

# Challenge X 2007

## Outreach Program Report # 2

Instructions: Use this template to provide your team's outreach program updates. The following are the dates that your outreach reports are due. Report #1: November 26, 2006; Report #2: March 29, 2007; Final Report: May 30, 2007 (please note, a revised template may be provided for the final report). Each of these reports must be posted as a PDF or Word document to your team website by the due date.

**Team: The University of Tennessee**

**Name of Outreach Coordinator: Scott Curran**

**Phone number and email of Coordinator:**

**Dedicated Outreach Coordinator (Y/N): N**

**If no, please list other role the O.C. has on your team: Exhaust and Aftertreatment Team Leader**

**Date posted: March 28, 2007**

### I. Outreach Plan

- Please report on any changes or updates your team has made to your Outreach Plan since it was submitted on November 2, 2006.
- If none, please write "No changes."

#### Youth Outreach

- Linden Elementary School Presentation – March 30 2007
- Girl Scout Alternative Fuels Conference – March 31 2007

#### Community Outreach

- UT College of Engineering Sneak Peak- March 22, 2007
- UT Undergraduate research and creative achievement exhibition -March 29, 07
- Earthday Activities- April 20&21, 2007
- ETR SCCA Autocross in Bristol, TN – April 22, 2007

#### Sponsor Outreach

- Run For Clean Air (Sponsor is organizing the event) – April 14, '07
- Host 2007GM FUEL ECONOMY and ENERGY DIVERSITY TOUR– April 19-22 (date TBA), '07 (media events are planned)
- Sponsor appreciation dinner – Friday April 27, 07

#### Media

- Article in Print with UT publication TN Engineer – Spring 07









Jesse Dalton explaining the reasons Diesel Engines are more fuel efficient than gasoline engines to a High School student and his father.



Shaun Hinds giving a group of High School students an overview of the hybrid packaging.





Shaun Hinds giving a presentation about the hybrid design at Heska Amuna

2. *Community event name:* Oak Ridge ASME Presentation  
*Date/Time:* Feb 13, 2007 – 5:00pm – 7:00 pm  
*Location:* Super China Buffet, Oak Ridge, TN  
*Team participants:* Shaun Hinds, Scott Curran, Courtney Lindwurm  
*Audience:* 27 Engineers and friends of the Oak Ridge National Lab  
*Activity description/details:* 1 hour presentation on the ChallengeX program and the technical achievements of the team.  
*Key Messages Covered:* Alternative fuels and hybrid technology, Benefits of biodiesel and fuel economy with hybrid, engineering challenges faced including packaging and NVH  
*Any measurable results:* Long question and answer period (20 minutes)  
*Photos:*



Scott Curran giving the OR ASME an explanation how a DPF reduces particulate matter from diesel exhaust.



UT ChallengeX Home Page - Mozilla Firefox

http://apcsi.tennessee.edu/challengeX/index.html

Latest Headlines: ORNL FCU | Online@UT | WebMail | UTK | APCSI SAE | MidSouth SAE | Green Car Congress

UT ChallengeX Home Page

THE UNIVERSITY of TENNESSEE College of Engineering

University Links | A-Z Index / WebMail / Dept. Directory | Enter search terms | Select type of search



**Team Tennessee ChallengeX Home Page**

**ChallengeX.org**

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**Welcome to the UT ChallengeX Home Page**

ChallengeX is a 4 year long collegiate automotive design competition that pits 17 universities against each other to see who can design the best hybrid system from the ground up using a stock 2005 Chevrolet Equinox. The competition is sponsored by General Motors and US Department of Energy, and managed by Argonne National Laboratory along with other sponsors. Teams are required to build vehicles that are of showroom quality and function as designed in a series of events at the yearly competition. We are now in year three of the competition which is focused on refining the vehicles that were designed in year 1 and built in year 2.

Competition events include fuel economy, emissions, acceleration, handling and others that make sure teams have built vehicles that are not only fuel efficient but that can perform in the real world.



**The goals of the program are as follows:**

The Challenge X teams will construct vehicles that, when compared with the stock vehicle,

- Significantly reduce well-to-wheels energy consumption;
- Incorporate technologies that increase energy efficiency and reduce fossil energy consumption and emissions on the basis of a total fuel cycle (well-to-wheels analysis);
- Significantly reduce criteria tailpipe emissions and greenhouse gases;
- Increase pump-to-wheels fuel economy; and
- Maintain or exceed consumer acceptability in the areas of performance, utility, and safety.

