Technology Integration

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Technology Integration Overview

Activities

- Clean Cities – A voluntary, locally based government/industry partnership
- Legislative and Rulemaking
- Advanced Vehicle Competitions
- Education Programs
  - Graduate Automotive Technology Education
  - Partnership with Automotive X Prize
  - Advanced Electric Drive Vehicle Education Program
Clean Cities

Improving the speed and scale of market penetration for alternative fuel vehicles and infrastructure

Results: 3 Billion Gallons of Petroleum Fuels Displaced Since 1993

Goal: 2.5 Billion Gallons/year by 2020

~100 coalitions Serving 78% of the US population

Deployment Awards:

Vehicle Deployment - More than 10,000 alt-fuel and EVs, displacing an estimated 38 million gal of petroleum fuels/year

Infrastructure - More than 1,250 new fueling and charging stations

Education and Community Readiness - Hundreds of workshops, community events, workforce training and public outreach efforts

National Clean Fleet Partners: (deployment with hi-impact national fleets)

Thousands of stakeholders from businesses, city & state governments, transportation industry, community organizations, fuel providers
Clean Cities Portfolio of Technologies

Alternative Fuels
- Electric Vehicles
- Biodiesel
- Ethanol
- Hydrogen
- Propane
- Natural Gas

Idle Reduction
- Heavy-Duty Trucks
- School & Transit Buses
- Light-Duty Vehicles

Fuel Economy
More Fuel efficient vehicles, adopting smarter driving and vehicle purchasing habits

Hybrids
- Light- and heavy-duty
- Electric hybrids
- Plug-In hybrids
- Hydraulic hybrids
Clean Cities Budget

$ Millions

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- **Appropriation**
- **Request**
- **Directed Funding**

FY09: $300M
FY11: $200M
Clean Cities Deployment Efforts include four major activities

Local Community/Coalition:
Support & Partnership Development:
Direct support for CC activities, public events, training for Clean Cities coalitions & community leaders, local project coordination, strategic planning assistance

Consumer Information, Outreach, and Education:
Fuel Economy Guide, Alternative Fuel and Advance Vehicles Data Center (AFDC), other web based consumer tools, publications, workshops, targeted workforce and end-user education

Technical & Problem Solving Assistance:
Addressing Market Barriers, Safety Issues, Technology shortfalls

Financial Assistance:
Funding to Facilitate Infrastructure Development and Vehicle Deployment projects (Competitive Awards)
Consumer Education & Outreach: Clean Cities Web Resources

Clean Cities

Alt Fuel and Advanced Vehicle Data Center (AFDC)

FuelEconomy.gov
Graduate Automotive Technology Education

• Centers established in 1998, expanded in 2005.
• Receive DOE funding for student fellowships and curriculum development.
• Each center has established a graduate engineering education program that offers courses emphasizing that center's technology specialty.

Advanced Vehicle Competitions

• Since 1987, DOE has sponsored more than two dozen university-level advanced vehicle technology competitions.
• Provides college engineering students an opportunity to conduct hands-on research and development with leading-edge automotive propulsion, fuels, materials, and emissions control technologies.

Solicitation Closed on April 18
Advanced Vehicle Competitions

Provide a new generation of engineers with knowledge and skills in developing and commercializing advanced automotive technologies.

16 Teams pursuing variety of advanced vehicle technologies

- Extended Range Electric Vehicle – 7
- Plug-In Hybrid Electric Vehicles (PHEV) – 6
- Full Function Electric Vehicle (FFEV) – 1
- Fuel Cell Plug-in Hybrid Electric Vehicle (FCPHV) – 2

3 year competition series concludes in June

- Vehicle dynamic events – June 6-13
- Static presentation events – June 14 & 15
- Awards ceremony – June 16
Introducing EcoCAR 2

- EcoCAR2 launched at SAE World Congress 4/12-13
- Headline Sponsored by DOE and GM, Natural Resources Canada and other North American partners
- Teams will be challenged to reduce the environmental impact of a mid-size car while maintaining the performance and consumer acceptability of the production counterpart

Chevrolet Malibu
Automotive X Prize concludes

DOE sponsored the Evaluation, Education & Outreach Program to promote student/public interest and understanding of advanced automotive technology.

- Real-time, on-line availability of competition activities
- Educational events in 16 science centers around the country
- High school aged competition to design next-generation dashboards
- Vehicles tested on the track and dynamometer using consistent methodology.
- Fuelourfuturenow.com

Mainstream
Edison2 “Very Light Car #98”

Alternative
Li-ion Motors Corp “Wave II”

Alternative
X-Tracer Team Switzerland
“E-Tracer #79”
Advanced Electric Drive Vehicle Education Program

- Selections announced by President Obama on August 5, 2009
- 10 projects receive $39.1 million in ARRA funding
  - National Fire Protection Association
  - Missouri University of Science and Technology
  - Wayne State University
  - West Virginia University
  - University of Michigan
  - J. Sergeant Reynolds Community College
  - Michigan Technical University
  - Purdue University
  - City College of San Francisco
  - Colorado State University
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