



Advanced Electric Drive™
Vehicle Education Program



Advanced Electric Drive Vehicle Education Program

Principal Investigator:

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Overview

- **Timeline**
 - Start: December 18, 2009
 - End: December 17, 2012
 - 35% Complete
- **Budget**
 - Total project funding \$8,600,000
 - Federal funding- \$6,900,000
 - Cost share- \$1,700,000
- **Barriers**
 - Constant advances in technology
- **Partners**
 - MotorWeek
 - Advanced Vehicle Research Center®
 - AutoExposure
 - WV and SC Department of Education
 - Greater New Haven Clean Cities Coalition
 - Communications and Curriculum contractor (TBA)



Relevance-Overview

- The National Alternative Fuels Training Consortium (NAFTC), together with its partners, will develop an *Advanced Electric Drive Vehicle Education Program* that will help **accelerate mass market introduction and penetration of advanced electric drive vehicles** to help reduce the country's dependence on foreign oil.
- This project will develop a national program for education, training, outreach, and public awareness for advanced electric drive vehicles, electric system components, and supporting electrical infrastructure.



Relevance

- Project Effect on Work Force Development:
 - Over 20,000 Students trained in Advanced Electric Drive technical skills
 - Students become more employable and marketable over traditional graduates
 - Required critical skills will be provided through training
- Project Impact
 - Training developed under this project will continue to be offered throughout the country after project completion with potential reach of over 100,000 individuals
- Project Job Statistics:
 - Project Year 1
 - » Creation of 17.5 Full Time Employment (FTE) Jobs
 - » Retention of 20.5 Full Time Employment (FTE) Jobs
 - Project Year 2
 - » Similar results expected for project year 2



Relevance-Goals

- Goal 1: Create an **external advisory committee** to provide input on project-related activities
- Goal 2: Develop and provide **Career and Technology Education (CTE)** teaching materials to secondary schools about advanced electric drive vehicles (grades 7-12)
- Goal 3: Provide **training** to in-service and pre-service personnel, mechanics/automotive technicians, and first responders to work with advanced electric drive vehicles and their supporting infrastructure
- Goal 4: Design, develop, and disseminate marketing and outreach materials to provide **consumer education** on EVs, HEVs, PHEVs, and FCVs
- Goal 5: Expand **National AFV Day Odyssey**, a nationwide, biennial, outreach event to include educating a new generation of consumers at the secondary school level of the on the subject of advanced electric drive vehicles



Relevance-Goals

- Goal 1: Create external advisory committee to provide input on project-related activities
 - Invite representatives from original equipment manufacturers (OEMs); utilities; industry; state Departments of Education; the U.S. Department of Energy; DOE Clean Cities Coalitions; NAFTC National Training Centers; the WV Workforce Development Office; and others to join the External Advisory Committee.
 - Host semi-annual Advisory Committee meetings to obtain input on project-related Tasks, Subtasks, and activities.

STATUS- Project year 1 COMPLETE 

Remaining meetings in progress



Relevance

- Goal 2: Develop and provide teaching materials to secondary schools about advanced electric drive vehicles (grades 7-12)
 - Develop an electric drive vehicle curriculum for use by CTE teachers in automotive technology classrooms. This task will also include the development of supplemental training materials including but not limited to trainer's manual, student manual, presentations, animations, workshop curriculum, surveys, exams, practical exercises, and handouts.
 - Provide two (2) 40-contact hour professional development workshops related to electric drive vehicles to automotive technology teachers.
 - Pilot EV, PHEV, and FCV teaching materials for CTE classrooms.
 - Develop a 15-minute video related to advanced electric drive vehicles for CTE classrooms.

