



the standard in safety

Underwriters
Laboratories

Underwriters Laboratories Electric Vehicle and Infrastructure Training Programs



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p/1

About UL

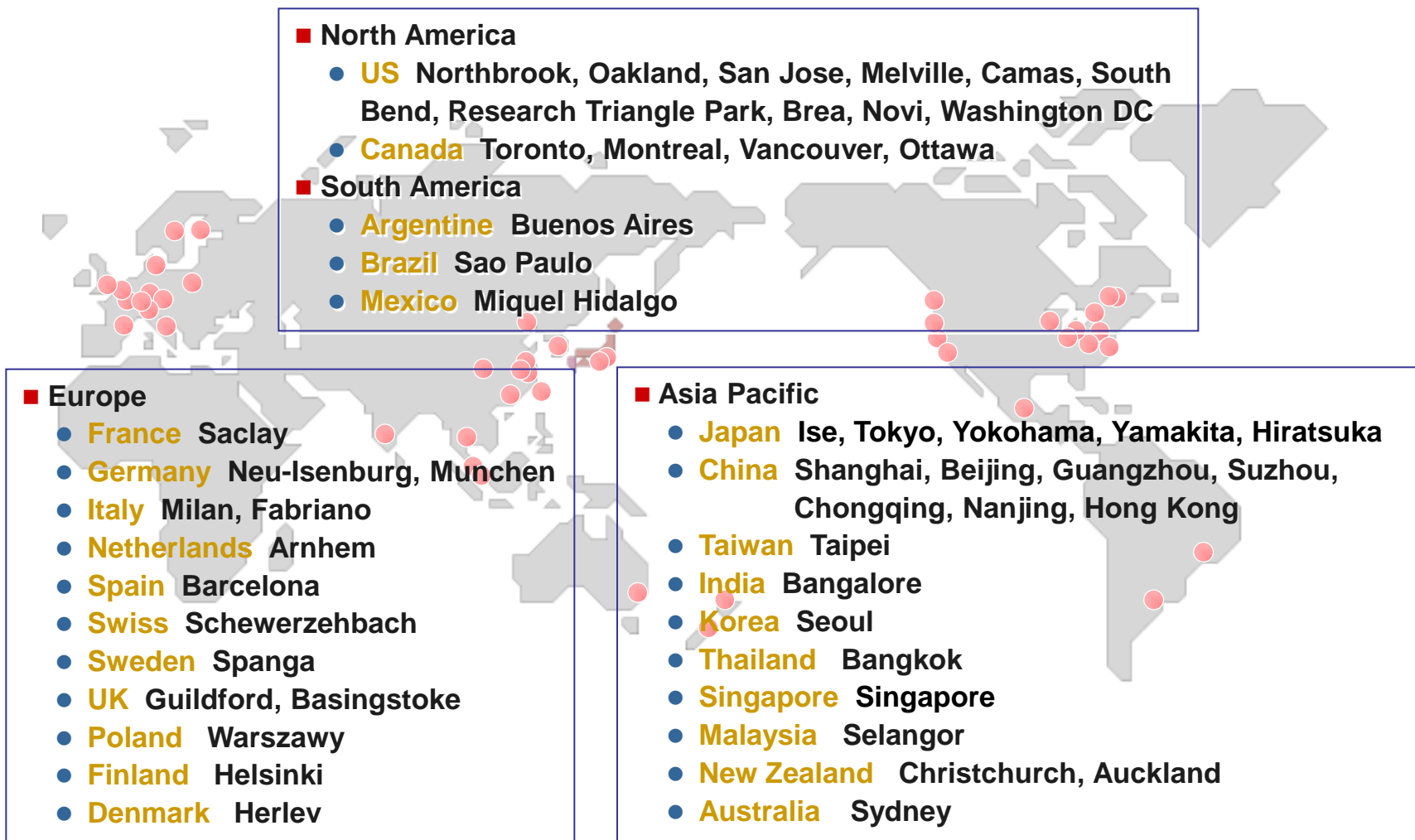
Underwriters Laboratories Inc.

