

## Students at the University of Tennessee Utilize Ethanol for Advanced Vehicle Technology Competition

### **Introduction**

The University of Tennessee is participating in a three-year collegiate engineering and automotive design competition: EcoCAR 2: Plugging In to the Future. In this competition, fifteen universities are challenged to further reduce the environmental impact of a 2013 Chevrolet Malibu, without compromising performance, safety or consumer acceptability.

### **Methods**

During competition, the team is expected to design and model their vehicle, rebuild it from the ground up, evaluate their design for functionality and performance and refine it to near showroom quality before sending it off to be judged. In order to best meet the challenges of the competition, Team Tennessee chose to use E85 (a blend of 85% ethanol and 15% gasoline) as their alternative fuel, along with a plug-in hybrid-electric vehicle architecture.

### **Results**

The vehicle is currently in the final stages of the competition. The Series-Parallel vehicle design showed approximately a 45% improvement in modeled fuel economy. Along with the utilization of E85, nearly a 53% decrease in lifecycle, or wheel-to-wheel, greenhouse gas (GHG) emissions was recorded.

### **Conclusion**

Team Tennessee's EcoCAR 2 E85 plug-in hybrid-electric vehicle design reduced GHGs and improved fuel economy.