

Way to Go Teams!

Cedarville College, Ohio
Crowder College, Missouri
Idaho State University
Illinois Institute of Technology
Kettering University, Michigan
Minnesota State University — Mankato/
University of Windsor, Ontario*
University of California, Riverside
University of Illinois at Chicago
University of Kansas
University of Nebraska — Lincoln
University of Texas at Austin
University of Texas at El Paso/
University of Alberta, Ontario*
University of Waterloo, Ontario
Wayne State University, Michigan

*Collaborated with a U.S. team in the 2000 competition.

"The competitions undoubtedly provided students with a more valuable and rewarding experience than any other they will have in college."

— Dr. Ryan Wicker, Advisor
University of Texas at El Paso



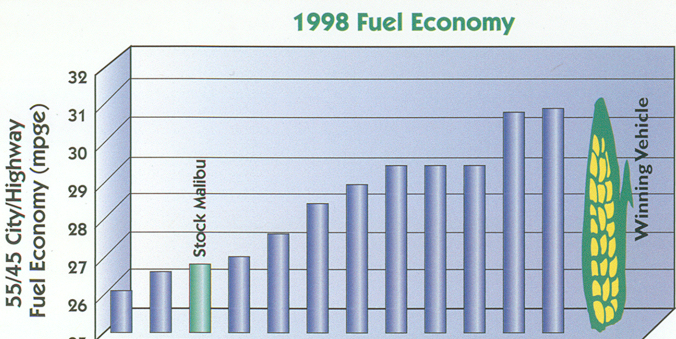
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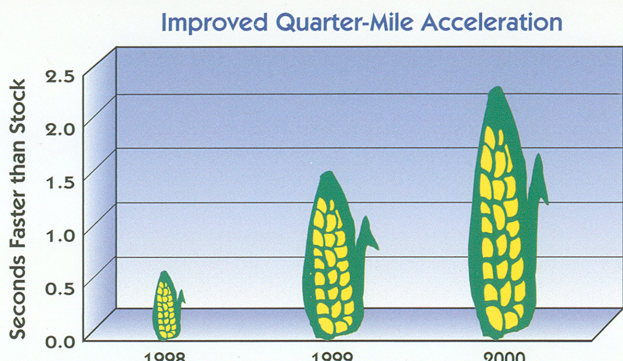
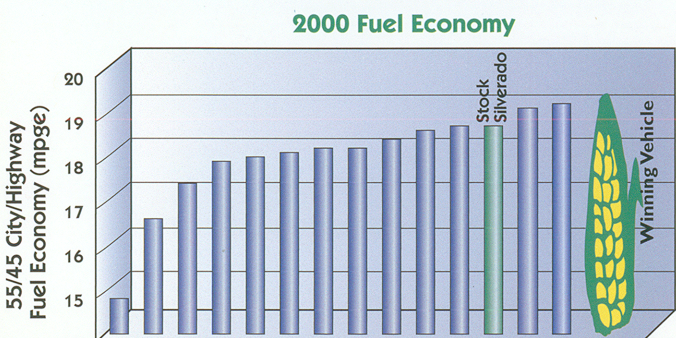
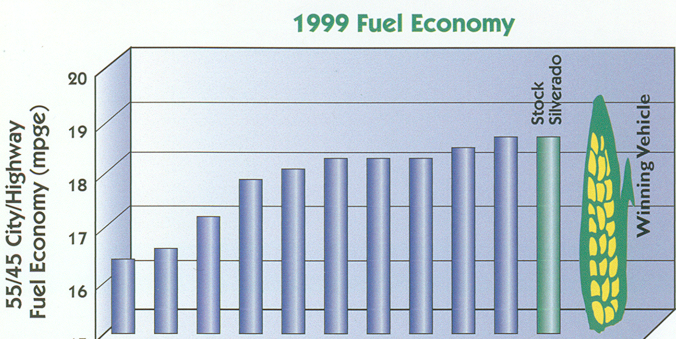
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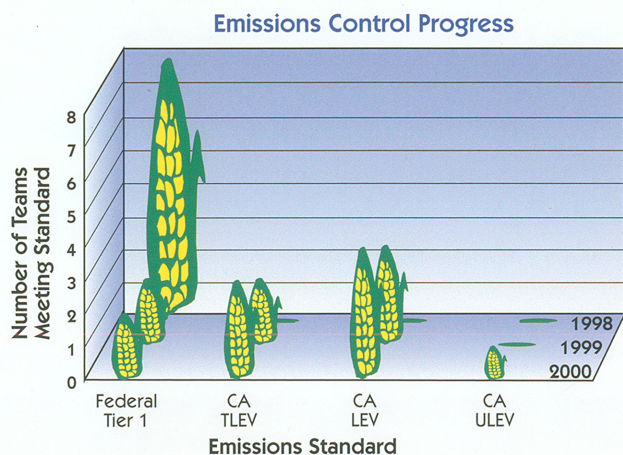
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In 1998, 10 of the 13 converted Chevrolet Malibus outperformed the stock vehicle in 55/45 city/highway fuel economy (on a miles-per-gasoline-equivalent-gallon (mpge) basis). In 1999 and 2000, while working on the less fuel-efficient Silverado, four of the teams still managed to develop a more fuel-efficient vehicle than the stock truck.