STATUS-IN PROGRESS



Relevance

- Goal 3: Provide **training** to in-service and pre-service personnel, mechanics/automotive technicians, and first responders to work with advanced electric drive vehicles and their supporting infrastructure
 - Design and develop advanced electric drive vehicle curricula for use by post-secondary schools and first responder organizations across the U.S.
 - Design and develop classroom materials related to emergencies involving HEVs, EVs, PHEVs, and FCVs, with a focus on light-duty and medium-duty vehicles.
 - Design and develop an electrical infrastructure curriculum. This curriculum will provide the necessary information that consumers, installers, and utilities need to better handle the task of installing the appropriate equipment for residential and fleet advanced electric drive vehicle customers.
 - Disseminate the Advanced Electric Drive Vehicle Mechanic/Automotive Technician Curricula, First Responder Safety Training workshops, and Advanced Electric Drive Vehicle Infrastructure Technician and Service Personnel Workshop across the U.S.

STATUS-IN PROGRESS



Relevance

- Goal 4: Design, develop, and disseminate marketing and outreach materials to provide **consumer education** on EVs, HEVs, PHEVs, and FCVs
- Design, publish and maintain a Web site that meets the communications needs of project constituents.
 - Elements of this Web site will include, but not be limited to, the downloadable Vehicle Simulation & Demonstration Software Tool; videos; animations; an online press room; consumer information area; mission area; white papers; podcasts; RSS feeds; technical bulletins; and an event calendar.
- Conduct ongoing media relations and project marketing

STATUS-IN PROGRESS



Relevance

- Goal 5: Expand **National AFV Day Odyssey**, a nationwide, biennial, outreach event to include educating a new generation of consumers at the secondary school level of the on the subject of advanced electric drive vehicles
 - Conduct National AFV Day Odyssey 2010- ☒ Complete
 - Conduct National AFV Day Odyssey 2012- IN PROGRESS

STATUS Project Year 1-COMplete 



Milestones

- Project Year 1-
 - Milestone 1: Creation of advisory committee-Status: COMPLETE ☒
 - Milestone 2: Completion of advanced electric drive toolkit-Status: NEARLY COMPLETE ☒
 - Milestone 3: Completion of MotorWeek television segment-Status: COMPLETE ☒
 - Milestone 4: Conduct of national AVF Day Odyssey 2010-Status: COMPLETE ☒
 - Milestone 5: Completion of First Responder curriculum Status: COMPLETE ☒ (review in progress)
- Project Year 2
 - Milestone 6: Completion of development of CTE teaching materials for secondary schools- Status: IN PROGRESS
 - Milestone 7: Completion of development of teaching materials for secondary schools-non-automotive classrooms-Status: IN PROGRESS
 - Milestone 8: Completion of automotive technician curriculum- Status: IN PROGRESS
 - Milestone 9: Completion of dissemination off electrical infrastructure technician and service personnel curriculum and training- Status: IN PROGRESS
 - Milestone 10: Completion of electrical infrastructure and service personnel curriculum- Status: IN PROGRESS
 - Milestone 11: Completion of dissemination of mechanic/automotive technician curricula/training- Status: IN PROGRESS
- Project Year 3
 - Milestone 12: Completion of beta test of CTE education teaching materials for secondary schools- Status: IN PROGRESS
 - Milestone 13: Conduct of national AVF Day Odyssey 2012- Status: IN PROGRESS
 - Milestone 14: Completion of downloadable education simulation software- Status: IN PROGRESS



Approach

- Curricula Development
 - First Responder Safety Training
 - Career and Technology Education
 - Advanced Electric Drive Vehicle Technician
 - Electric Infrastructure
- Training
 - Over 20,000 student trained
 - 98 training courses conducted
- Education and Outreach
 - National AFV Day Odyssey 2010
 - National AFV Day Odyssey 2012
 - Website
 - AED Toolkit
 - Media and Outreach activities



Approach-Curriculum Development

First Responder Safety Training

Develop curricula and train First Responders how to safely respond to accidents involving AED vehicles

Instructor Manual, Participant Workbooks, and Supplementary Training Materials for 4 First Responder Safety Training Workshops (EV, HEV, PHEV and FCV)

First Responder Safety Training Video

Four (4) First Responder Safety Train-the-Trainer workshops (one each for EVs, HEV, PHEVs, and FCVs) for NTC instructors



Approach-Curriculum Development

Career and Technology Education (CTE)

Design, develop, and disseminate marketing and outreach materials to provide consumer education on EVs, HEVs, PHEVs, and FCVs

