

National Fire Protection Association

ELECTRIC VEHICLE SAFETY TRAINING FOR EMERGENCY RESPONDERS



2011 DOE Vehicle
Technologies Program Review
May 11, 2011



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Project ID: ARRAVT036

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National Fire Protection Association ELECTRIC VEHICLE SAFETY FOR EMERGENCY RESPONDERS

Timeline

Start – February 2010

End – February 2013

42% complete

Budget

Total project funding

DOE share: \$ 4,354,135.

Contractor's
share: \$ 1,088, 534.

DOE Funding Received

2010: \$1,923,169.

2011: \$ 429,837*.

*(Through February 2011)

Barriers

- Fire Service lacks standardization in training and has 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)

Alliance of Automobile Manufactures (AAM)

General Motors, Nissan, Ford, Tesla

Assoc of International Automobile Manufactures (AIAM)

National Renewable Energy Lab (NREL)

National Highway Traffic and Safety Association
(NHTSA)



Objectives: Relevance

- Increasing fuel prices are driving greater consumer demand for electric and hybrid vehicles.
- Hybrid vehicle sales for February 2011 increased **39%** compared to February 2010.*
- Hybrid vehicle sales in February 2011 were **19.5%** higher than the previous month (January 2011).*
- Toyota forecasts selling its one millionth Prius in the U.S. in 2011.*
- Experts predict cumulative total of 2 million hybrid / electric vehicles in the U.S. in 2011.*



Objectives: Relevance

Program Objectives

- Develop and Implement a comprehensive Training Program and Field Guide for Electric Drive Vehicles, to keep first responders prepared and public safe.
- Reach 1 million fire service members nation-wide.
- Cultivate a lasting, sustainable program to address future alternative-fuel vehicle safety concerns.
- Create NFPA Emergency Responder Web Portal for all EV safety training and info.



Objectives: Relevance

2011 Objectives

- Deploy instructors for Train-the-Trainer sessions through State and Metro training systems.
- Launch e-learning online EV Safety Course.
- Publish EV/HEV Emergency Field Guide and Emergency Field Guide Database.
- Implement sustainability revenue model to support program and job longevity.
- Complete online interactive Flagship training module for Chevrolet Volt.



Objectives: Relevance

Job Creation

- 4 Full-time NFPA Staff positions created, 1 retained.
- 7 Subject Matter Experts/ Consultants hired.
- Numerous jobs created/ retained through employing vendors and subcontractors.
 - Fire Protection Research Foundation
 - ATEC, Burning Visions
 - Fleishman-Hillard
 - Chadwick Martin Bailey
 - University of Missouri Fire & Rescue Training Institute



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Approach: 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
1	Construction	21 days	F	S	M	T	W	T	F
2	Delivery	13 days							

Project Planning Complete

1st Responder Research (qualitative/quantitative)

Setup Fire Service Technical Panel

Hire Training Development Team (ATEC)

Hire Video Team

Nationwide 1st Responder Volt Tour

Video Shoot (NV, NH)

Project Kickoff Meetings

Hire Communications Firm (Fleishman Hillard)

Hire Web Development Firm (Velir Studios)

Hire SME Team (Content Formation)

Alliance with GM, Tesla, Nissan, Ford

Hire Flagship Training Development (ATEC)

Web Portal Released (EVsafetytraining.org)

