Quick Facts and Background

Over the last decade, the American automotive customer market has tended toward larger family-sized vehicles because of the utility they provide over passenger cars that get better fuel economy. At the same time, there has been a greater demand to reduce energy consumption and vehicle emissions. As a result, the auto industry, the U.S. government, and the academic community have been working together, through a series of competitive programs, to develop and explore advanced vehicle technologies that address important energy and environmental issues.

Since 1987, the U.S. Department of Energy (DOE) has sponsored more than two dozen competitions challenging thousands of engineering students to achieve better fuel economy and lower emissions while maintaining the safety, performance, utility, and consumer appeal of a variety of vehicles.

Now, General Motors Corporation (GM), DOE, and other government and industry leaders have developed a new competition called Challenge X: Crossover to Sustainable Mobility. This ground-breaking, three-year competition will give engineering schools an opportunity to participate in hands-on research and development with leading-edge automotive propulsion, fuels, materials, and emissions-control technologies.

Seventeen teams have been challenged to re-engineer a GM Equinox, a crossover sport utility vehicle to minimize energy consumption, emissions, and greenhouse gases while maintaining or exceeding the vehicle's utility and performance. Year 1 will focus on modeling, simulation, and testing of the vehicle powertrain and vehicle subsystems selected by each school. In June 2005, teams will come together to undergo extensive judging and evaluation. The teams that demonstrate a mastery of the key aspects of modeling their powertrain choice and constructing and controlling the powertrain will receive a donated GM Equinox after the June 2005 competition. Years 2 and 3 will require teams to develop and integrate their advanced powertrain and subsystems into a donated GM Equinox. At the conclusion of each of these competition years, teams will come together to undergo extensive judging and evaluation. Events will encompass energy use and emissions goals, vehicle utility and performance, engineering, and K-12 Education Outreach.
Using GM's Global Vehicle Development Process, teams will gain valuable experience in real-world engineering practices. These highly skilled engineers will also develop a strong understanding of advanced vehicle technologies that will prepare them to lead the automotive industry into the 21st Century and enable North America to remain competitive in the global marketplace.

Mississippi State University and Challenge X

In May 2004, Mississippi Stat University was officially announced as one of the 17 universities to participate in Challenge X. Since then, the MSU team has diligently worked to compete with other teams across North America. During their first year, the team took home several awards, including first place for Outstanding Outreach and Media/Community Relations.

The team is made up of students majoring in all computer science, communications, education, and all fields of engineering. The students are able to put what they learn in the classroom to practical use, designing a vehicle using the same rigorous design standards of engineers at General Motors.

The MSU team's vehicle design is a hybrid vehicle using both a diesel engine and an electric motor. The team's goal is for the Chevrolet Equinox to get about 45 miles per gallon when complete. The vehicle will also emit less harmful emissions, and will be completely user-friendly and can be easily mass produced.

This year the team will travel to Mesa, AZ May 31 through June 8 to compete in the end of the year competition. The competition, held at the General Motors proving ground where they test their own vehicles, will involve tests such as speed, weight, and amount of emissions.

For more information on the Challenge X program, please contact Amanda McAlpin by email amcalpin@cavs.msstate.edu, or by phone 662-325-5562.