

National Fire Protection Association

ELECTRIC VEHICLE SAFETY TRAINING FOR EMERGENCY RESPONDERS



2012 DOE Vehicle Technologies Program Review Presentation



*Andrew Klock
Sr Project Manager
National Fire Protection Association*

May 16, 2012

Project ID: ARRAVT036





National Fire Protection Association

ELECTRIC VEHICLE SAFETY FOR EMERGENCY RESPONDERS

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)

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)



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.



Relevance: 2012 Objectives

- 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



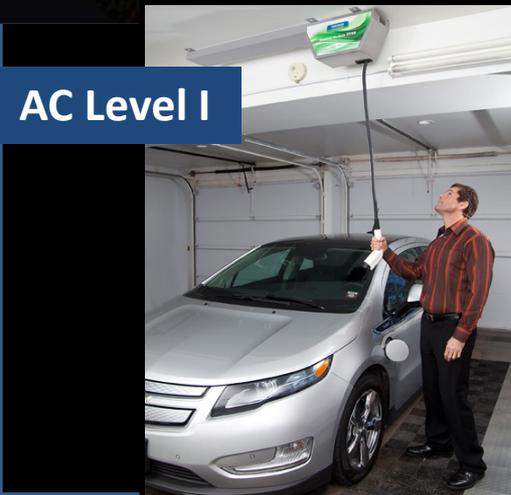
National Fire Protection Association
ELECTRIC VEHICLE SAFETY FOR EMERGENCY RESPONDERS

