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REPORT ON DISCUSSIONS DURING UL MEETINGS WITH ELECTRICAL INSPECTORS AT THE 2009 IAEI SECTION MEETINGS

March 16, 2009

TO: Attendees of Underwriters Laboratories Inc. Meetings with Electrical Inspectors at the 2009 IAEI Section Meetings

SUBJECT: Report of Meetings

Underwriters Laboratories held meetings with Electrical Inspectors during the 2009 IAEI Section Meetings. Historically, these meetings have provided for an open exchange between the electrical inspection community and UL regarding any subject of interest to authorities.

UL acknowledges the importance of this feedback. The electrical inspector is an integral part of the UL information loop. It is the inspector, who during the examination of the final installation, can judge under field conditions, the adequacy of the constructions and markings for proper installation. It is the inspector who can pass this installation information to UL for use in modifying product safety requirements.

The questions and answers in this Report present the items discussed during the meetings. This is not a verbatim transcript; only the pertinent points have been recorded. Each question has been identified with the designation of the Section meeting at which the subject was discussed.

UL appreciates all those who took the time to participate in these meetings and provided us with information important for our endeavors and goals toward public safety. I would appreciate hearing from you on any comments or suggestions you have on this Report or the UL/Inspectors meetings.

UNDERWRITERS LABORATORIES INC.

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FROM

UL MEETINGS WITH ELECTRICAL INSPECTORS

AT THE 2009

ANNUAL IAEI SECTION MEETINGS

This report contains questions and answers from the 2009 meetings. Where necessary, the answers have been expanded to include information that may not have been available during the meetings. Where specific actions have taken place in response to the Inspector's input, the status of the actions is indicated. This report may provide insights into UL's intent and efforts that are associated with the certification of electrical equipment so that it meets the purposes of the National Electrical Code® and is installable in accordance with it. The questions have been arranged by subject matter and are identified in the margin with an identifier for the IAEI Section where the question was raised.

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IAEI Section Identifier Legend

(E) Eastern Section
(NW) North Western Section
(S) Southern Section
(SW) South Western Section
(W) Western Section

1.0 UL LISTING, CLASSIFICATION AND FIELD EVALUATION INFORMATION

1.1 (S) **Q.** Are cell phone Kiosks in malls listed as wired cabinets?

A. No, UL lists these types of kiosks under the UL product category Custom Built Kiosks (EMHH), located on page 120 in the 2009 UL White Book. This category covers kiosks, rated 240 V or less, normally found in malls, retail stores, offices and business establishments, educational facilities and other similar environments.
These kiosks are intended but not limited for business applications, electronic point-of-sale, information exchange, Internet access or ticket dispensing. Kiosks consist of a cabinet that typically contains a power-supply adapter(s), monitor(s), computer(s), currency-processing equipment, printer(s), fan(s) and speaker(s).

However, kiosks may include as part of the assembly, listed wired cabinets. UL product Category Wired Cabinets (ZNXR), located on page 436 in the 2009 UL White Book. . This covers wired cabinets, such as illuminated and non-illuminated jewelry, display and showcases. Products covered by this category are intended to be installed in accordance with ANSI/NFPA 70, "National Electrical Code."

Additional information on either of these UL Categories can be found on UL's Online Certification Directory at www.ul.com/database and entering the category code at the category code search field.

1.2 (S) **Q.** Can a Kiosk use STP-2 cord inside of a Listed Kiosk to connect lights?

A. Yes, UL 2361, The Standard for Safety for Custom Built-Kiosks references UL 153 The Standard for Safety for Portable Electric Luminaires and UL 1598, The Standard for Safety for Luminaires both UL standards permit the use of STP-2 cord under certain conditions provided it's not subject to abuse or damage. The Luminaire would need to have its own separate Listing or Recognized Component Mark and be evaluated as part of the Kiosk.

1.3 (S) **Q.** Is Classified medical equipment the equivalent to Listed or should a Field Evaluation be required?

A. Yes, UL Classified equipment complies with the NEC definition of Listed. The biggest difference between UL Listed and UL Classified is that UL Classified equipment has been evaluated for a specific hazards or compliance with an international standard or to a model building code where UL Listed equipment has been evaluated with regard to all reasonably

foreseeable hazards including fire, electrical shock and casualty hazards.

