



ANSI WORKSHOP
Standards and Codes for
Electric Drive Vehicles



**U.S. National Electric Vehicle Safety Standards
Summit
October 21-22, 2010**

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NFPA Vice President & Chief Engineer

U.S. National Electric Vehicle Safety Standards Summit

- Purpose of Summit
 - Identify relevant fire and electrical safety codes, standards and specifications.
 - Identify gaps within these codes, standards and specifications.
 - Identify related gaps in research, training or communications which stem from OEM safety manual development and deployment.
 - Develop base elements for an action plan for standards development and deployment activities.



U.S. National Electric Vehicle Safety Standards Summit

- Areas addressed at the summit:
 - Codes and Standards and OEM Manuals addressing safety in the vehicle.
 - Codes and Standards addressing the infrastructure surrounding the electric vehicle (recharging stations, home recharging, battery storage, etc...).
 - Codes and Standards addressing emergency response to vehicle emergency events.
 - Other related Codes and Standards (user community specifications, insurance industry standards, etc...).



U.S. National Electric Vehicle Safety Standards Summit

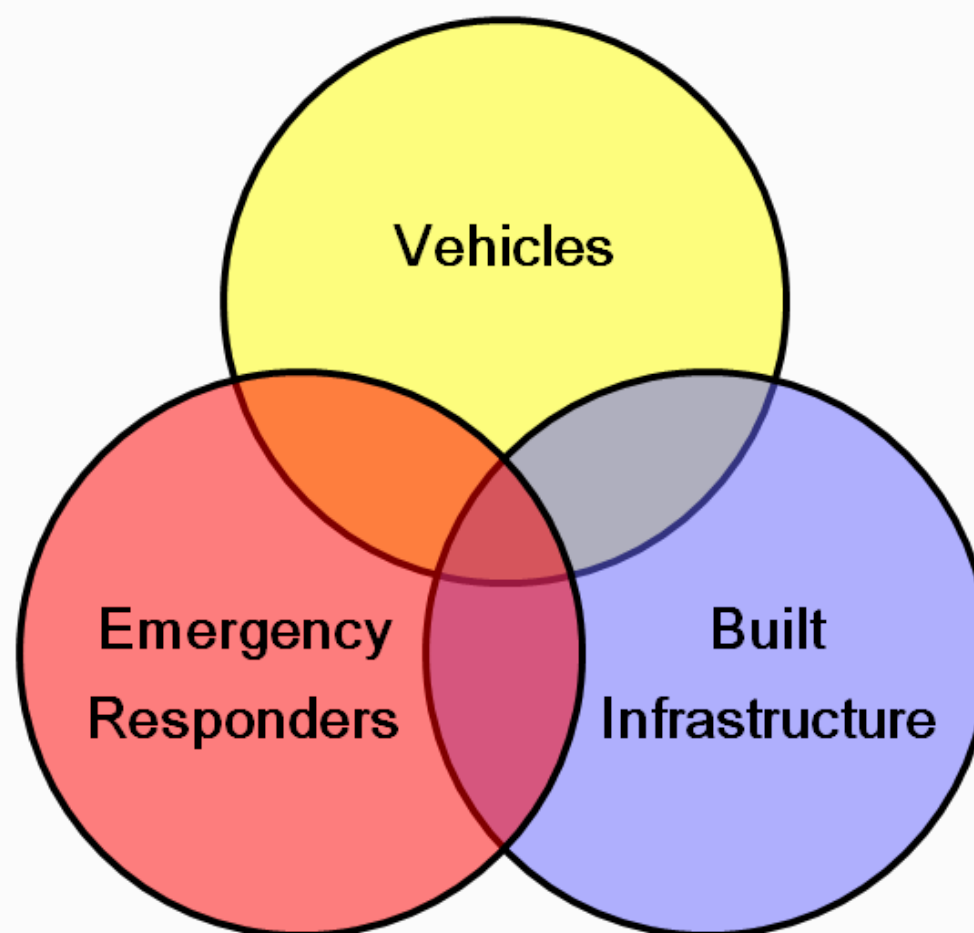
- Final Action Plan Considerations
 - Vehicle Charging Infrastructure
 - Battery Hazards Identification and Protection
 - Training for Emergency Responders and Enforcement Officials
- Report Available at – www.EVSafetyTraining.org