Approach: Project Scope

Plug in Hybrids

Electric

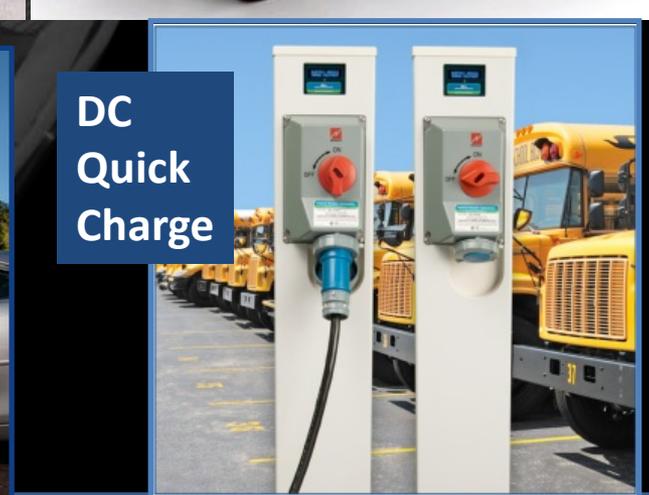
Hybrids



AC Level 1



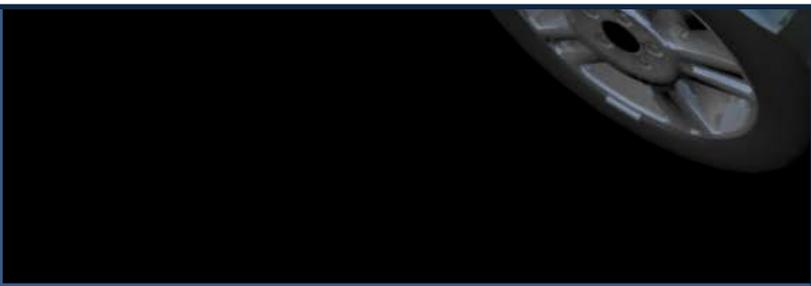
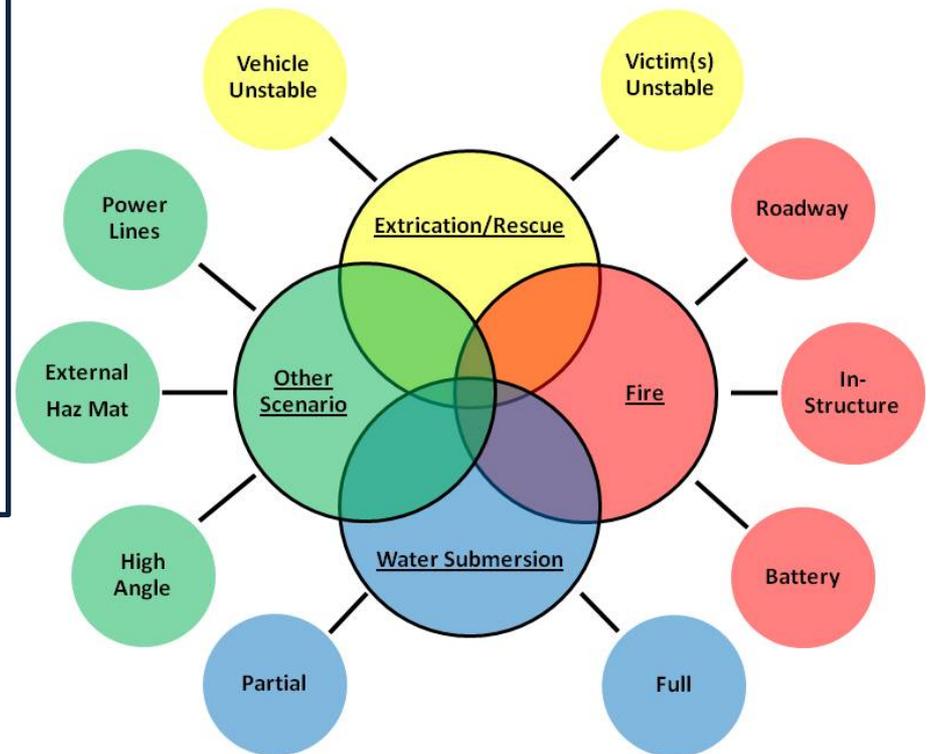
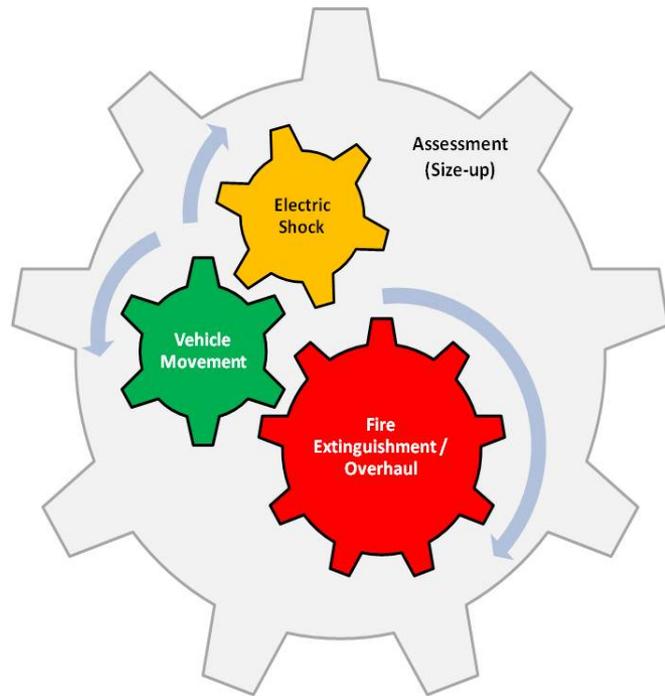
AC Level 2