It is important to remember that in either case, Classified or Listed, the product is evaluated with regard to all applicable requirements specified in the applicable Standard.

1.4 (S) **Q.** Does UL list amusement rides?

A. Yes, small amusement rides that are coin operated. These are typically located outside grocery and department stores. Additional information may be located by looking at UL product Amusement and Gaming Machines (ASMU), located on page 60 of the 2009 UL White Book.
This category covers self-contained commercial amusement and gaming machines.

The appliances are marked on or adjacent to the electrical rating plate with one of the following: "Suitable for Indoor Use Only," "Suitable for Protected Locations — See Installation Instructions" or "Suitable for Outdoor Use." Complete instructions appear on an appliance intended for use in a protected location, indicating the manufacturer's recommendations concerning the use or installation, or both, of any canopy, marquee, shelter, etc., that may be necessary for the protection of the appliance. The instructions may be located inside the appliance if they are accessible through the front door.

1.5 (W) **Q.** Is it common for an HVAC unit not to have a UL Label and then three weeks later, a UL Label appears on the equipment?

A. The UL Listing Mark is the manufacturers declaration that when the product was labeled at the factory and it left the factory that the product was in compliance with the applicable UL requirements at the time of manufacturer. If the product left the factory with out the UL mark, then it is not considered Listed. A manufacturer cannot ship a label to the field and label the product in the field. The application of a UL Mark in the field is only permitted when an inspection is conducted under one of UL's Field Engineering Services in the presence of a UL representative. If they were eligible to bear a UL mark and for whatever reason it was not applied at the factory they would be eligible of a Field Inspection where the UL Field representative would use the UL report for the product and conduct the follow up inspection in the field and if it complied would witness the application of the UL Mark. The AHJ would be notified prior to the Field Inspection in case they would like to be present and then would be sent a letter confirming the results after the inspection. If the product was not eligible for a Field inspection, then UL could conduct a Field Evaluation, where we do the evaluation in the field and if it complies we will label it with a Field Evaluated Product label.

I would encourage any one who runs into labels shipped to the Field to file a Product Incident Report (PIR) (formerly Field Report) so that UL's Market Surveillance group can take appropriate steps with the manufacturer.

To file a Product Incident Report, please go to http://www.ul.com/ahjreport

1.6 (W) **Q.** After an AHJ Product Incident Report is filed and the UL investigation is completed, is UL done or what else happens to ensure the equipment is properly evaluated and labeled?

A. Once the Product Incident Report investigation is complete, UL has taken the appropriate action with the manufacturer to make sure they are aware that sending labels to the field is not permitted and that those products are not to be considered UL Listed. In addition, they have taken appropriate steps to be certain that the practice does not re-occur. What the Product Incident Report does not do is make sure the manufacturer gets their field labeled product either Field Inspected or Field Evaluated, that is up to the AHJ to enforce Code compliance at the installation and if they are requiring Listing or Field Evaluation, the AHJ should red tag the installation until the manufacturer or installer brings the product into compliance to achieve an approved installation.

1.7 (SW) **Q.** Does UL apply a Listing Mark to a product based on evaluation to an Outline of Investigation? My jurisdiction does not require Listing until an Outline of Investigation becomes a published standard.

A. Yes, in cases where a published UL Standard does not cover a product submitted for investigation and certification, an Outline of Investigation may be used and contains basic requirements for such products.

When the first submittal of a new type of product is received, UL can evaluate the product for compliance with the appropriate requirements selected from related UL Standards, UL's technical experience with the basic hazards involved using Hazard Based Safety Engineering principles, and appropriate safety requirements of other organizations. The product evaluation which results in the first Listing (or other type of certification, such as UL Classification) of the new type of product then becomes the basis for UL's requirements for subsequent product submittals for the new product category and the requirements are documented in an Outline of Investigation.

UL's Guide Information for the product category references the Outline of Investigation, and this document is maintained by UL in the same manner as UL Standards. UL's Primary Designated Engineer's (PDE) periodically review an Outline of Investigation for conversion to a UL Standard. Factors considered include the number of manufacturers of the product, references to the Outline of Investigation made by AHJs, and the need for ANSI

recognition.