2010

Q2

Q3

Q4





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Approach: Project Scope

Model Years 2008-2012

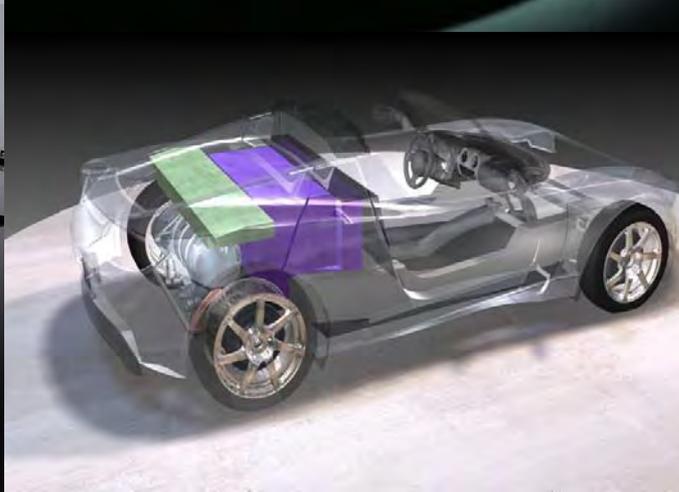
Plug in Hybrids



Electric



Hybrids





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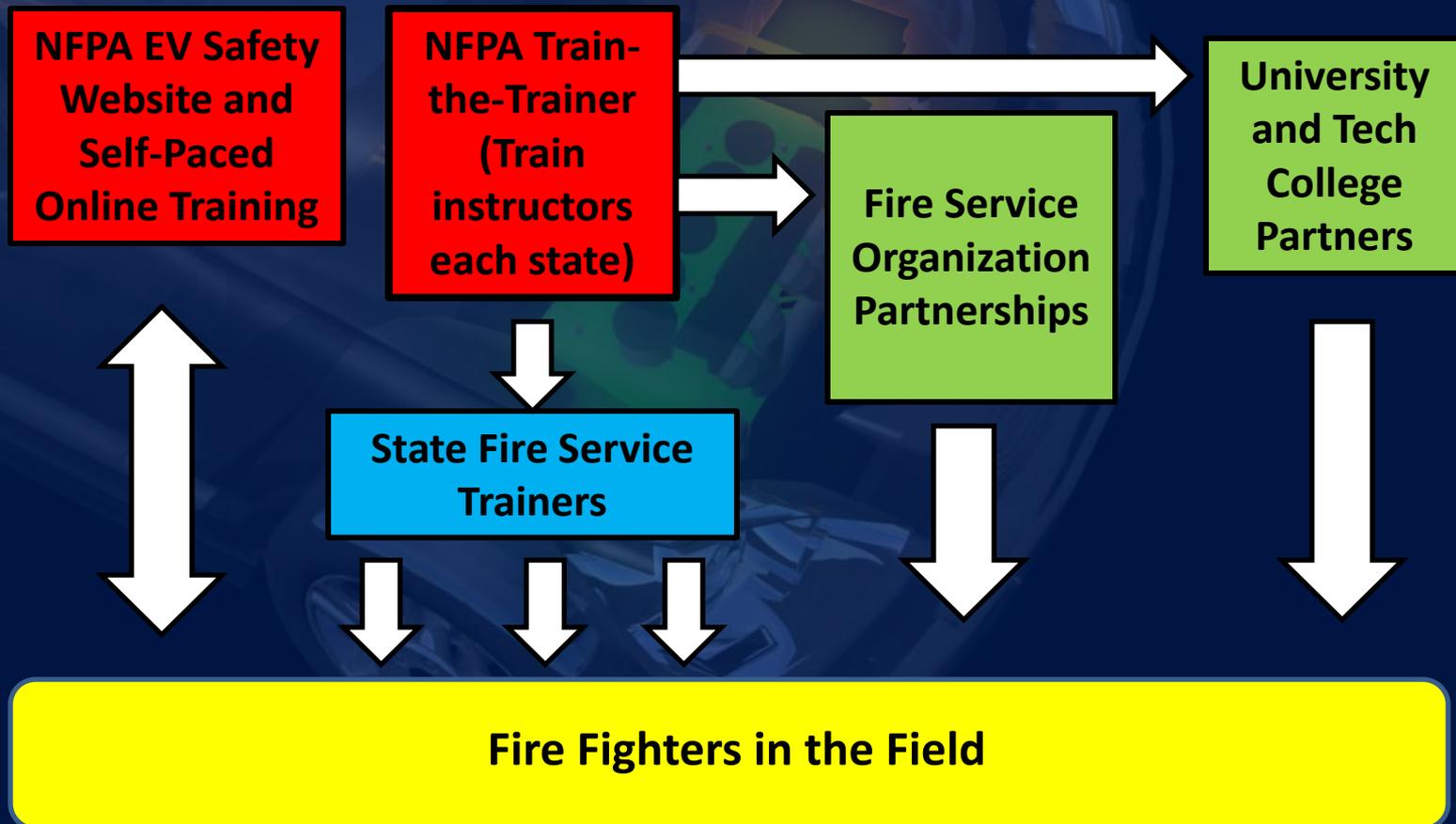
Approach: Project Scope

Charging Stations (Level 1,2,3)





