

FutureTruck 2001



Publicity Report

FutureTruck 2001



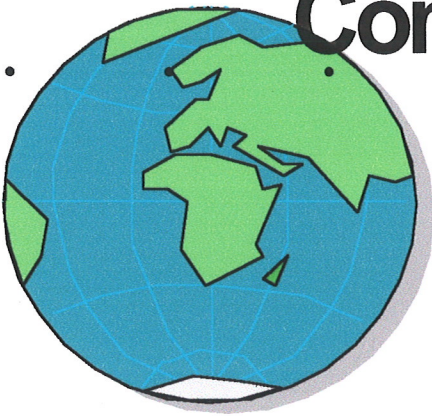
**Communications Report
Media Coverage Summary**

• • *Section 1* • • • • • • •

40 Moulton Circle
Warwick, RI 02886
(401)732-1551
(401)732-0547 fax

Groh Associates

FutureTruck 2001 Public Relations & Communications Report



Pathway to a Greener Future

FutureTruck 2001 Public Relations & Communications Report

Reaching Our Key Audiences

Introduction

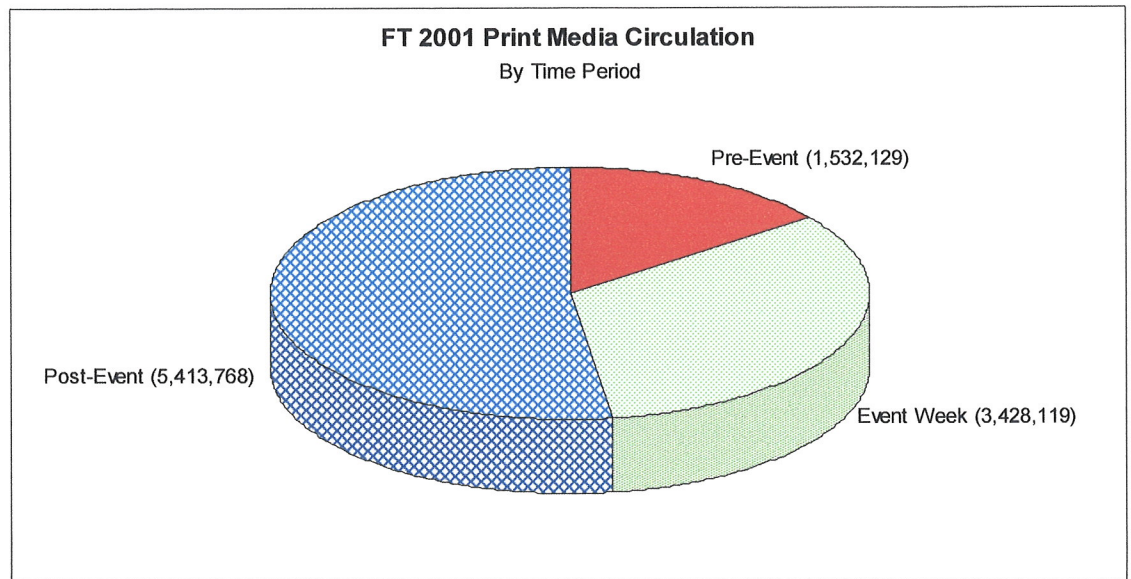
The goal of the FutureTruck public relations campaign was straightforward: to reach as wide an audience as possible with the message that the federal government and the U.S. auto industry are working together to solve the economic and environmental challenges of today's automotive transportation.

To this end, we identified the most significant audiences that needed to be reached, shaped the appropriate messages about FutureTruck and then defined the best strategies for reaching those groups of people.

Print Media Coverage

More than 31 million people read about the FutureTruck program during its second year of competition. Many of the newspaper stories contained photos of the competition (34%) and many other articles appeared on newspaper front pages or front section pages (16%). Both of these factors (photos and front page placements) significantly increased the visibility and impact of these media placements.

Stories appeared in large-circulation publications including the *New York Times*, *Los Angeles Times*, *Cleveland Plain Dealer*, *San Francisco Chronicle*, *Newsday*, *Autoweek*, *Cincinnati Enquirer*, *Baltimore Sun*, *Atlanta Constitution*, *Sacramento Bee*, and *Columbus Dispatch* as well as smaller publications including the *Parkersburg News*, *Beckley Register Herald*, *Sandusky Register*, *New Philadelphia Times Reporter*, *Wooster Daily Record*, *Morgantown Daily Athenaeum*, *Longview Daily News*, and *Greeley Tribune* throughout the United States and Canada.



Print media coverage grew through pre-event, event week and post-event time period reaching a peak immediately following the competition.

Broadcast Coverage

Three dozen separate FutureTruck stories aired on local television stations around the country. Additional footage was shot by a documentary crew for future use.

Television stories were broadcast in large markets (Columbus, Cincinnati, Knoxville, Sacramento, Pittsburgh, Dallas/Ft. Worth, Atlanta) and in smaller markets (Lubbock, Clarksburg, Johnstown, Negaunee, Madison) across the United States.

Still pending is a documentary on alternative fuel vehicles being shot on spec for PBS. Footage shot during the 2001 FutureTruck competition is expected to appear in this production.

In total, more than 2.1 million* people were reached by broadcast coverage of FutureTruck.

** Additional local television coverage occurred in the months preceding the competition. This coverage was not monitored.*

New Media

One innovation incorporated into the Future Truck communications program was a pair of live broadcasts transmitted over the World Wide Web. Two events, the oral presentations of FutureTruck teams and the post-competition awards ceremony, were broadcast this way.

The oral presentation web cast gave students, engineers and other interested parties worldwide a chance to peek “behind the scenes” at the strategies that students were using to create the sport utility vehicles of the future. The awards presentation brought some show business to FutureTruck. Noted television personality and science program host Bill Nye served as master of ceremonies for this broadcast.

A mailing was done to nationwide press as well as industry, environmental and Congressional contacts to promote these web casts. Paid advertisements were also purchased by General Motors to promote the web casts. These ads ran in *SAE Supercharger*, *SAE Automotive Engineering*, and *ASEE Prism* magazines.

Another communications tactic was the use of two specially designed web sites to provide official FutureTruck information. One web site (<http://www.futuretruck.home.att.net/>), maintained by Groh Associates, provided material and background information specifically for use by the media. A separate site (www.futuretruck.org) made extensive material about FutureTruck available to the general public.

Media Day and On-Site Coverage

In cooperation with the General Motors Communications staff, reporters from the Detroit area were invited to the GM Milford Proving Grounds to cover competitive events on “Media Day,” June 11. The on-site turnout was excellent and resulted in several significant media placements.

Media people on site during the FutureTruck competition included:

Name	Media Organization
Lewis Gulick	EV News Magazine
Keith Bradsher	New York Times, Detroit
Jacques Gordon	Motor Age Magazine

Bridget Ryan	Motor Age Magazine
Richard Truett	Automotive News
Tom Nash	Motor Magazine
Bruce Pollock	U.S. Auto Scene
Sarah Kline	U.S. Auto Scene
Alec Proudfoot	Freelance Video Producer
Kevin Wilson	AutoWeek



Congressional Campaign

An important part of this year's communications effort was directed at members of Congress. Because programs such as FutureTruck depend on government funding and support, it is necessary that Congress understand and appreciate the impact of these programs and agree to provide sufficient funds to continue them.

An extensive grass-roots campaign was organized to encourage participation at Washington DC FutureTruck activities by members of Congress.

As a direct result of this campaign, 23 members of Congress (4 Senators and 19 Representatives) visited the Capitol Hill display presented on the afternoon of June 13.

Members of Congress attending included:

Name	District/State Represented
Rep. Roscoe Bartlett	MD 6 R
Rep. Larry Combest	TX 19 R
Rep. John Dingell	MI 16 D
Rep. Wayne Gilchrest	MD 1 R
Rep. Mark Green	WI 8 R
Rep. Van Hilleary	TN 4 R
Rep. Johnny Isakson	GA 6 R
Rep. Paul Kanjorski	PA 11 D
Rep. Dale Kildee	MI 9 D
Rep. Sander Levin	MI 12 D
Rep. John Linder	GA 11 R
Rep. Jim McGovern	MA 3 D
Rep. George Miller	CA 7 D
Rep. Butch Otter	ID 1 R
Rep. Tom Petri	WI 6 R
Rep. Thomas Reynolds	NY 27 R
Rep. Mike Rogers	MI 8 R
Rep. Charles Stenholm	TX 17 D
Rep. Bart Stupak	MI 1 D

Sen. Carl Levin	MI (D)
Sen. Bob Smith	NH (R)
Sen. Debbie Stabenow	MI (D)
Sen. George Voinovich	OH (R)



Conclusion

The problems being addressed by FutureTruck - fuel economy and greenhouse gas impact – continue to be serious issues. In recent months, energy shortages and volatile fuel prices have helped make the public aware that these issues need to be addressed in a timely manner. One of the key messages of FutureTruck is that only by bringing together the resources of government, academia, industry and other concerned parties can these types of broad problems be solved.

FutureTruck has clearly demonstrated that government and industry –even while they may differ on many of the details – can effectively pool their resources to address those issues they agree upon.

The FutureTruck communications efforts focused on bringing that message to the key audiences (news media, Congress, environmental organizations, industry leaders, and educators). While media coverage reached a large number of people, more than 33 million, the quality of the coverage was of equal importance. Coverage was overwhelmingly positive and focused on the achievements of individual teams, the achievements of the program as a whole and the successful partnership between General Motors, the U.S. Department of Energy and the other major sponsors of the FutureTruck program.

FutureTruck 2001 MEDIA COVERAGE

SUMMARY REPORT

TOTAL AUDIENCE (Reached by media coverage): **33,296,048**

TOTAL NUMBER OF PRINT MEDIA PLACEMENTS: **119**

TOTAL NUMBER OF VERIFIED BROADCAST REPORTS: **36**

TOTAL NUMBER OF MEDIA PLACEMENTS: **155**

TOTAL REPORTED NEWSPAPER AND MAGAZINE CIRCULATION: **31,122,048**

TOTAL ESTIMATED BROADCAST COVERAGE: **2,174,000**

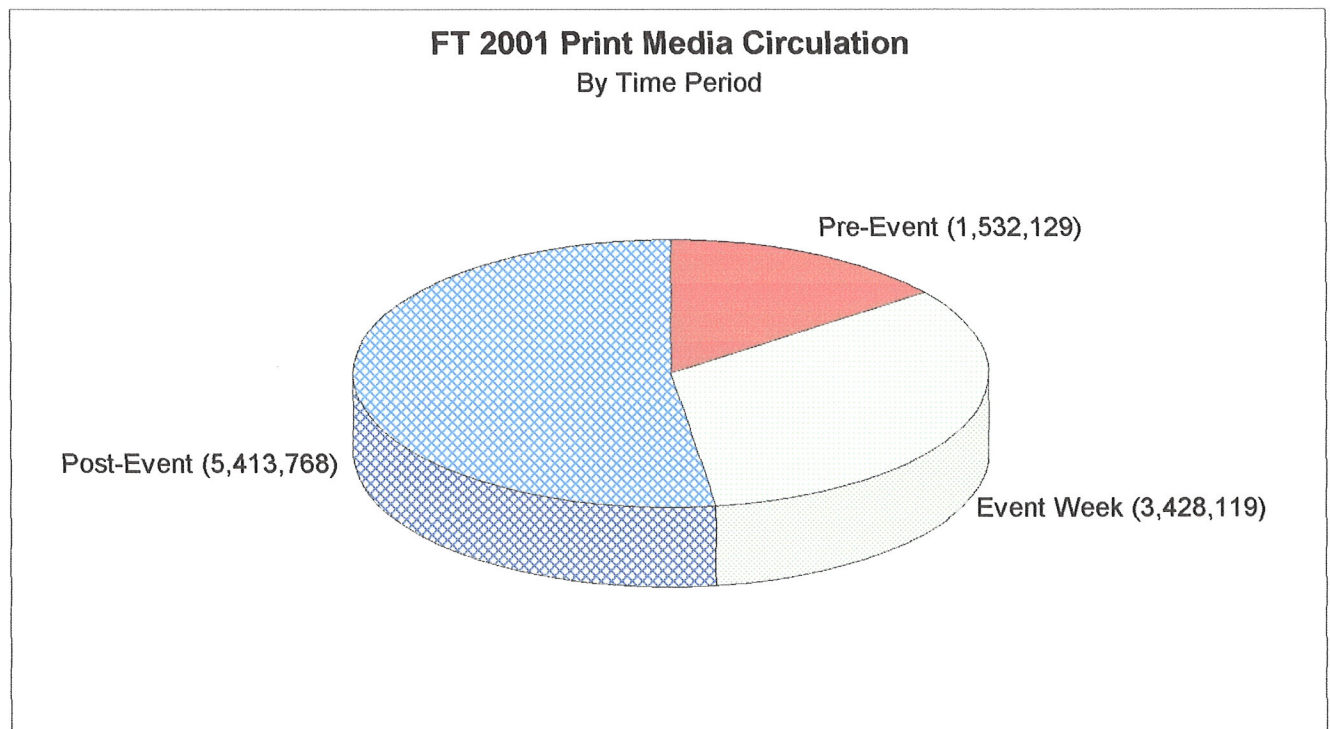
NUMBER OF STATES REPRESENTED (NEWSPAPER): **21**

NUMBER OF ARTICLES PER STATE:

AR (1)	CA (7)	CO (1)	FL (1)	GA (2)
ID (2)	IL (14)	MD (4)	NC (1)	NE (1)
NJ (7)	NY (3)	OH (13)	OR (1)	PR (1)
TN (3)	TX (2)	VA (1)	WA (1)	WI (5)
WV (12)				

NUMBER OF ARTICLES CONTAINING PHOTO(S): **28 (34%)**

NUMBER OF ARTICLES ON FIRST PAGE: **13 (16%)**



Future Truck 2001



Print and Broadcast Media Logs

• • *Section 2* • • • • • • •

FutureTruck 2001 Print Coverage

<u>Company</u>	<u>City</u>	<u>Circulation</u>	<u>Date</u>
U-Wire	Blacksburg	n/a	09/29/2000
API EnCompass		n/a	10/26/2000
U-Wire	Davis	n/a	10/27/2000
Electric Vehicles Online	Alexandria	n/a	12/04/2000
PR Newswire	Pontiac	n/a	03/23/2001
Alternative Fuels Today	Alexandria	n/a	03/27/2001
Daily Beacon	KNOXville	16,500	04/03/2001
Badger Herald	Madison	16,000	04/12/2001
Daily Cardinal	Madison	10,000	04/16/2001
California Aggie	Davis	13,000	04/20/2001
Diamondback	College Park	21,000	05/09/2001
U-Wire	College Park	n/a	05/09/2001
Electronic Engineering Times	Manhasset	160,155	05/14/2001
Business First	Columbus	10,754	05/25/2001
Daily Athenaeum	Morgantown	25,000	05/30/2001
Wisconsin State Journal	Madison	86,000	05/31/2001
Inside ITS	New York	3,000	06/01/2001
Associated Press	Morgantown	n/a	06/02/2001
Columbus Dispatch	Columbus	248,787	06/02/2001
Associated Press	Columbus	n/a	06/03/2001
Charleston Gazette		54,500	06/03/2001
Cincinnati Enquirer	Cincinnati	327,810	06/03/2001
Daily Record	Wooster	25,200	06/03/2001
Dayton Daily News	Dayton	212,128	06/03/2001
Herald Dispatch	Huntington	49,123	06/03/2001
Herald Sun	Durham	62,000	06/03/2001
Parkersburg News	Parkersburg	37,771	06/03/2001
Progress Index	Petersburg	19,200	06/03/2001
Register Herald	Beckley	35,000	06/03/2001
Sandusky Register	Sandusky	27,301	06/03/2001
Southwest Times Record	Fort Smith	45,900	06/03/2001
Times Reporter	New Philadelphi	26,000	06/03/2001
Ascribe News		n/a	06/04/2001
Associated Press	Sacramento	n/a	06/04/2001
Business Wire	Boston	n/a	06/04/2001
Daily Chief Union	Upper Sandusky	4,400	06/04/2001
Cincinnati Enquirer	Cincinnati	204,388	06/05/2001
Citizen	Auburn	16,143	06/05/2001
Mount Vernon News	Mount Vernon	11,000	06/05/2001
Parkersburg Sentinel	Parkersburg	80,008	06/05/2001
Associated Press	Atlanta	n/a	06/06/2001
Atlanta Constitution	Atlanta	313,990	06/06/2001
Deerfield Review	Wilmette	42,338	06/07/2001

<u>Company</u>	<u>City</u>	<u>Circulation</u>	<u>Date</u>
Evanston Review	Wilmette	43,548	06/07/2001
Glencoe News	Wilmette	2,288	06/07/2001
Glenview Announcements	Wilmette	43,548	06/07/2001
Grayslake Review	Grayslake	42,338	06/07/2001
Gurnee Review	Gurnee	42,338	06/07/2001
Highland Park News	Wilmette	7,735	06/07/2001
Lake Forester Lake Bluff	Wilmette	42,338	06/07/2001
Lake Villa Review	Lake Villa	42,338	06/07/2001
Libertyville Review	Mundelein	42,338	06/07/2001
Mundelein Review	Wilmette	42,338	06/07/2001
Northbrook Star	Wilmette	43,548	06/07/2001
Wilmette Life	Wilmette	43,548	06/07/2001
Winetka Talk	Wilmette	43,548	06/07/2001
Knoxville News Sentinel	Knoxville	119,529	06/11/2001
Electric Vehicles Online	Alexandria	n/a	06/12/2001
New York Times	New York	1,093,411	06/12/2001
Los Angeles Times	Los Angeles	1,021,121	06/13/2001
San Juan Star	San Juan	40,000	06/13/2001
Associated Press	Morgantown	n/a	06/14/2001
PR Newswire	Washington	n/a	06/14/2001
Ascribe News		n/a	06/15/2001
Associated Press	Sacramento	n/a	06/15/2001
Charleston Gazette		54,500	06/15/2001
Charleston Gazette		54,500	06/15/2001
Clarksburg Telegram	Clarksburg	13,000	06/15/2001
Dominion Post	Morgantown	21,500	06/15/2001
Electric Vehicles Online	Alexandria	n/a	06/15/2001
Inter Mountain	Elkins	12,000	06/15/2001
Automotive News		82,000	06/18/2001
Inside Energy		n/a	06/18/2001
Daily Beacon	Knoxville	16,500	06/19/2001
Sarasota Herald Tribune	Sarasota	114,450	06/19/2001
Wisconsin State Journal	Madison	86,000	06/19/2001
Daily Athenaeum	Morgantown	25,000	06/20/2001
Los Angeles Times	Los Angeles	1,021,121	06/20/2001
Middletown Journal	Middletown	24,000	06/20/2001
Focus Daily News	DeSoto	26,374	06/21/2001
Hillsborough Beacon	Hillsborough	4,500	06/21/2001
Hopewell Valley News	Hopewell	3,300	06/21/2001
Manville News	Manville	1,500	06/21/2001
South Brunswick Post	Dayton	5,000	06/21/2001
Atlanta Constitution	Atlanta	313,990	06/22/2001
Cranbury Press	Cranbury	4,500	06/22/2001
Princeton Packet	Princeton	14,130	06/22/2001
Sacramento Bee	Sacramento	275,000	06/22/2001

<u>Company</u>	<u>City</u>	<u>Circulation</u>	<u>Date</u>
Sun	Baltimore	320,986	06/22/2001
Windsor Hights Herald	Hightstown	5,500	06/22/2001
Sun	Baltimore	320,986	06/23/2001
Associated Press	Sacramento	n/a	06/24/2001
Associated Press	Sacramento	n/a	06/25/2001
Autoweek	Detroit	340,000	06/25/2001
University Daily	Lubbock	14,000	06/26/2001
California Aggie	Davis	13,000	06/28/2001
Sacramento Business Journal	Sacramento	16,500	06/29/2001
Cleveland Plain Dealer	Cleveland	504,411	07/01/2001
Utility Fleet Management	Alexandria	22,000	07/01/2001
Worthington News	Columbus	18,454	07/04/2001
Newsday	Long Island	463,406	07/05/2001
Bulletin	Bend	27,930	07/06/2001
Capitol Times	Madison	22,000	07/06/2001
Daily News	Longview	25,000	07/06/2001
Diamondback	College Park	21,000	07/06/2001
Greeley Tribune	Greeley	24,500	07/06/2001
Associated Press	Sacramento	n/a	07/10/2001
Associated Press	Sacramento	n/a	07/12/2001
Omaha World Herald	Omaha	238,462	07/12/2001
Inside ITS	New York	3,000	07/15/2001
Idaho Statesman	Boise	67,000	07/21/2001
Associated Press	Boise	n/a	07/31/2001
Idaho Statesman	Boise	67,000	08/01/2001
Tooling & Production	Solon	80,500	08/01/2001
Electric Vehicles Online	Alexandria	n/a	08/03/2001
San Francisco Chronicle	San Francisco	482,268	08/05/2001
Electric Vehicles Online	Alexandria	n/a	08/15/2001
TOTAL Readership:		30,693,048	

FutureTruck 2001 - Broadcast Audience

<u>Company</u>	<u>City</u>	<u>Dates</u>	<u>Audience</u>
State: CA			
KXTV-TV Channel 10	Sacramento	06/25/2001	115,000
KCRA-TV Channel 3	Sacramento	06/26/2001	108,000
KXTV-TV Channel 10	Sacramento	06/26/2001	7,000
KMAX-TV Channel 31	Sacramento	06/26/2001	43,000
KCRA-TV Channel 3	Sacramento	06/26/2001	108,000
KMAX-TV Channel 31	Sacramento	06/26/2001	43,000
KTXL-TV Channel 40	Sacramento	07/12/2001	125,000
State: DC			
Tech TV Cable	Washington	06/13/2001	200,000
State: GA			
WXIA-TV	Atlanta	05/31/2001	62,000
State: MI			
WLUC-TV Channel 6	Negaunee	05/30/2001	33,000
State: OH			
WCMH-TV Channel 4	Columbus	05/31/2001	47,000
WBNS-TV Channel 10	Columbus	06/13/2001	156,000
WKRC-TV, Ch 12	Cincinnati	06/02/2001	141,000
WBNS-TV Channel 10	Columbus	06/02/2001	102,000
WKRC-TV, Ch 12	Cincinnati	06/02/2001	102,000
WCMH-TV Channel 4	Columbus	06/26/2001	47,000
State: PA			
WWCP-TV, Channel 8	Johnstown	05/30/2001	38,000
WATM-TV	Johnstown	05/30/2001	18,000
WWCP-TV, Channel 8	Johnstown	06/21/2001	38,000
WATM-TV	Johnstown	06/21/2001	18,000
KDKA-TV, Ch 2	Pittsburgh	06/08/2001	104,000
State: TN			
WBIR-TV	Knoxville	06/12/2001	129,000
State: TX			
KCBD-TV	Lubbock	06/13/2001	45,000
KVUE-TV, Ch 24	Austin	06/16/2001	10,000
KLBK-TV	Lubbock	06/08/2001	12,000
KLBK-TV	Lubbock	06/08/2001	15,000

<u>Company</u>	<u>City</u>	<u>Dates</u>	<u>Audience</u>
WFAA-TV	Dallas/Ft. Worth	06/14/2001	103,000

State: WI

WKOW-TV Channel 27	Madison	06/12/2001	57,000
WKOW-TV Channel 27	Madison	06/12/2001	57,000

State: WV

WBOY-TV	Clarksburg	05/10/2001	13,000
WBOY-TV	Clarksburg	05/31/2001	13,000
WBOY-TV	Clarksburg	05/09/2001	13,000
WBOY-TV	Clarksburg	05/09/2001	13,000
WBOY-TV	Clarksburg	06/01/2001	13,000
WBOY-TV	Clarksburg	06/14/2001	13,000
WBOY-TV	Clarksburg	06/15/2001	13,000

Total Broadcast Audience:			2,174,000
----------------------------------	--	--	------------------



VIDEO MONITORING
SERVICES
OF AMERICA, L.P.

361 Newbury Street
Boston, MA 02115
(617) 266-2121
(617) 266-5168
www.vidmon.com

New York
(212) 736-2010

Los Angeles
(323) 993-0111

Chicago
(312) 649-1131

Philadelphia
(215) 569-4990

San Francisco
(415) 543-3361

Detroit
(248) 220-0002

Boston
(617) 266-2121

Dallas
(972) 644-9696

Washington
(202) 393-7110

Houston
(713) 789-1635

Miami
(305) 822-4400

Denver
(303) 733-8000

Hartford
(860) 236-6662

San Diego
(619) 544-1860

Phoenix
(602) 957-7995

Cleveland
(216) 579-4103

Baltimore
(410) 418-4445

I=Interview; GR=Graphic; PC=Press Conference; R=Reader; SI=Studio Interview; T=Teaser; TZ=Teased Segment; V=Visual

Monitoring Report

FUTURETRUCK 05/01 to 06/28

1. Good Day Sacramento KMAX-TV CH 31 (UPN) Television Sacramento/Stockton/Modesto 06/26/2001 7:00 - 8:00 am

15.05 Doug Brauner the Car Czar. > UCD students convert Chevy Suburban. V; Chevy Suburban converted by UC Davis students to hybrid engine; Saturn, Autodesk, General Motors among logos on vehicle. Won General Motors FutureTruck Competition. > New Jeep. V; looks at Jeep Liberty. I; Lisa Barrow, Daimler Chrysler, formerly of Motorweek Television, shows features of the Jeep Liberty. Anchor chat. 19.00

2. Good Day Sacramento KMAX-TV CH 31 (UPN) Television Sacramento/Stockton/Modesto 06/26/2001 6:00 - 7:00 am

02.10 Headlines. > Governor praises whistleblowers from Duke Energy's San Diego plant. V; Gov. Gray Davis meeting with former Duke Energy employees who claim company manipulated plant to drive up energy costs. Davis and the Duke employees will testify to Senate Committee icw drive to have billions in usurious charges returned to CA. Duke Energy says it was under direction of state officials. PC; Davis - they're fighting back and we're fighting back, and the fact that they came forward today allows us to make a stronger case. > Cool weather hits Sacramento area. V; street scenes; rainstorm yesterday; scenes of car accident from car that slid; power outage on Power Inn. > Weather. > Rain during Rivercats game. V; scenes of crowds covered up, groundskeepers at work. Game delayed by rain at Raley Field, but finished. I; fans - it's better than the heat. > Record rainfall in Bay Area. V; street scenes. Record rainfall in the area. > Wildfire in the Sierras. V; scenes of wildfire, now at 70% containment. Low winds helping efforts. > Fire in Redwood City. V; scene of fire in historic district. Cause not yet known. Two historic buildings damaged. > Mother of abandoned baby found. V; canine officer at Philipino Plaza. Teen admitted dumping baby in Stockton to hide pregnancy from her mother. I; officer Mark Helms - we found 17-year-old-girl who admitted being mother. > Body found in San Joaquin County canal. V; scene where oversized bag containing body of young man found. I; officer Joe Herrera - murder took place somewhere else and was dumped in rural area. > Body of Larry Tankersly found in downtown Stockton. V; scene where body of city's former chief investigator for D.A. found in his truck. Being investigated as homicide but may be suicide. > Small plane crash at Napa Airport. V; crash scene. Plane clipped wing, overturned. Pilot, student pilot all right. > UCD students convert Chevy Suburban. V; Chevy Suburban converted by UC Davis students to hybrid engine; Saturn, Autodesk, General Motors among logos on vehicle. Won General Motors FutureTruck Competition. I; Peter Hutchinson, UCD student - we knew we had a good-running truck. > Traffic. 10.10

Note: Unless otherwise noted, the above VMS news segment summaries are derived from off-air tape.
For videocassettes or transcripts of any of the above segments, contact your nearest VMS office.
Note: Shaded segments were previously sent in closed captioning format.

FUTURETRUCK Continued....

3. News 10 Good Morning
KXTV-TV CH 10 (ABC) Television Sacramento/Stockton/Modesto
06/26/2001 5:00 - 7:00 am

[Derived from Captioning] 1.45.41 The cooling off period ends at the end of the month. Kree algs creation of a emergency board continues the delay of another two months money flight attendants have been working without a contract for more than two years. Sport utility vehicles may be more fuel efficient and environmentally friendly. The **FutureTruck** competition challenges students nationwide to redesign a large sport utility vehicle to make it more fuel efficient and environmentally friendly. They want to maintain performance characteristics like acceleration, towing and off road driving. A member of the team believes it won't be long before hybrid vehicles become the main way to get around. I personally think this is the way to do it. Electric vehicles don't have far enough range for people to have it as a primary car, but this can be a primary car. Reporter: the vehicle can travel up to 60 miles on battery power alone before needing recharged. When the batteries run down, the gas engine takes over. It can go 25 to 30 miles per hour on one gallon of gasoline. Not bad. Not bad at all. 6:46 Is the time. This is the time of year where if you like fruit and you live in california, you are lucky. 1.46.51

4. Channel 3 Reports
KCRA-TV CH 3 (NBC) Television Sacramento/Stockton/Modesto
06/26/2001 5:00 - 7:00 am

[Derived from Captioning] 43.33 We'll show you a group of northern california students that has designed the SUV of the future, today. Some students at UC Davis are changing the rules of the road. They've made it possible to drive one of the biggest s-u-v's out there without guzzling gas. Their Chevy Suburban gets nearly 30-miles to the gallon and has just won the title "**FutureTruck, 2001.**" Kcra three's steve bunnell has more. It sounds a bit like your vacuum cleaner.. But this super efficient.. Mostly electric S.U.V. Has the power of a monster v8. Tyler Garrard, UCD engineering student: we smoked the tires both first and second gear when we had the quarter mile drag race, so it was very impressive to say the least.. Even more impressive, perhaps, is how environmentally friendly this "**FutureTruck**" is. Instead of a monster, 5.6 Liter v8 there's a 1.9-Liter saturn engine under the hood linked to two electric motors. Uc davis engineering students designed this hybrid to run u away with its sports coupe the prelude. 53.47

5. Channel 3 Reports
KCRA-TV CH 3 (NBC) Television Sacramento/Stockton/Modesto
06/25/2001 6:00 - 6:30 pm

17.14 TZ; Fuel efficient SUV. UC Davis students make Chevy Suburban SUV fuel efficient, to win title of "**FutureTruck 2000**". V; modified Chevy Suburban at UC Davis with electric conversion equipment under hood. I; Tyler Garrard, UCD Engineering student, says we smoked the tires in first and second gear in the quarter mile drag race. V; Saturn engine under hood. V; electronic panels under hood. V; logos on vehicle, Saturn, GM, Yahoo, Chevy, Delphi, UC Davis, and others not legible. I; Mark Duvall, Team Advisor, says the global warming contribution drops to as low as some of the most efficient cars sold today, and that includes a Toyota Preis. V; Sony and Clarion equipment in truck. I; Andrew Frank, UCD Mechanical Engineering Professor, says if they built it in the volumes necessary it would cost about \$5,000-6,000 more than a conventional truck. Steve Bunnell reports. Anchor notes UC Davis teams have won 4 of 10 **FutureTruck** competitions. 19.34

FUTURETRUCK Continued....