DC
Quick
Charge



Approach: Identified EV Risks & Scenarios

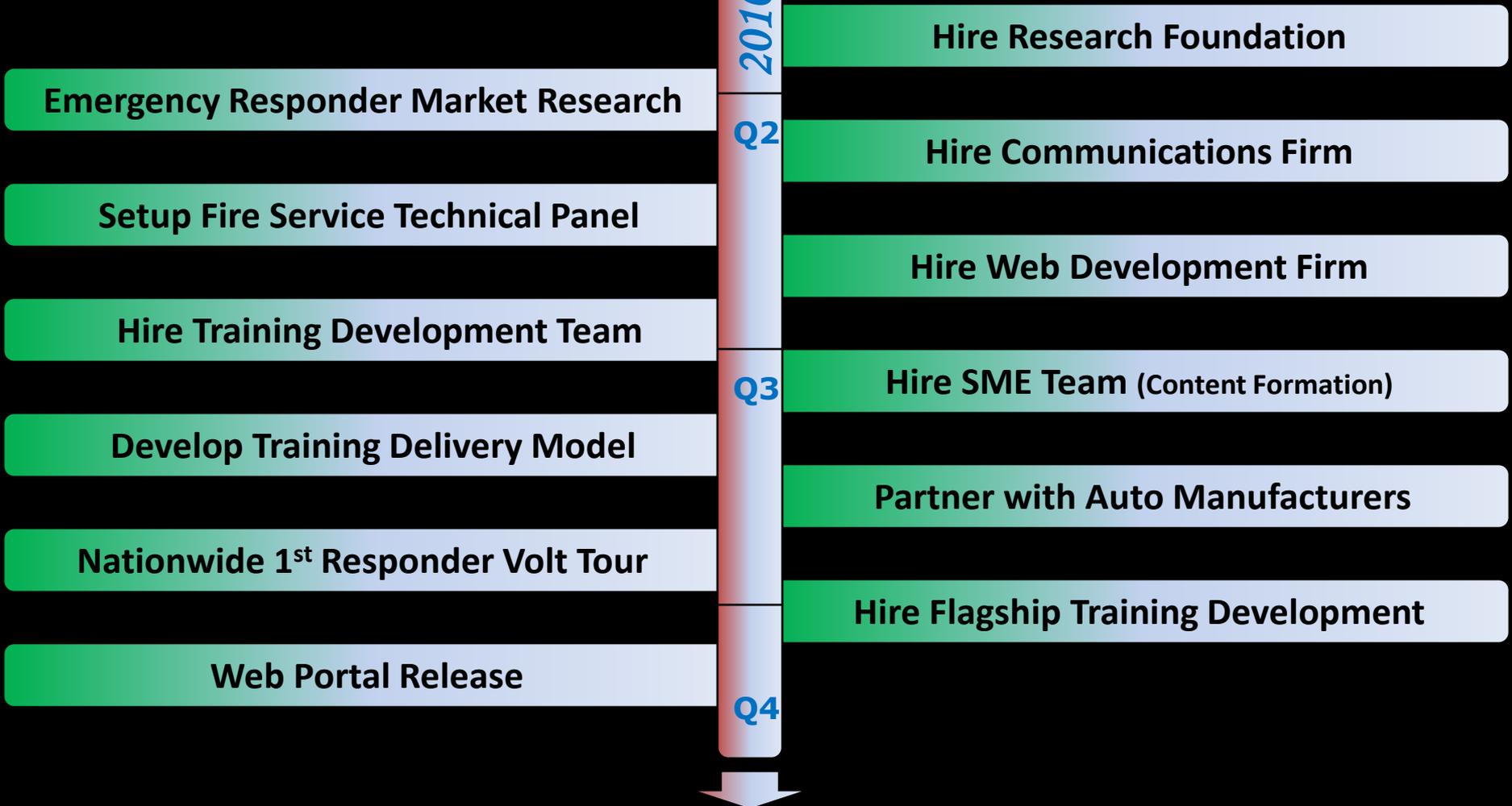




National Fire Protection Association
ELECTRIC VEHICLE SAFETY FOR EMERGENCY RESPONDERS

ID	Task Name	Duration	Aug 16, '09							Aug 23, '09							Aug 30, '09							Sep 6, '09							Sep 13, '09							Sep 20, '09							Sep 27, '09						
			F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F
1	Construction	21 days	[Gantt bar for Construction task]																																																
2	Delivery	13 days	[Gantt bar for Delivery task]																																																