CTE Electric
Drive Vehicle
Curriculum

CTE Video

Two professional
development
courses for CTE
instructors in SC
and WV

10 pilot
workshops in
SC and WV



Approach-Curriculum Development

Advanced Electric Drive Vehicle Technician

Design, develop and disseminate a curriculum for pre- and in-service automotive technicians to diagnose, repair and maintain AED vehicles

Instructor Manual, Participant Workbooks, and Supplementary Training Materials

Advanced Electric Drive Vehicle Curriculum for Post-Secondary Schools

Train-the-Trainer Course for the Advanced Electric Drive Vehicle Curriculum

Vehicle Simulation & Demonstration Tool

Unique to
NAFTC

Electric Drive Vehicle Technician Training Video



Approach-Curriculum Development

Electric Infrastructure

Design, Develop and Disseminate a Curriculum for Installers of Electric Drive Vehicle Charging Stations and Equipment

Instructor Manual,
Participant Workbooks, and
Supplementary Training Materials

Advanced Electric Drive Vehicle
Infrastructure Technician and
Service Personnel Workshop

Advanced Electric Drive Vehicle
Infrastructure Technician and
Service Personnel Train-the-Trainer
Course

Electric Vehicle Infrastructure
Training Video



Approach-Training

98 Training courses to be conducted:

- Two (2) Train-the-Trainer workshops for CTE instructors
- Ten (10) pilot courses in CTE centers in SC and WV
- Six (6) Train-the-Trainer courses for NAFTC NTCs
- Eighty (80) training courses provided by post-secondary schools (NAFTC National Training Centers)

Population reach:

- Over 20,000 students
 - High School students and teachers
 - Pre and in-service technicians
 - First Responders
 - Auto maintenance instructors
 - Infrastructure technicians



Approach-Education and Outreach

National AFV Day Odyssey is a nationwide, biennial outreach event to include educating a new generation of consumers at the secondary school level on the subject of advanced electric drive vehicles.

- National AFV Day Odyssey 2010 (exceeded project goals) Status: ☒ COMPLETED

- AED Project Goals

- 54 Sites Recruited and partially supported by AED Project
 - 26 High School Sites Recruited

- Overall Odyssey Statistics

- 105 Traditional Sites
 - 26 High School Sites
 - Nearly 200,000 Attendees
 - Approximately 75 Million Reached Through Media Exposure

- National AFV Day Odyssey 2012 Goals Status: UNDERWAY

- 100 Traditional Sites for AED
 - 50 High School Sites
 - Goal to reach 75 million





Approach-Education and Outreach

- Marketing
 - Advanced Electric Drive Toolkit and videos
 - MotorWeek television segment
 - AED 101 video
 - Trade shows and conferences
 - Nearly 38,000 reached to date
 - Project publicity
 - Strategic partnerships
- Media Relations
 - Press releases and media advisories
 - 34 press releases
 - Social media
 - Facebook
 - LinkedIn
 - Twitter

- Website
 - Consumer information
 - Technical information
 - Events calendar
 - Press room and library
 - Videos and podcasts





Accomplishments and Progress

- Task 1.2 External advisory committee
 - 10 member committee with representatives from OEMs, utilities, NAFTC National Training Centers, USDOE Clean cities Coalitions, State Department of Education, First Responder organizations
 - Initial meeting- December 13, 2010
 - STATUS: COMPLETED ☒
- Task 2.1 Design, develop, and disseminate Career & Technology Education (CTE) teaching materials related to EVs, HEVs, PHEVs, and FCVs for use by automotive technology high school teachers
 - Needs assessment in progress, focus groups with state high school CTE teachers being formed
 - STATUS: IN PROGRESS



Accomplishments and Progress

- Task 3.1 Advanced Electric Drive Vehicle Curriculum
 - Curriculum development in progress
 - Anticipated completion September 2011
 - STATUS: IN PROGRESS
- Task 3.2 First Responder Safety Training Curriculum
 - Training materials complete-participant manual, instructor manual, and classroom presentation
 - STATUS: NEARLY COMPLETED ☒ (review in progress)