6. **NewsWatch 23**
WATM-TV CH 23 (ABC) Television Johnstown/Altoona
06/21/2001 11:00 - 11:35 pm

[Derived from Captioning] 09.55 Peter Glenn has been the Dean at Dickinson since 1994 when the nation's oldest independent law school began merger talks with Penn State University. Glenn will stay on at the law school as a full-time faculty member and says he looks forward to getting back into the classroom. An SUV made by penn state students has won some major awards near the motor city. nearly 40 students engineered this hybrid electric 2000 Chevy Suburban. The "Power Lion" ranked 9th overall in the **FutureTruck** challenge in Milford Michigan. The penn state team also took second place in the Cisco Telematics award competition which honors excellence in systems and information. 15.53

7. **The Ten O'Clock News**
WWCP-TV CH 8 (FOX) Television Johnstown/Altoona
06/21/2001 10:00 - 10:30 pm

[Derived from Captioning] 13.21 21 An SUV made by Penn State students has won some major awards near the motor city. nearly 40 students engineered this hybrid electric 2000 Chevy Suburban. The "Power Lion" ranked 9th overall in the **FutureTruck** challenge in Milford Michigan. The Penn State team also took second place in the Cisco Telematics award competition which honors excellence in systems and information. 17.46

8. **KVUE 24 News Daybreak Saturday**
KVUE-TV CH 24 (ABC) Television Austin
06/16/2001 7:00 - 9:00 am

[Derived from Captioning] 25.41 Today fuel-cell cars are still expensive lab projects for engineering students- like those competing in the energy department's **FutureTruck** competition. A few foreign makes have begun selling compact hybrid electric cars- but they still burn gasoline and need frequent recharging. now General Motors is committing itself to developing an all hydrogen powered fuel cell competitive in price and driving range with today's gasoline engines. the company says it will have a prototype car out within three years.... Soon followed by demonstration-scale commercial fleets and then: I personally think you'll see hundreds of thousands of fuel cell electric vehicles on the road in the 2010 time frame. To make that possible though... GM must develop hydrogen storage tanks and distribution networks as convenient and commonplace as gas stations are now. That's why GM has signed a 25 year stake in General Hydrogen Corporation. 27.03

9. **TechLive**
Tech TV Cable National
06/13/2001 2:00 - 3:00 pm

33.53 TZ; **FutureTrucks**. As President Bush's energy plan is subject to heated debate in Congress, Capital Hill is being invaded this afternoon by college engineering students who are competing in the Energy Department's **FutureTruck** Competition, General Motors is also sponsoring the event. The student teams were given stock Chevrolet Suburbans, and compete to make them more fuel efficient. I; Shelly Lanney, Dept of Energy Dept, says the SUVs use more gasoline and have more emissions. The University of Wisconsin Madison team, The University of Tennessee Knoxville, used different approach. Toyota and Honda are already making these hybrids, but in smaller calls. V; Footage of the competition. Gary Nurenberg reporting. 36.40

FUTURETRUCK Continued....

10. Eyewitness News At Five
KDKA-TV CH 2 (CBS) Television Pittsburgh
06/08/2001 5:00 - 6:00 pm

56:25 Goodnews. > West Virginia truck gets twice the gas mileage with half the omissions. Engineering students are working on an electrical engine. This is a **FutureTruck** competition at General Motors in Michigan. V: Students working in truck. > Volunteers hosted a cookout at Oakland today in the Fight Against Hunger. V: Food scenes. 57:58

11. 12 News Tonight
WKRC-TV CH 12 (CBS) Television Cincinnati
06/02/2001 11:00 - 11:35 pm

00.09.44 Group of Ohio State University students says they found a way to get 28 miles a gallon out of an SUV. Secret involves replacing the Chevrolet Suburban engine with diesel electric powertrain. The hybrid was Ohio State University's entry in the **FutureTruck** Program. 00.10.17

12. 12 News At 6:00
WKRC-TV CH 12 (CBS) Television Cincinnati
06/02/2001 6:00 - 6:30 pm

00.09.44 Group of Ohio State University students says they found a way to get 28 miles a gallon out of an SUV. Secret involves replacing the Chevrolet Suburban engine with diesel electric powertrain. The hybrid was Ohio State University's entry in the **FutureTruck** Program. 00.10.17

13. Eyewitness News
WBNS-TV CH 10 (CBS) Television Columbus/Zanesville
06/02/2001 6:00 - 6:30 pm

[Derived from Captioning] 06.40 > O.S.U. Engineering students have found a way to save money. They have replaced the traditional gas engine in an S.U.V. With a diesel electric one that gives you 10 more miles to the gallon. Ohio state students will take the design and enter it into the few **FutureTruck** program. 09.38

14. Newschannel 4 At 11:00
WCMH-TV CH 4 (NBC) Television Columbus/Zanesville
05/31/2001 11:00 - 11:35 pm

08.01 Hybrid truck. The Ohio State University Center of Automotive Research is participating in the National **FutureTruck** Competition in Detroit to change a Chevy Suburban into a hybrid vehicle. V; GM truck. 08.27

15. Newswatch 23
WATM-TV CH 23 (ABC) Television Johnstown/Altoona
05/30/2001 11:00 - 11:35 pm

[Derived from Captioning] 13.38 At Penn State have put together a full size 2000 Chevrolet Suburban by way of a vehicle kit. The "Power Lion" a hybrid electronic vehicle will be making its debut at the 2001 **FutureTruck** competition at the general motors proving ground in Michigan next week. While engineering the vehicle, students had to maintain the same performance, utility, safety and affordability that consumers seek in an SUV 15.20

FUTURETRUCK Continued....

16. **The Ten O'Clock News**
WWCP-TV CH 8 (FOX) Television Johnstown/Altoona
05/30/2001 10:00 - 10:30 pm

[Derived from Captioning] 15.49 engineering students at Penn State have put together a full size 2000 Chevrolet Suburban by way of a vehicle kit. The "Power Lion" a hybrid electronic vehicle will be making its debut at the 2001 **FutureTruck** competition at the General Motors proving ground in Michigan next week. While engineering the vehicle, students had to maintain the same performance, utility, safety and affordability that consumers seek in an SUV. 18.08

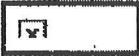
17. **Newschannel 4 At Sunrise**
WCMH-TV CH 4 (NBC) Television Columbus/Zanesville
06/26/2001 5:00 - 7:00 am

1:49:54 TZ; CNBC Business Report > Federal reserve to meet today and may lower interest rates. > International paper to cut 3,000 jobs. > Stock results from Monday. > American Airlines reaches contract with mechanics. V; American ticket counters. Their flight attendants may strike this Saturday. > Delta cutting prices on fares. GR; Delta Discount. > Univ. of California Davis engineers develop electric/gas **hybrid SUV**. V; SUV. > International Advertising Council honors Budweiser for its ads. V; council. > FDA crackdown on candy processors over unlabeled products. V; candy factory. 1:52:54

18. **News 10 At 5:00**
KXTV-TV CH 10 (ABC) Television Sacramento/Stockton/Modesto
06/25/2001 5:00 - 5:30 pm

13.26 TZ; **Hybrid SUV**. V; Saturn SUV at UC Davis. V; Yahoo! logo. I; Rob Schurhoff, UCD graduate student, talks of hybrids being primary cars for families. 14.26

###



Date: 05/31/01 18:22:20

Page	Slug	Wtr	Format	Tape	TTime	Total
G102	GT/GREEN VEHICLE	DW*	ENG/VO	11330		00:19
[0]		[0]((PAUL/ENG VO))				
PAUL/ENG VO (DUFFY)		CHECK OUT THIS BABY!!!				
cg loc2		THIS IS NO ORDINARY 2000 CHEVY SUBURBAN S-U-V.				
suv of the future		ONE DAY IT MAY NO LONGER BE A GAS GUZZLER!!!				
georgia tech		STUDENTS AT GEORGIA TECH HAVE RE-ENGINEERED THIS VEHICLE FOR BETTER FUEL ECONOMY AND EMISSIONS.				
		THE SCHOOL IS ONE OF 15 IN THE COUNTRY PARTICIPATING IN THE				
		"FUTURETRUCK' COMPETITON WHICH TAKES PLACE IN MICHIGAN EARLY NEXT MONTH.				

Search Again:

Tips for searching

☒ Use Free-Text Query.

NOTES:
The above video tape and the material presented is restricted to non-commercial purposes.
Any and all references, including to this, will be considered an infringement of copyright
to which we do not consent. 11/2/99

Future Truck 2001



Newspaper and Magazine Clippings

• • *Section 3* • • • • • • •



Diesel Engines Get Spotlight in Fuel-Efficiency Contest

By KEITH BRADSHAW

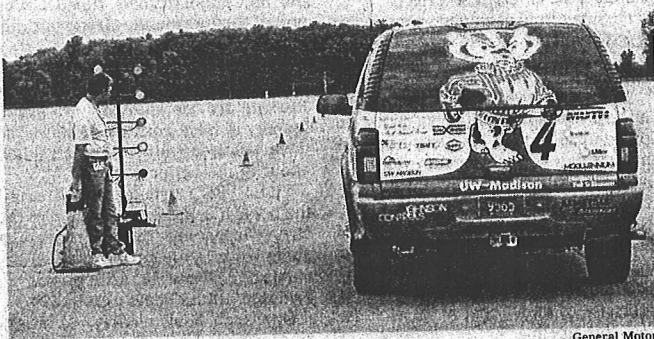
MILFORD, Mich., June 11 — Each of the 16 Chevrolet Suburban sport utility vehicles in a barnlike garage at the General Motors vehicle testing center here is painted a different bright color and festooned with the logos of sponsoring corporations. But the Suburbans are here not for a road race but for a different kind of competition: to see which can emit the least amount of global-warming gases.

Designed by students at the nation's top mechanical engineering schools with cutting-edge equipment supplied by the world's largest auto parts makers, the Suburbans are part of a contest, Future Truck, that has become an annual showcase for what might be done by automakers to address global warming. Because automobiles emit 19.5 pounds of carbon dioxide, a global-warming gas, for each gallon of fuel they burn, the contest has taken on new prominence as Washington has become increasingly interested in global warming and in whether fuel-efficiency rules should be raised.

The entries here showed a striking split that is also apparent within the auto industry: whether to switch to diesel engines. Eight of the Suburbans burned diesel, which gives excellent mileage and produces minimal emissions of greenhouse gases but tends to produce more soot and smog-causing gases. The other eight used a variety of fuel sources, including two demonstration models of fuel-cell vehicles that did not work well enough to participate in various tests, like towing a 7,000-pound trailer.

Two gasoline-electric vehicles already on the market are the Toyota Prius and Honda Insight. G.M., Ford Motor and DaimlerChrysler plan to introduce gasoline-electric hybrid sport utility vehicles within the next three years.

Diesel engines lack the sex appeal of fuel cells, which combine hydrogen and oxygen in a chemical reac-



Students from the University of Wisconsin entered this Suburban in the Future Truck contest in Milford, Mich. The competition is to see which vehicles emit the least amount of global-warming gasses.

tion to produce energy to drive a vehicle's wheels. But diesels are technically feasible now, especially if their pollution problems can be fixed, and provide remarkable fuel economy.

A diesel vehicle has nearly the same emissions of greenhouse gases as a gasoline-electric hybrid, said Robert Larsen, the director of transportation research at the Energy Department's Argonne National Laboratory. A diesel-electric does even better, with emissions of global warming gases almost as low as those of a fuel-cell vehicle, he added. Making hydrogen for a fuel cell requires some emissions of global-warming gases.

Preliminary figures showed that the Suburban that emitted the least carbon dioxide and other global-warming gases today was designed at the University of Wisconsin at Madison, Mr. Larsen said. The diesel-powered, four-wheel-drive Suburban got 28 miles to the gallon on the fairly easy course here, which involved driving at speeds no faster than 60 miles an hour and minimal

stop-and-start driving. An unmodified Suburban got 17.3 miles a gallon on the same course, several miles a gallon better than most drivers achieve.

The Suburban from the University of Wisconsin did well partly because it was a hybrid and partly because it used a lot of lightweight aluminum, including an aluminum underbody frame. Mass-producing aluminum frames is extremely difficult, but Audi is already doing it for some cars, and American automakers plan to start trying it in the next few years.

Julie Marshaus, a graduate student in mechanical engineering who led the University of Wisconsin team, said that choosing diesel had been easy. "We used a diesel engine because they're more efficient than any other internal combustion engine," Ms. Marshaus said.

But while her team's Suburban emitted less smog-causing nitrogen oxides than any of the other diesel vehicles here, the big vehicle's emissions were still not low enough to meet tough new government regula-

tions that will take effect in the 2004 model year. And her team's Suburban failed miserably on the soot test today, producing emissions of tiny particles that were off the top of the chart for the contest.

The poor pollution performance of the diesels left it unclear today which engineering school had won the competition. The results of the tests here, which have been taking place for a week, will be announced on Wednesday evening in Washington. G.M. plans to announce separately its own progress on fuel cell vehicles in separate news conferences on Tuesday in Warren, Mich., and on Wednesday morning in Washington.

G.M. gives a Suburban and \$10,000 to each of the nation's top mechanical engineering schools for the contest. The students then raise up to \$250,000 more each from other corporate sponsors to design a Suburban that gets the best possible mileage with the least pollution and no reduction in driving performance. The Energy Department is co-sponsor of the competition.

Automakers are lobbying for less strict pollution standards for diesels, contending that the rules in 2004 will effectively ban diesels. But Mark Mayer, G.M.'s director of North American engine development, acknowledged that recent innovations in pollution-control devices "will probably get us there, at enormous expense."

Europe applies less strict pollution rules to diesels, and sales of diesel cars are soaring there, claiming a third of the market compared with almost none here.

Environmentalists dislike diesels. Jason Mark, the director of the clean-vehicle program at the Union of Concerned Scientists, said that the real problem was that too many Americans prefer 5,800-pound Suburbans to cars, which get much better mileage with less pollution. Diesel engines are not the answer, he said, adding that "until they solve their public health liabilities, they shouldn't be in Suburbans and other vehicles."

LOS ANGELES TIMES

LOS ANGELES, CA
WEDNESDAY 1,021,121
JUN 20 2001



Burrelle's
INFORMATION SERVICES

352
.XZWA

2

LI

UC Team Wins FutureTruck Competition

257V
By JOHN O'DELL
TIMES STAFF WRITER

A Chevrolet Suburban using a "plug-in" hybrid power plant designed and built by UC Davis engineering students has captured top honors in the national FutureTruck 2001 competition.

The entry—designed to meet California's demand for high-mileage, low-emission vehicles—achieved average fuel economy of 25 miles per gallon in combined highway and city tests in Michigan this month. That's a 67% improvement over the stock Suburban's 15-mpg average.

Andrew Frank, head of UC Davis' Institute of Transportation Studies and one of two staff advisors to the 35-member student team, said the university will compete in the second two-year installment of the FutureTruck contest. In the next phase, university teams will adapt a 2002 Ford Explorer, the best-selling sport-utility vehicle brand in the nation.

"We'll go on with FutureTruck and with any other projects like it that may come our way," Frank said. "They give us a national forum to show we can meet these goals and do it at a reasonable cost."

He estimated that a commercial version of the modified Suburban could be produced by General Motors Corp. for \$5,000 to \$6,000 more than a stock model that uses a thirsty V-8 engine. Various state and federal subsidies for low-emission, high-mileage, alternate power plant vehicles could bring the actual cost to consumers back to normal, Frank said.

The FutureTruck awards were announced last week in ceremonies in Washington. UC Davis, the only California team in the competition, bested 14 other universities for the overall first-place award.

The engineering goals of FutureTruck, which began last year, are to take large sport-utility vehicles and increase their fuel efficiency and lower their greenhouse gas emissions while achieving national ultra-low exhaust emission standards.

The Davis team actually cut emissions to meet the tougher California standard for super ultra-low emission vehicle, or SULEV, status.

The students replaced the Suburban's stock 5.3-liter, V-8 engine with a four-cylinder gasoline engine from a Saturn sedan, linked to a pair of electric motors. The hybrid power plant produced about the same power and torque as the stock engine, said Mark Duvall, a UC Davis researcher and advisor to the team.

Additionally, the team installed a series of storage batteries that power the Suburban's electric motors. The motors are recharged by plugging in to the commercial electric grid during the night, when rates are lowest and there is a surplus of power.

The university's victory "shows that it is possible to satisfy both California and national [fuel efficiency and emissions] goals in the same vehicle," Frank said. "The technology is here. We did it without using any really high advancement in technology, like fuel cells, which still require a lot of development and are very expensive."

In individual categories, the University of Wisconsin at Madison took first place for fuel efficiency with a combined city-highway average of 28 miles per gallon. The team's Suburban was outfitted with a five-cylinder diesel engine and an electric motor and used a custom aluminum frame that cut the vehicle's weight by 200 pounds.

The list of winners, as well as other information about the FutureTruck program, can be found on the Internet at www.futuretruck.org.



Burrelle's
INFORMATION SERVICES

352
.XZV41

ryster designers the other
y.

They drove up in two of
e company's most recent

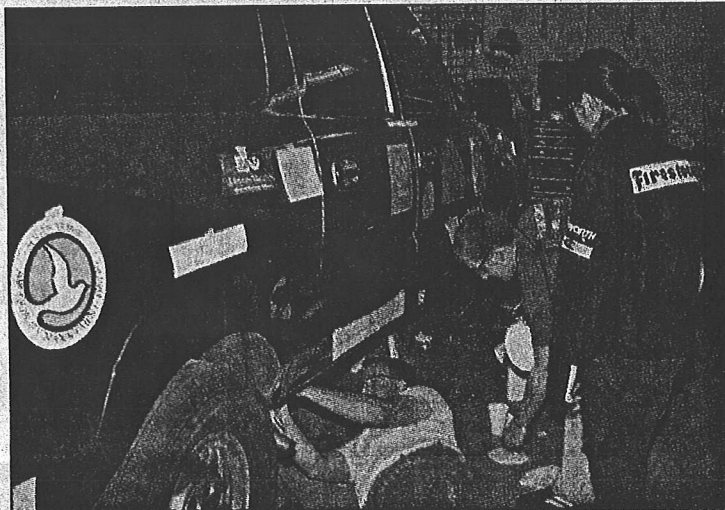
work at low speeds, most off-road.
Because only the electric motors
is log on a normal workday.

most Southern California motor-
0 miles of driving—more than
ower the electric drive motors for
ge batteries hold enough juice to
ne would never fire up. The stor-
ys, the internal combustion en-
For most weekday use, Duval

out 400 miles on 12 gallons of
The hybrid Suburban can travel
c vehicle users at low prices.

at power companies sell to elec-
then there is a surplus of energy
e recharging is done at night
ht and costly energy situation.
t a problem even in California's
to the commercial electricity grid
wer. And Duval says plugging
esn't have to generate electrical
ic drain on the engine if it
conomy because there is no para-
The recharging helps boost fuel

might
teries that can be recharged
s, it also carries storage
e the power for its electric mo-
erative braking system to pro-



UC Davis students tinker with their "FutureTruck," a hybrid Chevrolet Suburban, during final evaluations at GM's Michigan proving grounds.

The Assignment: Tame the Gas-Guzzling SUV

Technology •

'FutureTruck' contest has campus teams trying to make the big machines environmentally friendly.

By JOHN O'DELL
TIMES STAFF WRITER

The big Chevrolet Suburban being wheeled around General Motors Corp.'s desert test center in Arizona by a group of college students didn't look much like a truck of the future.

It seemed to be a stock model, but a peek under the hood quickly put that idea to rest.

Instead of the standard Suburban's hefty, thirsty V-8, this engine bay was stuffed with a four-cylinder gasoline engine borrowed from a Saturn sedan, along with the maze of electronic gadgetry needed to link it to a pair of elec-

tric motors.

The hybrid system gives the big Suburban the performance of a stock model with far less tailpipe emissions and far fewer visits to the gas pump.

The hybrid Suburban is UC Davis' initial project in the national "FutureTruck" competition, a four-year event that pits university teams from across the nation in a contest to develop ecologically friendly, fuel-efficient versions of the lumbering SUVs that many American motorists seem to love and most environmentalists seem to loathe.

Round One of the contest wraps up with award ceremonies tonight in Washington after a week of final tests and evaluations at GM's main proving grounds in Milford, Mich.—a year after the initial operating tests at the desert center outside Phoenix.

Please see Trucks, G2

Trucks: Who Will Tame the Gas-

Continued from G1

Expected to be among the victors is California's only entry, the team from Davis, whose hybrid gas-electric Chevrolet Suburban delivered 27 miles per gallon. And that's 27 mpg while delivering all of the towing, hill climbing, acceleration, cargo room and range of a stock Suburban with its 15-mpg thirst.

The universities, whose projects ranged from exotic fuel-cell propulsion to hybrid gasoline and diesel power systems mated to electric motors, worked on GM's biggest consumer vehicle in this round of the contest, which is sponsored by the Department of Energy and several other federal agencies, along with GM, Yahoo Inc. and a number of private automotive technology firms and alternate fuel groups.

Beginning in August, and for the next two years of the program, the universities will be trying to tame Ford Motor Co.'s 2002 Explorer. Ford will replace GM as a sponsor.

The concentration on trucks is important because pickups, sport-utility vehicles and minivans account for nearly half of all new vehicles sold in the U.S. each year and collectively guzzle far more gasoline, and spew more emissions, than passenger cars.

"We've seen two hybrid vehicles hit the market," said Energy Department official Shelley Launey—referring to the five-passenger Toyota Prius and the two-passenger Honda Insight. "We like to think that things like this [FutureTruck project] go a long way to helping with commercial development of these kinds of vehicles," said Launey, who runs the department's advanced vehicle competitions.

The competitions also have benefited the auto industry—and the students. At least half the students who have graduated since competing on university teams have taken jobs in the auto industry, Launey said. "They get good jobs and they bring an appreciation for fuel economy and a degree of environmental sensitivity to those jobs."

GM, which already has hired a number of graduates from the university teams, sees the competition as "a great recruiting opportunity," says Mark Maher, powertrain systems director for GM's truck group. "And the rest of the country will eventually benefit from the types of cleaner, more efficient technologies we're seeing

here."

FutureTruck follows a similar FutureCar competition that ran from 1996 to 1999. UC Davis won that first round with a 67-mpg gas-electric Ford Taurus, but then failed to place in the final round when the team couldn't get the kinks out of an ambitious experiment with a fuel-saving, continuously variable transmission.

But these are contests in which failure is as honorable as victory.

"The value of this program is that we are previewing the next generation of advanced propulsion technology," says Bob Larsen, director of the Argonne National Laboratory's Center for Transportation Research. "These students are encouraged to look at things in an atmosphere of unfettered creativity and the result is combinations of fuels and propulsion equipment you won't see elsewhere."

In the quest for improved mileage, the team from the University of Wisconsin went so far as to throw away their Suburban's steel frame and replace it with a custom-built aluminum frame that shaved 200 pounds from the vehicle's weight.

Sometimes, Larsen says, experiments in the competition, even failures, help spur important development.

Indeed, UC Davis now has an ongoing project on a hybrid gas-electric power system with a continually variable transmission—which saves fuel by keeping the power train operating at maximum efficiency at all times and eliminating the energy wasted as mechanical gears are shifted.

That FutureCar experience and the results of the truck program's desert testing last summer "taught us that preparation is everything and that the entire project needs to be well-tested by the time you show up here" at the finals, UC Davis staff researcher Michael Duvall said in a telephone interview from Milford.

Duvall, one of two advisors to the university's 35-member student team, says that since the desert tests, the students "completely redesigned the control system to make it more reliable and more modular so it is easier to [reconfigure], and designed a new exhaust system treatment for better emissions. We think it can now meet the strictest [emissions] standards in California."

switched engines, electric motors and batteries or have made other significant modifications to their entries since the desert testing in attempts to shed weight or gain power and reliability.

The UC Davis team is unusual among the FutureTruck contestants in that it is following a double directive in the competition: to develop a vehicle that could be marketable as a smog-fighter in California as well as to compete for the high-gas-mileage and low-emissions crowns that are the national contest's goal.

Among other improvements to the stock design, the UC Davis team developed a unique pair of retractable carbon-fiber body panels that extend from the rear of the Suburban at highway speeds to cut down on the air turbulence that slows a vehicle. The result is a 15% reduction in fuel-wasting aerodynamic drag, Duvall says.

And the UC Davis Suburban is a "plug-in hybrid." While capable of using its gasoline engine and regenerative braking system to provide the power for its electric motors, it also carries storage batteries that can be recharged overnight.

The recharging helps boost fuel economy because there is no parasitic drain on the engine if it doesn't have to generate electrical power. And Duvall says plugging into the commercial electricity grid isn't a problem even in California's tight and costly energy situation. The recharging is done at night when there is a surplus of energy that power companies sell to electric vehicle users at low prices.

The hybrid Suburban can travel about 400 miles on 12 gallons of gas.

For most weekday use, Duvall says, the internal combustion engine would never fire up. The storage batteries hold enough juice to power the electric drive motors for 60 miles of driving—more than most Southern California motorists log on a normal workday.

Because only the electric motors work at low speeds, most off-roading, traffic-jam creeping and parking-lot crawling in this Suburban would be zero-emissions driving.

FutureTruck 2001 award ceremonies will be broadcast live on the Internet today from 5 to 7:30 p.m. PDT, at www.futuretruck.gm.com.



Burrelle's
Information Services HT
-621 C229.. 80...

25YV p 8

Kinetic engineering

Students breed hybrid whales for Department of Energy FutureTruck competition

It was a close-fought battle, and some think the loser should have won. Last November's U.S. presidential election? No, although that's relevant; our subject is the **FutureTruck** competition sponsored by the U.S. Department of Energy and General Motors.

FutureTruck (and its antecedent FutureCar) originated as an adjunct to former Vice President Al "Earth in the Balance" Gore's favorite automotive project, the government-industry Partnership for a New Generation of Vehicles. President George W. Bush's administration is putting the squeeze on PNGV, but the U.S.

Department of Energy is committed to two more years of FutureTruck, in which engineers-in-training are indoctrinated to Green-think.

Each of the 15 schools competing aimed to convert a 15-mpg Chevy Suburban 4x4 into a fuel-efficient, low-emissions vehicle. All replaced the stock V8 with hybrid powertrains, mostly smaller engines with supplementary electric power. Virginia Tech and Texas Tech unsuccessfully tried fuel cells with battery assist.

Scores were compiled June 13—just when Bush was taking heat from European leaders for bailing out on the Clinton/Gore-era Kyoto Agreement on



Wisconsin's FutureTruck might look like your neighbor's Suburban, but it has an aluminum chassis and gets 28 mpg, without giving up the big cabin, cargo space and off-roadability of the original mammoth-size Chevy 4x4.

global warming—and victory went to the University of California-Davis by a narrow margin over the University of Wisconsin-Madison. Wisconsin had the most individual awards and scored best in the prime categories: lowest greenhouse gas emissions (half of a normal Suburban's) and best fuel economy (28 mpg) on the open road. For the cheeseheads, it was like winning the popular vote but losing in the Electoral College.

UC-Davis earned victory with consistently high scores in the multifaceted week-long competition, which includes judging in 25 categories. It collected top awards for telematics, mathematical modeling and oral presentation. The California truck used one Saturn twin-cam four-cylinder burning reformulated gasoline, and two electric motors drawing power from advanced NiMH batteries.

The Wisconsin team led by Julie



Climbing to overall victory with strong performances in all judged events, the UC-Davis team surprised many FutureTruck observers.

Marshaus (one of few women participating in FutureTruck) replaced its Suburban's steel frame with an aluminum duplicate, creating the only entry that weighed less than a stock truck. Its Land Rover turbodiesel five-cylinder burned B20, a blend of petro- and bio-diesel fuels, assisted by a 66-kilowatt motor.

The University of Maryland came in third, using a GM 3800 V6 with electric assist (good for low score on emissions and best towing performance). Georgia Tech's hybrid used the new Vortec 4200 inline six and posted the best acceleration run, coming in fourth overall.

Next year, Ford is the sponsor and provider of vehicles. Good thing the tire sponsor is Goodyear.

