.com**. Happy holidays!

Managing Editor





## Going Up...

### UL's new elevator certification program

To better meet the needs of manufacturers and code officials, UL has launched a certification program for elevator and escalator systems, subsystems and equipment.

Currently, elevator manufacturers who are developing innovative elevator and escalator designs must approach individual local code authorities and have them determine if the equipment and systems comply with nationally recognized standards and are installed in a safe, code-compliant manner.

The new certification program allows manufacturers to have elevator systems and equipment investigated by a single certifier using requirements in ASME A17.7/CSA B44.7 Performance-based Safety Code for Elevators and Escalators. The ANSI (American National Standards Institute) accredited program facilitates acceptance by code authorities, and allows them to focus on verifying the systems are installed in a safe, code compliant manner.

#### **New product category**

The Elevator and Escalator Systems, Subsystems, Components and Functions product category (AECCO) has been established to cover these certifications. Information on this category can be found in UL's Online Certifications Directory at [www.ul.com/database](http://www.ul.com/database).

#### **Code compliance tool**

Elevator systems and equipment covered under this product category are investigated in accordance with ASME A17.7/CSA B44.7. Section 3001.2 of the International Building Code require elevators and conveying systems to be designed, constructed and installed in accordance with specifically referenced product standards, including this ASME A17.7 standard.

#### **Additional Certifications**

Numerous elevator and escalator products are also certified under the following UL product categories:

- Elevator Control Panels (FQPBB)
- Elevator Control Panels for Use in Hazardous Locations (FSNA)
- Elevator Control Panels Relating to Hazardous Locations (intended for installation in unclassified locations) (FSSA)
- Elevator Controls and Accessories (FQMW)
- Elevator Door-locking Devices and Contacts (FQXZ)
- Elevator Door-locking Devices and Contacts for Use in Hazardous Locations (FSNT)
- Elevator Switches (FRAH)
- Passenger Elevator Car Enclosures (FRBK)

#### **Installation considerations**

Elevator and escalator systems are investigated as complete units. Subsystems, components and system functions may be investigated separately, and are specifically designated in the technical documentation provided with the system.

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## Spotlight on Safety (continued from cover)

Some basic safety issues apply to signs and lighting products, regardless of the illumination source. Some of the concerns associated with LED illuminated products include:

**Electrical hazards** — Products utilizing LED circuitry are typically powered in one of three ways:

- Line voltage power directly from branch circuit wiring
- Power from a non-Class 2 power source or battery that provides isolation from the branch circuit but does not meet the parameters required for Class 2 supplies
- Power from a Class 2 power source that may be integral or located remotely to the product

Both line-connected and non-Class 2 powered products may pose a risk of electric shock due to the energy levels present. Low voltage products may also pose a risk of electric shock because the low voltage seen at the LEDs may be provided by in-line impedance or in some other manner that does not comply with Class 2 circuit requirements. Under certain conditions, such as open circuit, there may be voltages present that represent a risk of electric shock.

**Fire hazards** — Although they operate at low voltage, LED illumination sources can generate considerable thermal energy that can create a potential fire hazard. Like any product utilizing an illumination source, products incorporating LED circuitry must

be designed and investigated to verify that thermal energy generated by the illumination source is not transferred to polymeric or other combustible materials in a manner that creates a potential fire hazard.

**Other hazards** — All lighting products, including those incorporating LED circuitry, must be designed and investigated to reduce the risk of personal injury during installation and use.

### UL requirements and standards

When investigating lighting products utilizing LED circuitry, they are first evaluated using the appropriate UL Standard for Safety for the end product, such as the UL 1598 Standard for Safety for Luminaires, or the UL 48 Standard for Safety for Electric Signs.

These basic product requirements are supplemented with requirements included in the Subject 8750 Outline of Investigation for Light Emitting Diode (LED) Light Sources for Use in Lighting. This outline includes construction and performance requirements specifically designed to address LED safety concerns.

### Product categories

Signs utilizing LED technologies are covered under the product category for Signs (UXYT). Light-emitting-diode luminaires are covered under several different product categories; the guide information for Light-emitting-diode Luminaires (IFAK) includes a list of these product categories. Low-

voltage lighting systems, including power units, luminaires and fittings, are covered under the Low-voltage Lighting Systems, Power Units, Luminaires and Fittings (IFDR) product category. Information on all of these product categories and the related certifications can be found in UL's Online Certifications Directory at [www.ul.com/database](http://www.ul.com/database).

