

Vehicle Technologies Program Implementation

Introduction

The Vehicle Technologies Program takes a systematic approach to Program implementation. Elements of this approach include the evaluation of new technologies, competitive selection of projects and partners, review of Program and project improvement, project tracking, and portfolio management and adjustment. The Program's implementation activities are summarized on the following pages.

Technology Evaluations

Before investing in new technologies, the Vehicle Technologies Program evaluates the potential cost, performance, and reliability of proposed research. The Program works with subject matter experts from the national laboratories, universities, and the private sector to conduct technology assessments. An example is a National Research Council review titled Review of the 21st Century Truck Partnership available at http://www.nap.edu/catalog.php?record_id=12258.

Competitive Solicitations

The Vehicle Technologies Program provides funding opportunities for advanced vehicle technology projects that are aimed at removing technical and cost barriers. Much of the funding available to the Program is distributed to industry, educational institutions, state and local governments, and national laboratories through competitive solicitations. DOE is strongly committed to partnerships to help ensure the eventual market acceptance of the technologies being developed. Use of competitive solicitations ensures that the best possible research and researchers are selected to develop new technologies. It also provides a transparent mechanism to ensure accountability and public confidence in the work. Open Vehicle Technologies Program solicitations can be viewed at http://www1.eere.energy.gov/vehiclesandfuels/financial/solicitations_active.html. Closed solicitations are available at http://www1.eere.energy.gov/vehiclesandfuels/financial/solicitations_closed.html.

Reviews

The Vehicle Technologies Program conducts peer reviews to assess progress and promote Program and project improvement:

Peer Reviews – The Program organizes annual peer merit reviews. The emphasis of the annual merit review determines whether or not the Program is balanced, organized, and performing appropriately, and evaluates whether or not projects are performing appropriately and contributing to element goals. The peer review process is led by a steering committee that selects experts from industry, academia, non-governmental organizations, and the national laboratories to review both the Program and technical element portfolios. The review provides feedback on Program and portfolio performance and identifies opportunities for improved Program management and gaps or imbalances in funding that need to be addressed. By addressing these gaps and imbalances, the Program will continue to stay focused on the highest priorities. The 2008 DOE Vehicle Technologies Program Annual Merit Review is available at http://www1.eere.energy.gov/vehiclesandfuels/resources/proceedings/2008_merit_review.html. The 2009 review will be posted soon.

Project Tracking

Through project tracking activities, the Vehicle Technologies Program monitors the status of competitive solicitations, applications, selections, schedules, project contract completions, new competitions, and other ongoing information for all technology systems under development. An overview of vehicle technologies project tracking can be found at

http://www1.eere.energy.gov/vehiclesandfuels/resources/fcvt_reports.html.

Systems Engineering

Systems engineering focuses on how large, complex engineering projects and systems within a large project should be designed and managed. The Vehicle Technologies Program utilizes a systems-based approach to manage the complexity of achieving its mission. Through this approach, the Program aligns RDD&D efforts with its strategic goals. It also directs funding to the efforts that offer the most promise. A briefing on the Vehicle Technologies Program's systems engineering efforts on plug-ins is available at

<http://www.transportation.anl.gov/pdfs/HV/376.pdf>. A second briefing on the Program's current transportation models is located at

http://www1.eere.energy.gov/vehiclesandfuels/pdfs/transportation_models.pdf.