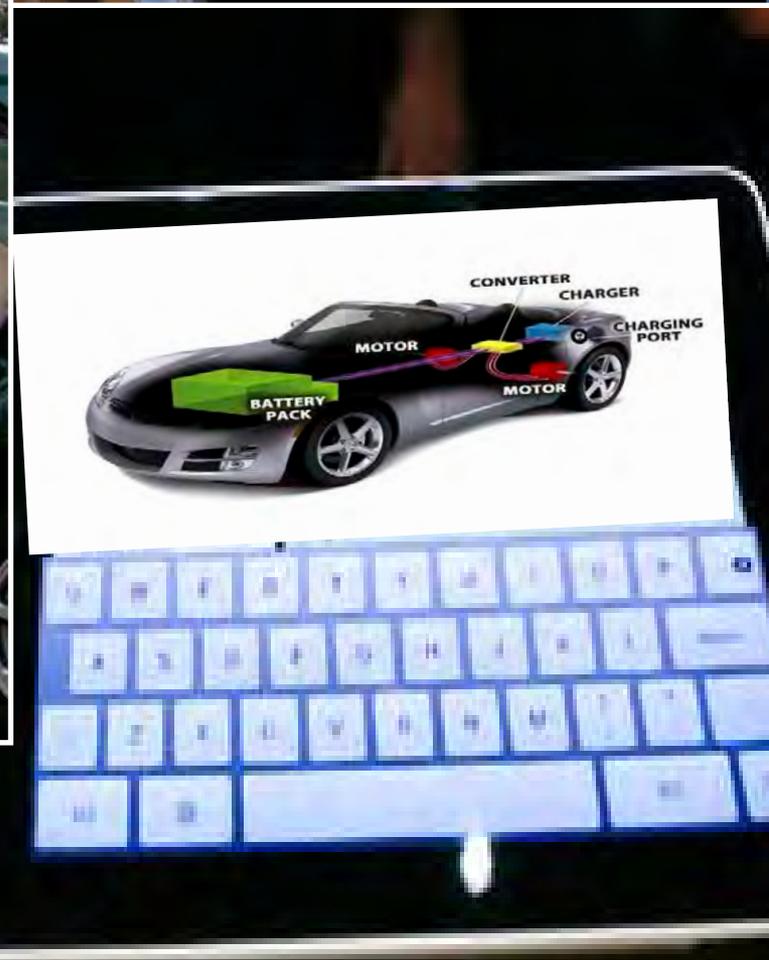
Approach: Training Delivery Model





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Approach: Emergency Field Guide





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



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Progress: Milestones

Hire Training Development Team (ATEC)

Nationwide 1st Responder Volt Tour

Hire Emergency Field Guide Developers

Hire Video Team

Web Portal Released (EVsafetytraining.org)

EV Safety Video Release

4 Pilot Classroom Trainings Held

Video Shoot (NV, NH)

Completed Market Research (Qualitative)

Alliance with GM, Tesla, Nissan, Ford

Hire SME Team (Content Formation)

Completed Market Research (Quantitative)

Chevrolet Volt Online Training Released

Hire 3 EV Safety Instructors (Train-the-Trainer)

2010

2011

Q1

Q2



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Progress: 2011 Objectives

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

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ELECTRIC VEHICLE SAFETY TRAINING

A PROJECT OF THE NATIONAL FIRE PROTECTION ASSOCIATION

NEWS ABOUT THE PROJECT CONTACT US

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 Baderty

[Click to play](#)