1.8 (SW) **Q.** In my jurisdiction, companies that perform Field Evaluations are also OSHA Nationally Recognized Testing Laboratories (NRTLs). Should they be?

A. Acceptance of an organization to perform Field Evaluation work in your jurisdiction is based on a variety of criteria; some formally established and documented by the jurisdiction, with others are more informal.

OSHA does not accredit organizations that conduct Field Evaluations.

OSHA administers the NRTL product certification program, which recognizes private sector organizations as Nationally Recognized Testing Laboratories (NRTLs), signifying that an organization has met the necessary qualifications specified in the federal regulations for the program. The NRTL is responsible for determining that specific equipment meets consensus-based standards of safety to provide the assurance, required by OSHA, that these products are safe for use in the U.S. workplace.

If an organization conducting Field Evaluations has OSHA NRTL recognition for the product type under investigation, such as UL, you can be confident that they have expertise in that specific type of product evaluation.

Many states and cities have developed their own criteria for acceptance, and this may include significant limitations on the type of equipment for which the organization is accepted. Some jurisdictions simply require that organizations conducting Field Evaluations must also be recognized by OSHA as a Nationally Recognized Testing Laboratory.

Currently, NFPA is working on a new proposed standard NFPA 790: Standard for Competency of Third Party Field Evaluation Bodies. This standard may be useful in establishing criteria for determining the acceptability of field evaluation providers.

2.0 SERVICE EQUIPMENT, SWITCHBOARDS, PANELBOARDS AND POWER DISTRIBUTION EQUIPMENT

2.1 (S) **Q.** 210.4(B) requires simultaneous disconnect for multi-wire branch circuits, does UL list 3-pole handle ties?

A. Yes - the Guide Information for UL product category Circuit Breakers, Molded-Case and Circuit Breaker Enclosures (DIVQ), located on page 94 in the 2009 UL White Book and the Standard for Safety for Molded Case Circuit Breakers, UL 489, currently only allow 2 single pole breakers to be handle tied together. This was due to older requirements of the NEC. However, with the change in Section 210.4(B) of the NEC was revised to require all multi-wire branch circuits be disconnected simultaneously. Other sections allow this to be accomplished with single pole beakers and a handle tie. As such, UL recently started the process required to update UL 489 for this very purpose. As of January 2010, the Guide Information for DIVQ has been revised to allow handle ties for more then 2 single pole breakers. The Guide Information can be viewed online on UL's Online Certifications Directory at www.ul.com/database and entering the DIVQ at the category code search field.

2.2 (E) **Q.** Are any UL listed power transformers rated over 600V?

A. UL Lists power transformers over 600V under UL product category Transformers, Distribution, Dry Type, over 600 volts (XPFS), located on page 411 in the 2009 UL White Book. Guide Information for this category can also be found on UL's Online Certifications Directory at www.ul.com/database and entering the category code at the category code search field. As of this writing there are 31 Listings under this product category.
UL also Lists power transformers under the product category Transformers, Distribution, Liquidfilled Type, over 600 volts (XPLH), located on page 411 in the 2009 UL White Book. Guide Information for this category can be found in UL's Online Certifications Directory at www.ul.com/database and entering the category code at the category code search field. As of this writing there are 15 Listings under this product category.

UL also publishes a list of product categories for equipment rated over 600 Volts on page 31 of the 2009 UL White Book.

3.0 CIRCUIT BREAKERS AND AFCIs

3.1 (S) **Q.** What are Classified breakers and what are they suitable for?

A. UL Classified circuit breakers are circuit breakers typically manufactured by a manufacturer other than the panelboard original equipment manufacturer (OEM) that the circuit breakers are classified for use in. UL Classifies circuit breakers under UL product category Circuit Breakers, Molded-Case, Classified for use in Specified Equipment (DIXF), located on page 95 in the 2009 UL White Book or found on UL's Online Certification Directory at www.ul.com/database and entering the category code at the category code search field. Classified molded-case circuit breakers rated 15 to 50 A, 120/240 V maximum that have been investigated and found suitable for use in place of other Listed circuit breakers in specific Listed panelboards, with ratings not exceeding 225 A, 120/240 V ac and a short-circuit current of 10 kA. The circuit breakers are Classified for use in specified panelboards in accordance with the details described on the circuit breaker or in the publication provided therewith. In addition, Classified molded-case circuit breakers may also be Listed with additional features such as a ground-fault trip element, ground-fault circuit interrupter, arc-fault circuit interrupter, secondary surge arrester, transient voltage surge suppressor, and the like.