- Established in : 1894 (Renamed from Underwriter's Electrical Bureau in 1901)
- Number of members : 6,808 (as of Dec 31, 2008)
- President and CEO : Keith Williams
- Head office : Northbrook, Illinois
- Major activities :
 - Development and publication of UL Standards
 - Safety testing and certification
 - EMC testing and evaluation
 - Follow-Up services, labeling services
 - Training/education



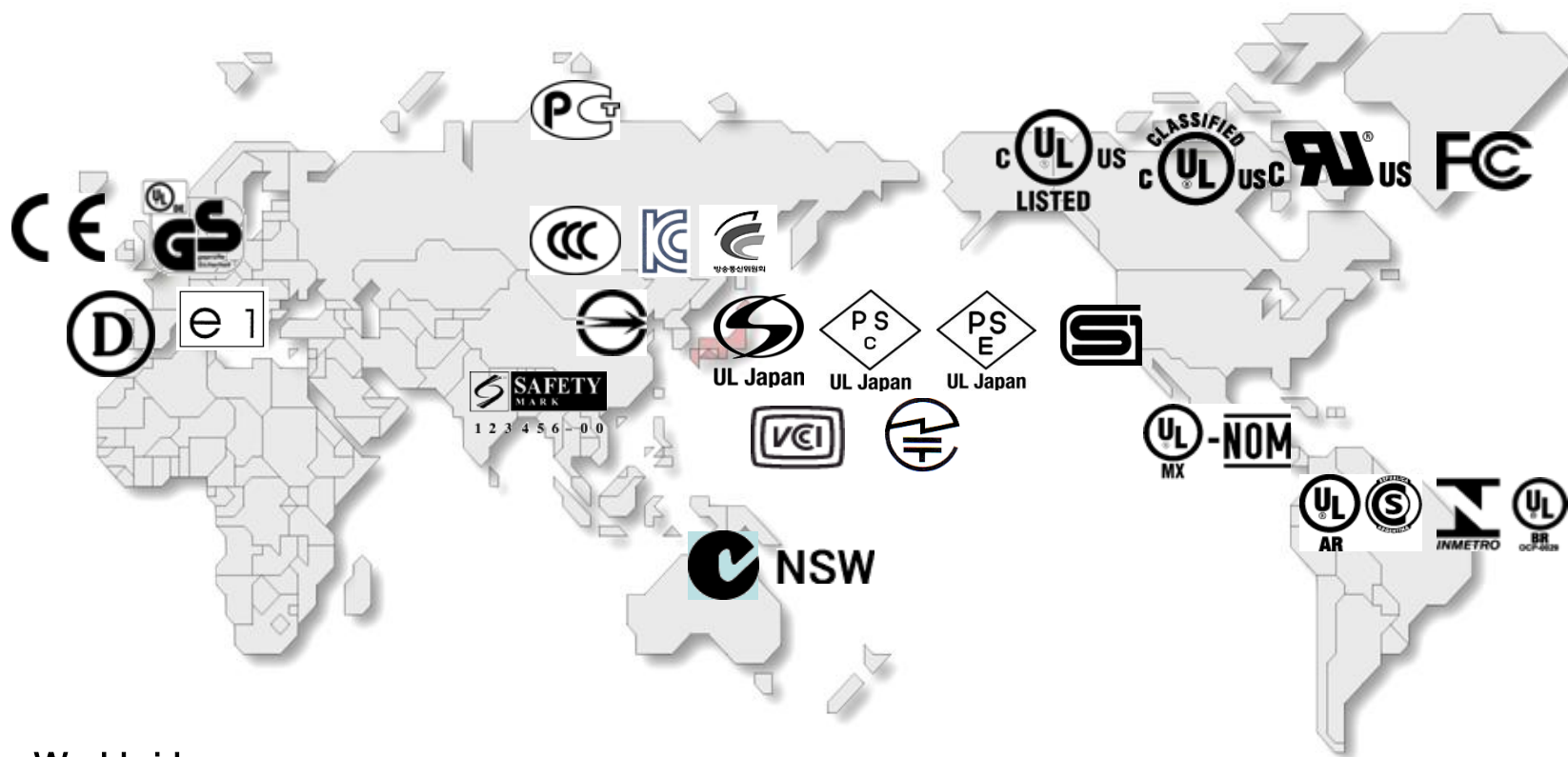
UL Global Network

(As of April, 2009)



One Stop Service for “Global Market Access”

Global Market Access



Worldwide

CB Scheme

 **Bluetooth®**



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UL history



1890

Increase the usage of Electricity

“New Era for Electricity”

More number of Fire caused by electricity

1893

Big fire at Columbia Expo. At Chicago

➡ **William Henry Merrill is appointed to conduct surveillance**

1894

Foundation of Underwriters Electrical Bureau and start testing service

1901

Foundation of Underwriters Laboratories Inc.



Brand awareness

Consumers know and trust the UL Mark

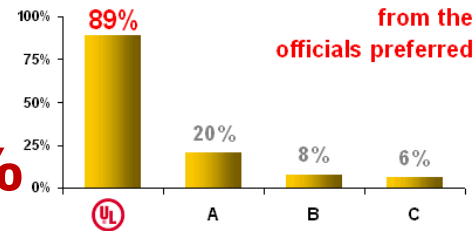
A phone survey of over 2,000 adults conducted in 2004 found that:

- 73 percent of American consumers are aware of the UL Mark
- 63 percent of American consumers are more confident of a product's safety if it has been tested by UL and carries a UL Mark

Consumer: 73%

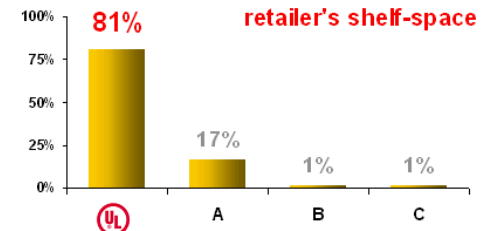
Retail storefront share: 81%

AHJs preference: 89%



The majority of the local officials (AHJs) for electric/building/fire in Northamerica prefer UL

- 89% prefer to work with UL
 - 97% more comfortable accepting the UL mark
 - Compared to other safety organisations
- [results from a June 2006]



The UL Mark is by far the preferred mark by North American Retailers of small appliances

- 81% share of shelf-space among the major retailers:
Wal-Mart, Lowes, Sears, Kmart

[Results of an audits from August 2007]

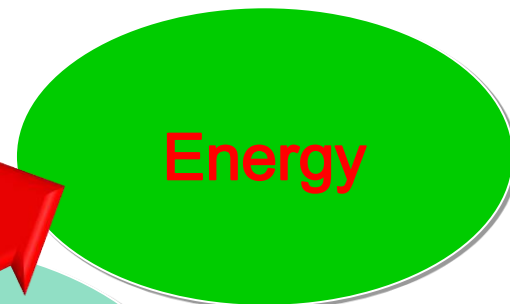
UL Certification past history and future

1920

1950

2000

2010



Digital Mobile



Consumer Electronics

IT· AV
Electronics Devices
Industry Products

IMD
Wire & Cable



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UL's Electric Vehicle and Infrastructure Certification Program



The reasons why UL decided to develop EV Programs

1. To achieve UL's mission

“Working for a safer world!”