ELECTRIC VEHICLE SAFETY TRAINING

GM

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

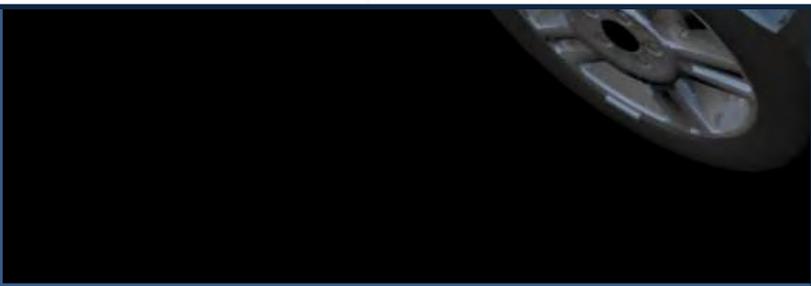
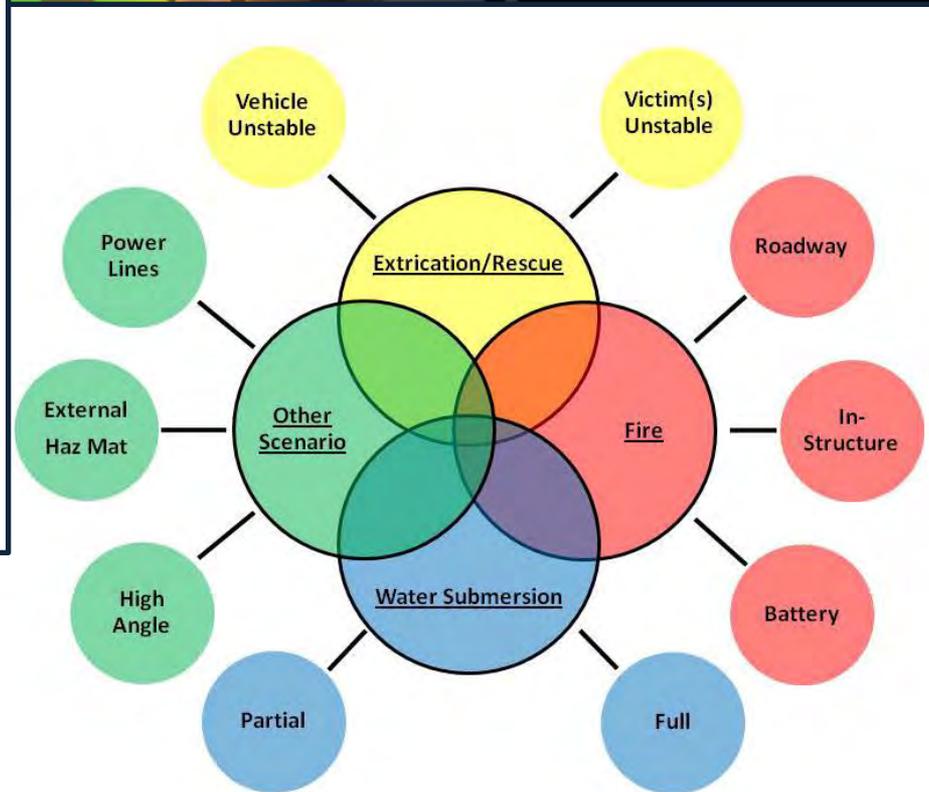
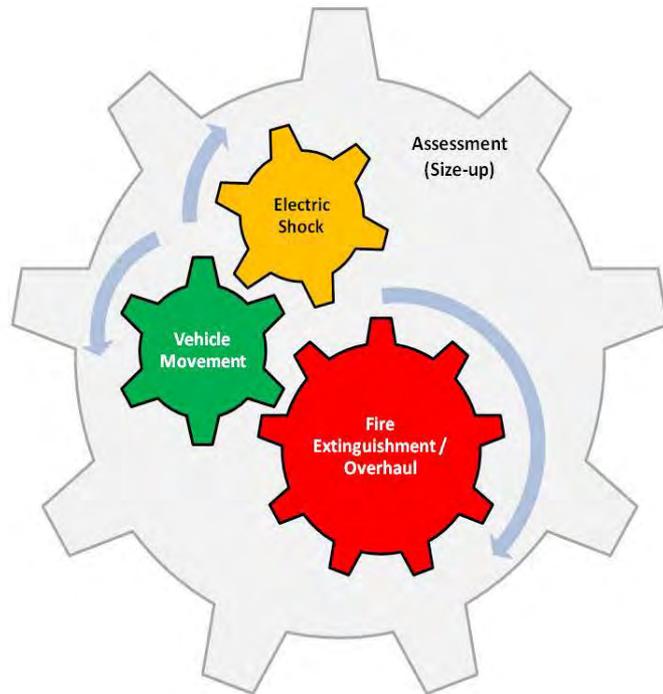


Progress: Nationwide Fire Service Research

- 17 Qualitative Focus Group Studies
Round Table Facilitated Discussions
- 425 Quantitative Studies
Training Officer Focused Calls
- Research Foundation Study
Report on EV & HEV for Emergency Responders & Incident Commanders
- Hired SMEs on HEVs & EVs
Identified Areas for Training



Progress: Identified EV Risks, Procedures & Emergency Scenarios





Progress: EV Safety Deliverables

- GM/NFPA Nationwide Chevy Volt Safety Tour -- 2000 First Responders Trained
- 3-6 Hour Classroom Instructor-Led Course Package
- 8 Hour Train-the-Trainer Instructor-Led Course Package
- Online Self-Instructional Course
- Emergency Field Guide
- EV Safety Training Website
- Vehicle-Specific Online Training



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Progress: Web Portal Release

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

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SEARCH GO

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 - + Manufacturer Resources
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 - Research
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Resources

NFPA's Electric Vehicle Safety Training project is a nationwide program to help firefighters and other first responders prepare for the growing number of electric vehicles on the road in the United States. NFPA is collecting safety information from hybrid and electric vehicle manufacturers. To access these articles and documents, please visit our manufacturer webpages for [Chevrolet](#), [Nissan](#) and [Ford](#). Also see NFPA's online resources including [research](#), [articles](#), and [videos](#).

