National Fire Protection Association

ELECTRIC VEHICLE SAFETY TRAINING FOR EMERGENCY RESPONDERS

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May 16, 2012
Project ID: ARRAVT036

2012 DOE Vehicle Technologies Program Review Presentation

This presentation does not contain any proprietary, confidential, or otherwise restricted information
Barriers

- Fire Service and Law Enforcement suffer from unstructured training infrastructure & inconsistent technology/internet accessibility.

Partners

- 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)
- GM, Ford, Toyota, Nissan, Mercedes, Hyundai, Tesla, Porsche, Honda, Mitsubishi, Chrysler, Volkswagen, BMW, Kia, Alt-e
- National Renewable Energy Lab (NREL)
- National Highway Traffic Safety Association (NHTSA)

Timeline

Start – February 2010
End – February 2013
70% complete

Budget

Total project funding
DOE share: $4,354,135.
Contractor’s share: $1,088,534.

DOE Funding Received
2010: $1,923,169.
2011: $1,520,737.
2012: $96,331.*

*(Through February 2012)
Relevance: Project Objectives

- Provide comprehensive nationwide EV Safety Training Programs for the Fire Service (1+ million).
- Make specialized classroom and online programs available to Law Enforcement & EMS communities.
- Create NFPA Emergency Responder Web Portal for national EV Safety Training, events, news and OEM info.
- Create a quick reference on-scene EV Field Guide.
- Cultivate a lasting, sustainable program to address future alternative-fuel vehicle safety concerns.
Train Fire Service Instructors throughout U.S. to deploy EV Safety Training nationwide.

Launch online self-paced EV Safety courses.

Publish EV Emergency Field Guide on multiple platforms.

Expand program to Law Enforcement & EMS.

Implement sustainability revenue model to support program longevity.
Relevance: Job Creation & Retention

- 3 Full-time, 1 Part-time NFPA positions created.
- 4 Additional Subject Matter Experts/Trainers hired.
- Numerous jobs created/retained through employing vendors and subcontractors.
  - Several video and media production vendors
  - Curriculum development vendors
  - Public Relations & Communications Firm
  - Market Research Organization
  - Research Foundation
  - Fire & Rescue Training Institutions
Approach: Project Scope

Plug in Hybrids

Electric

Hybrids

AC Level 1

AC Level 2

DC Quick Charge
Approach: Identified EV Risks & Scenarios
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Approach: Milestones

- Emergency Responder Market Research
- Setup Fire Service Technical Panel
- Hire Training Development Team
- Develop Training Delivery Model
- Nationwide 1st Responder Volt Tour
- Web Portal Release
- Hire Research Foundation
- Hire Communications Firm
- Hire Web Development Firm
- Hire SME Team (Content Formation)
- Partner with Auto Manufacturers
- Hire Flagship Training Development

Year: 2010
Q1: Jan
Q2: Apr
Q3: Jul
Q4: Oct
Approach: NFPA Standards Alignment

- NFPA 1500: Occupational Safety & Health Standards for Fire Fighters
- NFPA 1001: Fire Fighter Professional Qualifications Series
- NFPA 1600: Disaster Planning and Emergency Preparedness
- NFPA 472: Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents
- NFPA 1670: Standards for Technical Rescue Incidents
- NFPA 921: Fire Investigation

- National Electric Code
- Article 625: Electric Vehicle Charging Stations
- Article 626: Electrified Truck Parking Spaces
- Article 220: Residential power consumption and how EV charging infrastructure will affect power consumption and emergency responders
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Approach: Training Delivery Model

NFPA EV Safety Website and Self-Paced Online Training (Fire, EMS, LE)

NFPA Train-the-Trainer (Train instructors each state)

University and Tech College Partners

State Fire Service Trainers

Fire/Law Enforcement Organization Partnerships

Fire Service, EMS, Law Enforcement in the Field
Progress: Milestones

- Web Portal Launched
- Market Research Complete
- 4 Successful Pilot Trainings
- Fire Service Tech Panel Course Review
- Online Course Development Complete
- Emergency Field Guide Complete
- 25 of 50 States Trained
- Nationwide Chevy Volt Tour Complete
- Fire Course Development Complete
- Hired SME/Instructor Team
- First State Training Held (MA)
- NHTSA Li-Ion Guidelines Developed
- Courses Revised per NHTSA
- Released Online Training/EFG
Progress: Milestones

- Developed Program Sustainment Model
- Developed LE Classroom, Online Course
- Developed EFG Web, Mobile Installable
- Developed EMS Course
- Exhibit at Major LE & EMS Events
- 50 of 50 States Trained
- Partnered with LE Organizations
- Pilot LE Courses
- First LE Training Held (NY)
- Pilot/Launch EMS Course
- Update All Training Materials
Progress: EV Safety Deliverables
(29,000 Emergency Responders Trained)