3.2 (S) **Q.** I have had Combination AFCI breakers tripping from radio frequency interference, is this common problem?

A. No, UL has received some reports of Smart Meter RF transmissions tripping AFCI's. In these cases the AFCI was installed in an All-In-One panel that also included the meter in close proximity. The transmitters were of relatively high power and close proximity to the AFCI. We have not had any other reports of this type of issue.

In all cases of unwanted tripping, the complainant is urged to work directly with the AFCI manufacturer. To file an unwanted tripping report with NEMA, go to www.afcisafety.org/report.

If you encounter verified cases of unwanted tripping of AFCI's, you can also file a Product Incident Report (formerly called Field Reports) with UL at www.ul.com/ahjreport UL will work with the manufacturers to track these incidents.

3.3 (S) **Q.** I have inspected AFCI breakers that are only marked AFCI Breaker. When I said these AFCI Breakers must be marked as Combination AFCI Breakers, the contractor provided empty breaker boxes that identified it as a Combination AFCI Breaker. Is this acceptable?

A. No, since January 1, 2008, the 2005 NEC has required AFCI protection

required by 210.12(B) to be a Listed Combination AFCI. If you were to look for UL product category Arc-fault Circuit Interrupters, Combination Type (AWAH), located on page 62 in the 2009 UL White Book or on UL's Online Certification Directory at www.ul.com/database and entering the category code at the category code search field, you would notice that these devices are evaluated to The Standard for Safety for Arc-Fault Circuit-Interrupters, ANSI/UL 1699. In addition, this category also identifies the required marking as "Combination Arc Fault Circuit Interrupter" or "Combination AFCI".

ANSI/UL 1699 requires the marking to be visible, with a dead front or faceplate removed, while the device is installed. Therefore this marking is required to be on the device and may also be on the box. If you have UL Listed AFCI's that are not properly marked, it is encouraged for you to file an AHJ Product Incident Report at www.ul.com/ahjreport

4.0 DISTRIBUTED ENERGY SYSTEMS

4.1 (S) **Q.** I've heard that there is no standard for Emergency Generators, is that true.

A. No, UL evaluates generators to, The Standard for Safety for Stationary Engine Generator Assemblies. ANSI/UL 2200. Engine generators are Listed under UL product category Engine Generators (FTSR) located on page 146 in the 2009 UL White Book or found on UL's Online Certification Directory at www.ul.com/database and entering the category code at the category search field.

This category covers electrical generating equipment driven by gasoline, LP-gas, natural gas or diesel-fueled internal combustion engines. Listed stationary engine generator assemblies are rated 600 V or less and are intended for installation and use in accordance with ANSI/NFPA 70, "National Electrical Code," ANSI/NFPA 37, "Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines," ANSI/NFPA 99, "Standard for Health Care Facilities," and ANSI/NFPA 110, "Standard for Emergency and Standby Power Systems." Listed stationary engine generator assemblies may be used in emergency and standby power systems, provided the installed system complies with applicable codes.

4.2 (NW) **Q.** Is electrical certification of complete wind turbine assemblies limited to field evaluations?

A. UL has created several new product categories to evaluate the major components of these systems as well as the overall system themselves. UL can Classify these systems or Field Evaluate these systems. The evaluations are limited to risk of fire and electric shock, including safety-related control system electrical performance and grid interconnection performance. These evaluations do not include the tower or structural evaluations of the turbine. The electrical equipment systems covered under these categories are intended for installation requirements in accordance with Art. 705, ANSI/NFPA 70, National Electrical Code (NEC).