Each year of the competition, the students significantly increased the acceleration advantage of the ethanol-fueled vehicle — proving that ethanol can compete with gasoline in both power and performance. The winning team in the 1998 Ethanol Vehicle Challenge accelerated 0.66 seconds faster than the stock vehicle; in 1999, it was 1.6 seconds faster; and in 2000, the winner beat the stock vehicle by 2.43 seconds.



As the competition progressed, a greater number of the teams met more stringent emissions limits, a result of experience gained and increased technical support from GM. Especially impressive: the students achieved these emissions standards in the last two years of the Challenge while working on the larger, more mechanically complex, and more difficult-to-control Silverado.

"These competitions help us to gain entry into research and development programs that are of vital interest to our country."

— Dr. Gregory W. Davis, Advisor
Kettering University

"Over the past year, you have embarked on what I believe is an unparalleled educational experience; an experience that provides you with a hands-on opportunity to tackle 'real-world' automotive engineering challenges. Many of the cutting-edge ideas resulting from this challenge will be implemented in the vehicles of the future. Many of you who optimized these vehicles will become leaders in the automotive industry."

— Ralph Goodale, PC, MP
Minister of Natural Resources Canada

A Fuel Whose Time Has Come

Americans already use more than 15 billion gallons of ethanol-blended gasoline annually to improve vehicle performance and reduce emissions. In the U.S., production of over 1.5 billion gallons of ethanol each year increases net farm income by \$4.5 billion, boosts total employment by almost 200,000 jobs, adds over \$450 million to state tax receipts, improves the U.S. trade balance by \$2 billion, and results in a net savings in the federal budget of over \$3.6 billion.* In Canada too, ethanol production has grown into a significant industrial sector over the past 20 years, with plants in four provinces producing 62 million gallons of ethanol; this number is expected to increase to over 178 million within the next three years. Ethanol has added over 5,000 new jobs to the Canadian economy, and farmers have seen a 10¢-a-bushel benefit due to ethanol production. In 2000, more than 1,000 retail outlets across Canada sell ethanol blends, accounting for 5% of the gasoline fuel market. Made from renewable crops, ethanol also reduces U.S. and Canadian dependence on foreign oil imports.

In greater concentrations (like in E-85), ethanol is the only liquid fuel that actually reduces greenhouse gas emissions because it represents a renewable carbon cycle — in other words, the carbon dioxide emitted by ethanol-burning vehicles is reused by the crops and plants from which ethanol is made. Burning fossil fuels, on the other hand, releases carbon into the air, where it reacts with oxygen to form carbon dioxide, a greenhouse gas that may contribute to global climate change.

Because it burns cleaner than other fuels, ethanol also significantly reduces tailpipe emissions like carbon monoxide, nitrogen oxides, volatile organic compounds, benzene, and toluene. Unlike other alternative transportation technologies, ethanol requires no special infrastructure to achieve these emission benefits.

*The Economic Impact of the Demand for Ethanol, Dr. Michael Evans, Professor of Economics, Kellogg School of Management, Northwestern University (1997).

In 1999, 12 of the 14 converted Chevrolet Silverados accelerated faster than the stock truck in the 1/4 mile event, while outperforming it on an mpge basis.

After the 1998 competition, 64% of graduating students from the Ethanol Vehicle Challenge accepted jobs within the automobile industry.



Competition Administrator

Center for Transportation Research, Argonne National Laboratory, operated for the University of Chicago as part of the U.S. Department of Energy's national laboratory system. For more information on DOE-sponsored student competitions, please check out Argonne's Transportation Technologies Research and Development Center web site at <http://www.transportation.anl.gov> ("What's New in Student Competitions").