VEHICLES

Regulations: More on Federal Level

Codes/Standards: SAE and others



**EMERGENCY
RESPONDERS**

Regulations: Self Regulated

Codes/Standards: NFPA and others

**BUILT
INFRASTRUCTURE**

**Regulations: More on State/Local
Level**

Codes/Standards: NFPA and others



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- Vehicle Charging Infrastructure
 - National Electrical Code®(NEC®)is the electrical installation document for the built environment and is adopted and used in all 50 states.
 - The NEC has had electric vehicle charging system equipment installation requirements since 1996 and has been updated through the next 6 editions – Article 625.
 - Currently, the Technical Panels are preparing for the 2014 NEC and an Electric Vehicle task group has been established to ensure that open issues and gaps are addressed for the next edition.



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- Vehicle Charging Infrastructure
 - NECA - EVSE Training Workshop
 - Installation in accordance with ANSI Standards including:
 - NFPA 70, *National Electrical Code*, and
 - NECA 413, *Standard for Installing and Maintaining Electric Vehicle Supply Equipment*
 - Electrical Permitting Process and Role of Electrical Inspector.



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- Vehicle Charging Infrastructure
 - Electric Vehicle Infrastructure Training Program (EVITP) and Certification
 - NECA, IAEI, IBEW, automakers, EVSE manufacturers, utility companies, and standards developing organizations.
 - This ensures that there is a ready force of trained electricians and electrical contractors that are familiar with the unique characteristics of the EVSE technology.



U.S. National Electric Vehicle Safety Standards Summit

- Battery Hazards Identification and Protection
 - Lithium Ion Batteries in Storage Hazard Assessment
 - Fire Protection Research Foundation - Address insurance industry concerns for storage protection and concerns of first responder.
 - Scope - Literature Review, Usage Survey, Hazard Assessment and Gap Analysis.
 - Schedule - Initiated January 2011, workshop to discuss finds and plan next steps July 2011, completed in August 2011.



U.S. National Electric Vehicle Safety Standards Summit

- Training for Emergency Responders
 - Develop and Implement Comprehensive Training Program and Field Guide
 - NFPA/DOE Project to Reach Nations 1.1 Million First Responders
 - Program will expand to Law Enforcement and EMS
 - 5.4 Million Dollar Program – Completed February 2013
 - Training Available July 1, 2011
 - Self sustaining program once established
 - www.EVSafetyTraining.org



EV Safety Training Project Partnerships

International Association of Fire Fighters (IAFF)
International Association of Fire Chiefs (IAFC)
National Volunteer Fire Council (NVFC)
International Fire Marshals Association (IFMA)
National Association of State Fire Marshals (NASFM)
Metropolitan Fire Chiefs
U.S. Fire Administration (USFA)
North American Fire Training Directors (NAFTD)

Fire Service Technical Panel: assisting with needs assessment & direction for training development

National Renewable Energy Lab (NREL)
National Highway Traffic and Safety Association (NHTSA)

Tech Questions, Trends, Stats, Safety Issues, Crash Test Results



Auto Manufacturers Partnerships

- Alliance of Auto Manufacturers (AAM)
- Association of Intl Auto Manuf. (AIAM)
- Individual Auto Manufacturer Partners

Audi

BMW

Ford

GM

Hyundai

Nissan

Tesla

Kia

Volkswagen





ELECTRIC VEHICLE SAFETY TRAINING

A PROJECT OF THE NATIONAL FIRE PROTECTION ASSOCIATION

SEARCH GO

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Training

Resources

Calendar

Blog



Extrication demonstration

See photos of Chicago firefighters working on a Chevy Volt [more >](#)