UL can *Classify* the electrical provisions of wind turbine assemblies under the product category Small Wind Turbine Generating Systems, (ZGEN) or Large Wind Turbine Generating Systems, (ZGEA). UL can also Classify Large Wind Turbine Generating Assemblies, Construction Only (ZGBP), Wind Turbine Safety-related Control System Equipment (ZGCP), Wind Turbine Inverters and Converters (ZGFA), Wind Turbine Generating System Subassemblies (ZGZJ) and Wind Turbine Tray Cable (ZGZN). Guide Information for these categories can be found in UL's Online Certifications Directory at www.ul.com/database and entering the category code at the category code search field. UL Classified wind turbine generating systems are evaluated to UL Subject 6140, Outline of Investigation for Wind Turbine Generating Systems.

5.0 LUMINAIRES AND SIGNS

5.1 (W) **Q.** Do Luminaire retrofit conversion kits, such as fluorescent to LED, have to be re-labeled?

A. Luminaire Conversion kits are Listed under the category Luminaire Conversions Retrofit (IEUQ), located on page 156 of the 2009 UL White Book. These kits include the parts to complete the retrofit conversion from one UL Listed light source to another and will bear the UL Classification Mark as described below.

This category also includes retrofit kits consisting of light-emitting-diode (LED) light sources intended to replace a fluorescent lamp and where it is necessary to modify the luminaire. The modification may involve removing the fluorescent lamp ballast or rewiring lampholders within the luminaire in order to power the LED light source. A luminaire that is modified so it can no longer accept the original lamp has a label affixed (provided by the retrofit kit manufacturer) indicating the luminaire has been modified and can no longer operate the originally intended lamp(s).

The Classification Mark of Underwriters Laboratories Inc. on the product is the only method provided by UL to identify products manufactured under its Classification and Follow-Up Service. The Classification Mark for these products includes the UL symbol, the word "CLASSIFIED" above the UL symbol (as illustrated in the Introduction of this Directory), and the following additional information:

For reflector kits:

LUMINAIRE CONVERSION, RETROFIT
FOR USE ONLY WITH + IDENTIFIED IN MANUFACTURER'S INSTRUCTIONS
Control No.

For nonreflector kits:

The Classification Mark for retrofit devices that are other than reflector kits includes the Classification Mark elements detailed above and the following additional information:

LUMINAIRE CONVERSION, RETROFIT
(WITH RESPECT ONLY TO *)
FOR USE ONLY WITH +
Control No.

+ **FLUORESCENT LUMINAIRES**, **INCANDESCENT LUMINAIRES**, **HID LUMINAIRES**, **OFFICE FURNISHING LUMINAIRES** or **PORTABLE LUMINAIRES**

* **RISK OF FIRE** or **RISK OF SHOCK** (the entire parenthetical phrase is provided only if found applicable by UL)

5.2 (E) **Q.** If there is only a UL Mark on the lampholder in a luminaire that is listed?

A. A complete UL Listing Mark will appear on the product unless otherwise indicated in the General Guide Information for a specific product category. A UL Listing or Classification Mark includes the following four elements: UL's symbol, the word ''LISTED'' or ''CLASSIFIED,'' the product identity or product category name, and a control number or issue number assigned by UL. Accordingly, the UL Mark on the Lampholder (identifying the product as a lampholder) does not designate that the luminaire is an overall Listed assembly. In this case the Listing Mark would have to identify it as a Listed Luminaire if the entire luminaire was Listed.
Just because a product incorporates all listed components, does not mean that the overall product is a Listed assembly.
For more information on UL Marks see pages 33-38 in the 2009 UL White Book.

5.3 (E) **Q.** When UL tests IC rated incandescent recessed lights, what type of insulation is used? Does it represent spray in expanding foam insulation?

A. UL Lists Incandescent Recessed Luminaires under the product category of the same name and the category code (IEZX), located on page 160 of the 2009 UL White Book. As outlined in the Standard for Safety for Luminaries, UL 1598, a thermally protected Type IC unit provided for test is to be installed in a ceiling cavity filled with loose fill insulation. Thermal insulation of the loose-fill type shall be conditioned to the density specified by the insulation manufacturer to obtain a required rated thermal resistance of R3.2 to R3.85. The loose fill insulation is considered to be representative of expanding foam insulation from a thermal aspect for the purpose of insulated ceiling testing. UL has not evaluated the effect of expanding foam on luminaires.