### National Electrical Code® requirements

The 2008 National Electrical Code® covers the installation of lighting type products and signs using LED circuitry and other illumination technologies. The code recognizes the value provided by requiring these products to be listed.

Article 410 covers luminaires, lampholders, lamps, and other lighting products and accessories. Section 410.6 requires all luminaires and lampholders to be listed. Similarly, Section 600.3 requires electric signs, section signs and outline lighting to be listed and installed in conformance with that listing, unless otherwise approved by special permission.

Article 411 covers lighting systems operating at 30 volts or less. Section 411.3(B) requires these systems to be listed either as a complete system or as an assembly of specifically identified listed parts. The luminaire, power supply and luminaire fitting, including the exposed bare conductors, of an exposed bare conductor lighting system must be listed for use as part of the same lighting system.

### Installation considerations

Code authorities can expect to see an ever-increasing number of products incorporating LED technology being installed in their jurisdictions. By making sure that the products are Listed and installed in accordance with the manufacturer's instructions and applicable NEC® requirements, safe code-compliant installations can be achieved.

For more information on LED signs and outline lighting, please contact Lee Hewitt in Northbrook, Ill., at [Lee.C.Hewitt@us.ul.com](mailto:Lee.C.Hewitt@us.ul.com) or at +1.847.664.2906. For information on LED luminaires and lampholders, please contact Ed Joseph in Melville, N.Y. at [Edward.A.Joseph@us.ul.com](mailto:Edward.A.Joseph@us.ul.com) or at +1.631.271.2243.



# Your Chance to be Heard

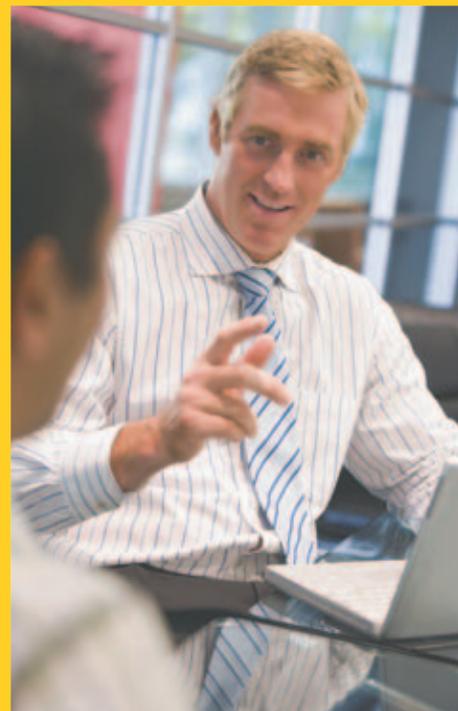
## Call for standards technical panel members

UL Standards Technical Panels (STPs) are formed to review proposals to develop and maintain UL Standards for Safety and are composed of groups of individuals who represent a variety of interests. UL is seeking to broaden jurisdictional authority membership on the following STPs to make sure the views of the code enforcement community are well represented:

- STP 231 for the UL Standard for Safety for Power Outlets
- STP 778 for the UL Standard for Safety for Motor-Operated Water Pumps
- STP 875 for the UL Standard for Safety for Electric Dry-Bath Heaters
- STP 1323 for the UL Standard for Safety for Scaffold Hoists
- STP 2075 for the UL Standard for Safety for Gas and Vapor Detectors and Sensors

Join a UL Standards Technical Panel and let your voice be heard in the UL Standards development process. Participation is easy: balloting and reviews are done using an online system; attendance at STP meetings is optional; and UL reimburses code authorities for their Standards-related expenses.

For more information, please see [http://ulstandardsinfolnet.ul.com/stp/call\\_4\\_members.html](http://ulstandardsinfolnet.ul.com/stp/call_4_members.html) or contact Derrick Martin in San Jose, Calif., at +1.408.754.6656 or at [Derrick.L.Martin@us.ul.com](mailto:Derrick.L.Martin@us.ul.com).



## Going Up... (continued from page 3)

When an elevator system is designated as a “model elevator,” it is deemed to be representative of series-produced elevators with the same design and configuration. Any allowable variations between a model and installed elevators are clearly specified in the technical documentation accompanying certificate of conformance. This includes minimum and maximum values, optional and mandatory features, and other details that make it easy for the code authority to determine if the elevator to be installed is covered by the UL certification.