2. Cope with New technologies and reduce those risks

3. Apply UL's Core Competencies

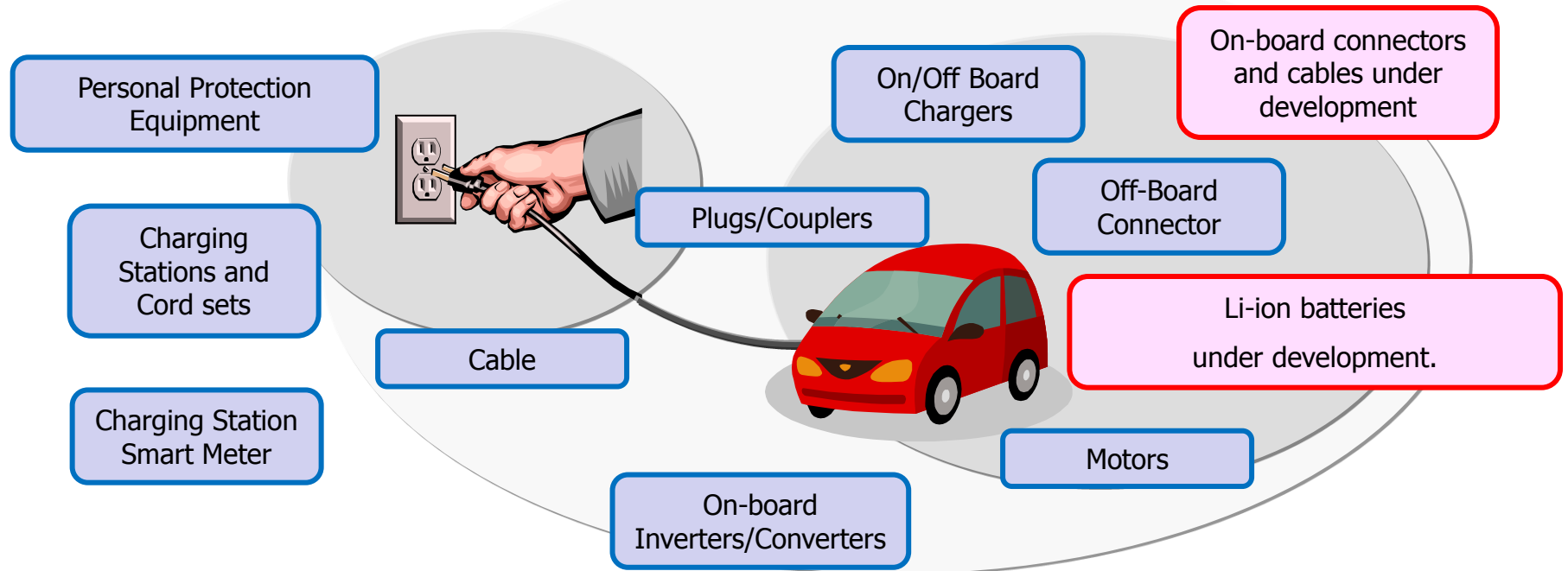
**“Experience and Expertise”
in Electricity**