Accomplishments and Progress

- Task 3.3 Electric Infrastructure Curriculum
 - Curriculum development in progress
 - Anticipated completion September 2011
 - STATUS: IN PROGRESS
- Task 3.4 Disseminate the Advanced Electric Drive Vehicle Mechanic/Automotive Technician Curricula, First Responder Safety Training workshops, and Advanced Electric Drive Vehicle Infrastructure Technician and Service Personnel Workshop across the U.S.
 - 1 First Responder Safety Training Train-the-Trainer conducted
 - Training courses to be conducted by national training centers
 - STATUS: IN PROGRESS



Accomplishments and Progress

- Task 4.1 Marketing and outreach
 - AED toolkit-STATUS: NEARLY COMPLETED ✓
 - AED 101 Video-STATUS: COMPLETED ✓
 - MotorWeek television segment-STATUS: COMPLETED ✓
 - 11 conferences and tradeshow-attended, displayed, and presentations conducted in PY 1 and 2-STATUS: COMPLETED ✓
 - STATUS: IN PROGRESS/ONGOING
- Task 4.2 Website
 - Online
 - Web address: <http://www.aedvehicleeducation.org>
 - STATUS: IN PROGRESS/ONGOING



Accomplishments and Progress

- Task 4.3 Media relations and project marketing
 - Press releases- 34 released-STATUS: COMPLETED ☒
 - Social Media- numerous posts, tweets and discussions- STATUS: ONGOING
 - Facebook
 - Twitter
 - LinkedIn
 - STATUS: IN PROGRESS/ONGOING
- Task 5.1 National AFV Day Odyssey 2010
 - 54 National AFV Day Odyssey sites for AED project
 - 26 secondary school sites
 - Nearly 200,000 Participants
 - Approximately 75 Million reached through media coverage
 - STATUS: COMPLETE ☒ (exceeded project goals)
- Task 5.2 National AFV Day Odyssey 2012
 - National recruitment campaign-underway
 - Event date October 2012
 - STATUS: IN PROGRESS



Collaborations

- Partners
 - MotorWeek
 - Advanced Vehicle Research Center
 - AutoExposure
 - WV and SC Department of Education
 - Greater New Haven Clean Cities Coalition
 - Communications and Curriculum contractor (TBA)
- Collaborations
 - NAFTC developing collaborations with NFPA, Colorado State University, and other AED awardees



Future Work

Major Milestones and Activities to be Completed in PY2-PY3:

- Curricula
 - AED Technician & Infrastructure
 - Automotive Electric Drive Vehicle Mechanic/Automotive Technician
 - Advanced Electric Vehicle Infrastructure and Service personnel
 - Career and Technical Education
 - Launch Online Courses
 - Vehicle Demonstration and Simulation software tool
 - Used to supplement and reinforce visual and hands-on learning by CTE students, pre-service and in-service automotive technicians, first responders, and consumers
- First Responder Safety Training
 - Train-the-Trainer workshops
 - First Responder Safety Training Courses
- Training
 - AED Technician & Infrastructure
 - Career and Technical Education
- Education and Outreach
 - Marketing materials
 - Media relations
 - Consumer education
 - Design, publish and maintain Website
- National AFV Day Odyssey 2012
 - Develop and Conduct Event for over 100 Sites



Summary

- Significant progress has been made in PY1:
 - National AFV Day Odyssey 2010-Status: ☒ COMPLETED
 - Development of Marketing and Promotional Materials-Status: IN PROGRESS
 - Advisory Committee Creation-Status: ☒ COMPLETED
 - First Responder Curriculum-Status: ☒ COMPLETED
 - First Responder Train-the-Trainer Workshop-Status: ☒ COMPLETED
 - MotorWeek television segment-Status: COMPLETE ☒
- Milestones on target to be completed in PY2-PY3:
 - Completion of Advanced Electric Drive and Electrical Infrastructure Technician Curriculum- Status: IN PROGRESS
 - Completion of CTE curricula including collaboration with WV and SC Dept of Education- Status: IN PROGRESS
 - Initial planning of National AFV Day Odyssey 2012- Status: IN PROGRESS