Approach: Milestones





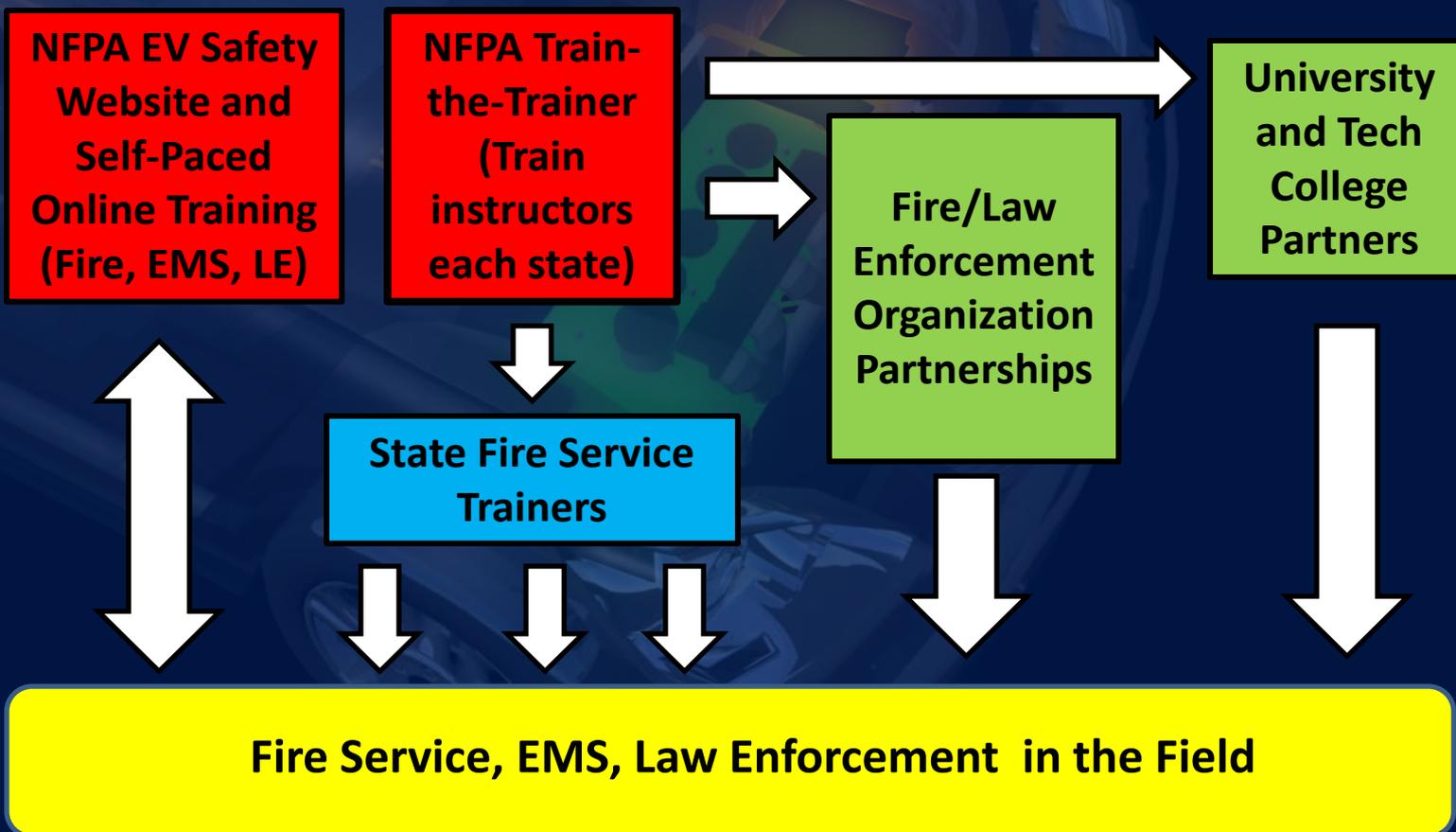
Approach: NFPA Standards Alignment

- 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 effect power consumption and emergency responders



Approach: Training Delivery Model





National Fire Protection Association

ELECTRIC VEHICLE SAFETY FOR EMERGENCY RESPONDERS

Progress: Milestones

ID	Task Name	Duration	Aug 16, '09							Aug 23, '09							Aug 30, '09							Sep 6, '09							Sep 13, '09							Sep 20, '09							Sep 27, '09						
			F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F
1	Construction	21 days	[Gantt bar for Construction task]																																																
2	Delivery	13 days	[Gantt bar for Delivery task]																																																