—KEVIN A. WILSON

Burrelle's
INFORMATION SERVICES

21 .322880 24 .8...0



DAVID HOBBY: SUN STAFF PHOTOS

Students: Mechanical engineering students Robert Cirincione (top left), Joli Rightmyer (bottom left) and Kevin Kefauver stand under the SUV in a garage bay in College Park.

UM's engineers keep on truckin'

25YV
■ **Competition:** Students' modified Chevy Suburban is the cleanest of the FutureTrucks, but a short circuit deprives it of the top prize.

By TED SHELSEY
SUN STAFF

COLLEGE PARK — At first glance, it looks more like something you would expect to see circling the Indianapolis Motor Speedway than a vehicle used to drive the kids to T-ball games.

The bright reddish gold Chevrolet Suburban has number 07 painted on both front doors. And, like a racecar, it is covered with decals promoting its corporate sponsors.

"Yeah, it's fast," David Holloway said earlier this week. "It will go from 0 to 60 in 7 seconds." That's 40 percent faster than a stock Suburban.

Holloway is director of the University of Maryland's Center for Automotive Research, and the proud father



Experiment: The modified Chevrolet Suburban is both clean and peppy, the students say.

of the school's entry in the national FutureTruck competition.

While the souped-up Suburban will squeal wheels on the parking lot, it was not designed for speed. The primary goals of the 50 or so engineering and computer science students working on the truck were to boost fuel economy and reduce emissions.

Their job was made more difficult by rules requiring them to maintain the big SUV's performance, safety and other features that consumers demand.

Maryland was one of 15 universities participating in this year's FutureTruck competition, a cooperative effort that includes the federal government and the auto industry. The competition, completed last week, was co-sponsored by General Motors Corp. and the Department of Energy, with contributions from dozens of companies, including the Northrop Grumman complex in Linthicum, Goodyear Tire & Rubber Co., Cisco Systems and the Maryland Grain Producers Association.

The University of Maryland's entry took top honors

for the lowest tailpipe emissions and might have driven off with the top prize overall if it were not for an electrical accident that handicapped its hybrid power plant.

Holloway said the vehicle's emissions of nitrogen oxides and hydrocarbons were more than 90 percent below federal standards. Carbon monoxide emissions were nearly 50 percent lower, he said.

To achieve those gains, students removed the 2001 Suburban's V-8 engine and replaced it with a V-6. They altered the engine to run on a blend of 85 percent ethanol and 15 percent gasoline.

To retain the vehicle's get-up-and-go, Robert Cirincione, a senior mechanical engineering student from Fallston, said a 120-horsepower electric motor was tucked under the hood. "It provides more pep for merging into beltway traffic," he said.

Twenty-eight lead acid batteries beneath the vehicle's floorboard provide the power for the electric motor.

Unfortunately, an electrical short in the controller that operates the electric engine rendered it useless during the competition on GM's test track in Phoenix.

[FutureTruck, from Page 10c]

rendered it useless during the competition on GM's test track in Phoenix.

"That was a little disappointing," said Joli Rightmyer, a mechanical engineering graduate student who worked on the SUV. "We didn't get to test something we worked on all summer, but that was one of the bumps in the road."

Kevin Kefauver, a graduate student in mechanical engineering from Baltimore, worked on the software that controls the operation of the V-6 engine as well as the electric motor. "We can't complain about finishing third [overall] among 15 schools," he said.

GM had praise for all the participants. Dennis Minano, GM's chief environmental officer, said the FutureTruck competition "addresses our goals of developing more environmentally sensitive vehicles through the use of advanced

technologies, and facilitating the growth of tomorrow's engineering talent."

Referring to the competition, Shelley Launey, an official with the U.S. Department of Energy, said that "it not only builds trucks, it builds engineers with an appreciation for making future vehicles cleaner and more efficient."

Holloway said the University of Maryland's vehicle proves that the technology is available to boost the mileage of gas-guzzling SUVs and make them more environmentally friendly.

The big problem, he admitted, is the cost. Even in large-scale production, Holloway said, the school's modified Suburban would cost \$5,000 to \$6,000 more than a stock vehicle.

"Getting the cost down, that's the problem the veteran engineers in Detroit still have to solve," said Jack Groh, a spokesman for the FutureTruck program.

UM students modify SUV to run cleaner



Burrelle's

21 24 .6...R

W.Va. students designing SUV_{25YV}

Hybrid electric vehicle
runs partly on battery,
partly on diesel fuel

By VICKI SMITH
ASSOCIATED PRESS

MORGANTOWN, W.Va. — Ten years from now, Jason Conley says, "You won't be able to throw a rock without hitting one."

Doug Fig, clearly confident, nods in agreement. "I like the idea of saying, 'I built one before they were on the road.'"

Their shiny silver Chevy Suburban looks like millions of others guzzling gas at 13 miles per gallon.

Except for the battery box underneath and the transfer case on the floor.

This is the SUV of the future — a hybrid electric vehicle that runs partly on battery, partly on diesel. Unlike electric cars, a hybrid doesn't have to be plugged in at night. The batteries are recharged by braking and rolling downhill.

Fig, a senior from Jackson, N.J., and Conley, a graduate student from Bridgeport, are the leaders of West Virginia University's Future Truck team, a group of nearly two dozen mechanical engineering students devoted to designing a cleaner, leaner SUV.

In the first phase of the two-year Future Truck competition last summer, WVU tied the University of Maryland for first place and brought home awards totaling \$10,000. The money went back into the vehicle for this year's competition, in which the teams refine their designs for optimal performance.

Vehicles are rated overall and in 13 categories, including emissions, fuel economy, use of materials, consumer acceptability, acceleration, handling and towing performance.

The goal of Future Truck is to design a hybrid electric vehicle, or HEV, that uses less fuel and belches fewer fumes than a traditional SUV.

The HEV is closer to production than people realize: Ford plans to roll out a line of hybrid Escapes that get 40 mpg in 2003, followed by hybrid Explorers in 2004. GM is also working on a hybrid SUV for 2004 called the Paradigm.

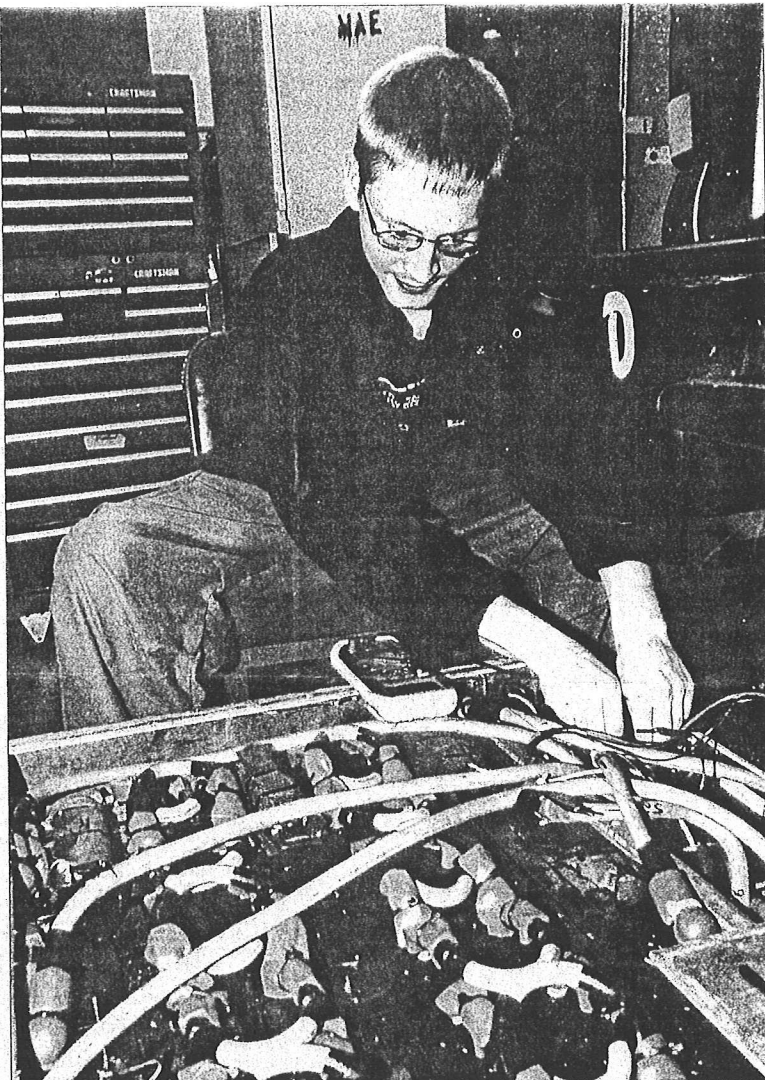
So far, the only hybrids on the market are two compact cars, the Toyota Prius and Honda Insight.

Conley says the problem is that efforts to design a greener vehicle have focused on the type of vehicles few buyers want.

"People are not aspiring to buy a Geo Metro," he says. "Making an economy car with great gas mileage is great, but people aren't going to buy it."

Light trucks account for nearly half the market, and people are going to buy them whether they're clean or inefficient. So, Conley figures it makes more sense to improve a half-ton pickup than a subcompact.

With a hybrid, power comes from either a diesel engine or bat-



At work: Sam Taylor, a masters student at West Virginia University, works on a battery box, an electrical energy storage system supplying close to 350 volts for a SUV, at the National Research Center for Coal and Energy in Morgantown, W.Va. Taylor along with other West Virginia engineering students worked on refining the SUV. Last year they won the first part of a two-year competition called Future Truck. They are working to make the vehicle lighter, with better mileage.

teries, or both.

A commuter stuck in traffic can switch to electric mode and inch along instead of wasting fuel. The batteries are also useful if there is an engine failure. Instead of calling a tow truck, "You could still limp along to the garage," says professor Nigel Clark.

Although the Suburban has a manual override switch, it's being designed to automatically balance power.

"The whole idea is you don't want to confuse people," Fig says. "You don't want to introduce people to a whole new concept. It should be foot on gas means go, foot on brake means stop."

Many buyers still have misconceptions about diesels that must be overcome.

No black clouds

In last year's tests, a particulate filter on the WVU Suburban captured so much carbon that levels from the tailpipe were unmeasurable.

In other words, there were no black clouds of smoke.

"HEVs can be high performance, fuel efficient and still offer everything the consumer wants,"

Conley says.

A typical Suburban with a stock V-8 engine gets 13 mpg in the city, and 17 on the highway. WVU's version got 24 and 29 mpg, respectively, last year and is expected to do better this year.

Since last summer, the engineers have replaced their 6-cylinder engine with a donated, state-of-the-art 4-cylinder from Detroit Diesel, shedding about 300 pounds.

The smaller engine produces as much power and torque as a larger one, so the Suburban doesn't lose steam on a long uphill climb.

The constant output of the electrical motor eliminates the lag in acceleration so it reaches speed faster than a stock V-8.

"It's very fast off the mark," Clark says. "It feels powerful."

And it's not just a feeling: Last year, the WVU crew pulled a 7,000-pound trailer over a 5 percent grade.

More expensive

Manufacturers say hybrids like the new Escape will cost about \$3,000 more than their gas-powered counterparts. Supporters say the vehicles will pay for themselves

in the long run with lower fuel bills and — they hope — tax incentives.

President Bush has proposed tax credits to encourage the development and sale of hybrid vehicles, and several automakers and environmental groups support the idea.

The Society of Automotive Engineers is beginning to develop standards for hybrids, looking at issues such as emergency shut-off systems in crashes and how to prevent acid loss from the batteries in a rollover.

Those regulations could take years to develop, but Clark says one thing could bring hybrids to showrooms sooner: Better batteries. The WVU Suburban runs at more than 300 volts with a 450-pound battery pack where the spare tire used to be.

Lead acid batteries are heavy but cheap. Unfortunately, battery technology hasn't advanced as quickly as the engineers would like, Clark says.

"If the miracle battery arrives," he says, "hybrids will unquestionably take over the market."

Future Truck is a contest designed by the U.S. Department of Energy and General Motors Corp.

**Burrelle's**
INFORMATION SERVICES549
.XZVag

20

Q1
.A...X**AUTO NOTES**

By Mark Glover

UCD team's hybrid wins competition

^{254V}
Engineering students from the UC Davis, beat out teams from more than a dozen North American colleges to win a fuel-efficiency competition overseen by General Motors Corp. and the U.S. Department of Energy.

The "FutureTruck" competition was started last year to encourage development of fuel-efficient, low-emission power plants without accompanying reductions in performance and in-vehicle comfort.

The UCD team - which won the initial phase of the four-year competition - reworked a Chevrolet Suburban sport-utility vehicle, replacing the V-8 engine with a four-cylinder gasoline-electric hybrid power plant. Its large battery pack was capable of propelling the SUV 70 miles on electricity alone. In tests, the UCD hybrid averaged 27 miles per gallon and still retained the towing capacity and performance of the standard Suburban that typically averages 15 miles per gallon in mixed driving conditions.

UCD officials said night-time charging of the battery would sharply reduce fuel costs, and the modified vehicle had zero emissions in city operation.

Roush at Future Ford

Jack Roush, owner of multiple stock car teams in the NASCAR Winston Cup racing series, will be at Future Ford in Roseville tonight to unveil his latest special-edition Mustang.

Roush is scheduled to be at the Roseville Auto Mall dealership (650 Automall Drive) between 7:15 and 9 p.m. to take the wraps off the 2001 Roush Performance Products Stage 3 Mustang.

The Stage 3 is based on the Mustang GT, but its supercharged 4.6-liter V-8 engine generates 360 horsepower and reportedly goes from zero-to-60 miles per hour in 4.9 seconds. A base version of the car starts at around \$40,000.

Future Ford is the regional dealer for Roush-prepared Mustangs.

Auto Notes information should be mailed to Mark Glover, Auto Editor, The Sacramento Bee, P.O. Box 15779, Sacramento, CA 95852. He can be reached at (916) 321-1184 or mglover@sacbee.com. Fax is (916) 321-1009. Deadline is Tuesday for Friday publication.

A8

Labor Risks After C-Section

Uterine rupture increases in delivery following Cesarean

By Ridgely Ochs
STAFF WRITER

Women who have had one baby by Cesarean section and then have a second baby vaginally are at higher risk of having their uterus rupture, especially if labor is induced with certain drugs, a study has found.

About 60 percent of pregnant women who have had one Cesarean try to deliver a second child vaginally, according to a study published today in the *New England Journal of Medicine*.

Researchers from the University of Washington in Seattle looked at all women in Washington State hospitals from 1987-1996 who had delivered a first baby by Cesarean section and then had a subsequent birth. They found that the absolute rate of uterine ruptures was low, 4.5 per 1,000, or 91 women out of 20,095.

But the rate of uterine rupture was higher among all women who delivered vaginally compared to those who had repeat Caesareans. It was especially high among those who were given

prostaglandins to induce labor: 24.5 per 1,000 compared to 1.6 per 1,000 among those who had repeat Caesareans.

Prostaglandin drugs soften and widen the cervix, the opening into the uterus, and some also induce contractions. They are usually inserted vaginally in the form of a suppository. Previous studies have found a higher rate of uterine rupture among those given the prostaglandin misoprostol and the American College of Obstetricians and Gynecologists in 1999 recommended against its use for this purpose. Although this study did not look at specific prostaglandins, the authors were able to infer that the risk did not appear to be limited to misoprostol, but also included other prostaglandins.

For those who went into labor naturally, the rupture rate was also higher than among those who had repeat C-sections: 5.6 per 1,000. It was 7.7 per 1,000 among those women whose labor was induced without using prostaglandins — either by using another synthetic hormone, oxytocin, or by mechanically manipulating the uterus.

Although the overall death rate was quite low, those women who had uterine ruptures were far more likely to have serious complications or to lose the baby. The infant death rate was 10 times higher among those who had ruptures, the researchers found.

"I think this study is going to give obstetricians pause about the use of prostaglandins for inducing labor in women who have had prior C-sections," said Dr. Michael Greene, head of maternal-fetal medicine at Massachusetts General Hospital in Boston, wrote an accompanying editorial.

But the study's chief author, Mona Lydon-Rochelle, emphasized that the absolute risk of a uterine rupture remained low. And, she said, any risks from a vaginal delivery have to be weighed against the risks associated with Cesarean sections. Lydon-Rochelle was author of a study published last year in the *Journal of the American Medical Association* which found that women who had C-sections had an 80 percent higher risk of being re-

hospitalized within two months of delivery compared to women who had delivered vaginally.

"These studies will hopefully draw more interest to a neglected area of research," she said. "This is not a definitive study."

Dr. Burt Rochelson, director of obstetric and maternal-fetal medicine at North Shore University Hospital in Manhasset, said the study highlights the need for fully informing the patient about the risks and benefits of either form of delivery.

Rochelson said prostaglandins are often given to a woman whose cervix hasn't softened and started to widen, usually in conjunction with oxytocin, which causes contractions in the uterus.

The reason for the high rate of uterine ruptures may be less related to the actual drug than to the condition of the patient, he said. Someone whose cervix is still hard, but who is having contractions may be more likely to rupture, he said. The smarter course in many cases may be to let the patient stay in labor longer, he said.

Driving Up The MPG For SUVs

Turning to hybrids for fuel efficiency

By Earl Lane
WASHINGTON BUREAU

Washington — At first glance, the row of Chevy Suburbans parked near the U.S. Capitol recently looked like race-car wannabes, brightly colored and plastered with sponsor decals.

But the vehicles had been modified by clever student engineers from 15 colleges for a competition of a different sort, an effort to design a fuel-efficient, low-polluting "green" sport utility vehicle that would still win the hearts of consumers.

The teams in the FutureTruck 2001 contest, including the overall winner from the University of California at Davis, used hybrid electric design, an approach already being used for the Toyota Prius and Honda Insight, commercially available passenger cars.

A team from the University of Wisconsin at Madison took first place for best on-road fuel efficiency, squeezing the equivalent of 28 miles per gallon of gasoline out of their diesel-electric hybrid. That is about 60 percent better than the standard Suburban's 15 mpg average.

According to organizers of the FutureTruck competition and other specialists, the technology is at hand to give gas-guzzling SUVs, vans and light trucks — which account for nearly half of U.S. sales — better mileage and cleaner emissions.

Consumers who want to drive fuel-efficient vehicles will not have to abandon their SUVs in favor of compact sedans, they said. But there is a vigorous political debate on whether Uncle Sam should do more to prod automakers to improve the mileage of SUVs, which currently are subject to less stringent fuel economy standards than passenger cars.

See SUV HYBRIDS on A19



Storm Surge

A man, above, braves the pounding surf on a breakwater in Manila Bay as the strengthening Typhoon Utor lashes the northern islands of the Philippines yesterday. At left, boys play, undaunted by the fury of the storm. Reports say at least 15 people have died in the typhoon.

AP/Photo

NATION

Designing SUVs to Guzzle Less Gas

SUV HYBRIDS from A8

It is a debate that Congress has had just about every year since President Gerald Ford signed a law in 1975 mandating "corporate average fuel economy," or CAFE, standards, for new cars. The current standards require each automaker to produce a fleet of passenger cars with an average fuel economy of 27.5 miles per gallon. But the standard for light trucks, minivans and SUVs is only 20.7 miles per gallon.

With consumers upset at high gas prices and critics arguing that Bush's energy plan puts too much emphasis on production (even as the president touted conservation during a visit last week to the Energy Department), proponents of tougher fuel economy standards are pressing their case.

"Fuel economy standards have not kept pace with technology improvements," said Michelle Robinson, a senior policy adviser for the Union of Concerned Scientists.

For the first time in years, there may be legislative movement on the fuel economy front. Some Republicans in Congress have said they are open to reasonable increases in the standards and back bills that would require SUVs to meet the higher fuel economy standard for cars.

Last week, the House passed a transportation funding bill that — for the first time since the Republicans took over the House in 1995 — does not prohibit government regulators from raising the miles per gallon standard for SUVs.

The Bush administration is reviewing fuel economy standards, including those for light trucks and SUVs. It is awaiting a National Academy of Sciences report, expected by the end of July, on the effectiveness of the existing CAFE standards.

Still, the prospects for closing the so-called SUV loophole remain unclear. The auto industry continues to oppose any change in fuel economy standards, whether through regulatory action or legislative mandate.

Instead, industry officials back voluntary technology improvements and use of federal tax incentives to encourage consumers to buy advanced, fuel-efficient vehicles such as electric hybrids.

"Automakers are making an incredibly valiant effort to introduce new technology into the marketplace," Josephine Cooper, president of the Alliance of Automobile Manufacturers, told a House subcommittee recently.

Ford has announced plans to make a hybrid electric version of its Escape SUV for the 2003 model year that could get up to 40 miles per gallon. GM says it will build a hybrid version of a full-sized pickup truck by 2004. DaimlerChrysler says it will offer a hybrid version of its Dodge Durango for 2003.

Critics say the industry can do more. The nonprofit Union of Concerned Scientists, in a recent report, said the nation's combined fleet of passenger cars, light trucks and sports utility vehicles could average 40 miles per gallon by 2012 using such techniques as weight-saving aluminum body parts, variable valve engines, tires with lower rolling resistance and improved transmissions. Use of hybrid electric technologies could increase the fleet fuel economy to 55 miles per gallon by 2020, the scientists' group said.

Rep. Joe Barton (R-Texas), chairman of the energy and air quality subcommittee of the House Energy and Commerce Committee, said at a recent hearing that the fuel economy standards "deserve a new look with the explosion in sales of ve-

hicles classified as light trucks."

Rep. Billy Tauzin (R-La.), chairman of the Energy and Commerce Committee, has also called for more attention to auto fuel economy. "I don't think we can pass an energy conservation package that doesn't have some fuel savings" in the transportation sector, Tauzin said. He mentioned such possibilities as tax incentives for high-mileage vehicles and allowing commuters with such vehicles to be exempt from high-occupancy vehicle lane restrictions.

But asked if he thinks Congress, in the end, will vote to bring SUV mileage standards in line with those for cars, Tauzin said, "I doubt it."

of one form or another in the next 10 years," predicted Yann Guezennec, a faculty adviser for the Ohio State University student team.

There has been substantial consumer interest in the electric hybrid Toyota Prius (rated by EPA at 52 mpg in the city and 45 on the highway) and the Honda Insight (61 mpg city, 68 on the highway). While hybrid SUVs will not be as fuel efficient, they should do much better than such gas guzzlers as the Lincoln Navigator (12 mpg city, 16 highway) and the Land Rover Range Rover (12 and 15).

Hybrid vehicles rely on both a standard internal combustion engine and an electric motor, with batteries for power storage. Depending on design and driving circumstances, the vehicle might draw its power from the electric motor alone, the gas engine or both. Hybrids offer some of the fuel-saving advantages of electric vehicles (without the hassle of having to plug in for recharging) along with the range and performance of a conventionally powered vehicle, specialists said.

With hybrid engines and other advances projected in the next several years, "I can easily envision a 40 miles per gallon (fleet average) for a combination of autos and light trucks," said Thomas Gross, the Energy Department's deputy assistant secretary for transportation technologies. But, he added, "consumers need to put fuel economy higher on their list of desirables."

Cooper of the automobile manufacturers' alliance said the top 10 fuel-efficient vehicles now available — none of them SUVs — account for less than 2 percent of sales.

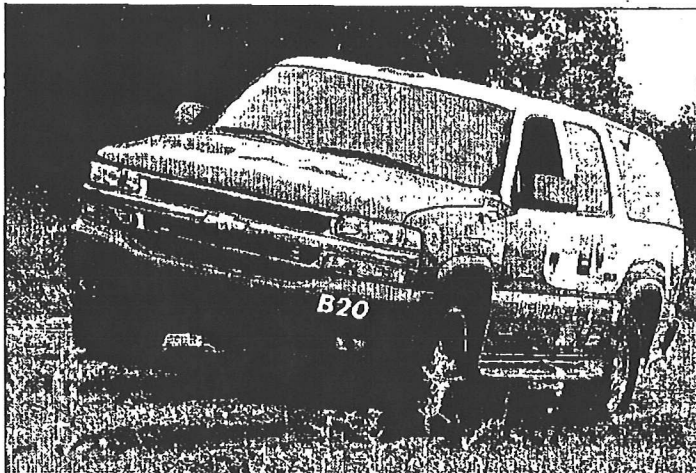
The market could change, however. While SUVs remain very popular, some consumers have been showing interest in the smaller models offering relatively better gas mileage. Gross said consumer demand for more efficient SUVs may well outlast the recent run-up in gas prices, which now is abating.

"There's a reasonable percentage of the population that is going to be very interested in hybrids, regardless of where the fuel price is," Gross said.

Glenn Bower, faculty adviser for the second-place team from the University of Wisconsin at Madison, said the modifications for the school's Suburban include a lightweight aluminum frame that helped shave 500 pounds off the car's factory weight of 5,800 pounds, an electric motor and controller with an associated array of batteries for storage of energy.

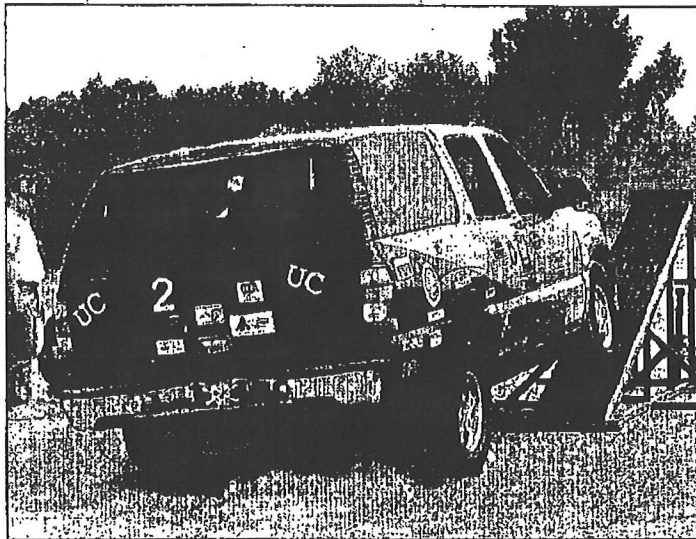
The cost of adding the equipment could approach \$10,000 per vehicle, he said, for a production run of about 5,000 cars. But the costs would come down as the number of units sold increased. Savings in fuel costs would help the consumer recoup the initial cost of the novel technology, as would the proposed federal tax incentives to purchase such vehicles.

"I feel kind of optimistic about the future of hybrids, even in this class of vehicle [SUVs]," said Jerry Barnes, a retired General Motors engineer who was involved with the FutureTruck competition. GM was one of the major sponsors. But Barnes cautioned that it is one thing to engineer a custom-designed vehicle for a student competition, another to mass produce it. He also noted that auto engineers have made striking improvements in internal combustion engines for passenger cars over the years and may have some tricks up their sleeves for SUVs as well. "The internal combustion engine has been a moving target for 20 years," Barnes said. "It is still a pretty tough customer to beat."



General Motors Photos

Two of the sport utility vehicles in the FutureTruck 2001 contest



Previous efforts to toughen mileage standards have faced opposition not only from automakers and free-market Republicans, but also from auto unions concerned about jobs and some key Democrats from car-producing states, including Rep. John Dingell and Sen. Carl Levin of Michigan.

While they anticipate a battle this year as well, backers of tougher SUV mileage standards argue that boosting them could hasten the introduction of new technology and save at least a million barrels of oil a day (or about what some have estimated would be the eventual daily output from drilling in the Arctic National Wildlife Refuge).

Whatever happens on Capitol Hill, some specialists said they expect to see wider use of hybrid electric vehicles simply because the technology makes sense. "We're all going to be driving a hybrid vehicle

**Burrelle's**
INFORMATION SERVICES381
.xzeag

32

Z0
.b...n

OSU students get 28 mpg from SUV

Gas engine replaced
with hybrid powertrain

The Associated Press

COLUMBUS - A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain.

This improvement came with no loss of power, acceleration or passenger comfort - and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle - the Buckeyebrid.

"I think the hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor

'I think the hybrid-electric vehicle technology is solid for the next 10 to 15 years. I think we'll all be driving vehicles of this sort, whether it's an SUV or something else.'

Yann Guezennec, OSU associate professor
of mechanical engineering

of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools sponsored by General Motors and Ford.

Despite the mileage improvement, the engineers weren't able to reach the FutureTruck program's goal of doubling fuel economy.

About 20 student engineers have participated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000 worth of contributed parts.

Mr. Guezennec said more basic changes must be made in SUVs to further improve gas mileage. One such change would be a body

made of a lighter metal, such as aluminum. Streamlining would be needed to reduce wind resistance.

"But otherwise, with a vehicle of that size, I don't think we can get 40 (miles per gallon)," he said.

As of 1999, about 35 million SUVs were on U.S. roads, according to the Insurance Institute for Highway Safety. Another 3.2 million SUVs were added in 2000, said R.L. Polk & Co., which tracks automotive data.

Dan Becker, director of global warming at the Sierra Club, said 40 miles per gallon should be the target fuel economy set for SUVs by the Bush administration.

Current requirements call for the industry to achieve an average fuel economy of 20.7 mpg for its entire fleet of SUVs and light trucks.



Burrelle's
INFORMATION SERVICES

72
.xzeag

32

70
.b...n

Students boost SUV gas mileage

The Associated Press

COLUMBUS - A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport-utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain.

This improvement came with no loss of power, acceleration or passenger comfort - and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nick-

name they gave the test vehicle - the Buckeyebrid.

"I think the hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools nationwide sponsored by General Motors and Ford.

Despite the improvement in mileage, the engineers weren't able to reach the FutureTruck

program's goal of doubling fuel economy.

About 20 student engineers have participated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000 worth of contributed parts.

Mr. Guezennec said more basic changes must be made in SUVs to further improve gas mileage. One such change would be a body made of a lighter metal, such as aluminum. In addition, streamlining would be necessary to reduce wind resistance.