**Headline Sponsors**



**Contact UT ChallengeX**

**Faculty Advisor**  
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**Team Leaders**  
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Knoxville, Tennessee 37996

**APCSI**

**Website Problems:**  
Email [sic@utk.edu](mailto:sic@utk.edu)

RevolutionX Vehicle Information Page - Mozilla Firefox

http://apcsi.tennessee.edu/challengeX/revolutionX.html

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**The RevolutionX Vehicle Information Page**

UT ChallengeX Home

Hybrid Design

L.S.L. Turbin Stewart




**The RevolutionX**

The RevolutionX is Team Tennessee's through-the-road parallel electric hybrid electric diesel (HEV). The Equinox design is a **parallel HEV** that is built on a **gasoline** engine. The result is a passenger vehicle that has the storage capacity of an SUV that has better fuel economy and handling than any stock SUV is.

The main features of the RevolutionX are:

- L.S.L. Turbo Diesel running 6.0L (200% boost of baseline) with 80% traditional diesel fuel.
- New Integrated Transaxle from **GM** (Electric Motor)
- 200 V (200V) battery pack from **Delcor**

The stock Equinox was **2005** and to keep with benefits of all wheel drive, the RevolutionX is through-the-road parallel hybrid. The **2005** diesel drives the front wheels and the electric motor drives the rear wheels and charges the battery pack during braking.

During normal driving the RevolutionX uses the electric motor to do the braking which causes the motor to act as a **generator** that can charge the battery pack. This type of braking is called regenerative braking, and is used to convert kinetic that would otherwise be lost as heat between the **2005** and **2005**. When the **2005** is engaged during an emergency, the control system does not allow any regenerative braking. Safety is more important than regenerative braking.

The charged battery pack can be used to cover the **2005** when extra power is needed. The 6.0L motor means that there is no off-on lag when you're in **2005** or driving into or exiting the **2005**. The control system determines when the motor is used and is adjusted when the throttle is partially depressed.

More information about the RevolutionX is available in the side menu.

UT Chevrolet Equinox Diesel HEV

Authors: Shaun Hinds, Turbin Stewart

UT ChallengeX Outreach - Mozilla Firefox

http://apcsi.tennessee.edu/challengeX/outreach.html

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**UT ChallengeX Outreach**

UT ChallengeX Home

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Brochure

Banner

Team Tennessee's outreach program is an integral part of the Challenge program. The outreach events are an excellent way to educate the public on hybrid electric vehicles, alternative fuels, the Challenge competition and **2005** of the University of Tennessee.

So far the most interesting outreach event has been when the RevolutionX competed at the **2005** in Oak Ridge, TN in late 2005. Driven by experienced autojournalists, Shaun Hinds and Turbin Stewart, the RevolutionX placed 7' out of 16 with Shaun Hinds behind the wheel and 8' out of 16 with Turbin Stewart behind the wheel. The greatest victory however was that both drivers took the 2005, but lost for a biodiesel hybrid electric motor (HEV). See the video section for YouTube videos of the event. <http://www.youtube.com/watch?v=...>


Year 3 outreach has been very successful. See the **2005** page for the UT ChallengeX brochure and the promotional items for year 3.

Please look at the **2005** and all of them. If you think it's anything you would like to change about them, we use the outreach to help identify problems with the RevolutionX and to get suggestions for improvements.

**Year 3 Outreach Events**

**Heuka Anna Environmental Fair - Dec. 20, 2006**

UT ChallengeX team members from the Heuka Anna's Ecology Fair. There were many visitors from the Heuka Anna's Ecology Fair that were very interested in HEV's and hybrids.



**F. Other**

*Please provide any other information on your team's outreach program developments not covered above.*

The team received funding from a sponsor to print team t shirts, team pens and team coffee mugs.



Pens



Shirt Back



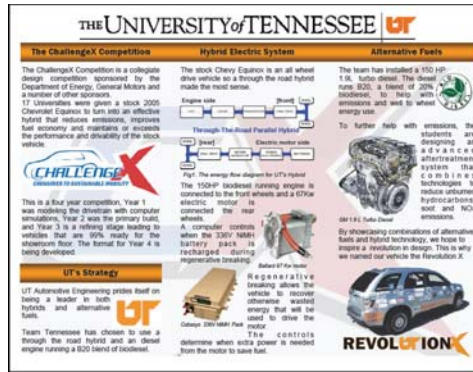
Mugs

# Brochure

The ChallengeX brochure is wealth of information about the RevolutionX and the ChallengeX program. The brochure is available for download on the website and print copies are given out at outreach events. The brochure is a trifold design that is meant to be duplex printed and folded.



Front



Inside



Back

The team was also awarded ChallengeX outreach funding for two posters for the engine and Aftreatments and another for hybrid and controls. The team will print another poster for the NVH/ 99% buyoff achievements.



Engine, Fuel and Aftreatment poster

Reported by: Scott Curran

Date: 3/28/2007

## **Appendix: Copies of Media Clips**

*Please scan in or otherwise paste any clips of media coverage here.*