UL Standards for EV/LEV's

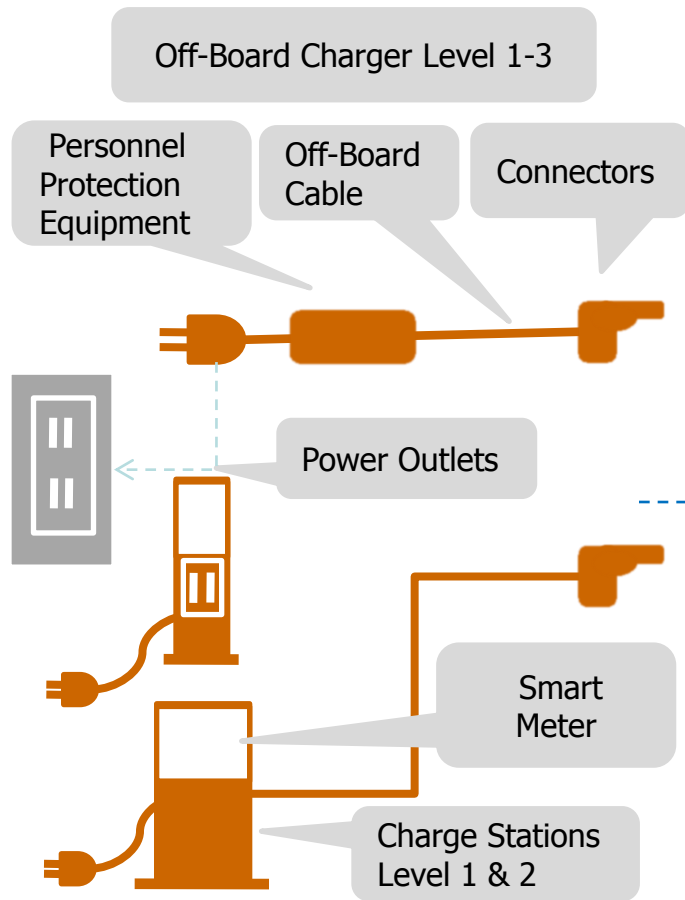
Tapping into the experienced expertise in batteries, UL is now developing UL Standard for large batteries and other on board components. Since the late 1990s, UL has developed a series of UL Standards for EVs that meet demands of the new energy era by utilizing the applicable UL Standards and existing EV standards.