"But otherwise, with a vehicle of that size, I don't think we can get 40 (miles per gallon)," he said.



Buttelles
INFORMATION SERVICES

106 X2649 34 LE A...X

Ohio State students squeeze better gas mileage from SUV

Team taking hybrid-power vehicle to national contest

Ohio State University is one of 15 engineering schools in the FutureTruck program, which seeks to double fuel economy on Ford and GM products.

David Lore 25V
Dispatch Science Reporter

Having coaxed their Chevy Suburban to return 28 miles per gallon at highway speeds, Ohio State University student engineers are ready to take in their prototype for a Ford. The Ford, which also will be a portability vehicle, is to arrive at OSU later this summer after next week's FutureTruck 2001 competition, at the General Motors Proving Ground near Detroit. General Motors and Ford are sponsors in the competition, with the Suburbans being used in 2000-2001 and the Ford SUVs in 2002-2003.

OSU is one of 15 engineering schools in the FutureTruck program, which seeks to double fuel economy in these Ford and GM products. So far, admits OSU team adviser Yann Guezennec, that hasn't happened with the Suburban.

"We've achieved a solid 50 percent improvement, and maybe a little more," said Guezennec, an associate professor in mechanical engineering.

About 20 student engineers have anticipated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000

OSU's enthusiasm for the hybrid is reflected in the name of its test vehicle, the *Buckeyebrd*.

But Guezennec said even more basic changes must be made in SUVs to further improve gas mileage. One would be a body made of a lighter metal, such as aluminum, without degrading its crashworthiness. And streamlining would be necessary, he said, to reduce wind resistance.

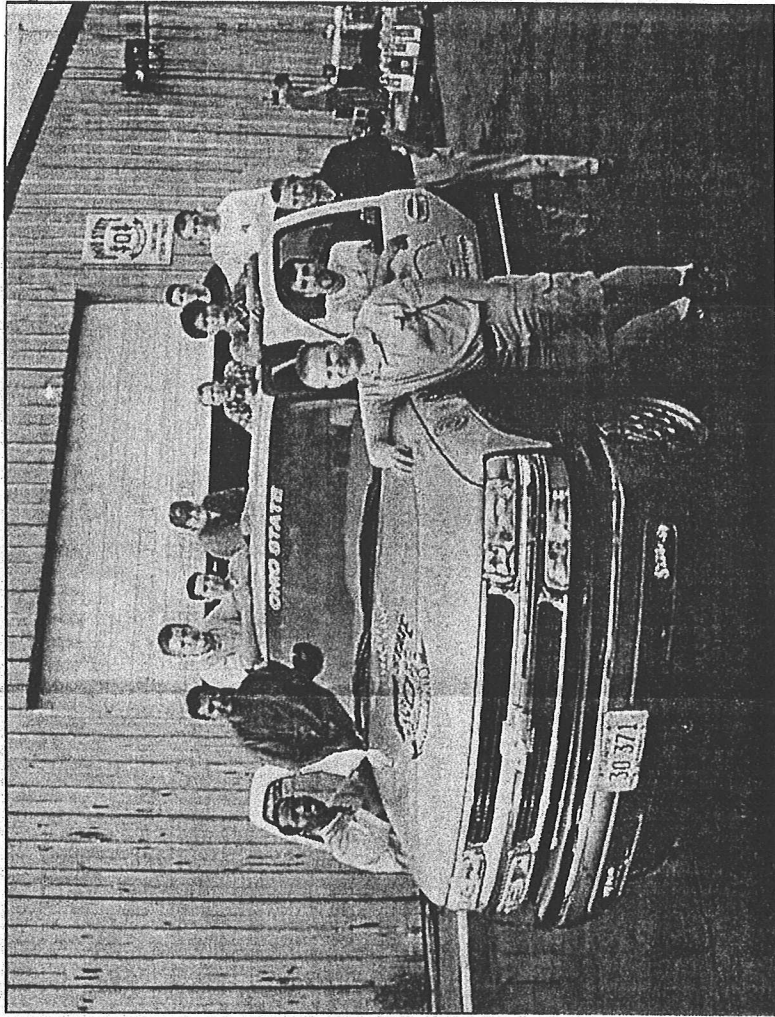
"But otherwise, with a vehicle of that size, I don't think we can get 40 mpg," he said.

As of 1999, there were about 35 million SUVs on U.S. roads, according to the Insurance Institute for Highway Safety. Another 3.2 million SUVs were added in 2000, according to R.L. Polk & Co., which tracks automotive data.

Dan Becker, director of global warming at the Sierra Club, said 40 mpg should be the target fuel economy set for SUVs by the Bush administration. That's about the best fuel economy now available from nonhybrid vehicles now on the market, Guezennec said.

Currently, the industry is required to achieve an average fuel economy of 20.7 mpg for its entire fleet of SUVs and light trucks.

Ford has said that by 2003 it will



Ohio State University

Ohio State engineering students modified a Chevy Suburban to achieve 28 miles per gallon in highway driving.

market a hybrid diesel-electric SUV to kick-start this technology."

Becker said he has owned a hybrid, and "it really works."

Guezennec said he plans this summer to buy a Toyota Prius, a gasoline-electric hybrid from Japan.

"I have no intention of getting an

SUV," he said. "I don't like it."

But because many Americans disagree, he said, it makes sense to find ways to make these vehicles more fuel efficient.

dlore@dispatch.com

NEWSBREAK

Tom Nash

25VV

FutureTruck Rolls to the Finish Line

The best and brightest minds of 15 university automotive technology teams gathered recently at the General Motors Proving Ground in Milford, Michigan, to compete in the 2001 FutureTruck competition.

The competition, sponsored by the U.S. Dept. of Energy, General Motors, the National Science Foundation and a host of other organizations, is designed to challenge the teams to create a low-emissions,

high-efficiency vehicle without sacrificing the performance, utility, safety and affordability customers want in their trucks.

After several years of FutureCar competitions, the event graduated to trucks two years ago. For this year's competition, GM presented the participating universities with Chevy Suburbans to transform into vehicles utilizing environmentally friendly fuel-efficient technologies we may see in our own personal vehicles in the near future.

When the dust settled after several days of competition, the University of California-Davis emerged as the winner. Advised by Dr. Mark Duvall and FutureCar veteran Dr. Andrew Frank, the team placed first in two events and second in nearly every other event.

The UCD truck is powered by a 1.9-liter Saturn gasoline engine, mated to a 75kW Unique Mobility electric motor. Charge storage is contained in Ovonic nickel metal hydride cells. The truck plugs into a stan-

dard charging station to recoup its power.

Dr. Frank spoke proudly of his team's truck: "The main difference between our truck and the others is that we use a large battery pack that can drive this truck 70 miles all electrically and can take energy from the electric grid. The large pack allows the hybrid to be much more efficient than the other small-battery hybrid concepts." He added, "Our truck, including the batteries, is only one passenger heavier than the stock truck and it performed the same in most respects—and better in towing. The car companies can easily make it the same weight."

According to Dr. Frank, the most important factor in the award-winning design "is that the batteries can be charged at night, and the cost of using electricity, even in California, is less than one-third the cost of using gasoline at \$1.50 per gallon. The nighttime charge can make the electric generation system more efficient, lowering the cost of electricity. Thus, compared to a conventional truck, this vehicle, which plugs in, is equivalent to being able to buy gasoline at about 30 cents a gallon. The vehicle is zero emissions for most city operation."



The FutureTruck team from the University of California-Davis puts the finishing touches on its plug-in hybrid Chevy Suburban. The UCD team pooled its experience and technological skills accumulated over the last two years to win the competition.

Photo: Tom Nash

**Burrelles**
INFORMATION SERVICES150
.XZwa1

73

QH
.a...b

Hybrid Engines Make SUVs Clean Machines

259V NEWSDAY

Washington — At first glance, the row of Chevrolet Suburbans parked near the U.S. Capitol looked like race-car wannabes, brightly colored and plastered with sponsor decals.

But the vehicles had been modified by clever student engineers from 15 colleges for a competition of a different sort, an effort to design a fuel-efficient, low-polluting, "green" sport utility vehicle that would still win the hearts of consumers.

The teams in the FutureTruck 2001 contest, including the overall winner from the University of California, Davis, used hybrid electric design, an approach already being used for the Toyota Prius and Honda Insight, commercially available passenger cars.

A team from the University of Wisconsin at Madison took first place for best on-road fuel efficiency, squeezing the equivalent of 28 miles per gallon of gasoline out of its diesel-electric hybrid. That is about 87 percent better than the standard Suburban's 15 mpg average.

According to organizers of the FutureTruck competition and other specialists, the technology is at hand to give gas-guzzling SUVs, vans and light trucks — which account for nearly half of U.S. sales — better mileage and cleaner emissions.

Consumers who want to drive fuel-efficient vehicles will not have to abandon their SUVs in favor of compact sedans, they said. But there is a vigorous political debate on whether Uncle Sam should do more to prod

automakers to improve the mileage of SUVs, which currently are subject to less stringent fuel economy standards than passenger cars.

It is a debate Congress has had just about every year since President Ford signed a law in 1975 mandating "corporate average fuel economy," or CAFE, standards for new cars. The current standards require each automaker to produce a fleet of passenger cars with an average fuel economy of 27.5 miles per gallon. But the standard for light trucks, minivans and SUVs is only 20.7 miles per gallon.

With consumers upset at high gas prices and critics arguing that President Bush's energy plan puts too much emphasis on production (even as the president touted conservation during a visit last week to the Energy Department), proponents of tougher fuel economy standards are pressing their case.

"Fuel economy standards have not kept pace with technology improvements," said Michelle Robinson, a senior policy adviser for the Union of Concerned Scientists.

For the first time in years, there may be legislative movement on the fuel economy front. Some Republicans in Congress have said they are open to reasonable increases in the standards and support bills that would require SUVs to meet the higher fuel economy standard for cars.

Last week, the House passed a transportation funding bill that — for the first time since the Republicans took over the House in 1995 — does

not prohibit government regulators from raising the miles-per-gallon standard for SUVs.

The Bush administration is reviewing fuel economy standards, including those for light trucks and SUVs. It is awaiting a National Academy of Sciences report, expected by the end of this month, on the effectiveness of the existing CAFE standards.

Still, the prospects for closing the so-called SUV loophole remain unclear. The auto industry continues to oppose any change in fuel economy standards, whether through regulatory action or legislative mandate.

Instead, industry officials back voluntary technology improvements and use of federal tax incentives to encourage consumers to buy advanced, fuel-efficient vehicles such as electric hybrids.

Ford has announced plans to make a hybrid electric version of its Escape SUV for the 2003 model year that could get up to 40 miles per gallon. GM says it will build a hybrid version of a full-sized pickup truck by 2004. DaimlerChrysler says it will offer a hybrid version of its Dodge Durango for 2003.

Critics say the industry can do more. The nonprofit Union of Concerned Scientists, in a recent report, said the nation's combined fleet of passenger cars, light trucks and sports utility vehicles could average 40 miles per gallon by 2012 using such techniques as weight-saving aluminum body parts, variable valve engines, tires with lower rolling resistance and improved transmissions.



Burrelle's
INFORMATION SERVICES
-2277
TX20... 60

25YV

Students vie to give SUVs a cleaner, environmentally friendly look

By Terry Costlow

ARLINGTON HEIGHTS, ILL. — College teams are tuning up their creativity by working to make sport utility vehicles more energy-efficient and environmental-

ly friendly, as part of the FutureTruck competition.

The annual competition, which is sponsored in part by the U.S. Department of Energy, shifted its focus from cars to

SUVs this year. Student teams work to "re-engineer full-size SUVs to meet the needs of the future," according to the FutureTruck Web site. The lead co-sponsor, General Motors

Corp., has donated a Chevy Suburban and \$10,000 to each of the 15 teams competing to make the vehicles more environmentally friendly.

Hybrid vehicles with both

electronic motors and conventional gas engines dominate this year's competition.

"All the teams have adopted one form or another of hybrids," said Jerry Barnes, an organizer of FutureTruck who is also a consultant to GM. "They're trying to balance the switch between electronic motors, with high torque that is great for acceleration and low-speed maneuvering, with internal combustion engines that are, at higher speeds, very efficient, especially diesel engines."

With the increased focus on electronic engines, EEs have become a more important part of the competition. Nobody is keeping official count, but estimates indicate that EEs make up about 25 percent of the engineers on the teams.

Telematics prize

Underscoring the rising influence electronic engineers play in the auto industry, the contest also offers an award for best telematics development. Telematics refers to the Internet/in-fo-tainment equipment inside a vehicle.

"This is the first time we have an award for telematics," said Nicole LeBlanc, a competition coordinator and an engineer at Argonne National Laboratory. "We're looking at things such as the information management of the vehicle, the Internet and entertainment technologies, as well as global-positioning systems—taking the information that's in the car and building it in with classic telematics."

Most participants said that one of the key benefits for such sponsors as Cisco Systems, Delphi Automotive, National Instruments and Newark Electronics is that students in the program are far more ready to work in the industry by the time they graduate. Professors whose teams are involved contend that the interaction between mechanical and electronic engineers makes both better.

"Automotive is one of the areas where mechatronics is a better title; this is a real blend of mechanics and electronics," said Glenn Bower, automotive faculty adviser at the University of Wisconsin at Madison.

The judging will begin in Milford, Mich., on June 4, culminating with an awards banquet in Washington on June 13.

TOOLING & PRODUCTION

SOLON, OH
MONTHLY 80,500
AUGUST 2001



Burrelle's
INFORMATION SERVICES
-6793 JJ
txze.. in...

Hybrid SUV is called aluminum innovation 2syv

As part of the 2001 FutureTruck Challenge, in a competition against 14 other top engineering schools from North America, students from the University of Wisconsin-Madison won the Innovations in Aluminum design award. FutureTruck is a cooperative effort among auto industry, government and academia to solve vehicle environmental- and energy-related issues. The Aluminum Association Inc. is a FutureTruck sponsor and bestows the Innovations in Aluminum awards to teams that make best use of the metal to enhance vehicle environmental performance.

The University of Wisconsin-Madison team converted their Chevy Suburban SUV into a diesel-electric hybrid, which used a lightweight, yet high-strength, aluminum underbody frame (and other aluminum components) to offset the added weight from the hybrid technology. The result is a Chevy Suburban that gets approximately 28 miles per gallon (up from approximately 17 miles per gallon), and it weighs about 500 pounds less than the production model—all the more dramatic, considering the added weight produced from the heavy batteries and electric motors employed in the modified Suburban.

Burrelle's
INFORMATION SERVICES

440 .XZWC0 117 XX... VJ

GREEN MACHINES

Hybrids Belch Fewer Fumes

WEST VIRGINIA ENGINEERING STUDENTS DESIGNING SUV OF THE FUTURE

By Vicki Smith
THE ASSOCIATED PRESS

MORGANTOWN, W.Va. — Ten years from now, Jason Conley says, "You won't be able to throw a rock without hitting one."

Doug Fig, clearly confident, nods in agreement. "I like the idea of saying, 'I built one before they were on the road.'"

Their shiny silver Chevy Suburban looks like millions of others guzzling gas at 13 miles per gallon.

Except for the battery box underneath and the transfer case on the floor.

This is the SUV of the future — a hybrid electric vehicle that runs partly on battery, partly on diesel. Unlike electric cars, a hybrid doesn't have to be plugged in at night. The batteries recharge by braking and rolling downhill.

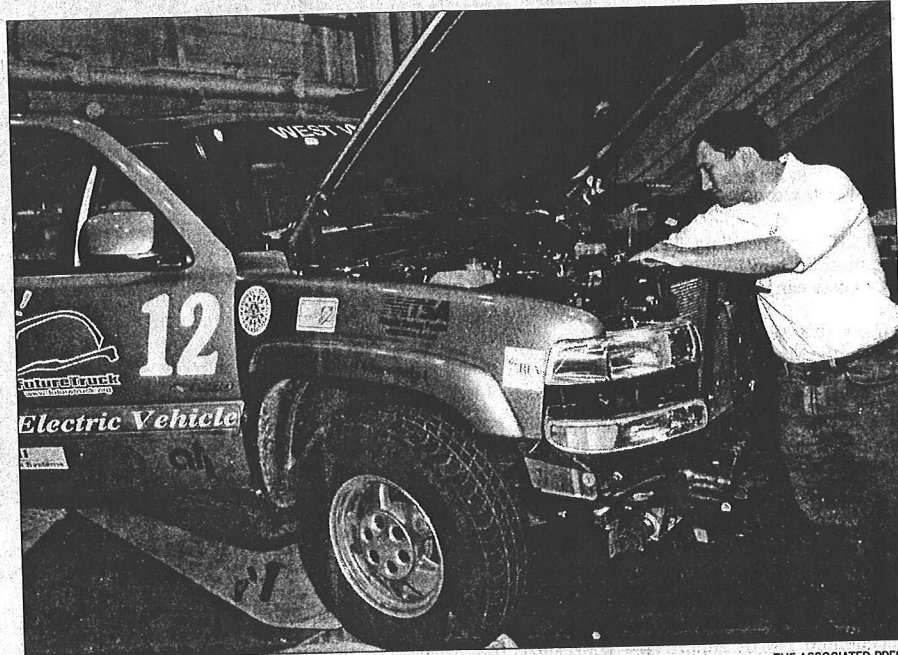
Fig, a senior from Jackson, N.J., and Conley, a graduate student from Bridgeport, are the leaders of West Virginia University's Future Truck team, a group of nearly two dozen mechanical engineering students devoted to designing a cleaner, leaner SUV.

They compete June 4-13 in Detroit against 14 other universities at Future Truck, a contest designed by the U.S. Department of Energy and General Motors Corp.

In the first phase of the two-year competition last summer, WVU tied the University of Maryland for first place and brought home awards totaling \$10,000. The money went back into the vehicle for this year's competition, in which the teams refine their designs for optimal performance.

Vehicles are rated overall and in 13 categories, including emissions, fuel economy, use of materials, consumer acceptability, acceleration, handling and towing performance.

The goal of Future Truck is to design a hybrid electric vehicle, or HEV, that uses less fuel and



THE ASSOCIATED PRESS

Jason Conley, a West Virginia University engineering student, works May 24 on a Chevy Suburban that runs partly on diesel and partly on battery power. The SUV is designed to recharge the batteries automatically with braking or going downhill, so it never needs to be plugged in.

belches fewer fumes than a traditional SUV.

The HEV is closer to production than people realize: Ford plans to roll out a line of hybrid Escapes that get 40 mpg in 2003, followed by hybrid Explorers in 2004. GM is also working on a hybrid SUV for 2004 called the ParadiGM.

So far, the only hybrids on the market are two compact cars, the Toyota Prius and Honda Insight.

Conley says the problem is that efforts to design a greener vehicle have focused on the type of vehicles few buyers want.

"People are not aspiring to buy a Geo Metro," he says. "Making an economy car with great gas mileage is great, but people aren't going to buy it."

Light trucks account for nearly half the market, and people

are going to buy them whether they're clean or efficient. So, Conley figures it makes more sense to improve a half-ton pickup than a subcompact.

With a hybrid, power comes from either a diesel engine or batteries, or both.

A commuter stuck in traffic can switch to electric mode and inch along instead of wasting fuel. The batteries are also useful if there is an engine failure. Instead of calling a tow truck, "You could still limp along to the garage," says professor Nigel Clark.

Although the Suburban has a manual override switch, it's being designed to automatically balance power.

"The whole idea is you don't want to confuse people," Fig says. "You don't want to intro-

duce people to a whole new concept. It should be foot on gas means go, foot on brake means stop."

Many buyers still have misconceptions about diesels that must be overcome.

In last year's tests, a particulate filter on the WVU Suburban captured so much carbon that levels from the tailpipe were unmeasurable.

In other words, there were no black clouds of smoke.

"HEVs can be high performance, fuel efficient and still offer everything the consumer wants," Conley says.

A typical Suburban with a stock V-8 engine gets 13 mpg in the city, and 17 on the highway. WVU's version got 24 and 29 mpg, respectively, last year and expects to do better this year.



Students vie to build greener SUV using diesel-electric technology

By VICKI SMITH
Associated Press

MORGANTOWN, W.Va. — Ten years from now, Jason Conley says, "You won't be able to throw a rock without hitting one."

Doug Fig, clearly confident, nods in agreement. "I like the idea of saying, 'I built one before they were on the road.'"

Their shiny silver Chevy Suburban looks like millions of others guzzling gas at 13 miles per gallon.

Except for the battery box underneath and the transfer case on the floor.

This is the SUV of the future, a hybrid electric vehicle that runs partly on electricity, partly on diesel. Unlike electric cars, a hybrid doesn't have to be plugged in at night. The batteries recharge by braking and rolling downhill.

Fig, a senior from Jackson, N.J., and Conley, a graduate student from Bridgeport, are the leaders of West Virginia University's Future Truck team, a group of nearly two dozen mechanical engineering students devoted to designing a cleaner SUV.

They compete June 4-13 in Detroit against 14 other universities at Future Truck, a contest designed by the U.S. Department of Energy and General Motors Corp.

In the first phase of the two-year competition last summer, WVU tied the University of Maryland for first place and brought home awards totaling \$10,000. The money went back into the vehicle for this year's competition, for which the teams

have refined their designs for optimal performance.

Vehicles are rated overall and in 13 categories, including emissions, fuel economy, use of materials, consumer acceptability, acceleration, handling and towing performance.

The goal of Future Truck is to design a hybrid electric vehicle, or HEV, that uses less fuel and belches fewer fumes than a traditional SUV.

The HEV is closer to production than people realize: Ford plans to roll out a line of hybrid Escapes that get 40 mpg in 2003, followed by hybrid Explorers in 2004. GM is also working on a hybrid SUV for 2004 called the Paradigm.

So far, the only hybrids on the market are two compact cars, the Toyota Prius and Honda Insight.

Conley says the problem is that efforts to design a greener vehicle have focused on the type of vehicles few buyers want.

"People are not aspiring to buy a Geo Metro," he says. "Making an economy car with great gas mileage is great, but people aren't going to buy it."

Light trucks account for nearly half the market, and people are going to buy them whether or not they're clean and efficient. So Conley figures it makes more sense to improve a half-ton pickup than a subcompact.

With a hybrid, power comes from either a diesel engine or batteries, or both.

A commuter stuck in traffic can switch to electric mode and inch along instead of wasting fuel. The

batteries are also useful if there is an engine failure. Instead of calling a tow truck, "You could still limp along to the garage," says professor Nigel Clark.

Although the Suburban has a manual override switch, it's being designed to automatically balance power.

"The whole idea is you don't want to confuse people," Fig says. "You don't want to introduce people to a whole new concept. It should be foot on gas means go, foot on brake means stop."

Many buyers still have misconceptions about diesels that must be overcome.

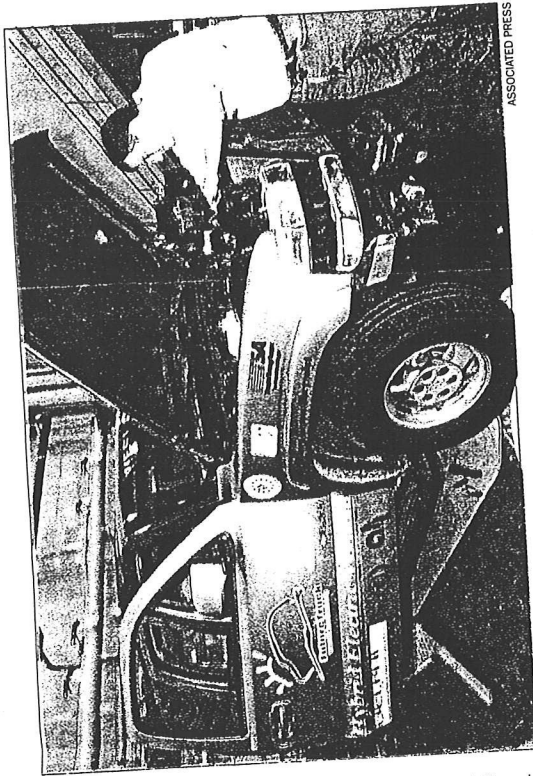
In last year's tests, a particulate filter on the WVU Suburban captured so much carbon that levels from the tailpipe were unmeasurable.

In other words, there were no black clouds of smoke.

"HEVs can be high performance, fuel efficient and still offer everything the consumer wants," Conley says.

A typical Suburban with a stock V-8 engine gets 13 mpg in the city and 17 on the highway. WVU's version got 24 and 29 mpg, respectively, last year and expects to do better this year.

Since last summer, the engineers have replaced their 6-cylinder engine with a donated state-of-the-art 4-cylinder from Detroit Diesel,



ASSOCIATED PRESS

Jason Conley, a engineering graduate student at West Virginia University, works on the hybrid powered Chevy Suburban that the school is entering in the Future Truck competition. It is 4-13 in Detroit.

and — they hope — tax incentives.

President Bush has proposed tax credits to encourage the development and sale of hybrid vehicles, and several automakers and environmental groups support the idea.

Clark says one thing could bring hybrids to showrooms sooner: Better batteries. The WVU Suburban runs at more than 300 volts with a

450-pound battery pack where spare tire used to be.

Lead acid batteries are heavy and cheap. Unfortunately, battery technology hasn't advanced as quickly as the engineers would like, Clark says.

"If the miracle battery arrives, he says, 'hybrids will unquestionably take over the market.'"



Crash diet for gas hogs



Submitted photos

Members of the UW-Madison FutureTruck team gathered last week outside the Department of Energy in Washington, D.C., with their Chevrolet Suburban entry that the team modified to reduce greenhouse gas emissions by nearly 50 percent and increase fuel efficiency by 65 percent. The team's efforts earned second place in the national competition among 15 top engineering schools to improve fuel economy and reduce greenhouse gas emissions of full-size sport utility vehicles.

254V
A team of UW-Madison students cut gas emissions by half and got 31 miles per gallon from a sport utility

State Journal staff

A team of UW-Madison students took overall second-place honors last week in a national competition to alter a full-size sport utility vehicle to make it more environmentally friendly and fuel efficient while maintaining performance, safety and other standards.

The team of students from the College of Engineering took top awards in nine of 23 categories in the FutureTruck competition, including lowest greenhouse gas emissions and best on-road fuel efficiency. The contest sponsored by industry and government involved 15 top engineering schools.

The team changed a Chevrolet Suburban to reduce greenhouse gas emissions by nearly 50 percent when compared with a stock Suburban.

The team also demonstrated on-road fuel efficiency equivalent to 28.05 miles per gallon, a 65 percent increase over a stock Suburban. To get that result, the team used a biodiesel fuel consisting of 80 percent diesel fuel and 20 percent soybean oil, said the team's faculty adviser, Glenn Bower. He said the vehicle actually got 31 miles per gallon with that fuel, but the results are adjusted to reflect the various kinds of fuels the teams used.

The UW-Madison team also received top awards for safety, best appearing vehicle, best vehicle design inspection, best technical report, best workmanship, best innovations in aluminum and best use of materials.

The teams used computer simulations, and their engineering modifications included using hybrid powertrains, fuel cells, advanced electronics, lightweight materials and alternative fuels.

The University of California at Davis was the overall first-place winner.



The UW-Madison team's Chevrolet Suburban is shown last week at the U.S. Capitol in Washington where the vehicles were displayed after a week of testing and competition at the General Motors Milford Proving Ground in Michigan.

The UW-Madison team members and their hometowns: Joe Bayer, Waukesha; Kris Biegler, St. Louis Park, Minn.; Ethan Brodsky, Madison; Laura Ekern, Eland; Aaron Haugen, Zumbrota, Minn.; Jason Helgren, Columbus; Dan Kenan, Woodbury, Minn.; Anton Kozlowski, Ithaca; Julie Marshaus, Tomah; Chris Mulhall, Monroe; Mitch Pederson, Eau Claire; Andrew Powers, Onalaska; Ryan Rowe, Middleton; Eric Schroeder, Neenah; John Schuster, Waunakee; Jenny Topinka, Pittsville; Keith Tschohl, West Bend; Ben Willis, Manitowoc; and Luke Zimbric, Hartland.

On the Internet: www.futuretruck.org



Burrelle's
INFORMATION SERVICES

53

.XZOC.

19

SC..C.

WVU FutureTruck finishes sixth

By ZAKARIJ RICHARDS
Athenaeum Staff

In this year's FutureTruck competition, schools from around the nation competed to see who could create the "greenest," most fuel efficient sport utility vehicle. WVU's FutureTruck team's modified Chevrolet Suburban earned them a finish of sixth overall.

The team also placed first in the towing category, tying with the University of Maryland. Last year both schools shared the first place overall title.

This year's competition was dominated by the University of California-Davis, followed by the University of Wisconsin-Madison, Maryland, Georgia Tech and Cornell University. The

awards ceremony was Wednesday night in Washington, D.C., where the 15 competing teams traveled after the seven-day competition at the General Motors Proving Ground in Milford, Mich.

Team leader Jason Conley was pleased with the sixth place finish.

"The competition went well. We managed to get our truck running for a second year," Conley said. "Sixth place is fine because our overall record is still good."

The FutureTruck competition, while always relevant, takes on more meaning as gas prices continue to rise.

"People really started to take an interest in the competition because of an increase in fuel

prices," Conley said.

The actual mass production of these hybrid vehicles is in the near future.

"Lots of hybrids are coming out," Conley said. "By 2005 Toyota claims that they will sell 300,000 a year."

Toyota has plans to release a 4-door sedan, the Prius, which will be in direct competition with Honda's 2-door Insight. In 2003 or 2004 larger sport utility hybrids will be released by major companies. Ford has announced plans to release a hybrid version of their Escape and Dodge is to release a hybrid of the Durango. General Motors has also announced the release of a similar vehicle, Conley said.