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

2011

Q2

Q3

Q4

2012

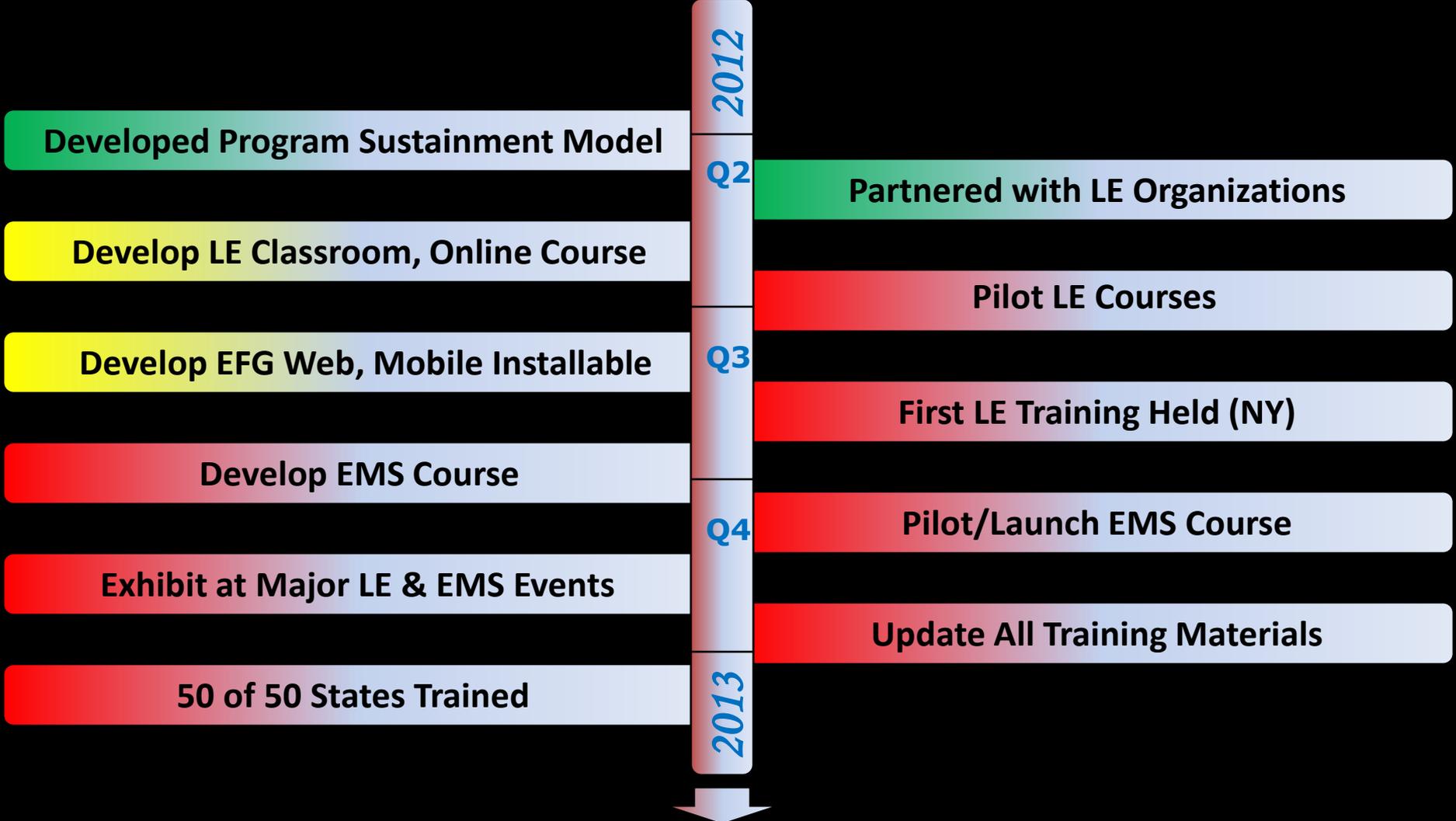




National Fire Protection Association
ELECTRIC VEHICLE SAFETY FOR EMERGENCY RESPONDERS

Progress: Milestones

ID	Task Name	Duration	Aug 16, '09							Aug 23, '09							Aug 30, '09							Sep 6, '09							Sep 13, '09							Sep 20, '09							Sep 27, '09						
			F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F	F	S	M	T	W	T	F
1	Construction	21 days	[Progress bar for Construction task]																																																
2	Delivery	13 days	[Progress bar for Delivery task]																																																





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**



National Fire Protection Association
ELECTRIC VEHICLE SAFETY FOR EMERGENCY RESPONDERS

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



National Fire Protection Association 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