### Certificate of conformance

The certificate of conformance serves as evidence that a representative sample of the elevator or escalator system, subsystem or component and related functions has been investigated for conformance to ASME A17.7/CSA B44.7. It provides code authorities with basic information on the requirements for installation and maintenance

of an elevator system, subsystem and related functions. Among other information it includes:

- Manufacturer name and address
- Scope of certification, including the relevant portions of ASME A17.7/CSA B44.7 to which each product or product type was certified
- Unique certificate number, effective date of the Certificate, and the term (time limit) or expiration date
- Critical information related to installation or maintenance and any conditions or limitations on the installation and use of the product(s)

The certificate does not cover the final installation of the entire elevator or escalator equipment in a building or structure.

### UL Classification Mark

In addition to a certificate of conformance, a UL Classification Mark appears on a subsystem or component or the smallest

unit container in which a subsystem or component is packaged. The Classification Mark includes the UL symbol, product identity, certificate of conformance number, and the phrase “CLASSIFIED IN ACCORDANCE WITH ASME A17.7/CSA B44.7” or the equivalent. If a component or subsystem is certified for use with more than one certified system, the Classification Mark may contain more than one certificate number.

### Current certifications

Otis Elevator Company of Farmington, Conn., obtained the first certification under this product category. It is anticipated that several more companies will obtain certifications for their products in the near future.

by Kevin Connelly

For additional information on UL's elevator and escalator certification programs, please contact Kevin Connelly at Melville, N.Y., at +1.631.546.2691 or at [Kevin.Connelly@us.ul.com](mailto:Kevin.Connelly@us.ul.com).

# UL and ICC Evaluation Service Introduce Dual Listing Program

UL and ICC Evaluation Service (ICC-ES) have established a dual Listing program for plumbing, mechanical and fuel gas (PMG) products. The purpose of the program is to provide code officials and construction professionals with a reliable means to verify that these products comply with applicable codes and standards.

Code officials who are asked to approve UL/ICC-ES Listed plumbing, mechanical and fuel gas installations, have the added assurance that the certified products meet the rigorous testing and evaluation requirements of both ICC-ES and UL. They will also benefit by being able to access information about certified products on the Web sites of both ICC-ES and UL.

Code officials can also easily determine the code applications for which specific products are certified by accessing UL's code correlation database. This one-of-a-kind database directly connects certifications with specific code sections to assist code officials in the acceptance of certified products. At the same time, designers and installers can readily find code-compliant products. UL's code correlation database is available at [www.ul.com/regulators/codelink](http://www.ul.com/regulators/codelink).

Jeff Smith, general manager of UL's Global Water & Food Business, announced the program by saying, "This strategic alliance leverages the shared strengths of UL and ICC-ES: credibility, integrity, technical expertise and brand recognition. The dual PMG Listing program provides manufacturers and regulators with a one-stop

resource for determining the code compliance and standards compliance of PMG products. We at UL are excited to be working with ICC-ES to bring added value and convenience to this industry."

Mark Johnson, President of ICC-ES, observed, "UL's reputation for product safety, combined with ICC-ES's nearly eighty years of experience in evaluating products for code compliance, means this program will provide regulators and manufacturers with a service of outstanding quality. The program will also be recognized globally."

John LaTorra, Building and Inspection Manager, Redwood City, CA explained, "Developing alliances and combining strengths is critical to our industry. This cooperation will provide the code official with complete confidence that the listed product complies with the requirements of the recognized standard in the code."

Manufacturers of plumbing, mechanical and fuel gas products who take advantage of this alliance will benefit from a comprehensive method for testing, inspection, and certification of PMG products from two highly reputable organizations.

A wide range of certifications is possible under the program, depending on a manufacturer's needs. This includes certifications designed to achieve compliance with:

- The International Plumbing Code (IPC), International Mechanical Code (IMC) and International Fuel Gas Code (IFGC), all promulgated by the International Code Council
- The Uniform Plumbing Code (UPC) and Uniform Mechanical Code (UMC), promulgated by the International Association of Plumbing and Mechanical Officials
- The National Plumbing Code of Canada (NPCC)
- The new low-lead requirements outlined in the California Health and Safety Code

UL's drinking water and plumbing product certification program is fully accredited in the United States and Canada and is recognized by the U.S. Environmental Protection Agency as well as all states and cities in the United States that have adopted their own water product certification requirements. Serving manufacturers around the world, UL tests and certifies drinking water treatment chemical additives, system components (fixture fittings, valves and gaskets, tanks and coatings), treatment units (chillers, coolers and water softeners), and plastic piping system components and related materials. UL is also an approved certifier of water products that meet the criteria of the EPA's WaterSense<sup>SM</sup> program, which identifies and promotes the use of water-efficient products.