The FutureTruck competition, which is sponsored by General

Motors and U.S. Department of Energy, involves student teams, this year from 15 schools, modifying the powertrain on a Chevrolet Suburban to increase fuel economy. Teams may use various technologies to achieve this goal. The automotive techniques include using hydrogen fuel cells, hybrid powertrains which combine standard internal combustion engines with electrical motors, emerging computer technologies, advanced electronics and alternative fuels.

WVU's team replaced their Suburban's engine with a smaller 2.5 liter prototype Detroit Diesel engine. They also added a 100-horsepower electric motor and installed a manual transmission.

A

See TRUCK, Page 2

TRUCK

Continued from Page 1

This work took the 20-member team a long time. Conley can't recall an exact number of hours but said that from finals week until the June 4th competition they worked around the clock.

Throughout the competition judges evaluated the vehicles based on their impact on greenhouse gases, fuel efficiency, exhaust emissions, acceleration and safety.

One of the reasons that WVU's team placed in sixth overall may have been because of a poor performance in the acceleration event. The

Suburban's electrical engine malfunctioned, reducing the vehicles horsepower by 100, and giving it a 22 second finishing time in the quarter mile event. The tow performance, for which the team placed first, required the Suburban to tow a load of 7,000 pounds. The vehicle was also required to perform an off road handling test. The General Motors testing facilities at Milford Proving Grounds provided a challenge with logs, ditches and other obstacles.

Members of the team besides Conley who went to Michigan are Tom Buffamonte of East Amherst, N.Y.; Jason Cheslock and Csaba Toth-Nagy, both of Morgantown; Doug Fig of Jackson, N.J.; Ken Lynch-

Warntz of Mount Airy, Md.; Axel Raedermacher of Harpers Ferry; and Sam Taylor of Fenwick. They are all mechanical and aerospace engineering students in the College of Engineering and Mineral Resources. Nigel Clark, a mechanical and aerospace engineering professor, is the team's faculty adviser.

Next year the team will compete in the event after preparing a 2002 Ford Explorer to run more efficiently. The competition will be held in Lake Havasu City, Ariz. The team will receive the vehicle in the end of August or beginning of September.

"This competition will give us the opportunity to improve on our good standing," Conley said.



Burrelles

217
XZ00K

14

00

25YV Future Trucks

Toyota Prius

mileage

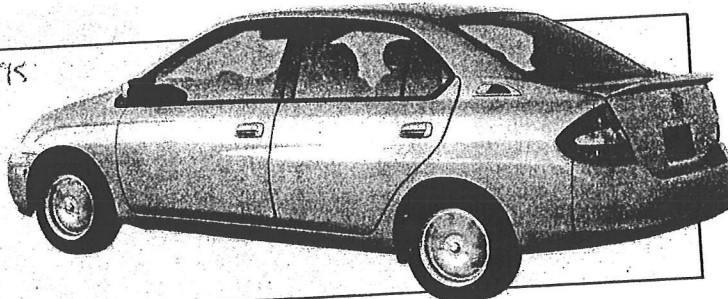
city/highway 52/45

transmission automatic**tank** 11.9 gallons**body size** 4-door**wheels** 14-inch alloy
emissions SULEV

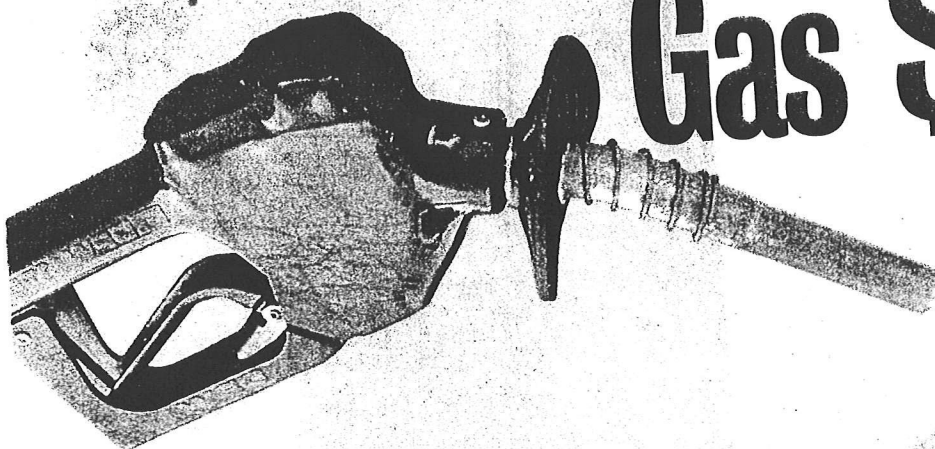
superultra low

engine 16-valve,

4-cylinder

fuel: regular unleaded**cost** \$20,450

Gas Savers



The improved fuel economy of hybrids is a major advantage over conventional cars, appealing to a car-buyer who doesn't want to pay big bucks to fill up the tank.

By MARY AWOSIKA

mary.awosika@herald-trib.com

Gas prices have dwindled slightly from the average \$1.58 per gallon in the past weeks, but the cost continues to break drivers' wallets, especially SUV owners at \$30, or more, a tank.

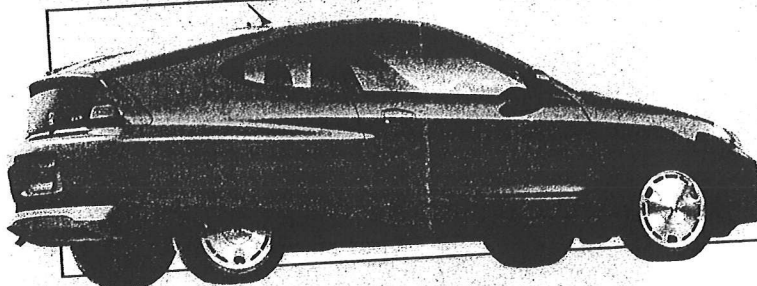
Although consumers aren't ready to turn away from their four-wheel-drive behemoths and embrace smaller, more fuel-efficient vehicles, automotive programs are researching ways to transform SUVs into more economical and environmentally safe vehicles.

In the meantime, automakers are venturing into the marketplace with hybrid vehicles, sometimes called

HEVs (for hybrid electric vehicles), as a solution to gas-guzzling machines. A hybrid combines the internal combustion engine of a conventional car with the battery and electric motor of an electric car, making HEVs twice as fuel efficient as a similarly-sized, gasoline-powered car.

Gasoline-electric hybrids are a two-way system. Conventional cars cannot reuse energy lost through internal combustion. Hybrids, however, draw power from a battery and use kinetic energy by way of regenerative braking. Regenerative braking recharges the battery whenever

PLEASE SEE HYBRID ON 2E



Honda Insight

miles per gallon

city/highway 61/68

transmission manual**tank** 10.6 gallons**body size** 2-seat hatchback**wheels** 14-inch alloy
emissions ULEV

ultralow

engine 12-valve

3-cylinder

fuel: regular unleaded**cost** \$21,180

Hybrid's major advantage is fuel economy

HYBRID FROM IE

er the car brakes or remains idle and allows the electric motor to convert that energy into electricity, which will power the wheels.

And, then, if there isn't enough electric energy to power the car, the hybrid can use its gasoline supply until the electric battery is fully charged.

Honda and Toyota have hybrid vehicles on the market.

The two-seat Honda Insight and four-door Toyota Prius (HEVs) have been available since 2000. Each design is different, but the components that make it a hybrid are the same.

"The cars have to meet certain requirements to make it a hybrid," said Tom Grubbs of Crampton Toyota in Venice.

Hybrids have reduced emissions, the regenerative braking system and torque-on-demand, which produces lower RPMs.

The improved fuel economy of hybrids is a major advantage over conventional cars, appealing to a car-buyer who doesn't want to pay big bucks to fill up the tank.

Most conventional cars — even subcompacts — use far more gas per mile than a hybrid vehicle.

For example, a Honda Civic Coupe, Ford Focus hatchback or Toyota Corolla, all have 13.2 gallon tanks and get between 25 mpg and 32 mpg in town and between 33 and 39 mpg on the highway.

The average SUV (Jeep Cherokee, Toyota 4-Runner, or Ford Explorer) gets between 15 and 16 miles per gallon around town and 19 to 21 mpg on the highway. SUV gas tanks range from 18 to 21 gallons, giving them a driving range of between 315 and 440 miles to the tank.

The hybrids, by contrast, get better than 50 mpg around town and as much as 70 mpg on

According to the Department of Energy and the Hybridcars.com Web site, the regenerative braking system enables the engine to minimize any energy loss if the car is idle or slowing down.

the highway.

The Honda Insight can go 700 miles on a 10.6 gallon tank and the Toyota Prius can go 600 on a 11.9 gallon tank. The Prius gets better in-town mileage at 52 mpg and gets 45 mpg on the highway, whereas the Insight gets 61 mpg in the city and better highway mileage at 68 mpg.

Hybrids may be the cars of the future, but consumers are cautious about buying them. "It's still new," said Mark Jimenez, a consultant at Honda Cars of Bradenton. "People are still a little apprehensive about the model, but it's doing well."

The Honda Insight is a wedge-shaped car that looks something like the discontinued Honda CRX hatchback or a mini Civic hatchback. The low-riding, two-seater has a digital instrumentation panel that allows the driver to see how the engine is functioning.

The cars for sale now all have manual transmissions, but an automatic will be available on the 2002 model. Prices start at \$21,180. Making available an automatic transmission may help boost sales of the Insight.

"There has been heightened interest in the automatic," said Matt Woods, new car sales manager for Honda Cars of Bradenton. "Some places are taking lists (of potential car buyers) for the automatics. We've sold 12 to 14 (manuals) in the last year."

Bill Franklin, of Sarasota, is more than happy. With the Honda Insight he bought in March,

"I'm in love with it," he said of his silver car. "It gets fantastic gas mileage and I've had dozens of compliments on the looks."

Franklin drove his car at 50 mph on a 16-hour trip to Petersburg, Va., on a single tank of gas. On his return trip, the car used more gas because he drove at 75 to 80 mph.

The Toyota Prius is an automatic, made to order through Internet sales, so the only Prius on any Toyota lot is the demonstration model. Most customers don't get a test drive before they purchase the car.

"People who want the Prius are more knowledgeable about the car than we are because they've researched it," said John Reeves, manager of Gettel Toyota in Bradenton. "We sell about five a month."

If a customer ordered a Prius today, the car would be in his or her driveway by late September or early October. Prices start at \$20,450.

The Prius' exterior body size is between a Toyota Echo and Corolla.

"It's a four-door that can seat up to five people," said Sandeep Singh, Internet leasing manager for Germain Toyota in Sarasota. "It's a very gas-conscious car."

Stan Ross of Sarasota investigated the Prius prior to leasing the car last September.

"I researched it on the Internet," he said.

"The dealer didn't even know the price or whether it could be delivered."

He said he's likely to purchase the car after the 3-year lease expires.

"It handles better than my Explorer did. It's like driving a sports car," Ross said. "Since there's a digital panel, I can drive more economically, too."

The cars' fuel economy comes from the way their internal combustion engines and electric motors work in tandem.

"Sometimes it may start up on gas depending

on if there isn't enough power for the car to start on electric," Singh said.

According to the Department of Energy and the Hybridcars.com Web site, the regenerative braking system enables the engine to minimize any energy loss if the car is idle or slowing down. This energy is then used to recharge the battery, which powers the car. Fuel efficiency increased and emissions are lowered, because hybrids use less fuel than conventional cars.

Both the Prius and Insight were successful in Japan in the late 1990s, before being rolled out to U.S. buyers.

Car buyers can look for more hybrid options in the future. Ford Motor Company is developing a hybrid version of the Escape (a compact SUV) for 2003.

For drivers who need enough room for the soccer team, groceries, camping equipment and more, there's hope in the form of a General Motors partnership with the Department of Energy. The program, called Future Truck, works with students from 15 universities to convert conventional cars, including SUVs, into hybrid prototypes without losing the size or the performance of a light-weight truck.

"People don't want a toy car," said Jack Groh, communication director of Future Truck. "After the competition, this technology will be available for car companies."

It's typical for people to be wary of something new and technologically advanced, but dealers insist that consumers are interested in hybrids and are simply awaiting new models.

"The biggest concern is the battery," Woods said. Most people think an electric battery will need to be recharged manually (plugged-in), but these hybrid models are self-charging.

"Until someone tells you, powerwise, you don't know you're in a hybrid car when you're riding," Woods said.

Burrelles
INFORMATION SERVICES632
CH
7 XX....
1229C.

FutureTruck: Proof of Progress is in the Results

WASHINGTON - After two years of development, the results are in and they show the FutureTruck program to be an unqualified success. Fifteen prototype "sport utility vehicles of the future" crossed the finish line at the U.S. Department of Energy and later that day, were on exhibit at the U.S. Capitol to tout their progress toward cleaner, greener transportation of tomorrow.

"At General Motors, we measure our environmental progress in three major areas: products, plants and partnerships," says Dennis R. Minano, GM vice president, energy & environment and chief environmental officer.

"GM is very proud of our FutureTruck partnership because it addresses our goals of developing more environmentally-sensitive vehicles through the use of advanced technologies, and facilitating the growth of tomorrow's engineering talent. The GM team has always been energized by FutureTruck's mentoring relationships, and continues to be impressed by what the participating engineering students accomplish."

The engineering goals of FutureTruck were a tough challenge: take a well-engineered, top-of-the-line sport utility vehicle, and make it even better by increasing its fuel efficiency and lowering its greenhouse gas emissions while achieving ultra-low exhaust emissions: the same challenge facing every automotive manufacturer and engineer worldwide.

The top performing vehicles met or exceeded those goals with the University of Wisconsin at Madison, for example, demonstrating on-road fuel efficiency of 28 miles per gallon (gasoline equivalency), a 65 percent improvement over a stock Suburban and the same team, University of Wisconsin, reducing greenhouse gas emissions by a remarkable 50 percent when compared to the stock Chevy Suburban.

The challenge was straightforward but there was a catch. The teams were required to maintain the performance, safety and features that consumers demand in a utility vehicle. This aspect of FutureTruck elevates it from a student project into a real-world challenge.

Each team developed a unique approach - spending thousands of hours testing theories through computer simulations and models as well as actual engineering modifications. Modifications include hybrid powertrains, fuel cells, advanced electronics, lightweight material substitution, alternative fuels and other advanced technologies.

The FutureTruck competitive events and testing took place June 4-11, 2001 at the General Motors Milford Proving Ground in Milford, Michigan. Following the weeklong competition, vehicles moved to a finish line ceremony and media event on June 13 at the U.S. Department of Energy headquarters in Washington, DC.

Later that day, vehicles were on display at the U.S. Capitol Building where Members of Congress met with the university teams. The FutureTruck awards ceremony was held that same evening at the Smithsonian Museum in Washington.

General Motors and the U.S. Department of Energy are the title sponsors of FutureTruck. Other major sponsors include: National Science Foundation, Cisco Systems, ArvinMeritor, Delphi Automotive Systems, BP, Aluminum Association, and Yahoo! Broadcast Services. Additional supporters include: The MathWorks, Newark Electronics, National Instruments, Natural Resources Canada, Illinois Department of Commerce and Community Affairs, Renewable Fuels Association, Governors' Ethanol Coalition, and The Goodyear Tire & Rubber Company. General Motors is supplying vehicles, seed money and prize money to the universities for this first stage of competition.

Ford Motor Company will replace General Motors as the automotive sponsor in the second two years of competition while the U.S. Department of Energy will continue to provide financial, organizational and technical support.

Competing universities include:

Concordia University;
Cornell University;
George Washington University;
Georgia Tech;
Michigan Technological University;

Ohio State University;
Penn State University;
Texas Tech University;
University of California at Davis;
University of Idaho;

University of Maryland;
University of Tennessee;
University of Wisconsin-Madison;
Virginia Tech; and
West Virginia University.

Complete information about FutureTruck can be found on the web at www.futuretruck.org

FutureTruck 2001 Awards

Lowest Greenhouse Gas Emissions: University of Wisconsin, Madison

(49.5 percent reduction over stock)

Lowest Regulated Tailpipe Emissions: University of Maryland

Best On-Road Fuel Efficiency: University of Wisconsin, Madison

(equivalent to 28.05 mpg of gasoline)

Best Trailer Towing Performance: University of Maryland/West Virginia

University (tie)

Best Acceleration: Georgia Tech

Safety Award: University of Wisconsin, Madison

Best Consumer Acceptability: Georgia Tech

Best Dynamic Handling: Georgia Tech

Best Off-Road Performance: University of Tennessee, Knoxville

Best Use of Advanced Vehicle Technology: Michigan Technological University

Best Appearing Vehicle: University of Wisconsin, Madison

Best Vehicle Design Inspection: University of Wisconsin, Madison

Best Oral Design Presentation: University of California at Davis

Best Technical Report: University of Wisconsin, Madison

Best Workmanship: University of Wisconsin, Madison

Innovations in Aluminum (1st): University of Wisconsin, Madison

Best Use of Materials: University of Wisconsin, Madison

Excellence in Renewable Fuels: Cornell University

The MathWorks Vehicle Modeling Award (1st): University of California at Davis

Cisco Systems Telematics Award (1st): University of California at Davis

Best Teamwork: University of Tennessee

Best Sportsmanship: Texas Tech University

Outstanding Faculty Advisor: Dr. Jeff Hodgson (Tennessee)

Overall Awards:

First Place: University of California at Davis

Second Place: University of Wisconsin, Madison

Third Place: University of Maryland

Fourth Place: Georgia Tech

Fifth Place: Cornell University

Sixth Place: West Virginia University

Burrelle's
INFORMATION SERVICES-1016
EX20.g 34 bc...n

Ohio State continues hybrid car leadership

25 YV

BY LAURA NEWPOFF ■ BUSINESS FIRST
newpoff@bizjournals.com

FRONT PAGE

When engineering students at Ohio State University's Center for Automotive Research and Intelligent Transportation were given a Chevrolet Suburban in late 1999, the vehicle got a gasoline-guzzling 13 miles a gallon in city driving.

But when OSU students drive the Suburban to Milford, Mich., on June 4 for the FutureTruck competition, it will boast hybrid-electric technology that gets it 25 city miles a gallon.

The Center for Automotive Research is one of 15 participants in the FutureTruck 2001 project, a two-year initiative of the federal Department of Energy and General Motors Corp. Each group was given a Suburban sport utility to transform into a low-emission, high-efficiency vehicle. Their results will be analyzed at the competition, which is designed to solve environmental and technical problems posed by popular vehicles considered in some circles to be environmentally unfriendly road hogs.

"The idea was and is to re-engineer the Suburban to make it use

SEE OSU, PAGE A37

OSU: Increase in technology expected to bring research work

FROM PAGE A1

less fuel and to make it be cleaner," said Paul Zangari, a spokesman for FutureTruck. "But they still have to be the same kinds of vehicles that people want to go out and buy. They have to have the cargo capacity, the passenger space, the amenities, the safety features and the same ability to tow a heavy trailer."

Showcase for technology

Dubbed the Buckeyebrid, OSU's Suburban is fueled by gasoline but also is equipped with an electric motor and energy storage devices that are used with a heat engine. With concerns over energy use, the hybrid technology has become a growing discipline at the OSU automotive research center.

"This is not off-the-wall stuff," said Yann Guezennec, an associate professor of mechanical engineering at Ohio State and an adviser to the 25 students who worked on the Suburban. "The top schools are coming up with solutions that the automakers would consider viable."

While only Honda and Toyota have hybrid vehicles on the road, all American car makers plan to sell hybrid-power vehicles by 2004, Guezennec said.

That likely will mean more work for the OSU research center, which is one of nine universities the Department of Energy has recognized as a center of automotive research. About 60 graduate students, 10 researchers and 10 faculty members do work at the center, which has an annual research budget of about \$4 million. Twenty-two automotive companies, including



PHOTO COURTESY OHIO STATE UNIVERSITY

A team from the OSU Center for Automotive Research and Intelligent Transportation will present the redesigned SUV at FutureTruck 2001.

Ford and GM, and top auto suppliers are using the center to conduct research.

Ohio State's involvement with hybrid-power engineering began with the FutureCar competition in 1995. The FutureCar program was replaced by the FutureTruck competition last year.

OSU engineering students placed fifth in last year's FutureTruck program. This year, using the same Suburban, the students have refined the truck by replacing components, improving the integration of parts and completing extensive testing.

"Since we're doing a one-of-a-kind vehicle, we can explore out of the box," Guezennec said. "It's a good platform for showcasing new technology, some of which has never seen the light of day."

The hybrid-powered Suburban maintains the performance standards of the original

CENTERS OF AUTOMOTIVE RESEARCH

Schools with centers designated by the federal Department of Energy:

- University of California-Davis
- Virginia Tech
- Michigan Technological University
- University of Michigan-Dearborn
- Pennsylvania State University
- University of Maryland
- University of Tennessee
- Ohio State University
- West Virginia University

truck. The vehicles will be tested and rated by GM engineers in Michigan.

The V-8 powerplant that came with the original Ohio State Suburban was replaced by a smaller diesel engine. To supplement the smaller engine size, the electric motor was added. Other changes include replacing rear view mirrors with video cameras and small LCD displays for aerodynamic benefit, switching from lead acid to lighter nickel batteries and reducing the fuel tank capacity to 15 gallons from 40 gallons.

Guezennec thinks the SUV is worth about \$250,000 not counting all of the unpaid engineering work. "If you can increase the fuel economy of the SUVs by 50 percent, that's very significant," he said.

"They're talking about \$3 a gallon for gas this summer. If you have a Suburban, that's \$100 to fill your tank. Imagine doing that every four days," he said. "I think we all will be driving a hybrid electric vehicle in one form or another in the next 10 years."



PHOTO COURTESY OHIO STATE UNIVERSITY

OSU students have redesigned a Chevrolet Suburban and improved its gas usage as part of a federal program.

Burrelle's
INFORMATION SERVICES4
12.08 XX...b

Diesel: Lower greenhouse emissions, but plagued by soot, smog gases

By KEITH BRADSHER

N.Y. Times News Service 25YL

MILFORD, Mich. — Each of the 16 Chevrolet Suburban sport utility vehicles in a barn-like garage at

General Motors' vehicle testing center here is painted a different bright color and festooned with the logos of sponsoring corporations.

But the Suburbans are here not for a road race but for a different

kind of competition: to see which can emit the least amount of global-warming gases.

Designed by students at the nation's top mechanical engineering schools with cutting-edge equipment supplied by the world's largest auto parts makers, the Suburbans are part of a contest, *Future Truck*, that has become an annual showcase for what might be done by automakers to address global warming. The contest has taken on new prominence as Washington has become increasingly interested in global warming and in whether fuel-efficiency rules should be raised.

The entries here showed a striking split that is also apparent within the auto industry: whether to switch to diesel engines. Eight of the Suburbans here burned diesel, which gives excellent mileage and produces minimal emissions of greenhouse gases but tends to produce more soot and smog-causing gases. The other eight used a variety of fuel sources, including two demonstration models of fuel-cell vehicles that did not work well

Please see DIESEL, Page 55

From Page 54

Diesel

enough to participate in various tests, like towing a 7,000-pound trailer.

Two gasoline-electric vehicles already on the market are the Toyota Prius and Honda Insight. GM, Ford Motor and DaimlerChrysler plan to introduce gasoline-electric hybrid sport utility vehicles within the next three years.

Diesel engines lack the appeal of fuel cells, which combine hydrogen and oxygen in a chemical reaction to produce energy to drive a vehicle's wheels. But diesels are technically feasible now, especially if their pollution problems can be fixed, and provide remarkable fuel economy.

A diesel vehicle has nearly the same emissions of greenhouse gases as a gasoline-electric hybrid, said Robert Larsen, the director of transportation research at the Energy Department's Argonne National Laboratory. A diesel-electric hybrid engine does even better, with emissions of global warming gases almost as low as those of a fuel-cell vehicle, he added. Making hydrogen for a fuel cell requires some emissions of global-warming gases.

Preliminary figures showed that the Suburban that emitted the least carbon dioxide and other global-warming gases Monday was designed at the University of Wisconsin at Madison, Larsen said. The diesel-powered, four-wheel-drive Suburban got 28 miles to the gallon on the fairly easy course here, which involved driving at speeds no faster than 60 miles an hour and minimal stop-and-start driving. An unmodified Suburban got 17.3 miles a gallon on the same course, several miles a gallon better than most drivers achieve.

The Suburban from the University of

Wisconsin did well partly because it was a hybrid and partly because it used a lot of lightweight aluminum, including an aluminum underbody frame. Mass-producing aluminum frames is extremely difficult, but Audi is already doing it for some cars and American automakers plan to start trying it in the next few years.

Julie Marshaus, a graduate student in mechanical engineering who led the University of Wisconsin team, said that choosing diesel had been easy. "We used a diesel engine because they're more efficient than any other internal combustion engine," Marshaus said.

But while her team's Suburban emitted less smog-causing nitrogen oxides than any of the other diesel vehicles here, the big vehicle's emissions were still not low enough to meet tough new government regulations that will take effect with the 2004 model year. And her team's Suburban failed on the soot test Monday, producing emissions of tiny particles that were off the top of the chart for the contest.

The poor pollution performance of the diesels left it unclear Monday which engineering school had won the competition. The results of the tests here, which have been taking place for a week, will be announced Wednesday evening in Washington. GM plans to announce separately its own progress on fuel-cell vehicles in separate news conferences on Tuesday in Warren, Mich., and on Wednesday morning in Washington.

GM gives a Suburban and \$10,000 to each of the nation's top mechanical engineering schools for the contest. The students then raise up to \$250,000 more each from other corporate sponsors to design a Suburban that gets the best possible mileage with the least pollution and no reduction in driving performance. The

Department of Energy co-sponsored the competition.

Automakers are lobbying for less strict pollution standards for diesels, contending that the rules in 2004 will effectively ban diesels. But Mark Mayer, GM's director of North American engine development, acknowledged that recent innovations in pollution-control devices "will probably get us there, at enormous expense."

Environmentalists dislike diesels. Jason Mark, the director of the clean vehicle program at the Union of Concerned Scientists, said that the real problem was that too many Americans prefer 5,800-pound Suburbans to cars, which get much better mileage with less pollution. Diesel engines are not the answer, he said, adding that, "Until they solve their public health liabilities, they shouldn't be in Suburbans and other vehicles."

**DIAMONDBACK (UNIVERSITY
OF MARYLAND)**

COLLEGE PARK, MD
WEDNESDAY 21,000
MAY 9 2001



30
JZed.
Buttelle's
INFORMATION SERVICES
8 sc..c.
CJ

Campus class speeds hybrid car development

BY MATT BOYD
Special to The Diamondback

It's the car purchase Gloria Chawla calls her "Internet romance."

The car was the Prius, a new hybrid electric vehicle from Toyota. Chawla, a librarian in the campus engineering and physical science library, had been waiting for the Prius to be sold in the United States. The first day it was available, she paid \$20,000 and ordered one from the Toyota website.

The Toyota Prius is one of the first generation of commercially available cars that use both a gasoline and an electric engine. Unlike other kinds of cars that use electric power, these hybrids don't have to be plugged in to a power source to recharge because the battery is recharged by the car itself.

David Baker, a senior mechanical engineering major, explained how hybrid vehicles work more efficiently than regular gas-pow-

ered cars and trucks. "Engines have certain ranges that are optimal for their efficiencies," Baker said. For instance, gasoline engines have to use a lot of energy to get going after they're stopped. An electric engine, on the other hand, works more efficiently in this situation. Once the car gets going, it can switch to the gasoline engine as needed. A complex computer-controlled system looks at hundreds of factors to decide which engine to use at any given time, Baker said.

Baker is enrolled in the Futuretruck program, a 6-credit class offered by the mechanical engineering department. The class is building a hybrid electric vehicle of its own to compete in the nationwide Futuretruck competition in June.

To power the electric motor, hybrid cars use a large rechargeable battery. In cars like the Prius or the campus's custom truck, the

battery gets most of its power from a technique known as regenerative braking, eliminating the need to plug the car in to some other power source to recharge it.

With normal brakes, Baker said, a lot of energy is wasted when the car stops. Instead of just clamping down on the wheel, a car using regenerative braking slows itself by using its forward motion to spin the motor, which in turn acts as a generator to charge the batteries. In a few cases, the battery might be charged directly by the gas engine.

Because of this system, hybrid cars are more fuel efficient than conventional cars and emit less greenhouse gases.

David Holloway, the professor in charge of the campus's Futuretruck program, said he thinks more people will buy electric hybrid cars in the future as gas prices climb.

"I think people are beginning to pay attention to fuel economy," he

said. "Three years ago, when we were paying 90 cents a gallon, people didn't care as much. But I think we're approaching the trigger point."

In four weeks, Holloway and his students will pit their converted Chevrolet Suburban, powered by corn-based ethanol, against entries from 14 other schools in the Futuretruck competition. The goal of the contest, sponsored by the Department of Energy, is to cut emissions without sacrificing performance or fuel efficiency. Last year, the campus tied for first place with West Virginia University.

This will be the first year they use an electric hybrid system with the ethanol engine. The goal for this year is to have the truck get 30 miles per gallon while cutting emissions of greenhouse gases by 30 percent, said senior mechanical engineering major Todd Colby. A stock Suburban gets about 17 miles per gallon.

**Burrelle's**
INFORMATION SERVICES11
.XZWC.

200

VN
XX...

Technology exists to create efficient (but still big) SUVs

By Earl Lane
Newsday

WASHINGTON — At first glance, the row of Chevy Suburbans parked near the U.S. Capitol recently looked like overgrown race-car wannabes, brightly colored and plastered with sponsor decals.