NFPA develops EV Training

More Videos

NOT VETTED BY CNN

CNN iReport
NEW YORK AREA FIRST RESP.
iReporter Badertv

Click to play



Headlines

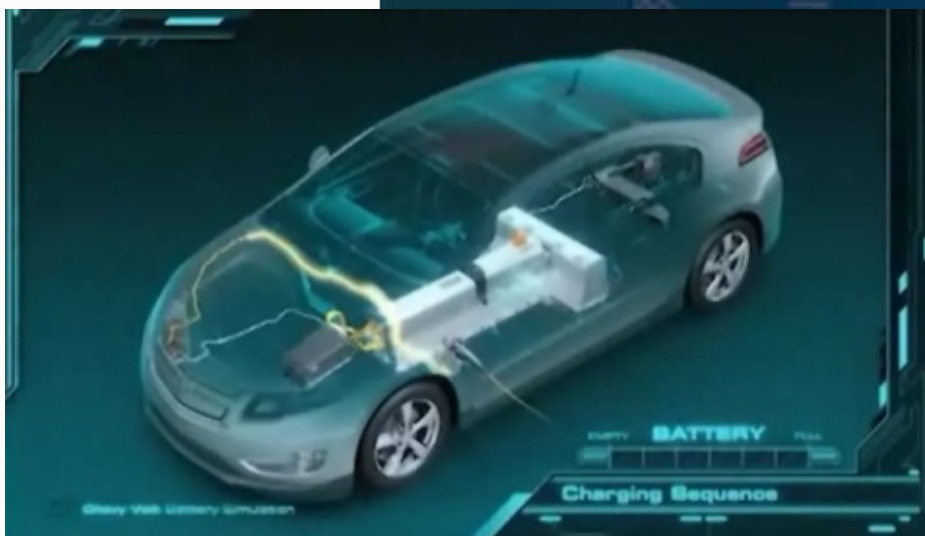
NFPA and Nissan collaborate to provide LEAF vehicle safety information to first responders

Chevrolet, OnStar and NFPA host Electric Vehicle Safety Training for Detroit's First Responders

From our blog

Events

Chevy Volt has be



ELECTRIC VEHICLE SAFETY TRAINING

Responder Actions

DATA ACCESS

Course Overview

Identification

EV construction

Vehicle Safety Systems

Responder Safety

Responder Procedures

DATA Review

- **Scene safety (ABC's of extrication)** - mention that they apply, then get into Volt-specific
- **Size up**
 - Scene survey (inner/outer circle)
 - Identification
 - > Emergency Field Guides

(Examples of crumpled vehicle; incidents where vehicle identification is difficult or unreliable)

- Consideration of biometric info from OnStar
- Evaluate need for extrication
- Number of victims
- Additional Secure vehicle

- **Immobilize Vehicle**
- Approach vehicle from the sides
- Stabilization of vehicle
 - Turn vehicle off
 - Chock wheels
 - Set parking/emergency brake
 - Place vehicle into park
 - Consideration of electrical system deactivation
- **Disable Vehicle (Vehicle Shutdown)**

SAMPLE VIDEO / ANIMATION

0:24 / 0:30

MY PROFILE

samples

NFPA TRAINING SYSTEMS



U.S. National Electric Vehicle Safety Standards Summit

- Identified standard gaps are being filled by ANSI member organizations like SAE, UL, NFPA, NECA and NEMA.
- Strong partnerships have been formalized between the auto manufactures, standards development organizations and the inspection, enforcement and safety agencies.
- These activities and accomplishments will be presented this fall at a follow-up U.S. National Electric Vehicle Safety Standards Summit in Detroit – September 27-28, 2011.





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Thank You

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