Deployment

The Vehicle Technologies Program promotes widespread adoption of advanced vehicle technologies by funding a range of deployment activities that will lead to the widespread use of new technologies that reduce America's dependence on imported oil, further decrease vehicle emissions, and serve as a bridge from today's conventional powertrains and fuels to tomorrow's plug-in hybrid and alternative fueled vehicles (AFVs). The Program also supports implementation Programs that help to transition alternative fuels and vehicles into the marketplace, as well as collegiate educational activities to help encourage engineering and science students to pursue careers in the transportation sector. Such Programs include:

Clean Cities – Clean Cities supports the voluntary side of EPAct and was created in 1993 to provide technical, informational, and financial resources to both regulated fleets and voluntary adopters of alternative fuels. As the primary deployment arm of the Vehicle Technologies Program, Clean Cities' mission is to advance the nation's economic, environmental, and energy security by supporting local decisions to adopt practices that contribute to the reduction of petroleum consumption. Clean Cities carries out this mission by working with more than 90 coalitions throughout the United States. Its 4,800 stakeholders encompass local, state, and federal government agencies; commercial fleets; automakers; fuel suppliers; utility companies; and professional associations. Since its inception, Clean Cities has displaced more than 1 billion gallons gasoline equivalent (GGE) of petroleum through the use of alternative fuels and AFVs, idle reduction technologies, fuel economy measures, and fuel blends. Information on Clean Cities can be found at <http://www1.eere.energy.gov/cleancities>.

Educational Activities – The Vehicle Technologies Program supports post-secondary educational activities, such as competitions and technology development Programs for engineering students interested in advanced transportation research. Information about the Program's educational outreach can be found at:

<http://www1.eere.energy.gov/vehiclesandfuels/deployment/education/index.html>.

- **EcoCAR: The NeXt Challenge** – The Program partners with General Motors (GM) to sponsor EcoCAR: The NeXt Challenge, a three-year engineering competition started in 2008 and ending in 2011 that challenges students to reengineer a 2009 Saturn Vue. The Challenge is to engineer a system that reduces fuel consumption and lower emissions by using advanced vehicle technologies, such as: hydrogen fuel cells, plug-in hybrid technology, hybrid technology, diesel technology and other advanced fueling technologies. EcoCAR also trains students to use hardware-in-the-loop (HiL) and software-in-the-loop (SiL) simulation tools. This is state-of-the-art training and allows students to mirror the real-world development process used by GM and other auto manufacturers from around the world. For more information regarding EcoCAR and its participants visit www.ecocarchallenge.org.
- **Automotive X Prize** – DOE has partnered with Automotive X Prize to develop an educational outreach program aimed at engaging students (kindergarten-12) and the public in learning about advanced, energy-efficient vehicles. DOE is providing \$3.5 million over three years for the outreach effort. The Automotive X Prize (AXP) is an open competition with the goal of inspiring a new generation of super-efficient vehicles that dramatically reduce oil dependence and greenhouse gas emissions. The Automotive X Prize Education Program is comprised of three integrated activities: 1) an on-line knowledge center, 2) development of a vehicle telemetry package and integration of that package with the AXP online knowledge center, and 3) launch of a national contest to harness student creativity. DOE and the Automotive X Prize's joint venture to bring automotive technology learning to our future engineers and scientists can be found at www.FuelOurFutureNow.com.
- **Graduate Automotive Technology Education (GATE)** – The DOE established the GATE Program in 1998 to train a future workforce of automotive engineering professionals knowledgeable about, and experienced in, developing and commercializing advanced automotive technologies to help overcome technology barriers preventing the development and production of cost-effective, high-efficiency vehicles for the U.S. market. To that end, DOE established 10 GATE Centers of Excellence at nine U.S. universities that address fuel cells, hybrid electric vehicle drivetrains and control systems, lightweight materials, direct-injection engines, and advanced energy storage.

DOE has also begun a second competition to form new, or expand, existing GATE Centers of Excellence. Award recipients receive funds to support graduate fellowships and to establish and/or upgrade and expand course study work and laboratory work to support a graduate engineering degree with a focus or certificate in a critical automotive technology area. Eight universities received awards and will focus on hybrid propulsion systems, fuel cells, advanced computation and simulation, energy storage systems, biofuels and lightweight materials. To learn more, visit http://www1.eere.energy.gov/vehiclesandfuels/deployment/education/fcvt_gate.html.