But the vehicles had been modified by clever student engineers from 15 universities for a challenge a different sort: to design a fuel-efficient, low-polluting, big sport utility vehicle that would still win the hearts of consumers.

Most of the teams in the FutureTruck contest, including the overall winner from the University of California, Davis, used hybrid electric design, an approach already being used for the Toyota Prius and Honda Insight, commercially available passenger cars.

A team from the University of Wisconsin at Madison took first place for best fuel efficiency, squeezing the equivalent of 28 miles per gallon of gasoline out of their diesel-electric hybrid. That's far better than the standard Suburban's 14 mpg around-town average.

According to organizers of the FutureTruck competition and other specialists, the technology is already at hand to give gas-guzzling SUVs, vans and light trucks — which account for nearly half of U.S. sales — better mileage and cleaner emissions.

Consumers who want to drive fuel-efficient vehicles will not have to abandon their SUVs in favor of compact sedans, they said.

But what isn't at hand is a mass-production mandate from the auto industry. There is a vigorous political debate on whether Uncle Sam should do more to prod automakers to improve the mileage of SUVs, which currently are subject to

less stringent fuel economy standards than passenger cars.

For the first time in years, there may be legislative movement on the fuel economy front. Some Republicans in Congress have said they are open to reasonable increases in the standards and back bills that would require SUVs to meet the higher fuel economy standard for cars.

Last week, the House passed a transportation funding bill that — for the first time since the Republicans took over the House in 1995 — does not prohibit government regulators from raising the miles per gallon standard for SUVs.

The Bush administration is reviewing fuel economy standards, including those for light trucks and SUVs. It is awaiting a National Academy of Sciences report, expected by the end of this month, on the effectiveness of the existing CAFE standards.

The industry has responded. Ford has announced plans to make a hybrid electric version of its Escape SUV for the 2003 model year that could get up to 40 miles per gallon. GM says it will build a hybrid version of a full-sized pickup truck by 2004. DaimlerChrysler says it will offer a hybrid version of its Dodge Durango for 2003.

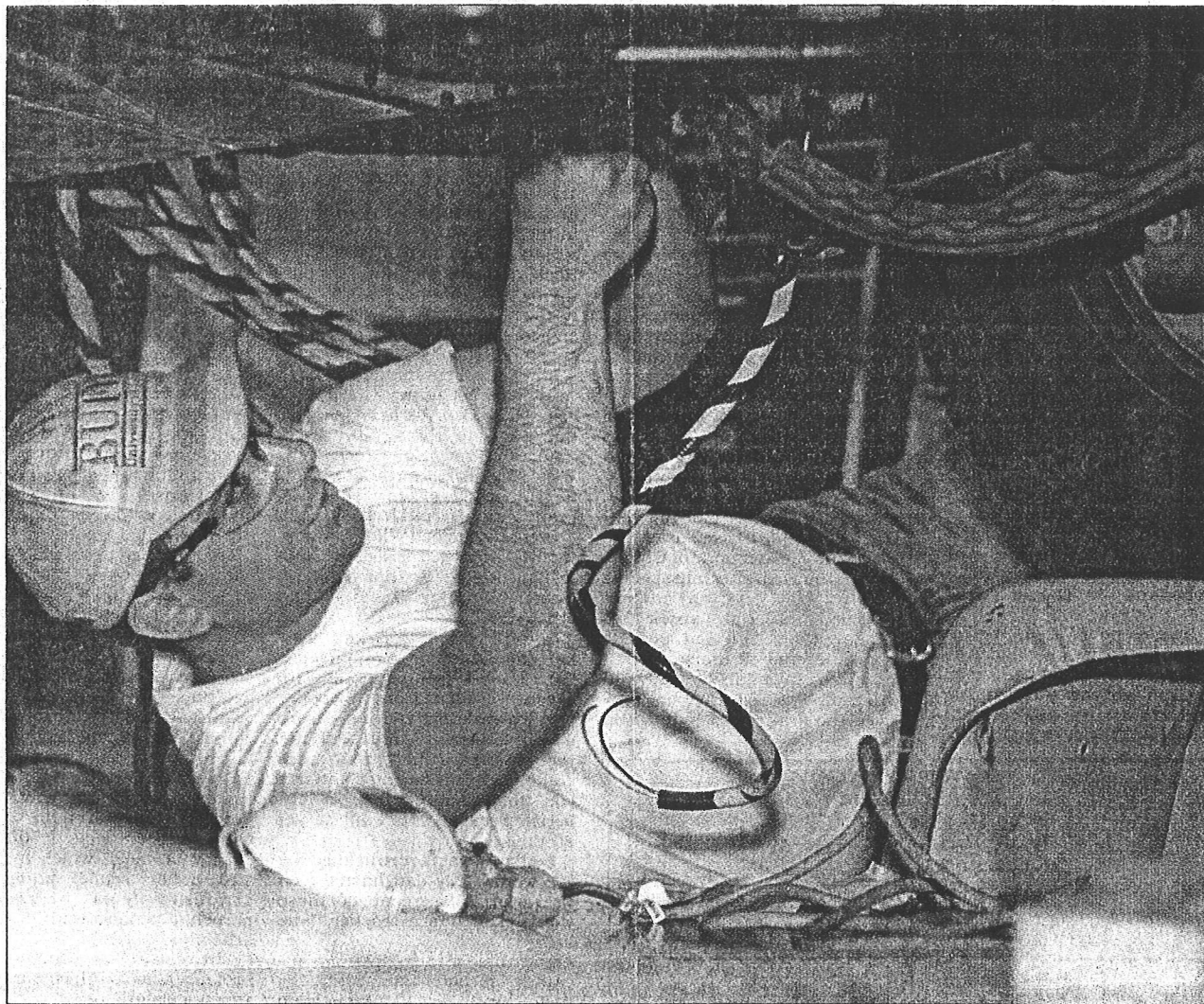
But critics say the industry can do more. The nonprofit Union of Concerned Scientists, in a new report, says the nation's combined fleet of passenger cars, light trucks and sports utility vehicles could average 40 miles per gallon by 2012 using such techniques as weight-saving aluminum body parts, variable valve engines, tires with lower rolling resistance and improved transmissions.

All that technology will not come cheap for future SUV owners, however. It will take a lot of "green" to buy it.



Burrelle's
INFORMATION SERVICES

53
.XZOC. 19 SC..C. CJ



Jason DeProspero/Athenaeum

Tom Buffamonte, a mechanical engineering major, does some work under FutureTruck on Tuesday evening at the NRCCE building on the Evansdale campus.

FRONT PAGE

Students defend FutureTruck title

254V
By Tonya Allen
Athenaeum Staff

WVU engineering students have their own solution to the current energy crisis.

It's a re-engineered Chevrolet Suburban and this weekend the students will compete for the right to call their creation the most full-efficient, environmentally friendly sport utility vehicle.

This is the second year that WVU has entered the General Motors sponsored FutureTruck competition. Last year, the group shared overall winner honors with the University of Maryland.

Since then, students have

taken that same truck and made it even better.

"We took out the larger diesel engine and replaced it with a smaller one," said Doug Fig, an engineering major on the team.

The team also added a 100-horsepower electric motor and installed a manual transmission.

According to Fig, the truck has both diesel and electric motors that can be ran at the same time or separately. The ability to run both engines at the same time helps sustain speed during acceleration and aids in heavy loading, Fig said.

During the competition, SUVs will be judged for greenhouse gas impact, fuel economy, exhaust emissions, accel-

eration, off-road performance, consumer acceptability and safety.

According to Nigel Clark, faculty adviser for WVU's team, the project gives students the chance to develop marketable skills and work as a team.

Fig agrees.

"It has been a good experience," Fig said. "I didn't know anything other than how to change the oil in my car and now I am changing drive lines and engines. I am tying together all of the things I've learned over the last couple of years. It also takes networking. Any one person couldn't get this job done in a year."

The team was working until the final moments Tuesday

night, putting the finishing touches on their vehicle. Participants will compete June 4-11 in Milford, Mich., then travel to Washington, D.C., for two days to show off their vehicles and attend an awards ceremony.

Following the competition, the vehicle will be displayed on campus.

WVU FutureTruck members going to the Michigan competition are Tom Buffamonte, Jason Cheslock, Csaba Toth-Nagy, Jason Conley, Doug Fig, Ken Lynch-Warntz, Axel Raedermacher and Sam Taylor. They are all mechanical and aerospace engineering students in the College of Engineering and Mineral Resources.



Burrelle's
REPRODUCTION SERVICE

350
JUN 3 2001
58 XX... 2A

6C The Herald-Dispatch — Huntington, WV, Sunday, June 3, 2001

Region

Questions? Call the newsroom at 526-2798 www.herald-dispatch.com

WVU engineering students design future SUVs

By Vicki Smith
The Associated Press
MORGANTOWN — Ten years from now, Jason Conley says, "You won't be able to throw a rock without hitting one."

Doug Fig, clearly confident, nods in agreement. "I like the idea of saying, 'I built one before they were on the road.'"

Their shiny silver Chevy Suburban looks like millions of others guzzling gas at 13 miles per gallon.

Except for the battery box underneath and the transfer case on the floor.

This is the SUV of the future — a hybrid electric vehicle that runs partly on battery, partly on diesel. Unlike electric cars, a hybrid doesn't have to be plugged in at night. The batteries recharge by braking and rolling downhill.

Fig, a senior from Jackson, N.J., and Conley, a graduate student from Bridgeport, are the leaders of West Virginia University's Future Truck team, a group of nearly two dozen mechanical engineering students devoted to designing a cleaner, leaner SUV.

They compete June 4-13 in Detroit against 14 other universities at Future Truck, a contest designed by the U.S. Department of Energy and General Motors Corp.

In the first phase of the two-year competition last summer, WVU tied the University of Maryland for first place and brought home awards totaling \$10,000. The money went back into the vehicle for this year's competition, in which the teams refine

On the Web
Future Truck: <http://www.futuretruck.org/>
Office of Transportation Technologies: <http://www.otd.doe.gov/hew/>
Partnership for a New Generation of Vehicles: <http://www.ta.doe.gov/pngv/introduction/intro.htm>

their designs for optimal performance. Vehicles are rated overall and in 13 categories, including emissions, fuel economy, use of materials, consumer acceptability, acceleration, handling and towing performance.

The goal of Future Truck is to design a hybrid electric vehicle, or HEV, that uses less fuel and belches fewer fumes than a traditional SUV.

The HEV is closer to production than people realize: Ford plans to roll out a line of hybrid Escapes that get 40 mpg in 2003, followed by hybrid Explorers in 2004. GM is also working on a hybrid SUV for 2004 called the Paradigm.

So far, the only hybrids on the market are two compact cars, the Toyota Prius and Honda Insight.

Conley says the problem is that efforts to design a greener vehicle have focused on the type of vehicles few buyers want.

"People are not aspiring to buy a Geo Metro," he says. "Making an economy car with great gas mileage is great, but people aren't going to buy it."

Light trucks account for nearly half the market, and people are going to buy them whether they're clean or



The Associated Press

Jason Conley, a West Virginia University engineering student, works in Morgantown on a Chevy Suburban that runs partly on diesel and partly on battery power.

efficient. So, Conley figures it makes more sense to improve a half-ton pickup than a subcompact.

With a hybrid, power comes from either a diesel engine or batteries, or both.

A commuter stuck in traffic can switch to electric mode and inch along instead of wasting fuel. The batteries are also useful if there is an engine failure. Instead of calling a tow truck, "You could still limp along to the garage," says professor Nigel Clark.

Although the Suburban has a manual override switch, it's being designed to automatically balance power.

"The whole idea is you don't want to confuse people," Fig says. "You don't want to introduce people to a

whole new concept. It should be foot on gas means go, foot on brake means stop."

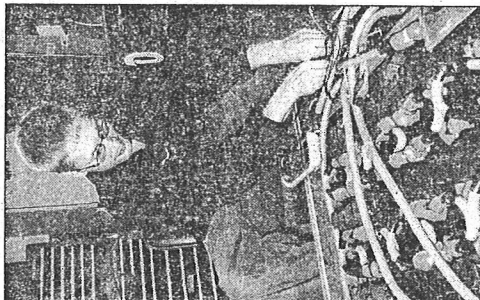
Many buyers still have misconceptions about diesels that must be overcome.

In last year's tests, a particulate filter on the WVU Suburban captured so much carbon that levels from the tailpipe were unmeasurable.

In other words, there were no black clouds of smoke.

"HEVs can be high performance, fuel efficient and still offer everything the consumer wants," Conley says.

A typical Suburban with a stock V-8 engine gets 13 mpg in the city, and 17 on the highway. WVU's version got



The Associated Press

Sam Taylor, a master's student at the University of West Virginia, works on a battery box, an electrical energy storage system supplying close to 350 volts for a SUV, at the National Research Center for Coal and Energy in Morgantown.

24 and 29 mpg, respectively, last year and expects to do better this year.

Since last summer, the engineers have replaced their 6-cylinder engine with a donated, state-of-the-art 4-cylinder from Detroit Diesel, shedding about 300 pounds.

The smaller engine produces as much power and torque as a larger one so the Suburban doesn't lose steam on a long uphill climb.

The constant output of the electrical

motor eliminates the lag time in acceleration so it reaches speed faster than a stock V-8.

"It's very fast off the mark," Clark says. "It feels powerful."

And it's not just a feeling: Last year, the WVU crew pulled a 7,000-pound trailer over a 5 percent grade.

Manufacturers say hybrids like the new Escape will cost about \$3,000 more than their gas-powered counterparts. Supporters say the vehicles will pay for themselves in the long run with lower fuel bills and — they hope — tax incentives.

President Bush has proposed tax credits to encourage the development and sale of hybrid vehicles, and several automakers and environmental groups support the idea.

The Society of Automotive Engineers is already beginning to develop standards for hybrids, looking at issues such as emergency shut-off systems in crashes and how to prevent acid loss from the batteries in a rollover.

Those regulations could take years to develop, but Clark says one thing could bring hybrids to showrooms sooner: Better batteries.

The WVU Suburban runs at more than 300 volts with a 450-pound battery pack where the spare tire used to be.

Lead acid batteries are heavy but cheap. Unfortunately, battery technology hasn't advanced as quickly as the engineers would like, Clark says.

"If the miracle battery arrives," he says, "hybrids will unquestionably take over the market."

DAYTON DAILY NEWS

DAYTON, OH

SUNDAY 212,128

JUN 3 2001



Burrelle's
INFORMATION SERVICES

386

.xzadg

54

ZN

b....

Students squeeze better gas mileage from SUVs

25YV ASSOCIATED PRESS

COLUMBUS — A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain.

This improvement came with no loss of power, acceleration or passenger comfort — and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle — the Buckeyebrid.

"I think the hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of

mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools nationwide sponsored by General Motors and Ford.

Despite the improvement in mileage, the engineers weren't able to reach the FutureTruck program's goal of doubling fuel economy.

About 20 student engineers have participated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000 worth of contributed parts.

Guezennec said more basic changes must be made in SUVs to further improve gas mileage. One such change would be a body made of a lighter metal, such as aluminum. In addition, streamlining would be necessary to reduce wind resistance.

TIMES-REPORTER

NEW PHILADELPHIA, OH
SUNDAY 26,000
JUN 3 2001



Burrelle's
INFORMATION SERVICES

237
.XZEC.

13 XX....

ZT

Students squeeze better gas mileage from SUV

COLUMBUS (AP) — A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds. **251V**

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain.

This improvement came with no loss of power, acceleration or passenger comfort — and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle — the Buckeyebrid.

"I think the hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools nationwide

sponsored by General Motors and Ford.

Despite the improvement in mileage, the engineers weren't able to reach the FutureTruck program's goal of doubling fuel economy.

About 20 student engineers have participated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000 worth of contributed parts.

Guezennec said more basic changes must be made in SUVs to further improve gas mileage. One such change would be a

body made of a lighter metal, such as aluminum. In addition, streamlining would be necessary to reduce wind resistance.

"But otherwise, with a vehicle of that size, I don't think we can get 40 (miles per gallon)," he said.

As of 1999, there were about 35 million SUVs on U.S. roads, according to the Insurance Institute for Highway Safety. Another 3.2 million SUVs were added in 2000, said R.L. Polk & Co., which tracks automotive data.

INTER-MOUNTAIN

ELKINS, WV

FRIDAY 12,000

JUN 15 2001



19
164
XX....

EM

WVU Takes Sixth in Truck Competition

MORGANTOWN, W.Va. (AP) — An engineering team from West Virginia University took sixth place in this year's Future Truck competition.

The competition's goal is to make a cleaner running, more fuel efficient sport utility vehicle.

Last year, WVU shared overall first-place honors with the University of Maryland for modifications to a Chevy Suburban. During

this year's competition, the WVU team modified its Suburban with a prototype diesel engine, a 100-horsepower electric motor and a manual transmission.

The vehicle tied for first in this year's trailer towing competition.

"I am satisfied with where we finished," said team adviser Jason Conley, a graduate mechanical engineering student from Bridgeport. "We finished with a running

vehicle and were able to enter and complete all events."

The 15 college teams competed last week and were judged on the vehicles' performance, emissions, fuel economy, acceleration and safety.

The University of California-Davis won overall first-place honors.

Future Truck is sponsored by General Motors and the U.S. Department of Energy.

WILMETTE LIFE

WILMETTE, IL
WEEKLY 43,548
JUN 7 2001



Burrelle's
INFORMATION SERVICES

743
.XZ8.b

3

XD
XX37..

Students squeeze better gas mileage from SUV

A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain.

This improvement came with no loss of power, acceleration or passenger comfort — and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle — the Buckeyebrid.

"I think hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools nationwide

sponsored by General Motors and Ford.

Despite the improvement in mileage, the engineers weren't able to reach the FutureTruck program's goal of doubling fuel

*'I think
hybrid-electric
vehicle
technology is
solid for the
next 10 to 15
years'*

economy.

About 20 student engineers have participated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000 worth of contributed parts.

Guezennec said more basic changes must be made in SUVs

to further improve gas mileage. One such change would be a body made of a lighter metal, such as aluminum. In addition, streamlining would be necessary to reduce wind resistance.

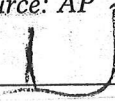
"But otherwise, with a vehicle of that size, I don't think we can get 40 (miles per gallon)," he said.

As of 1999, there were about 35 million SUVs on U.S. roads, according to the Insurance Institute for Highway Safety. Another 3.2 million SUVs were added in 2000, said R.L. Polk & Co., which tracks automotive data.

Dan Becker, director of global warming at the Sierra Club, said 40 miles per gallon should be the target fuel economy set for SUVs.

Currently, the industry is required to achieve an average fuel economy of 20.7 mpg for its entire fleet of SUVs and light trucks.

Source: AP



MOUNT VERNON NEWS

MOUNT VERNON, OH
TUESDAY 11,000
JUN 5 2001



Burrelle's
INFORMATION SERVICES

230
.xzed.

34 XX.... ZD

Students squeeze better gas mileage from SUV

^{25.4V}
COLUMBUS (AP) — A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain.

This improvement came with no loss of power, acceleration or passenger comfort — and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle — the Buckeyebrid.

"I think the hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools nationwide sponsored by General Motors and Ford.

Despite the improvement in mileage, the engineers weren't

able to reach the FutureTruck program's goal of doubling fuel economy.

About 20 student engineers have participated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000 worth of contributed parts.

Guezennec said more basic changes must be made in SUVs to further improve gas mileage. One such change would be a body made of a lighter metal, such as aluminum. In addition, streamlining would be necessary to reduce wind resistance.

"But otherwise, with a vehicle of that size, I don't think we can get 40 (miles per gallon)," he said.

As of 1999, there were about 35 million SUVs on U.S. roads, according to the Insurance Institute for Highway Safety. Another 3.2 million SUVs were added in 2000, said R.L. Polk & Co., which tracks automotive data.

Dan Becker, director of global warming at the Sierra Club, said 40 miles per gallon should be the target fuel economy set for SUVs by the Bush administration.

Currently, the industry is required to achieve an average fuel economy of 20.7 mpg for its entire fleet of SUVs and light trucks.

MIDDLETOWN JOURNAL

MIDDLETOWN, OH
WEDNESDAY 24, 000
JUN 20 2001



BURRELLE'S

218
.xzede 32 YK... ZT

Students squeeze the mileage

25YV

The Associated Press

COLUMBUS — A group of Ohio State University students say they have found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain.

This improvement came with no loss of power, acceleration or passenger comfort — and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle — the Buckeyebrid.

"I think the hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools nationwide sponsored by General Motors and Ford.

**Burrelle's**
INFORMATION SERVICES601
XZ9C0

186

ZS
XX....

OSU students squeeze better gas mileage from SUV

^{2.5 YV}
COLUMBUS (AP) — A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain.

This improvement came with no loss of power, acceleration or passenger comfort — and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle — the Buckeyebrid.

"I think the hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools nationwide sponsored by General Motors and Ford.

Despite the improvement in mileage, the engineers weren't able to reach the FutureTruck program's goal of doubling fuel economy.

About 20 student engineers have participated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000 worth of contributed parts.

Guezennec said more basic changes must be made in SUVs to further improve gas mileage. One such change would be a body made of a lighter metal, such as aluminum. In addition, streamlining would be necessary to reduce wind resistance.

"But otherwise, with a vehicle of that size, I don't think we can get 40 (miles per gallon)," he said.

As of 1999, there were about 35 million SUVs on U.S. roads, according to the Insurance Institute for Highway Safety. Another 3.2 million SUVs were added in 2000, said R.L. Polk & Co., which tracks automotive data.

Buttelle's
Insurance Service61
186 11.... 2A

Students designing SUV of the future

25YV

By VICKI SMITH
Associated Press Writer

MORGANTOWN — Ten years from now, Jason Conley says, "You won't be able to throw a rock without hitting one."

Doug Fig, clearly confident, nods in agreement. "I like the idea of saying, 'I built one before they were on the road.'"

Their shiny silver Chevy Suburban looks like millions of others guzzling gas at 13 miles per gallon.

Except for the battery box underneath and the transfer case on the floor.

This is the SUV of the future — a hybrid electric vehicle that runs partly on battery, partly on diesel. Unlike electric cars, a hybrid doesn't have to be plugged in at night. The batteries recharge by braking and rolling downhill.

Fig, a senior from Jackson, N.J., and Conley, a graduate student from Bridgeport, are the leaders of West Virginia University's Future Truck team, a group of nearly two dozen mechanical engineering students devoted to designing a cleaner, leaner SUV.

They compete June 4-13 in Detroit against 14 other universities at Future Truck, a contest designed by the U.S. Department of Energy and General Motors Corp.

In the first phase of the two-year competition last summer, WVU tied the University of Maryland for first place and brought home awards totaling \$10,000. The money went back into the vehicle for this year's competition, in which the teams refine their designs for optimal performance.

Vehicles are rated overall and in 13 categories, including emissions, fuel economy, use of materials, consumer acceptability, acceleration, handling and towing performance.

The goal of Future Truck is to design a hybrid electric vehicle, or HEV, that uses less fuel and belches fewer fumes than a traditional

and 17 on the highway. WVU's version got 24 and 29 mpg, respectively, last year and expects to do better this year.

Since last summer, the engineers have replaced their 6-cylinder engine with a donated, state-of-the-art 4-cylinder from Detroit Diesel, shedding about 300 pounds.

The smaller engine produces as much power and torque as a larger one so the Suburban doesn't lose steam on a long uphill climb.

The constant output of the electrical motor eliminates the lag time in acceleration so it reaches speed faster than a stock V-8.

"It's very fast off the mark," Clark says. "It feels powerful."

And it's not just a feeling: Last year, the WVU crew pulled a 7,000-pound trailer over a 5 percent grade.

Manufacturers say hybrids like the new Escape will cost about \$3,000 more than their gas-powered counterparts. Supporters say the vehicles will pay for themselves in the long run with lower fuel bills and — they hope — tax incentives.

President Bush has proposed tax credits to encourage the development and sale of hybrid vehicles, and several automakers and environmental groups support the idea.

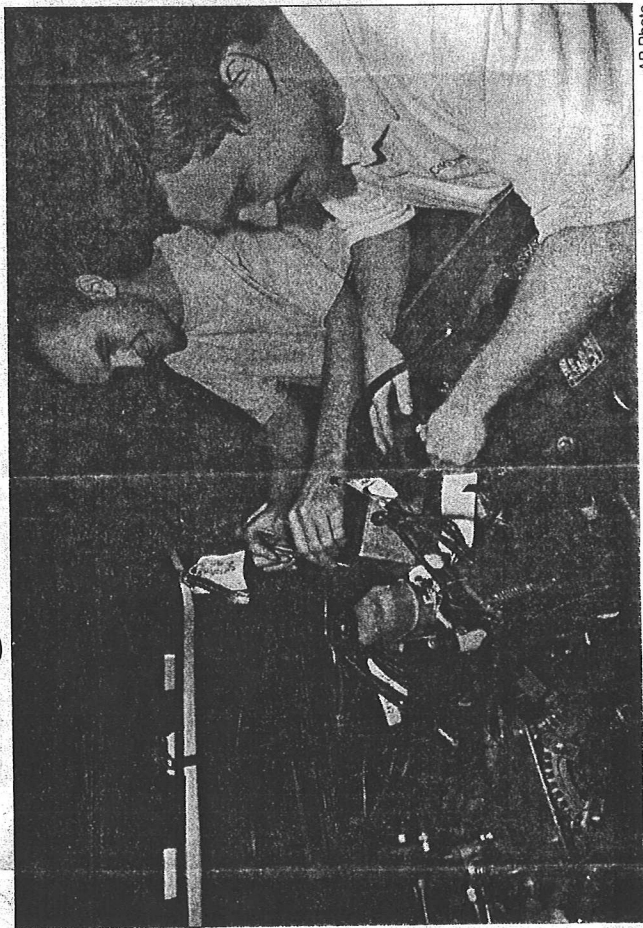
The Society of Automotive Engineers is already beginning to develop standards for hybrids, looking at issues such as emergency shut-off systems in crashes and how to prevent acid loss from the batteries in a rollover.

Those regulations could take years to develop, but Clark says one thing could bring hybrids to showrooms sooner: Better batteries.

The WVU Suburban runs at more than 300 volts with a 450-pound battery pack where the spare tire used to be.

Lead acid batteries are heavy but cheap. Unfortunately, battery technology hasn't advanced as quickly as the engineers would like, Clark says.

"If the miracle battery arrives," he says, "hybrids will unquestionably take over the market."



AP Photo

on diesel and partly on battery, in Morgantown. The car has regenerative braking, and doesn't need to be plugged in for recharging.

want to confuse people," Fig says. "You don't want to introduce people to a whole new concept. It should be foot on gas means go, foot on brake means stop."

Many buyers still have misconceptions about diesels that must be overcome.

In last year's tests, a particulate filter on the WVU Suburban captured so much carbon that levels from the tailpipe were unmeasurable.

In other words, there were no black clouds of smoke.

"HEVs can be high performance, fuel efficient and still offer everything the consumer wants," Conley says.

A typical Suburban with a stock V-8 engine gets 13 mpg in the city,

West Virginia University engineering students Csaba Toth-Nagy of Hungary, left, and Jason Conley work on refining this Chevrolet Suburban that they're turning into a high-efficiency, low emissions vehicle that runs partly

going to buy them whether they're clean or efficient. So, Conley figures it makes more sense to improve a half-ton pickup than a subcompact.

With a hybrid, power comes from either a diesel engine or batteries, or both.

A commuter stuck in traffic can switch to electric mode and inch along instead of wasting fuel. The batteries are also useful if there is an engine failure. Instead of calling a tow truck, "You could still limp along to the garage," says professor Nigel Clark.

Although the Suburban has a manual override switch, it's being designed to automatically balance power.

"The whole idea is you don't



Burtele's
Information Service

300 .X26C. 149 XI.... ZA

WVU students design SUV of the future

■ Hybrid electric vehicle runs partly on battery, partly on diesel

By Vicki Smith

ASSOCIATED PRESS WRITER

MORGANTOWN — Ten years from now, Jason Conley says, "You won't be able to throw a rock without hitting one."

Doug Fig, clearly confident, nods in agreement. "I like the idea of saying, 'I built one before they were on the road.'"

Their shiny silver Chevy Suburban looks like millions of others guzzling gas at 13 miles per gallon.

Except for the battery box underneath and the transfer case on the floor.

This is the SUV of the future — a hybrid electric vehicle that runs partly on battery, partly on diesel. The batteries recharge by braking and rolling downhill.

Fig, a senior from Jackson, N.J., and Conley, a graduate student from Bridgeport, are the leaders of West Virginia University's Future Truck team, a group of nearly two dozen mechanical engineering students devoted to designing a cleaner, leaner SUV.

They will compete June 4-13 in Detroit at Future Truck, a contest designed by the U.S. Department of Energy and General Motors Corp.

In the first phase of the two-year competition last summer, WVU tied the University of Maryland for first place and brought home awards totaling \$10,000. The money went back into the vehicle for this year's competition, in which the teams refine their designs for optimal performance.

Vehicles are rated overall and in 13 cate-

gories, including emissions, fuel economy, use of materials, consumer acceptability, acceleration, handling and towing performance.

The goal of Future Truck is to design a hybrid electric vehicle, or HEV, that uses less fuel and belches fewer fumes than a traditional SUV.

The HEV is closer to production than people realize: Ford plans to roll out a line of hybrid Escapes that get 40 mpg in 2003, followed by hybrid Explorers in 2004. GM is also working on a hybrid SUV for 2004 called the Paradigm.

Conley says the problem is that efforts to design a greener vehicle have focused on the type of vehicles few buyers want.

Light trucks account for nearly half the market, so Conley figures it makes more sense to improve a half-ton pickup than a subcompact.