- **Fire Svc Train-the-Trainer Course (8 hr)**
  ✓ 1,800 Fire Service Instructors Trained

- **Fire Service Classroom Course (4 hr)**
  ✓ 11,200 Fire Service Trained

- **Fire/EMS Web Self-Paced Course (2 hr)**

- **LE Classroom Course (3 hr)**

- **LE Web Self-Paced Course (2 hr)**

- **Emergency Field Guide**

- **EV Monthly Newsletter 22,000 Circulation**

- **EV Safety Training Website**
  ✓ 101,000 hits

- **Vehicle-Specific Online Training**
  ✓ 16,000 Emergency Responders Trained
Progress: Fire Service Train-The-Trainer - 30 State Classes

- Connecticut
- Delaware
- Florida
- Georgia
- Hawaii
- Illinois
- Iowa
- Kentucky
- Maryland
- Massachusetts
- Missouri
- Montana
- New Hampshire
- New Jersey
- New York
- North Carolina
- North Dakota
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- Vermont
- Washington
- Wisconsin
- Wyoming
- Tennessee
- Louisiana
- Mississippi
- Nevada
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ELECTRIC VEHICLE SAFETY FOR EMERGENCY RESPONDERS

Progress: NFPA’s Emergency Field Guide

HOW TO USE THIS GUIDE

- Immobilization
- How to Determine if Vehicle is ON / OFF
- Primary Disabling Procedure
- Alternate Disabling Procedures
- Disabling Procedure Supporting Diagrams
- WARNINGS
- Vehicle Photo
- Manufacturer Badge
- Model Year Range
- Vehicle Badging
- Make and Model Tab
- System Diagrams (High Voltage, Airbags, SRS—if Available)
Progress: Online Self-Paced Course

- Covers the same ground as the classroom course with one for one match to classroom units
- High Quality graphics, animations, and simulations.
- Includes self-contained LMS that will track, record and report on student completions

Link to Online Training Video Clip
GM passes the torch to NFPA on EV Training

NFPA President Jim Shannon speaks at a press conference in Detroit and talks about NFPA's role in providing electric vehicle safety training to first responders.
Collaboration: Emergency Responder Organizations

Training Developed with Assistance from:

- North American Fire Training Directors (NAFTD)
- 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)

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

- New York State Police
- National Renewable Energy Lab (NREL) – Tech Questions & Trends
- State Farm Insurance – Safety Issues, Crash Test Results
- National Highway Traffic Safety Administration (NHTSA)
Collaboration: Auto Manufacturer Partnerships

- Alliance of Auto Manufacturers (AAM)
- Association of Intl Auto Manuf. (AIAM)
- 15 Auto Manufacturer Partnerships

General Motors  Honda
Ford  Mitsubishi
Toyota  Chrysler
Nissan  Volkswagen
Porsche  BMW
Hyundai  Kia
Tesla  Mercedes
Alt-e
Future Work: Plans for Remainder of Project

- Develop and release our Instructor-Led and Online Training Programs for Law Enforcement and EMS.
- Complete Development of Electronic Emergency Field Guide.
- Complete Train-the-Trainer sessions in remaining states.
- Continue Developing Partnerships with Auto Manufacturers, Battery OEMs, Fire, LE & EMS Organizations.
- Work to Expand and Enhance our Web Portal (www.EVsafetytraining.org).
- Attend Major Nationwide Fire, EMS, LE Events to our Training Programs.
- Execute Media Campaign: Trade Publications, Online, Social Networking.
Summary

Relevance: Effective EV knowledge transfer to Emergency Responders will reduce property damage, injury, loss of life, and help achieve public acceptance of high volume EV/Hybrid production in the U.S.

Approach: Through a carefully planned and executed development, partnership and distribution strategy, NFPA offers high value, standards-based training programs, a web based centralized EV safety repository, and an EV quick reference guide (EFG).

Accomplishments/Progress: Developed classroom and online EV safety training courses (29,000 trained), videos, Emergency Field Guide (print and electronic), and an EV safety web portal (101,000 hits). Established numerous working partnerships with auto manufacturers to facilitate information flow, availability of EV safety related documents, and improvement of industry Emergency Response Guides.

Collaborations: Active partnerships with all high level U.S. fire service organizations, automobile manufacturers (15), law enforcement and governmental agencies.

Proposed Future Work: Train fire, law enforcement and EMS personnel to deliver course content and curriculum throughout the First Responder community. Continue to develop Emergency Responder and automotive partnerships, while updating training programs and reference material to stay current with emerging technology.