UL is the only organization which offers a full suite of EV/LEV standards

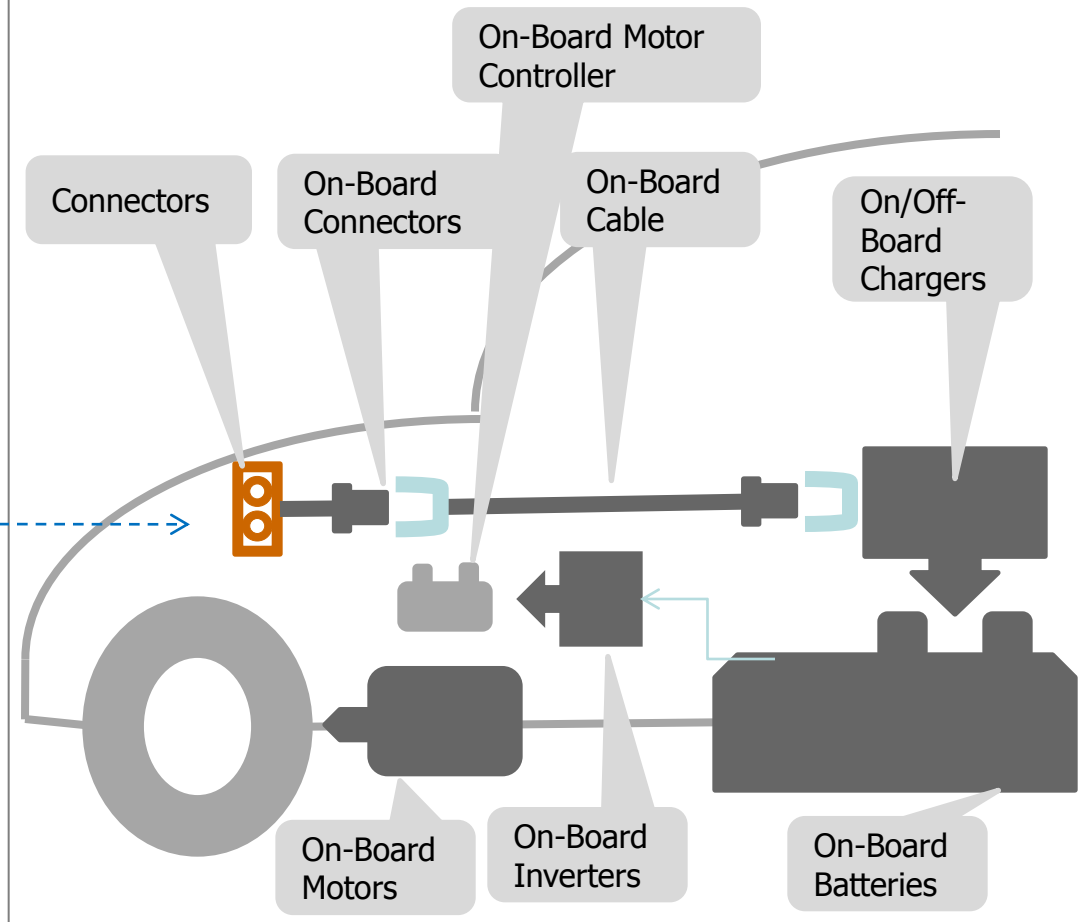


Electric Vehicle On-board and Off-board Components

Off-board Components



On-board Components

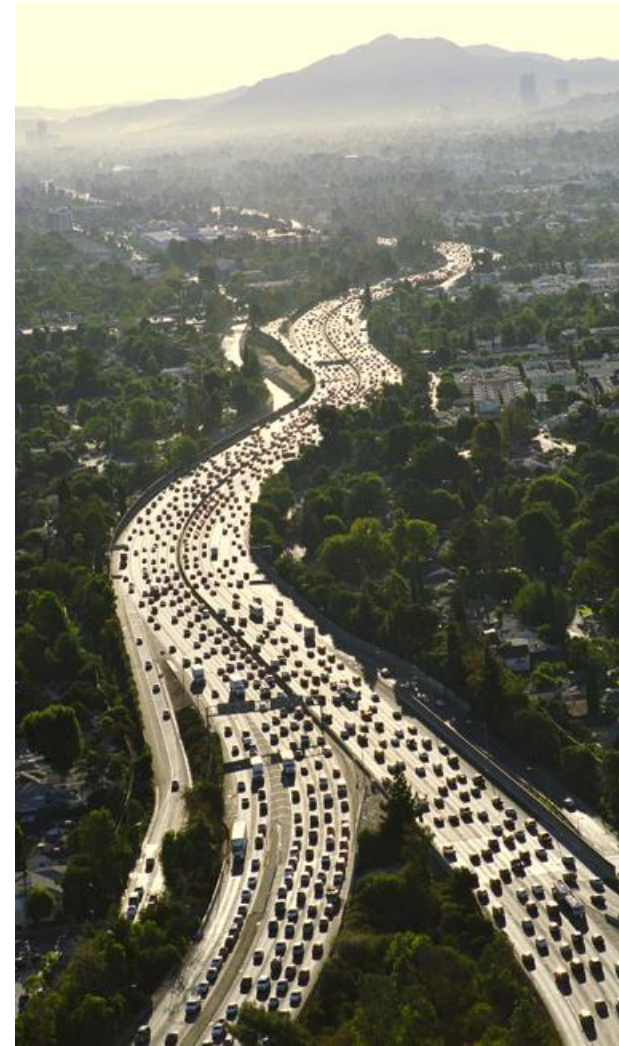


UL's Electric Vehicle and Infrastructure Training



EV Charging Equipment Training Programs

1. The programs were developed in collaboration with participants from the utility industry, infrastructure equipment industry, inspectors and installers.
2. The programs will include training for various stakeholders who will be involved in the design, construction, installation and inspection of electric vehicle charging equipment.
3. These programs will be developed with a training module and some will include a testing component as well which will allow for participants to demonstrate their understanding of the relevant National Electric Code (NEC) articles, the various installation requirements, the UL electric vehicle safety standards and the emerging electric vehicle infrastructure technology.
4. There will be separate programs developed for code officials and inspectors, installers and designers.
5. In addition to the general training program for installers, UL will also be creating company specific training programs which will allow for sellers of electric vehicle charging equipment to have installers trained on their equipment.