With a hybrid, power comes from either a diesel engine or batteries, or both.

Although the Suburban has a manual override switch, it's being designed to automatically balance power.

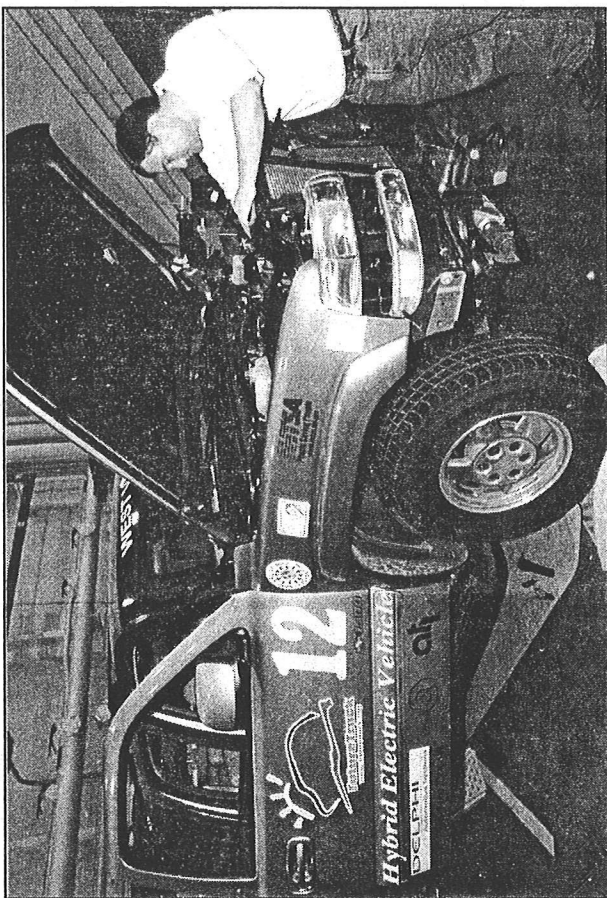
"The whole idea is you don't want to confuse people," Fig says. "You don't want to introduce people to a whole new concept. It should be foot on gas means go, foot on brake means stop."

Many buyers still have misconceptions about diesels that must be overcome.

"HEVs can be high performance, fuel efficient and still offer everything the consumer wants," Conley says.

Since last summer, the engineers have replaced their 6-cylinder engine with a donated, state-of-the-art 4-cylinder from Detroit Diesel, shedding about 300 pounds.

The smaller engine produces as much



AP photo

GREEN MACHINE: Jason Conley, a West Virginia University engineering student, works on a Chevy Suburban that runs partly on diesel and partly on battery power. The SUV is designed to

power and torque as a larger one so the Suburban doesn't lag on an uphill climb.

The constant output of the electrical motor eliminates the lag time in acceleration so it reaches speed faster than a stock V-

8. "It's very fast off the mark," Clark says. And it's not just a feeling: Last year, the

recharge the batteries automatically with braking or going downhill, so it never needs to be plugged in. The diesel engine is a 4-cylinder, but it has great horsepower and torque.

WVU crew pulled a 7,000-pound trailer over a 5 percent grade.

Manufacturers say hybrids like the new Escape will cost about \$3,000 more than their gas-powered counterparts. Supporters say the vehicles will pay for themselves in the long run with lower fuel bills and — they hope — tax incentives.

Burrelle's
INFORMATION SERVICES79
.XZWC.

23 XX...

SPORT UTILITY VEHICLES

Improving mileage takes center stage for automakers

NEWSDAY 25 JV

WASHINGTON —

At first glance, the row of Chevy Suburbans parked near the U.S. Capitol recently looked like race-car wannabes, brightly colored and plastered with sponsor decals.

But the vehicles had been modified by clever student engineers from 15 colleges for a competition of a different sort, an effort to design a fuel-efficient, low-polluting "green" sport utility vehicle that would still win the hearts of consumers.

The teams in the FutureTruck 2001 contest, including the overall winner from the University of California, Davis, used hybrid electric design, an approach already being used for the Toyota Prius and Honda Insight, commercially available passenger cars.

A team from the University of Wisconsin at Madison took first place for best on-road fuel efficiency, squeezing the equivalent of 28 miles per gallon of gasoline out of their diesel-electric hybrid.

That is about 60 percent better than the standard Suburban's 15 mpg average.

According to organizers of the FutureTruck competition and other specialists, the technology is at hand to give gas-guzzling SUVs, vans and light trucks — which account for nearly half of U.S. sales — better mileage and cleaner emissions.

Consumers who want to drive fuel-efficient vehicles will not have to abandon their SUVs in favor of compact sedans, they said.

But there is a vigorous political debate on whether Uncle Sam should do more to prod automakers to improve the mileage of SUVs, which currently are subject to less stringent fuel economy standards than passenger cars.

For the first time in years, there may be legislative movement on the fuel economy front. Some Republicans in Congress have said they are open to reasonable increases in the standards and back bills that would require SUVs to meet the higher fuel economy standard for cars.

It is a debate Congress has had just about every year since President Ford signed a law in 1975 mandating "corporate average fuel economy," or CAFE, standards, for new cars.

The current standards require each automaker to produce a fleet of passenger cars with an average fuel economy of 27.5 miles per gallon. But the standard for light trucks, minivans and SUVs is only 20.7 miles per gallon.

With consumers upset at high gas prices and critics arguing that President Bush's energy plan puts too much emphasis on production (even as the president touted conservation during a visit last week to the Energy Department), proponents of tougher fuel economy standards are pressing their case.

"Fuel economy standards have not kept pace with technology improvements," said Michelle Robinson, a senior policy adviser for the Union of Concerned Scientists.

For the first time in years, there may be legislative movement on the fuel economy front. Some Republicans in Congress have said they are open to reasonable increases in the standards and back bills that would require SUVs to meet the higher fuel economy standard for cars.

Last week, the House passed a transportation funding bill that — for the first time since the Republicans took over the House

in 1995 — does not prohibit government regulators from raising the miles per gallon standard for SUVs.

The Bush administration is reviewing fuel economy standards, including those for light trucks and SUVs. It is awaiting a National Academy of Sciences

report, expected by the end of this month, on the effectiveness of the existing CAFE standards.

Still, the prospects for closing the so-called SUV loophole remain unclear. The auto industry continues to oppose any change in fuel economy standards, whether through regulatory action or legislative mandate.

Instead, industry officials back voluntary technology improvements and use of federal tax incentives to encourage consumers to buy advanced, fuel-efficient vehicles such as electric hybrids.

Ford has announced plans to make a hybrid electric version of its Escape SUV for the 2003 model year that could get up to 40 miles per gallon.

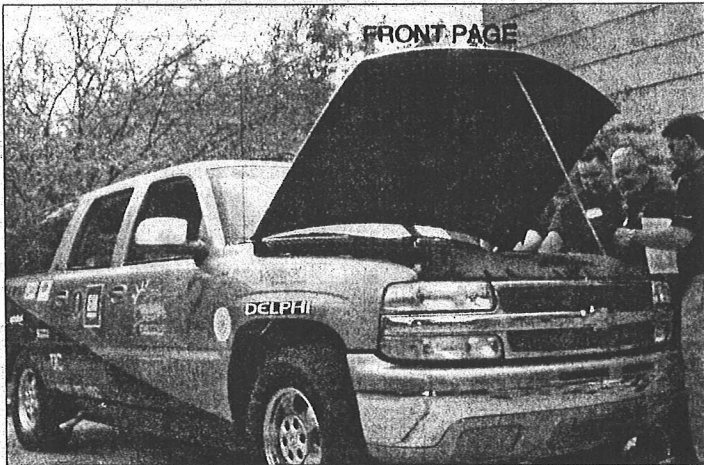
GM says it will build a hybrid version of a full-sized pickup truck by 2004, and DaimlerChrysler says it will offer a hybrid version of its Dodge Durango for 2003.

Critics say the industry can do more.

The nonprofit Union of Concerned Scientists, in a recent report, said the nation's combined fleet of passenger cars, light trucks and sports utility vehicles could average 40 miles per gallon by 2012 using such techniques as weight-saving aluminum body parts, variable valve engines, tires with lower rolling resistance and improved transmissions.

**Burrelle's**
INFORMATION SERVICES157 CD
.XZWD. 20 SC..C.

UCD student team wins first place in national engineering competition



KRYSTEN KELLUM/AGGIE PHOTOS

The winning SUV guarantees an annual savings of \$7,000 in gasoline.

By JULISSA MCKINNON
AGGIE NEWS WRITER

A team of UC Davis engineering students took first place at the national 2001 Future Truck Competition in Washington D.C. recently for its revamped, fuel-efficient version of a Chevrolet Suburban called Sequoia.

The UCD group competed with 14 other university teams in the General Motors-sponsored competition whose stated mission is to "challenge teams of students to...re-engineer a conventional, full-size Chevrolet Suburban into a low-emissions, high-efficiency vehicle without sacrificing the performance, utility, safety, and affordability customers want."

The UCD remake of the stock Suburban features an electric motor and a gas engine. This kind of vehicle is also known as a battery-dominant hybrid since its batteries can be plugged into an electricity source and recharged overnight. Similar hybrid vehicles currently on the market include the Toyota Prius and Honda Insight.

According to Future Truck team member and mechanical engineering student Peter Hutchison, the all-volunteer UCD group improved the gas mileage of a standard Suburban from 15 to 27 miles per gallon. The Sequoia features a 60 to 70 mile all-electric range and, when running in hybrid



Jason Parks shows off the technology of the energy-efficient Suburban.

mode, can travel up to 450 miles before refueling.

After taking fourth place overall in last year's competition, Hutchison said the team modified their 2000 Suburban design to be more compact and efficient.

"We made it more aerodynamic by adding on a boat tail, similar to the

See TEAM, back page A

Team

Cont. from front page

A spoiler on a Porsche Boxster," Hutchison said. "It folds out Batman style."

He said this single improvement upped the gas mileage by 2 to 3 miles per gallon. Hutchison added that the UCD vehicle received several compliments at the competition for its spaciousness, which he said might have earned it a high score in the consumer acceptability category.

Several celebrities made an appearance at the June 13 awards ceremony, including former Department of Energy Secretary Bill Richardson and Bill Nye "The Science Guy," who served as a judge and keynote speaker.

Hutchison noted that several companies also come to the competition events scouting for future employees.

"(The competition) definitely opens a lot of doors because industry has limited experience with these kinds of research vehicles," he said. "Business cards are flying around."

Hutchison and other team members estimated the cost of all project materials to be at least \$500,000.

According to students, the

money primarily comes from donations and sponsorship contracts with companies like General Motors and the Sacramento Municipal Utilities District. Besides funding, Hutchison said "time is of the essence" throughout the vehicle building process.

"We usually have about five months from the time we receive the vehicle to dismantle and then reassemble it after we've gutted it," said Hutchison.

According to team member and mechanical engineering student Greg Loomis, most volunteers contribute to various aspects of the project rather than concentrating on just one part.

"Very few of us are purists in just mechanical engineering or just computer science," said Loomis. "Most of us bring skills from a few different areas."

Tom Bradley, a mechanical and aeronautical engineering graduate student who has stuck with the vehicle design team for three years, said the success of the project springs not from funding but from the dedication of team members.

Bradley added that three cots in the laboratory give testimony to the fact that some days students do not leave the lab.

"We have the 30 to 40 smartest, most hard working, dedicated people in the College (of Engineering)," he said.



Burrelle's
INFORMATION SERVICES

365
.XZ9.g

34

XX04..

DS

Worthington grads' compete in truck design

By COURT SQUIRES

Worthington News Reporter

Two, Worthington men are trucking their ways toward the future as designers of more fuel efficient, lower emissions vehicles.

Future Truck is a competition created by General Motors and the U.S. Department of Energy, which encourages teams of college students to devise the truck of the future, said Future Truck publicist Paul Zangari.

The competition started in Milford, Mich. and ended in Washington, D.C.

This year's competition pitted 15 college teams against one another, to create the "greener sport utility of the future," according to Future Truck representatives.

Zangari said every team faced the same challenge, but chose different paths to get to solutions.

Cornell University competed with the help of Worthington native Kevin Chow, while Ohio State University had Worthington resident Matt Keener on its team.

Chow said he just graduated from Cornell and will be at-

tending Stanford Graduate School for mechanical engineering.

In fact, Chow said he never really thought about engineering vehicles until he stumbled upon the Hybrid Electronic Vehicle Club, in college.

"When I went to Cornell, I intended to go into aerospace engineering, but I'm really interested in cars, now," Chow said.

An interest in cars is a necessity to participate in this competition, said Future Truck representatives.

The student teams worked with \$10,000 donated by General Motors, advanced technology engineers from the auto industry and government researchers to create the Future Truck, Zangari said.

The Future Truck, a donated Chevrolet Suburban sport utility vehicle, was supposed to exude the image of a cleaner, higher-mileage SUV, Future Truck representatives said.

Every team used different ideas to produce their Future Truck.

"Our strong point was integrating all of our different systems together to make a truck

that performed very well," Chow said.

The Future Truck must perform well, but is must also showcase several, different characteristics, mandated by the rules of the competition, Future Truck representatives said.

"Increasing fuel efficiency and reducing green house gas emissions, while maintaining vehicle towing capability and customer performance expectations is a serious engineering challenge," said Mark Maher, director of powertrain systems at General Motors.

Using hybrid power - more than one energy source -

teams were to showcase their knowledge of what makes an efficient and environmentally friendly vehicle.

Future Truck representatives said it is hard to narrow it down to one team, but the decision rested in favor of the University of California, Davis.

But Chow and Keener didn't go home empty-handed.

Both had experiences and made acquaintances that could propel them into the next level of engineering and perhaps new ways of thinking could open more doors down the road, Zangari said.

CLARKSBURG TELEGRAM

CLARKSBURG, WV
FRIDAY 13,000
JUN 15 2001



103
xzed.

164

XX...

EM

WVU engineering team sixth in truck competition

25 JV
MORGANTOWN (AP) —
An engineering team from
West Virginia University took
sixth place in this year's
Future Truck competition.

The competition's goal is to
make a cleaner running, more
fuel efficient sport utility vehi-
cle.

Last year, WVU shared
overall first-place honors with
the University of Maryland for
modifications to a Chevy Sub-
urban.

During this year's competi-
tion, the WVU team modified
its Suburban with a prototype
diesel engine, a 100-horsepow-
er electric motor and a manu-
al transmission.

The vehicle tied for first in
this year's trailer-towing com-
petition.

"I am satisfied with where
we finished," said team advis-
er Jason Conley, a graduate
mechanical engineering stu-
dent from Bridgeport. "We fin-
ished with a running vehicle
and were able to enter and
complete all events."

The 15 college teams com-
peted last week and were
judged on the vehicles' per-
formance, emissions, fuel
economy, acceleration and
safety.

The University of Califor-
nia-Davis won overall first-
place honors.

Future Truck is sponsored
by General Motors and the
U.S. Department of Energy.

SACRAMENTO BUSINESS JOURNAL

SACRAMENTO, CA
WEEKLY 16,500
JUN 29 2001



Burrelle's
INFORMATION SERVICES
-9475 x GH
exzw.g 20 bc...n

HONORS & ACHIEVEMENTS

Shella Ross was selected as **Businessperson of the Year** by the Carmichael Chamber of Commerce. She has successfully operated her business, Carmichael Auto Service and Towing Inc., since 1987. The award is based on the recipient's contribution to her business success, involvement in the community and leadership and involvement in the chamber.

The **River City Small Business Consortium**, a division of the Sacramento Metropolitan Chamber of Commerce, honored eight businesses and individuals. **Mellow Me Out** received the **Special Achievement Award**; **Larry Cline** of SAY-Golf received the **Community Service Businessperson of the Year Award**; **Zang Her** of Fairytale Town was honored as **Small-Business Employee of the Year**; **Lilliput Children's Service** received the **Small-Business Nonprofit of the Year Award**; the **Small Business Resource Center** was awarded the **Small-Business Supporter of the Year Award**; **Absolutely Accountables** received the **Home-Based Business of the Year Award**; **Equal Access** was named **Small Business of the Year for Service**; and **Techline Studio** was named **Small Business of the Year for Retail**. **Elena Negrette** of Equal Access won the overall **Entrepreneur of the Year Award**.

Pasco Scientific of Roseville received the **President's E-Award** for exporting excellence. This award is presented to a small number of companies around the United States each year, to honor them for their contributions to exports. Last year, 21 companies received the award nationwide. This year, Pasco was the only local company to be honored. The award is given by the president of the United States through the Secretary of Commerce.

Papa John's Pizza in Folsom awarded **Megan Sheplar**, a senior at Folsom High School, with the **2001 Papa John's Scholar** award and a \$1,000 scholarship to the college or university of her choice. Applicants are evaluated on a wide variety of criteria including community involvement, creative ability, academic achievement, obstacles overcome, leadership, character, athletic achievement, objectives achieved and life goals and interests.

The Certified Fund Raising Executive Professional Certification Board awarded **Candace Taylor** the professional designation of **Certified Fund Raising Executive**. She joins 4,500 professionals around the world who hold the designation. Taylor, a development director at FamiliesFirst Inc. in Davis, received the credential after she met a series of standards set by the CFRE board of directors, which included tenure in the profession, education, professional achievements and a commitment to service not-for-profit organizations.

Engineering students from the **University of California Davis** won overall **first place** in the national **FutureTruck competition** for building a large vehicle that meets ultra-low emissions standards. The students modified a Chevrolet Suburban to increase fuel efficiency and lower tailpipe emissions, while preserving the performance in a big sport utility vehicle.

J. Laurence Mintler of Sacramento was inducted into the membership of the **Fellows of American Institute of Certified Planners**. He was chosen as a member of the College of Fellows for his achievements in the field of urban and rural planning. Election to the fellowship may be granted to planners who have been longtime members of AICP and to those who have demonstrated excellence in professional practice, teaching and mentoring, research, community service and leadership and communication.

Three Sacramento High School students received the **Voula Steinberg Memorial Award** for outstanding mathematic achievement as well \$100 each. The recipients were: **Stephanie Gilli**, a junior, **Rodrigo Rodriguez Jr.**, a freshman, and **Marqula Anderson**, a freshman. The students were selected based on classroom performance, test scores, initiative and the motivation to excel.



Burrelle's
INFORMATION SERVICES

70
.xzedi

63

CJ
sc..c.

Best Teamwork awarded

Engineering students, faculty travel to GM's FutureTruck Design Competition in Michigan

25YY
KEVIN SZATHMARY
Academics/Student Life Editor

For University of Tennessee students who are beginning to find that paying \$1.59 a gallon at the gas station is threatening to send them straight into bankruptcy, solace can be found in the fact that a solution may be no further away than UT's School of Engineering.

A team of engineering students and faculty represented the school in the FutureTruck Design Competition, held June 4-13 at the General Motors Milford Proving Grounds in Milford, Mich.

For the contest, in which UT placed eighth out of 15 universities, each team received a brand new Chevrolet Suburban and \$10,000. The team then had to rebuild the vehicle with improved fuel efficiency and better environmental standards.

For the past two years, 25 to 30 UT students worked on the project. Then earlier this month, Drs. Jeff Hodgson and Jeff Freeman, co-advisors for the team, took a contingent of approximately a dozen team members to the competition.

Hodgson, who won the best faculty advisor award, said that this year's team was not without adversity.

"We had some problems early on," he said. "We had to replace the whole drive train, but the judges were impressed at how we did that, so they gave us the 'Best Teamwork' award."

In addition, UT's entry also received recognition for best off-road performance and placed second for the computer modeling segment.

Despite any of the team's difficulties, Hodgson said he thinks the team members benefited greatly from entering the competition.

"I think it's an outstanding experience for the students to interact with students from other universities," he said.

SANDUSKY REGISTER

SANDUSKY, OH
SUNDAY 27, 301
JUN 3 2001



Burrelle's
INFORMATION SERVICES

2930
.XZEC.

13

XX... ZT

OSU students squeeze better gas mileage from hybrid SUV

By The Associated Press

COLUMBUS

A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain. This improvement came with no loss of power, acceleration or passenger comfort — and despite an overall vehicle weight gain of 700 pounds.

25 YV The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle — the Buckeyebrid.

"I think the hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the Future Truck program, a competition among 15 engineering schools nationwide sponsored by General Motors and Ford.

DAILY RECORD

WOOSTER, OH
SUNDAY 25, 200
JUN 3 2001



Burrelle's
INFORMATION SERVICES

364
txzec.

13

X ZN
bc....

Hybrid SUV gets better gas mileage

^{25xV}
COLUMBUS (AP) — A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain. This improvement came with no loss of power, acceleration or passenger comfort — and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle — the Buckeyebrid.

"I think the hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools nationwide sponsored by General Motors and Ford. Despite the improvement in mileage, the engineers weren't able to reach the FutureTruck program's goal of doubling fuel economy.

About 20 student engineers have participated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000 worth of contributed parts.

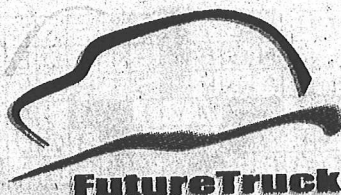
DOMINION POST

MORGANTOWN, WV
FRIDAY 21,500
JUN 15 2001



54
xzed

ZA



WVU not idled by lower finish in FutureTruck

Says 'other teams were
running better this year'

BY JIM BISSETT

The Dominion Post

25 YV
Last year, the WVU team left the competition in the Arizona dust to win the overall championship in the national FutureTruck competition—a contest to create a sport utility vehicle that is leaner and greener than anything else on the road.

The 2001 edition of WVU's FutureTruck team may have stalled in its attempt to drive home with the big prize two years running, but team member Jason Conley said this year's sixth-place finish in Michigan was still respectable.

Conley, a graduate mechanical engineering student from Bridgeport, is one of the veterans of the six-member team.

He was on last year's national championship team and has taken part in FutureTruck events since his freshman year in school.

"This is a pretty big undertaking," Conley said. "We feel pretty good about

**'I think the biggest
thing we learned this
year was time-man-
agement. We didn't
have a lot of time to
turn things around.'**

Jason Conley
mechanical engineering
student

it. We learned a lot. Sixth place doesn't sound as good as first, but the other teams were running better this year."

The University of California at Davis ran best of all, taking the overall championship in the seven-day event, held this year at the General Motors Proving Ground in Milford, Mich. GM and the U.S. Department of Energy annually sponsor the competition.

Awards were announced Wednesday night in ceremonies in Washington, D.C.

Teams this year worked to retool a stock 2000 Chevy Suburban, one that rolls off the line in Detroit with 13 miles a gallon in the city and 17 on the highway, into a more fuel-efficient vehicle using a variety of "hybrid" technologies.

WVU's entry was done out with a 2.5-liter "Detroit Diesel" prototype, a 100-horsepower electric motor and manual transmission that upped the mpg to 24 in the city and 29 on the highway.

Conley said such high-tech tweaking will eventually lead to bottom-line savings at the gas pump, an engineering move made all the more critical as gas prices continue to soar with sale of SUVs.

FutureTruck judges evaluate the vehicles for greenhouse gas impact, fuel economy, exhaust emissions, off-road performance and overall safety. WVU placed first in one category, tying with the University of Maryland for best trailer towing performance.

The WVU team, Conley said, is still cruising the learning curve.

"It's tough getting these vehicles ready," he said. "I think the biggest thing we learned this year was time-management. We didn't have a lot of time to turn things around."

**DIAMONDBACK (UNIVERSITY
OF MARYLAND)**

COLLEGE PARK, MD
FRIDAY 21,000
JUL 6 2001



Burrelles
INFORMATION SERVICES

30
x2ed.

8

sc..c.

CL

**ferps place in Top 3 for
FutureTruck Competition**

For the second year in a row, a team of engineering students from the campus has placed among the top three in the FutureTruck competition, sponsored by the Department of Energy and its 2000-2001 partner General Motors. The team finished third this year after finishing tied for first last year.

"We worked extremely hard prior to and during the competition and really thought we could win it again," said senior and team leader Matt Pettersen.

"Still we finished third overall among a tough field and we especially are proud that our [Chevy Suburban] had the lowest regulated emissions and was the only one to achieve the most stringent

U.S. emissions bracket known as SULEV [super ultra low emission vehicle]."

Faculty adviser David Holloway, who also lauded the regulated emissions performance of Proteus, the team's SUV, noted that currently in the United States there are only three commercially available vehicles that meet the SULEV standard and all three are small specially engineered sedans by Japanese automakers.

In the overall category, the campus's hybrid ethanol/electric powered Chevy Suburban beat entries from 12 other top engineering schools including Georgia Tech, Penn State, George Washington University and Virginia Tech, while finishing just behind the first and second place finishers — University of California, Davis and University of Wisconsin, Madison respectively.

The FutureTruck teams competed in more than a dozen events. They were evaluated on safety, performance, towing ability, greenhouse gas emissions, fuel economy, consumer acceptability and other areas.

A web cast of the awards ceremony, competition photos, and a complete list of all awards are available on the web at

<http://futuretruck.home.att.net>.

This was the second year for the competition, which challenges competing schools to re-invent the current gas guzzling sport utility vehicle (SUV) as a fuel efficient, non-polluting truck of the future.



Burrelle's
INFORMATION SERVICES

96 .xzwdo 18 XX... UL

SUVs and good mileage too?

Students pushing gas-electrical hybrids as vehicles of the future

NEWSDAY

WASHINGTON — At first glance, the row of Chevy Suburbans parked near the U.S. Capitol recently looked like race-car wannabes, brightly colored and plastered with sponsor decals.

But the vehicles had been modified by clever student engineers from 15 colleges for a competition of a different sort, an effort to design a fuel-efficient, low-polluting "green" sport utility vehicle that would still win the hearts of consumers.

The teams in the Future-Truck 2001 contest, including the overall winner from the University of California, Davis, used hybrid electric design, an

approach already being used for the Toyota Prius and Honda Insight, commercially available passenger cars.

A team from the University of Wisconsin at Madison took first place for best on-road fuel efficiency, squeezing the equivalent of 28 miles per gallon of gasoline out of their diesel-electric hybrid. That is about 60 percent better than the standard Suburban's 15 mpg average.

According to organizers of the FutureTruck competition and other specialists, the technology is at hand to give gas-guzzling SUVs, vans and light trucks — which account for nearly half of U.S. sales — better mileage and cleaner

emissions.

Consumers who want to drive fuel-efficient vehicles will not have to abandon their SUVs in favor of compact sedans, they said. But there is a vigorous political debate on whether Uncle Sam should do more to prod automakers to improve the mileage of SUVs, which currently are subject to less stringent fuel economy standards than passenger cars.

It is a debate Congress has had just about every year since President Ford signed a law in 1975 mandating "corporate average fuel economy," or CAFE, standards, for new cars. The current standards require each automaker to produce a fleet of passenger cars with an

average fuel economy of 27.5 miles per gallon. But the standard for light trucks, minivans and SUVs is only 20.7 miles per gallon.

With consumers upset at high gas prices and critics arguing that President Bush's energy plan puts too much emphasis on production (even as the president touted conservation during a visit last week to the Energy Department), proponents of tougher fuel economy standards are pressing their case.

"Fuel economy standards have not kept pace with technology improvements," said Michelle Robinson, a senior policy adviser for the Union of Concerned Scientists.

NORTHBROOK STAR

WILMETTE, IL
WEEKLY 43,548
JUN 7 2001



Burrelle's
INFORMATION SERVICES

551

.XZ0.b

3

XX37..

XD

WINNETKA TALK

WILMETTE, IL
WEEKLY 43,548
JUN 7 2001



Burrelle's
INFORMATION SERVICES

744
.XZ0.b

3

XX37..

XD

DEERFIELD REVIEW

WILMETTE, IL
WEEKLY 42,338
JUN 7 2001



Burrelle's
INFORMATION SERVICES

250
.XZ0.b

3

XX38..

XK

GLENVIEW ANNOUNCEMENTS

WILMETTE, IL
WEEKLY 43,548
JUN 7 2001



Burrelle's
INFORMATION SERVICES

735

3

XX37..

XD

Students squeeze better gas mileage from SUV

A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain.

This improvement came with no loss of power, acceleration or passenger comfort — and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle — the Buckeyebrid.

"I think hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools nationwide

sponsored by General Motors and Ford.

Despite the improvement in mileage, the engineers weren't able to reach the FutureTruck program's goal of doubling fuel

'I think hybrid-electric vehicle technology is solid for the next 10 to 15 years'

economy.

About 20 student engineers have participated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000 worth of contributed parts.

Guezennec said more basic changes must be made in SUVs

to further improve gas mileage. One such change would be a body made of a lighter metal, such as aluminum. In addition, streamlining would be necessary to reduce wind resistance.

"But otherwise, with a vehicle of that size, I don't think we can get 40 (miles per gallon)," he said.

As of 1999, there were about 35 million SUVs on U.S. roads, according to the Insurance Institute for Highway Safety. Another 3.2 million SUVs were added in 2000, said R.L. Polk & Co., which tracks automotive data.

Dan Becker, director of global warming at the Sierra Club, said 40 miles per gallon should be the target fuel economy set for SUVs.

Currently, the industry is required to achieve an average fuel economy of 20.7 mpg for its entire fleet of SUVs and light trucks.

Source: AP

LIBERTYVILLE REVIEW

MUNDELEIN, IL
WEEKLY 42,338
JUN 7 2001



Burrelle's
INFORMATION SERVICES

458

.XZ0.b

3

XX38..

XK

GURNEE REVIEW

GURNEE, IL
WEEKLY 42,338
JUN 7 2001



Burrelle's
INFORMATION SERVICES

1099

XK

EVANSTON REVIEW

WILMETTE, IL
WEEKLY 43,548
JUN 7 2001



Burrelle's
INFORMATION SERVICES

298
.XZ0.b

3

XX37..