5.4 (E) **Q.** I've noted the absence on surface mounted fluorescent luminaries of the marking that states "Suitable for surface mounting on combustible low-density fiberboard". Was this intentional? NEC 410.136(B) still refers to this marking.

A. To qualify as suitable to bear that marking a luminaire shall not produce a temperature in excess of 75 deg.C in an ambient of 25 deg.C. The reason for not seeing this marking anymore is a result of the absence of submittals for

that application. Additionally, NEC 410.136(B) does provide an alternative: “or shall be spaced not less than 38mm(1 ½ in.) from the surface of the fiberboard.

6.0 WIRING SYSTEMS AND WIRING DEVICES

6.1 (W) **Q.** The 2008 NEC has added Concealable Nonmetallic extensions to Article 382, is there any Concealable Nonmetallic extensions products listed?

A. UL presently Lists products for installation in accordance with Article 382, Nonmetallic Extensions under the main product category Nonmetallic Extensions (PXXT), located on page 274 in the 2009 UL White Book.

The definition of Concealable Nonmetallic Extensions and the requirements for these devices were added to the 2008 NEC. This type of wiring that exists today resembles flat conductor cable that can be used to provide power to devices and run on walls, concealed by paint or drywall compound as well as other means and powered by a device that provides personnel protection equivalent to a Class A GFCI for the circuit.

Presently, (03/10) there are no Listings for concealed nonmetallic extensions, however, UL is developing requirements and have several manufacturers interested in pursuing Listing. When Listing is promulgated to a manufacturer, most likely UL will create a new product category for these devices titled Concealed Nonmetallic Extensions as a sub category of Nonmetallic Extensions (PXXT).

6.2 (NW) **Q.** When a NEMA 3R metal enclosure is penetrated with a conduit, can a sealing gasket be installed on the interior of the enclosure?

A. No, UL Lists sealing gaskets under the product category Outlet Bushings and Fittings, (QCRV). Guide Information for this category can be found in UL's Online Certifications Directory at www.ul.com/database and on page 284 in the 2009 UL White Book.

Sealing gaskets are intended for use with threaded rigid metal conduit and intermediate metal conduit with one sealing gasket on the outside and an ordinary locknut or sealing locknut on the opposite side of the enclosure for wet locations or liquid-tight applications. Sealing gaskets may also be used with Listed wet location or liquid-tight fittings where so marked on the fitting carton.

7.0 APPLIANCES AND UTILIZATION EQUIPMENT

7.1 (W) **Q.** Is the CE mark a manufacturers self-declaration of conformity?

A. Yes, a CE mark is usually a self-declaration by the manufacturer of the product.

A CE Marking is a European marking of conformity that indicates that a product complies with the essential requirements of the applicable European laws or Directives with respect to safety, health, environment and consumer protection. Generally, this conformity to the applicable directives is done through self-declaration. The CE Marking is required on products in the countries of the European Economic Area (EEA) to facilitate trade between the member countries. The manufacturer or his authorized representative established in the EEA is responsible for affixing the CE Marking to his product. The CE Marking provides a means for a manufacturer to demonstrate that his product complies with a common set of laws required by all of the countries in the EEA to allow free movement of trade within the EEA countries.

Unlike the UL Mark, the CE Marking:

Is not a safety certification mark,

Is generally based on self-declaration rather than third-party certification, and

Does not demonstrate compliance to North American safety standards or installation codes.

A product that bears a CE Marking may also bear a certification mark, such as UL's Listing Mark; however, the CE Marking and the UL Mark have no association. The UL Mark indicates compliance with the applicable safety requirements in effect in North America and is evidence of UL certification, which is accepted by model North American installation codes, such as the National Electrical Code® and the Canadian Electrical Code®.

The CE Marking on products is not a certification mark. AHJs should continue to look for the UL Mark on products in order to determine if a product complies with applicable safety requirements for North America.

This information can also be referenced on page 39 of the 2009 White Book.

7.2 (W) **Q.** Please explain what is a Smart Grid?