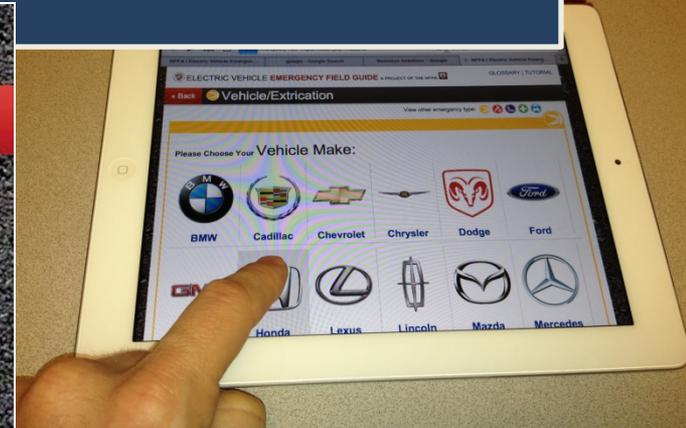
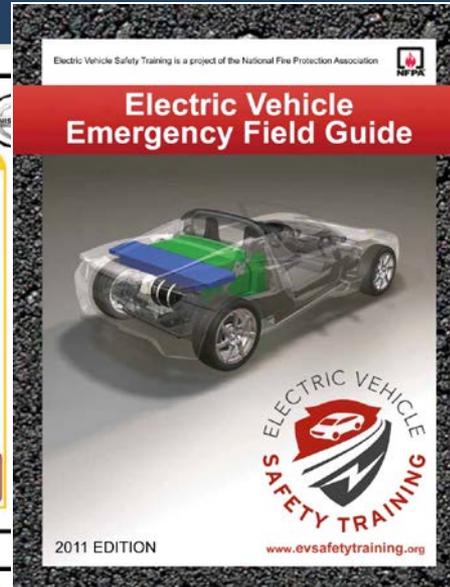
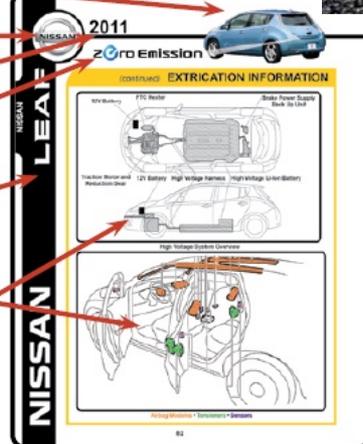
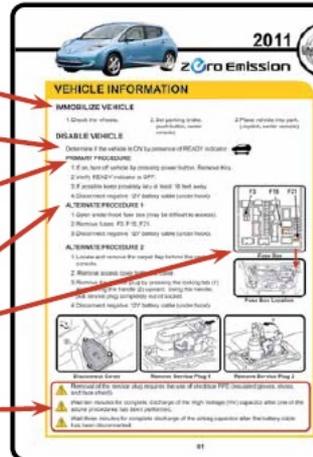
Manufacturer Badge

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](#)



National Fire Protection Association ELECTRIC VEHICLE SAFETY FOR EMERGENCY RESPONDERS

Progress: 2011-2012

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.

Electric Vehicle Safety Training is a project of the National Fire Protection Association

FONT SIZE: A A



SEARCH GO
[JOIN OUR EMAIL LIST](#)

[NEWS](#) | [ABOUT THE PROJECT](#) | [CONTACT US](#)

[Training](#) | [Resources](#) | [Calendar](#) | [Blog](#)



Download free Emergency Response Guides
See our Resources page to download hybrid and electric vehicle ERGs.
[read on >](#)

NFPA develops EV Training [More Videos](#)



Headlines

NHTSA releases guidance to increase awareness, identify safety measures following Volt investigation >

NFPA, Chevrolet provide 10,000 fire-fighters and first responders with

From our blog

Kentucky Train-the-Trainer Session Recap >

Looking for a charging station? There's an App for that! >

U.S. Army hybrid vehicle going on

Events

April 16-21, 2012
FDIC
Indianapolis, IN

May 4-8, 2012
Fire-Rescue Med 2012



NHTSA releases interim guidance

EVsafetytraining.org

- 101,000 Web Page Visits
- 22,000 EV Monthly Newsletter Circulation



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

Ford

Toyota

Nissan

Porsche

Hyundai

Tesla

Alt-e

Honda

Mitsubishi

Chrysler

Volkswagen

BMW

Kia

Mercedes



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.



National Fire Protection Association
ELECTRIC VEHICLE SAFETY FOR EMERGENCY RESPONDERS

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.