EV Charging Equipment Installer Program – Under Dev

- The installer training program is focused on training two groups of installers, those that are affiliated with a specific manufacturer and those that are not affiliated with a specific manufacturer
- For those installers working with a specific manufacturer, UL will offer e-learning training which will include both the training module as well as the testing component with a focus on the OEM's specific product attributes.
- Demonstrating knowledge will be assessed through passing the testing component of the course with a certificate being issued to the installer. The certificate can be verified online by inspectors, consumers and other stakeholders on UL's website.
- UL will also be developing a hands on training program which will allow for installers to be trained live and in a field setting. Initially this will be run out of UL's Raleigh office and then expanded nation wide.
- The program will initially be a certificate program as indicated above and will evolve into an ANSI accredited certification program.



Recent UL EV Activity Update



UL Signs MOU with eTec as the Exclusive NRTL for the EV Project



- Began in October 2009 when ECotality was awarded a federal stimulus grant of nearly \$100 million from the DOE,
- Will deploy 5,700 zero-emissions vehicles from Nissan and 2,600 plug-in electric vehicles from General Motors for the three-year study.
- The vehicles will be powered by 14,960 UL Listed charging stations in homes, commercial and public locations in sixteen major cities
- UL will test and certify eTec's Level Two charging systems and DC fast-chargers to its safety requirements, UL Subject 2594 and UL 2202, respectively
 - These standards and requirements are used to assess the safety of the overall charging systems



Sponsored by:

U.S. Department of Energy

Partners:

ECotality	Nissan North America
Idaho National Laboratory	Zero Emissions

Strategic Partners include:

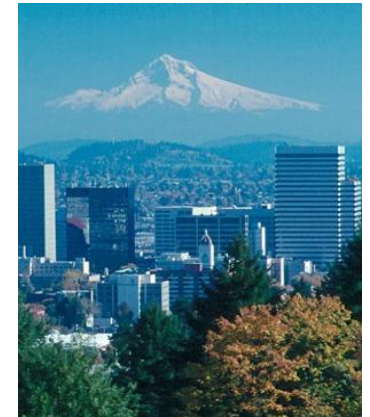
BP America	General Motors
Eaton	EPRI



UL Signs MOU with the Rocky Mountain Institute as a Technical Advisor

Project Get Ready

- Project Get Ready is a non-profit initiative led by Rocky Mountain Institute, in conjunction with a wide array of partners and technical advisers
- Project Get Ready will
 - Create a dynamic “menu” of strategic plug-in readiness actions including the “business case” for each action.
 - Provide a web database of American and international plug-in readiness activities
 - Convene at least 20 cities as well as technical players regularly to discuss their lessons learned and best practices, and report these conversations on our website and materials



Contributors:

- Ecotality
- GE
- Coulomb Technologies
- Mitsubishi Motors
- Nissan



UL Signs MOU with Industrial Technology Research Institute (ITRI)

- A national research organization that serves to strengthen the technological competitiveness of Taiwan.
- ITRI's Advanced Technology R&D focuses on the following sectors:
 - Information and Communications Field
 - Electronics and Optoelectronics
 - Chemical and Nanotechnology
 - Biomedical Technology
 - Advanced Manufacturing and systems
 - Energy and Environment



UL/ITRI MOU

Develop safety testing methodologies and requirements for power systems in electric vehicles.

UL Joins the Electric Drive Transportation Association (EDTA)

- EDTA is the preeminent industry association dedicated to advancing electric drive as a core technology on the road to sustainable mobility.
- As an advocate for the adoption of electric drive technologies, EDTA serves as the unified voice for the industry and is the primary source of information and education related to electric drive.

UL/EDTA

“EDTA welcomes our new member UL, an organization with over 116 years of expertise in developing new safety standards for new technologies. Because of this history, UL can provide a unique contribution to our efforts to reduce market hurdles for electric drive vehicles and infrastructure, expand manufacturing capacities, establish coherent regulatory policies, accelerate technological breakthroughs and increase consumer acceptance,” said EDTA’s President Brian Wynne.