A. Wikipedia defines it as “A smart grid delivers electricity from suppliers to consumers using two-way digital technology to control appliances at consumers' homes to save energy, reduce cost and increase reliability and transparency. Such a modernized electricity network is being promoted by many governments as a way of addressing energy independence, global

warming and emergency resilience issues. Smart meters may be part of a smart grid, but alone do not constitute a smart grid.

A smart grid includes an intelligent monitoring system that keeps track of all electricity flowing in the system. It also incorporates the use of superconductive transmission lines for less power loss, as well as the capability of integrating alternative sources of electricity such as solar and wind. When power is least expensive a smart grid could turn on selected home appliances such as washing machines or factory processes that can run at arbitrary hours. At peak times it could turn off selected appliances to reduce demand."

7.3 (E) **Q.** I have seen a baseboard heater installed in a grade school. Although there was no incident, I am concerned of a fire or burn hazard resulting from children sticking paper or fingers in the heater.

A. These heaters are Listed under UL product category Baseboard Heaters (KLDR), located on page 201 in the 2009 UL White Book or on UL's Online Certification Directory at www.ul.com/database and entering the category code at the category search field. Baseboard heaters have been investigated and found to incorporate suitable safeguards against establishment of fire hazards that might result from contact with draperies, furniture, carpeting, bedding and the like; however, discoloration or scorching (but no glowing embers or flaming) may result on adjacent materials.

The basic standard used to investigate products in this category is ANSI/UL 1042, "Electric Baseboard Heating Equipment." UL 1042 includes requirements for protection against personal contact with heating elements and a shredded paper test under certain guarding conditions. Obviously heating elements must be warmer than the environment to be heated, and openings must exist in order to permit appropriate airflow.

7.4 (E) **Q.** Although NEC 400.7(A) allows for some products to include flexible cords, why does UL list products when obviously, they're not portable nor require frequent interchange?

A. In addition to portability and frequent interchange, Section 400.7(A) includes eight other criteria permitting the use of flexible cords. In addition to evaluating products for compliance with the applicable safety standard so that the product can be installed in accordance with the Code, UL reviews products to insure the appropriate application of cord and plug connections do not introduce undue hazards. Below are a few examples of locations in the NEC that permit cord and plug connection for products that are not portable.

Listed packaged spa or hot tub equipment assemblies, NEC 680.42(A)(2) permits a spa or hot tub installed Outdoors, to incorporate a max. 15ft. Cord-and-plug connection, where protected by a ground-fault circuit interrupter. NEC

680.43 Exception: permits a spa or hot tub installed indoors, units rated 20 amperes or less shall be permitted to be cord-and-plug connected to facilitate the removal or disconnection of the unit for maintenance and repair.

Built-in Microwave Ovens- These appliances are fastened in place and cannot be serviced unless removed.
422.16(B)(3) States, wall-mounted ovens and counter-mounted cooking units shall be permitted to be permanently connected or, only for ease in servicing or for installation, cord-and-plug-connected.

7.5 (E) **Q.** Has UL Listed any cord & plug connected central air conditioning units, central heating furnaces or storage tank water heaters?

A. No, for central air conditioning equipment and central heating furnaces.

These types of equipment have been Listed as suitable for permanent wiring installations only. They are Listed under UL product category Heating and Cooling Equipment (LZFE), located on page 216 in the 2009 UL White Book or may be found on UL's Online Certification Directory at www.ul.com/database and entering the category code at the category code search field.

Only small capacity (5 gallon or less) storage tank water heaters or water heaters that are designed to permit removal for maintenance and repair can be cord and plug connected. The requirements are detailed in the Standard For Safety For Electric Booster and Commercial Storage Tank Water Heaters, UL 1453 as well as the Standard For Safety For Household Electric Storage Tank Water Heaters, UL 174.

8.0 COUNTERFEITING AND OTHER TOPICS

8.1 (SW) **Q.** Besides individual Regulatory Services staff office and cell phones, is there a hot line for questions I have on Listing/labeling, certification issues, etc?

A. Yes. AHJs can reach UL Regulatory Services staff at 800-595-9844 or by email at ULRegulatoryServices@us.ul.com. this information also appears on the front inside cover of the White Book for easy access.