Information on the dual PMG Listing program is available at [www.ul.com/iccespmg](http://www.ul.com/iccespmg).

For more information, please contact Tom Bowman in Northbrook, Ill., at +1.847.664.3796 or at [Thomas.A.Bowman@us.ul.com](mailto:Thomas.A.Bowman@us.ul.com).



## Questions & Answers

UL engineers answer questions concerning UL and its operations, UL Standards for Safety, product certifications, and the code applications for which products are certified.

**Section 10.4.4.2 of the National Fire Alarm Code requires smoke alarms located in other than one and two family dwellings to have their sensitivity calibrated and tested in a fashion similar to smoke detectors. Are there any Listed smoke alarms that are suitable for use where such testing is required? If so, how are they identified?**

UL has investigated and Listed smoke alarms for use in this application under the Commercial/Residential Single- and Multiple-station Smoke Alarms product category (UTHA).

These smoke alarms are investigated in accordance with ANSI/UL 217, the Standard for Safety for Single and Multiple Station Smoke Alarms. They must also comply with the sensitivity indicating means and field service tests outlined in ANSI/UL 268, the Standard for Safety for Smoke Detectors for Fire Protective Signaling Systems.

Products complying with these requirements carry a Listing Mark that includes



the phrase “Commercial/Residential Smoke Alarm.” These products are intended to be installed, maintained and tested in accordance with the manufacturer’s installation instruction.

Smoke alarms that do not include the “Commercial/Residential” reference as part of their UL Listing Mark have not been

investigated for use in these applications, and may not include provisions for testing sensitivity in the field.

If you have a question about the code applications for which products are certified, please send it to [Howard.D.Hopper@us.ul.com](mailto:Howard.D.Hopper@us.ul.com).

## News Briefs

### Gaining acceptance of unlabeled fire doors and frames

While the UL Mark should be applied to UL Listed fire doors and frames at the manufacturing location, on occasion labels cannot be found on these products at job sites. This may be due to assemblies being shipped without UL Labels, or in some instances labels may have been inadvertently removed or obliterated in the field rendering them illegible. In these instances code authorities are not able to approve the installation.

The UL Field Inspection Services program can help achieve a quick resolution to this problem, often within a few days. To qualify for this service, the fire doors and/or frames should meet the following criteria:

- Must have an active UL certification.
- Must have been manufactured at a UL authorized manufacturing facility in accordance with the active UL Procedure.
- Should not have been in use for more than one year.

In addition, minor modifications to the fire doors and frames performed in the field may be permissible provided that they are fully in accordance with the UL Procedure.

Only the product manufacturer or distributor may initiate a Field Inspection, and the local code official will be contacted to make sure the Field Inspection resolves

his or her concerns. Additional information on this program is available at [www.ul.com/fieldinspections](http://www.ul.com/fieldinspections), including an on-line Field Inspection Application form.

In situations where unlabeled fire doors and frames do not qualify for the UL Field Inspection Program, a UL Field Evaluation may be able to resolve concerns raised by code authorities. Any party can request a UL Field Evaluation. Information on this program is available at [www.ul.com/field](http://www.ul.com/field).



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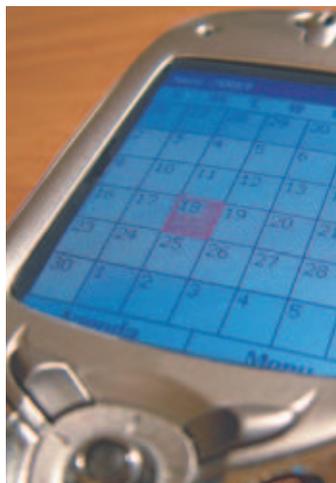
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## Calendar of Events



If you would like *The Code Authority* to consider publishing your upcoming events, contact Howard Hopper by email at [Howard.D.Hopper@us.ul.com](mailto:Howard.D.Hopper@us.ul.com). Please type "TCA Calendar" in the subject line.

**December 7–11, 2009**  
**NFPA Training Seminar Week**, Rancho Cordova, Calif.  
[www.nfpa.org](http://www.nfpa.org)

**December 14–18, 2009**  
**NFPA Training Seminar Week**  
Orlando, Fla.  
[www.nfpa.org](http://www.nfpa.org)

**March 16–18, 2010**  
**Electric West**  
Las Vegas, Nev.  
[www.electricshow.com](http://www.electricshow.com)

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