 Resources from Chevrolet

 Resources from Nissan

 Resources from Ford

 Resources from Volkswagen

Training **Resources** **Calendar**



Extrication demonstration

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

01 02 03 04 +

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

ANSI welcomes NFPA as Diamond Sponsor for electric vehicles workshop >

NFPA seeks firefighter to be the voice of Sparky® >

Fire Department Network News take a

Events

Training Resources and Data Exchange (TRADE) February 27-March 1, Emmitsburg

Firehouse World February 26-March 2, San Diego >

Fire Department Instructors

named 2011 Motor Trend Car of the Year®



Website:

EVsafetytraining.org



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Progress: GM Turns Over Training to NFPA



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ABOUT THE PROJECT

NFPA's [Electric Vehicle Safety Training project](#) is a nationwide program to help firefighters and other first responders prepare for the growing number of electric vehicles on the road in the United States. The NFPA project, funded by a \$4.4 million grant from the U.S. Department of Energy, provides first responders with information they need to most effectively deal with potential emergency situations involving electric vehicles. The project is being developed in support of the Department of Energy's overarching goal of increasing the number of electric vehicles on the road. Knowing that firefighters and first responders are equipped with the information they need about electric vehicles will be crucial to the public's acceptance of these vehicles.

BLOGGING TEAM



Andrew Klock, Senior Project Manager, Training Development



Harry Abraham, Senior Project Manager, Professional Development

01/19/2011

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.

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RELATED RESOURCES

[NFPA's Electric Vehicle Safety Training website](#)

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ARCHIVES

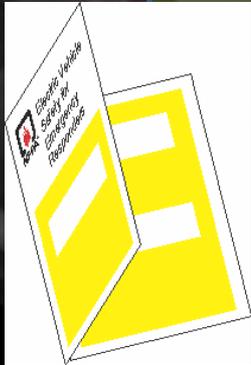
[January 2011](#)



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Progress: Instructor-Led Course

- 3-6 hours depending on optional activities
- **NFA style** Instructor Guide and Student Manual
- **Special Student Manual Option...**
An alternative abbreviated four-page student manual, with condensed info-graphic content. Designed to reduce SM printing costs.
- **High Quality** media
- Teachable by **any** experienced fire instructor





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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



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Progress: Emergency Field Guide

- Complete **electronic and print** reference data base for responders
- Indexed by **ALL** Hybrid and Electric Vehicles on the road and in production
- Contains system and construction characteristics and specifications, and **complete safe response procedures and guidelines.**





Collaboration: 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



Collaboration: Partnerships



- Alliance of Auto Manufacturers (AAM)
- Association of Intl Auto Manuf. (AIAM)
- Auto Manufacturers
 - General Motors
 - Nissan
 - Ford
 - Tesla
 - BMW
 - Volkswagen
 - Hyundai





Collaboration: Training Dissemination

- **Release** of the course from NFPA to state and metro training systems.
- **Classroom training impact reporting** from state and metro training systems to NFPA.
- **Online usage reporting** of student completions from NFPA to state and metro training systems.
- **Collaborative** evaluation and planning for updates and new programs to be provided from NFPA to state and metro training systems.



Future Work: Plans for 2011

- Finalize our **Instructor-Led** and **Online Training** Programs
- Complete the Development of Printed and Electronic **Emergency Field Guide**.
- Begin Hosting **Train-the-Trainer session** with State and Metro Training partners.
- Continue to **Develop Partnerships** with Auto Manufacturers and Fire Service Organizations.
- Work to Expand and Enhance our Web Portal, **www.EVsafetytraining.org**



Future Work: Remainder of Project

- Attend **Major Nationwide Fire Service Events** to Promote and Deliver our Training Programs.
- Execute a **Communications Blitz** through Fire Service Media, Online, Magazines, Ads.
- Conduct **Train-the-Trainer sessions** with State and Metro Fire Training partners.
- Develop **Revenue Stream** through sale of EV safety products and services to private industry.
- Use Revenue Stream to **Fund Training Deliveries** to Public Emergency Responder Agencies.



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Future Work:
Vehicle-Specific
Online Instruction



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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 will offer high value, standards-based training programs, a centralized EV web repository, and an EV quick reference guide (EFG).

Accomplishments/Progress: Developed classroom and online EV safety training courses, videos, Emergency Field Guide (print and electronic), and EV safety web portal. 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, and governmental agencies.

Proposed Future Work: Train state and metro fire trainers to deliver course content and curriculum throughout the Fire Service and First Responder community. Continue to develop Fire Service and automotive partnerships, while updating training programs and reference material to stay current with emerging technology.