XD

LAKE VILLA & LINDENHURST REVIEW

LAKE VILLA, IL
WEEKLY 42,338
JUN 7 2001



Burrelle's
INFORMATION SERVICES

1030
.XZ0.b

3

XX38..

XK

DAILY CHIEF-UNION

UPPER SANDUSKY, OH

MONDAY 4,400

JUN 4 2001

**Burrelle's**
INFORMATION SERVICES326
.XZB..

66

XX....

ZS

533
.XZB..

3

XX38..

XK

1027

GRAYSLAKE REVIEW

GRAYSLAKE, IL

WEEKLY 42,338

JUN 7 2001

**Burrelle's**
INFORMATION SERVICES

2

XX38..

XK

MUNDELEIN REVIEW

WILMETTE, IL

WEEKLY 42,338

JUN 7 2001

**Burrelle's**
INFORMATION SERVICES

3

XX38..

XK

1027

Students squeeze better gas mileage from SUV

25XV
A group of Ohio State University students says it has found a way to get 28 miles per gallon of gas out of a sport utility vehicle at highway speeds.

The secret involves replacing the traditional gasoline engine on a Chevrolet Suburban, which normally gets 18 miles to the gallon, with a hybrid diesel-electric powertrain.

This improvement came with no loss of power, acceleration or passenger comfort — and despite an overall vehicle weight gain of 700 pounds.

The students' enthusiasm for the hybrid is reflected in the nickname they gave the test vehicle — the Buckeyebrid.

"I think hybrid-electric vehicle technology is solid for the next 10 to 15 years," said Yann Guezennec, an associate professor of mechanical engineering at the university. "I think we'll all be driving vehicles of this sort, whether it's an SUV or something else."

The hybrid was Ohio State's entry in the FutureTruck program, a competition among 15 engineering schools nationwide

sponsored by General Motors and Ford.

Despite the improvement in mileage, the engineers weren't able to reach the FutureTruck program's goal of doubling fuel

*'I think
hybrid-electric
vehicle
technology is
solid for the
next 10 to 15
years'*

economy.

About 20 student engineers have participated each year in the program, which operates on a \$20,000-a-year budget with about \$250,000 worth of contributed parts.

Guezennec said more basic changes must be made in SUVs

to further improve gas mileage. One such change would be a body made of a lighter metal, such as aluminum. In addition, streamlining would be necessary to reduce wind resistance.

"But otherwise, with a vehicle of that size, I don't think we can get 40 (miles per gallon)," he said.

As of 1999, there were about 35 million SUVs on U.S. roads, according to the Insurance Institute for Highway Safety. Another 3.2 million SUVs were added in 2000, said R.L. Polk & Co., which tracks automotive data.

Dan Becker, director of global warming at the Sierra Club, said 40 miles per gallon should be the target fuel economy set for SUVs.

Currently, the industry is required to achieve an average fuel economy of 20.7 mpg for its entire fleet of SUVs and light trucks.

Source: AP

**LAKE FORESTER LAKE
BLUFF**

WILMETTE, IL

WEEKLY 42,338

JUN 7 2001

**Burrelle's**
INFORMATION SERVICES

XL

HIGHLAND PARK NEWS

WILMETTE, IL

WEEKLY 7,735

JUN 7 2001

**Burrelle's**
INFORMATION SERVICES

374

VY3R

XK

GLENCOE NEWS

WILMETTE, IL

WEEKLY 2,288

JUN 7 2001

**Burrelle's**
INFORMATION SERVICES

734

3

XX37..

XD



Burrelles

INFORMATION SERVICES

103
2200 61 XX NO

West Virginia engineering students designing SUV of the future

By THE ASSOCIATED PRESS

MORGANTOWN, W.Va. — Ten years from now, Jason Conley says, "You won't be able to throw a rock without hitting one."

Doug Fig, clearly confident, nods in agreement. "I like the idea of saying, 'I built one before they were on the road.'"

Their shiny silver Chevy Suburban looks like millions of others guzzling gas at 13 miles per gallon.

Except for the battery box underneath and the transfer case on the floor.

This is the SUV of the future — a hybrid electric vehicle that runs partly on battery, partly on diesel.

Unlike electric cars, a hybrid doesn't have to be plugged in at night. The batteries recharge by braking and rolling downhill.

Fig, a senior from Jackson, N.J., and Conley, a graduate student from Bridgeport, are the leaders of West Virginia University's Future Truck team, a group of nearly two dozen mechanical engineering students devoted to designing a cleaner, leaner SUV.

They compete June 4-13 in Detroit against 14 other universities at Future Truck, a contest designed by the U.S. Department of Energy and General Motors Corp.

In the first phase of the two-year competition last summer, WVU tied the University of Maryland for first place and brought home awards totaling \$10,000. The money went back into the vehicle for this year's competition, in which the teams refine their designs for optimal performance.

Vehicles are rated overall and in 13 categories, including emissions, fuel economy, use of materials, consumer acceptability, acceleration, handling and towing performance.

The goal of Future Truck is to design a hybrid electric vehicle, or HEV, that uses less fuel and belches fewer fumes than a traditional SUV.



AP PHOTOS

Above: Jason Conley, a West Virginia University engineering student, works on a Chevy Suburban that runs partly on diesel and partly on battery power. The SUV is designed to recharge the batteries automatically with braking or going downhill, so it never needs to be plugged in. The diesel engine is a four-cylinder, but it has great horsepower and torque. **Below left:** Sam Taylor, a graduate student at the University of West Virginia, works on a battery box, an electrical energy storage system supplying close to 350 volts. Last year, the students won the first part of a two-year competition called Future Trucks. They are working to make the vehicle lighter with better mileage.

The HEV is closer to production than people realize: Ford plans to roll out a line of hybrid Escapes that get 40 mpg in 2003, followed by hybrid Explorers in 2004. GM is also working on a hybrid SUV for 2004 called the Paradigm.

So far, the only hybrids on the market are two compact cars, the Toyota Prius and Honda Insight.

Conley says the problem is that efforts to design a greener vehicle have focused on the type of vehicles few buyers want.

"People are not aspiring to buy a Geo Metro," he says.

"Making an economy car with great gas mileage is great, but people aren't going to buy it."

Light trucks account for nearly half the market, and people are going to buy them whether they're clean or efficient.

So, Conley figures it makes more sense to improve a half-ton pickup than a subcompact.

With a hybrid, power comes from either a diesel engine or batteries, or both.

A commuter stuck in traffic can switch to electric mode and inch along instead of wasting fuel.

The batteries are also useful if there is an engine failure.

Instead of calling a tow truck, "You could still limp along to the garage," says professor Nigel Clark.

Although the Suburban has a manual override switch, it's being designed to automatically balance power.

"The whole idea is you don't want to confuse people," Fig says.

"You don't want to introduce people to a whole new concept. It should be foot on gas means go, foot on brake means stop."

Many buyers still have misconceptions about diesels that must be overcome.

In last year's tests, a particulate filter on the WVU Suburban captured so much carbon that levels from the tailpipe were unmeasurable.

In other words, there were no black clouds of smoke.

"HEVs can be high performance, fuel efficient and still offer everything the consumer wants," Conley says.

A typical Suburban with a stock V-8 engine gets 13 mpg in the city, and 17 on the highway.

WVU's version got 24 and 29 mpg, respectively, last year and expects to do better this year.

Since last summer, the engineers have replaced their 6-cylinder engine with a donated, state-of-the-art 4-cylinder from Detroit Diesel, shedding about 300 pounds.

The smaller engine produces as much power and torque as a larger one.

The Suburban doesn't lose steam on a long uphill climb.

The constant output of the electrical motor eliminates the lag time in acceleration so it reaches speed faster than a stock V-8.

"It's very fast off the mark," Clark says. "It feels powerful."

And it's not just a feeling: Last year, the WVU crew pulled a 7,000-pound trailer over a 5 percent grade.

Manufacturers say hybrids like the new Escape will cost about \$3,000 more than their gas-powered counterparts.

Supporters say the vehicles will pay for themselves in the long run with lower fuel bills and — they hope — tax incentives.

President Bush has proposed tax credits to encourage the development and sale of hybrid vehicles, and several automakers and environmental groups support the idea.

The Society of Automotive Engineers is already beginning to develop standards for hybrids, looking at issues such as emergency shut-off systems in crashes and how to prevent acid loss from the batteries in a rollover.

Those regulations could take years to develop, but Clark says one thing could bring hybrids to showrooms sooner: Better batteries.

The WVU Suburban runs at more than 300 volts with a 450-pound battery pack where the spare tire used to be.

Lead acid batteries are heavy but cheap. Unfortunately, battery technology hasn't advanced as quickly as the engineers would like, Clark says.

"If the miracle battery arrives," he says, "hybrids will unquestionably take over the market."

• On the Net:
Future Truck: <http://www.futuretruck.org/>
Office of Transportation Technologies:
<http://www.ott.doe.gov/hev/>
Partnership for a New Generation of Vehicles:
<http://www.ta.doc.gov/pngv/introduction/intro.htm>



Burrelle's
INFORMATION SERVICES31
.xzed. 74 XX... MP

Cornell grad keeps truckin'

FRONT PAGE

► Susan Mueller part of design competition

Jennifer Miller
Staff Writer

DETROIT – While most college students drive cars, Susan Mueller of Auburn designs them.

Mueller, who graduated from Cornell University in May, is part of her school's team at the "Future Truck" competition in Detroit this week. The contest is sponsored by the U.S. Department of Energy and General Motors Corp.

The competition pits college students from 15 universities in the United States and Canada in attempting to design a more environmentally-friendly sport utility vehicle.

The energy department brainstormed the competition about three years ago and issued a call for proposals to all North American universities. The proposals were reviewed by a panel of government and auto industry professionals and 15 were selected to compete. All of the students participate on a voluntary basis.

Each team started with a Chevrolet Suburban, \$10,000, and the challenge of crafting an SUV with increased fuel efficiency, reduced greenhouse gas emissions, improved powertrain efficiency and better aerodynamics.

Mueller worked as the team's office manager, doing the marketing and contacting sponsors. Although the group started with \$10,000 seed money from General Motors, they had to do a lot of fund raising to complete their design model, according to Mueller's

Please see DESIGN, A5

Susan
Mueller

Design team works on 'Future Truck'

Continued from A1
mother, Ruth.

"Mueller has served as the school's Radar," said competition spokesman Paul Zangari, referring to office clerk Radar O'Reilly, a character from the TV show "Mash."

Mueller, an Auburn High School graduate, majored in operations, research and industrial management at Cornell. She begins work on her master's degree there in the fall.

"I thought this would be just another one of her little projects," Ruth Mueller said. "But, it's been quite intensive."

In the fall of 2000, Susan Mueller started working on the project and devoted about 20 hours each week to her research duties.

Cornell's truck, Red 5, has a "split-parallel" design, Zangari said. The truck uses a hybrid-power model, combining electrical power with

ethanol fuel. The electricity powers the front wheels and the fuel motor powers the rear wheels. The vehicle will have all-wheel-drive capabilities through electronic traction control.

GM job offers?

At this week's competition in Michigan, each team's vehicle will be tested at GM's proving grounds. Prizes will be awarded to the teams for overall accomplishment, greenhouse gas reduction, safety, trailer towing, fuel economy and acceleration. The winning schools will receive cash and equipment prizes.

The project began two years ago and student teams tested their designs at GM's desert proving grounds in Arizona this past summer. At this year's competition, the teams will present the improvements they've made on the trucks and test them again.

"The auto industry has recognized the need for greater efficiency. This gives the industry a chance to look at 15 different models and to look at the upcoming graduates. I wouldn't be surprised if many of these students got job offers as a result of this competition," Zangari said.

Following the competition, teams will travel to energy department headquarters in Washington D.C., for an awards ceremony.

Team presentations on Thursday and at the June 13 awards ceremony will be Webcast live by General Motors. For information, log on to www.futuretruck.org.

For questions or comments about this story, contact Staff Writer Jennifer Miller at 253-5311, Ext. 237.



Burrelle's
INFORMATION SERVICES

70 .xzad1 63 sc..c. CJ

Contest tackles fuel price hikes

Students compete
in FutureTruck
program funded
by General Motors

JAYME TIMS
Staff Writer

25YV FRONT PAGE

Seniors in mechanical engineering are competing in a program that addresses increasing fuel prices and the environmental impacts of General Motors' 2000 model Chevrolet Suburban.

GM donated 15 Suburbans to each of the schools in the United States and Canada participating in the FutureTruck program.

This is the second year of the program, where the UT team came in seventh out of the 15 colleges that participated.

This year participants will meet in June at GM's proving grounds in Milford, Mich., to test improvements in consumer acceptability, safety, greenhouse gas impact, emissions, fuel economy, range, acceleration, towing capacity and off-road performance.

According to Chad Lela, a senior in mechanical engineering and member of UT's FutureTruck team, the team's goal is to sustain the performance of the vehicle while improving fuel economy and reducing harmful emissions.

UT's FutureTruck is one of six trucks in the competition that uses a diesel engine and electric motor. The remaining nine com-



• FILE PHOTO

General Motors donated a 2000 Chevrolet Suburban for the FutureTruck program, where seniors in mechanical engineering will research levels of safety, fuel economy and reducing harmful emissions.

bine a gasoline engine with an electric motor.

Sponsorship money is donated to the students from GM, the U.S. Department of Energy, the Natural Science Foundation, BP Amoco, Goodyear Tire and Rubber Company and the Renewable Fuels Association.

According to program coordinators, the program offers students hands-on, real-world experience with tangible results, as well as offering sponsors access to rising talent.

"Everybody's driving SUVs; it's the direction the sales are going these days," said Bryan

McConkey, senior in mechanical engineering and team member. "We are at the forefront of technology. This (innovations surrounding electric motors) is the next thing that will be produced mainstream, and we are getting our foot in the door of an emerging industry."



Burtele's
INFORMATION SERVICES

13 24dm
84 sc..c.

Aluminum Cow reigns victorious

25YD
UW-Madison
engineers build
better vehicles

By Kjerstin Lang
THE DAILY CARDINAL

Does a hybrid electric and diesel engine vehicle that has ultra-low emissions, superior acceleration and all the conveniences of a Radio Shack store accessible from the passenger seat sound good? Well, this car of the future has been designed, tested and awarded and now sits in the Mechanical Engineering building on campus. It is named the Aluminum Cow and is the result of a competition in engineering among students from universities and colleges in the United States and Canada.

The Future Car Competition, sponsored by the U.S. Dept. of Energy and General Motors, took place from 1996 to 1998, and the College of Engineering made the first-prize-winning Aluminum Cow. The Aluminum Cow is a Ford Taurus constructed with aluminum in the inside instead of steel. The name comes from Wisconsin's well-known dairy industry. Although excited about their victory among 15 other schools, the students working on this future car have moved on to new goals.

With our country moving to the use of more SUVs that emit more pollution, the team has been working on ways to reduce the source of this problem in vehicles. With sponsors such as the Department of Energy, GM and Ford,

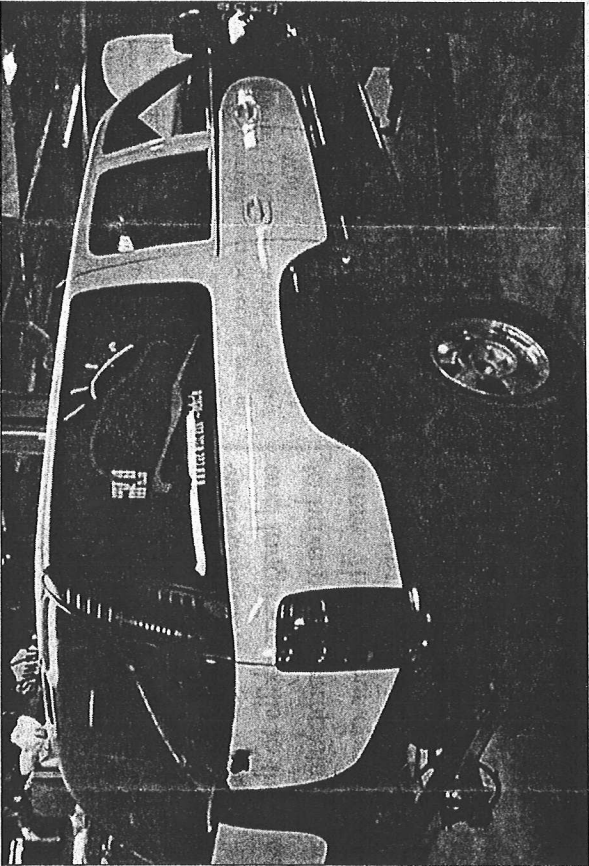


PHOTO COURTESY OF JENNIFER TOPINKA

A group of engineers from UW-Madison are working on Future Truck, a vehicle designed to be more environment-friendly and efficient. The group recently won first place for their Aluminum Cow, a futuristic car named for Wisconsin's dairy industry.

the group is now building Future Truck. However, this competition will be a little more competitive than the last. All the schools will be given the same type of vehicle this time around. This leaves engineers at Madison with the body of a Chevy Suburban and the mechanics of a drive train, frame and other components of the car, left to be made lighter and more efficient.

The truck has already been through one

about the truck. Some qualities that the judges, who are provided by the major sponsors, will be looking for are safety, towing ability, performance, greenhouse gas emissions, fuel economy and consumer acceptability. All this has to be achieved while not making any compromises in the performance of the original truck. An important question that judges will ask is: Could this vehicle be produced in mass quantity without the cost and construction being impractical?

The team is made up of mostly undergraduates with group leaders in mechanical engineering, electrical engineering, control and business. Jennifer Topinka, a mechanical engineering graduate student, stressed that anyone can join the group.

"I joined the team not sure about anything [having to do with cars], but I was delighted the little tasks. I always found that I could do the little things and gradually do a little more," Topinka said. "Basically, being in this group helped me decide that I liked mechanical engineering and it got me interested in the whole idea of future vehicles... I see the need for group technology for vehicles."

Team leader Julie Marshall, UW-Madison senior, found the group to be unique.

"Being new on the team... everyone was really quick to give me responsibility, where other groups fill up and don't really care if you are there or not," Marshall said.

These students are not only learning about the teamwork, engineering and assembly that goes into making cars and trucks, but they are preparing for their future.



Burtele's
INDEPENDENT SERVICE

157
12nd.
20 8c..c.

Tractor engines contrast electric vehicles at Picnic Day displays

By ERIN BROWN
AGGIE FEATURES WRITER

Thirty years ago, an old barn on the west side of the UC Davis campus containing a few rusty engines and a decrepit thresher was slated for demolition. The obsolete farm equipment was doomed; however, in an effort to save the machinery, a handful of UCD students organized the Antique Mechanics Club dedicated to collecting, restoring and demonstrating tools characteristic

of California's agricultural heritage. Now displayed in their own hangar at University Airport, many of the tractors and other engines, including a 1887 Bronson-Pitts Thresher, are among the only ones left in the world.

Club President Nathan Fleischer said he felt it was important to preserve the motors so that people could perceive the evolution of agriculture and appreciate the genius of the old machines. He added that the restoration projects also carry some sentimental weight.

"We get a lot of old-time farmers that come out and get nostalgic about all these old machines that some of them once used," he said. "Some of these guys haven't seen them for 50 years and can name every part."

The Antique Mechanics Club embraces members of diverse educational backgrounds in its effort to impart important life skills like leadership and problem solving to students, according to Vice

President Andrew Hall. "Our club membership attracts quite a few mechanical engineering majors, but anyone...interested is welcome," he said. "We have had (students majoring in) everything from English to crop science."

The club holds an annual all-night Picnic Day preparation which Hall described as a "caffeinated tryst of painting floats, turning wrenches, securing fuel, getting vehicles together and moving them to campus." This year, the club plans to showcase myriad tractors in the parade including a TD6 crawler tractor boasting a fresh coat of red paint.

"Prepare to be blinded," Hall said. At the parade's close, the club will display the tractors in addition to some 19th century vertical engines. Those interested can see the tractors and

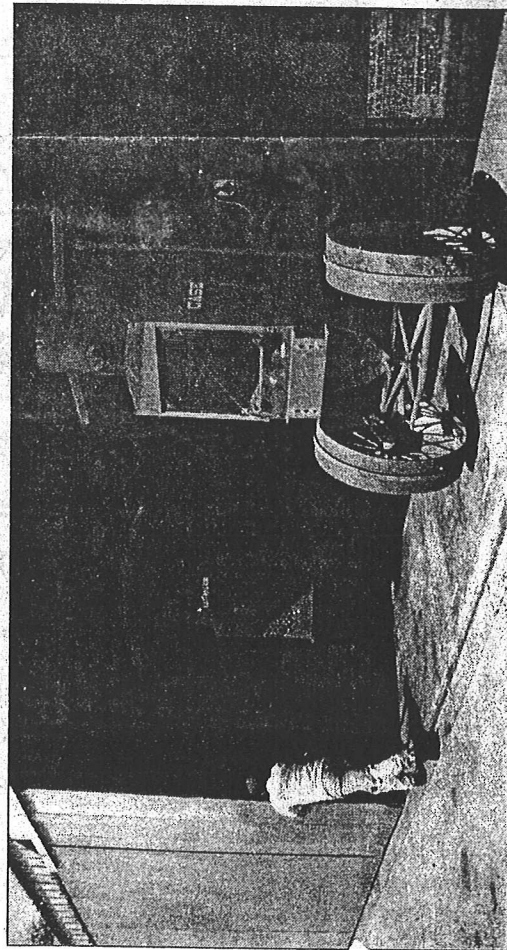
rent collection Saturdays from noon to 4 p.m. at the hangar. For more information call 752-6177.

Other mechanical marvels for parade-goers to behold are the electric vehicles and fuel cell cars sponsored by the UCD College of Engineering and the City of Davis Alternate Vehicle Task Force.

Craig Childers, a task force representative, said the group hopes to use its display at Bainer Hall and the Chemistry Annex to inform the public about the EVs that will soon be available for purchase.

The award-winning UC-student designed and built hybrid EV is an annual feature in the display. Created by the FutureTruck Team, these hybrids — also known as

The Hybrid-Electric Vehicle team inspects their "FutureTruck."



KRISTEN KELLUM/AGGIE

The Antique Mechanics Club prepares to showcase their tractors for Picnic Day.

Engines

Cont. from page 6

"plug-ins" — recharge overnight and run on electricity for 60 miles before switching to gasoline power.

"The UC student-designed and built hybrid EVs are way better than those ordinary, plug-deficient hybrids you find at dealerships today," Childers explained. "(They) act as electric cars with only occasional assistance from their gasoline engines. The early model hybrids at the dealerships are gasoline cars without plugs that occasionally get a small boost from their electric motors."

Mark Duvall, the FutureTruck Team adviser, said the students will not showcase their project this year as they are currently rebuilding

three of the vehicles and the fourth is locked in an inaccessible lab.

While engineering enthusiasts will miss the student-built vehicles, other companies such as GEM, Honda and Toyota will present EV hybrids and Corbin, NEVCO and CityCom will feature electric three-wheelers.

The California Fuel Cell Partnership — a collaborative group of auto manufacturers, fuel cell developers, oil companies and the state of California — will also demonstrate a tabletop hydrogen fuel cell. According to Childers, a fuel cell replaces a battery and is recharged using hydrogen rather than electricity or stored fuel.

For more information on the Davis AFTE, visit them at the exhibit or see www.city.davis.ca.us/meetings to find out more about the organization and its meeting times.



Burrelle's
INFORMATION SERVICES

365
XZWD0 147 SC..C.

Court hear case

ent Monday on race-
higher education, re-
a ruling that its law
discriminated against

not to take the case
ady to break years of
in public colleges.
nidly said he was dis-
as upheld because of
ng in Texas.
nues to place us at a
ge to other states not
ood that can come in
students," Schmidly

ot going to use it as an
commitment is to di-
student body at Texas
atter what it takes, we
going to do it through
action, but we're find-
ays."

ogers was one of the
ood v. Texas. He gradu-
month and said he likes

ends a clear message
l quotas in university
will virtually never be
Supreme Court had a
decided not to both
rt thinks that the rul-

however, because chal-
an's preferential poli-
ober term.

nitively on the issue
cision, when the ma-
e into account in ad-

restling with ways to
olic colleges, and sev-
s or negotiated agree-
er education.

id general counsel for
continues to be a con-

nd that people should
uld be no discrimina-
sort of set aside when
ite a diversified popu-

ie law school policy, it
ate. Once the 5th U.S.
vn the policy, the state
ergraduate public col-

BUILDING THE FUTURE

FRONT PAGE

BY COURTNEY MUENCH
STAFF WRITER

I 254V Future Truck
nstead of filling a vehicle with
gas, drivers might be filling
their cars with hydrogen
within the next decade, said
Michael Pate, a senior electrical
engineering major from Lub-
bock.

Pate is a member of a team of
Texas Tech electrical and
mechanical engineering students
who have been redesigning two
Suburbans this summer at Reese
Technology Center.

One Suburban contains a fuel
cell, run completely off of
Hydrogen.

The other contains a hybrid-
electric engine, which is designed
to cut the amount of gasoline a
car uses dramatically, Pate said.

"The purpose for these
projects is to design a more
energy efficient vehicle that has
lower emissions so they don't
produce as much carbon dioxide
and other substances that are
harmful to the environment,"
Pate said.

Pate said the Suburban that
contains a fuel cell does not have
an engine.

Instead it has two electric
motors along with the fuel cell.

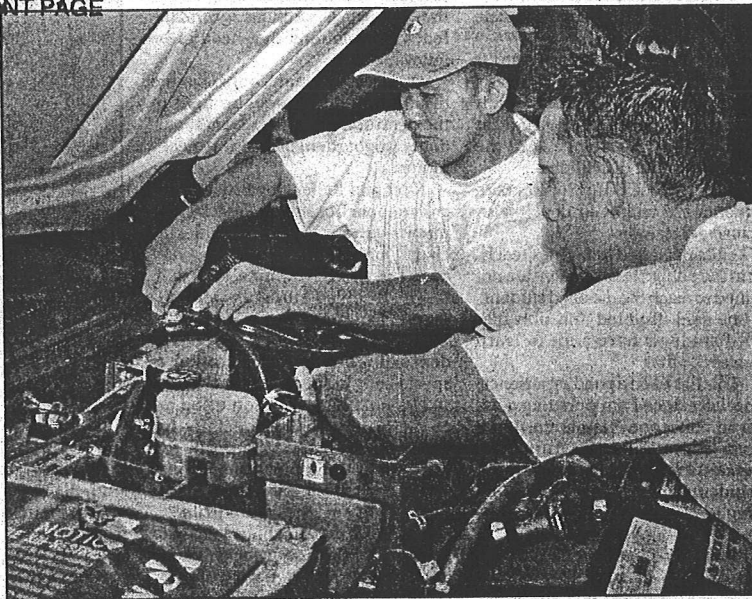
The fuel cell, Pate said, has six
stacks each containing 105
plates.

Each plate contains a plati-
num membrane.

One side of the plate contains
hydrogen and the other side
contains oxygen.

Pate said the hydrogen
attracts to the oxygen through the
platinum membrane.

An electron is then split off as
it travels through the membrane



Craig Swanson/THE UNIVERSITY DAILY

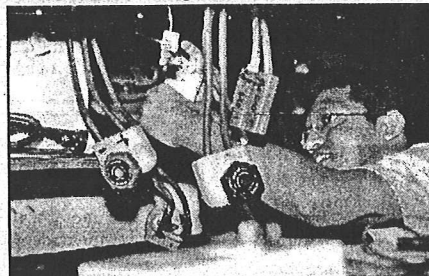
creating electricity, which then
powers the car.

The hydrogen then bonds with
the oxygen, making water, which
means the only car's emission is
steam rather than carbon dioxide
and other substances that can be
harmful to the environment.

"The average person would never
be able to tell a fuel cell is in their car.
The car may be more quiet, but the
driver would still be able to use their
electric windows and CD player just
like they always have," he said.

The second Suburban the team is
redesigning contains a hybrid-
electric engine that contains a
regular engine plus two electric

see **TRUCKS**, page 2



Craig Swanson/THE UNIVERSITY DAILY

(Far top): Hung Tran, a senior electrical engineering
major from Vietnam, and Tony Pennington, a senior
electrical engineering major from Artesia, N.M., work
on a Suburban powered by an alternative fuel system
Monday. (Above): A Tech engineering student
attaches power cables to the fuel cells of a vehicle
which uses alternative fuels Monday.

Law school dean positive about ranking

BY MELISSA GUEST
STAFF WRITER

Texas Tech School of Law Dean Frank
Newton said he expects the school will be
back in the third tier next year.

The law school was dropped to the
fourth tier this spring, according to an ar-
ticle published in the *U.S. News and World
Report*, which also listed the school as hav-
ing the worst student-faculty ratio of any
law school in the country.

"We can't afford to be dead last," he said.
Another shortcoming listed in the most
recent rankings, Newton said, was the lack
of funding for the law school library.



Newton

we can't afford to under fund," Newton said.

With the addition of four new professors,
Tech law school will improve their student
to faculty ratio, which was ranked last out

ted to a program,
which will add \$1 mil-
lion to the library bud-
get over the next five
years.

"In library expen-
ditures, we weren't last
in the country, but we
were last in the Big 12
and in the state of
Texas. Our library is
very important and

Newton said he expects the addition of
the professors will bring the school into the
mid-range.

"With a small school it doesn't take a great
deal of change in numbers to have a big
change in student/faculty ratios," he said.
"However, we are very anxious on the impact
it will have on the rankings, including that of
U.S. News and World Report."

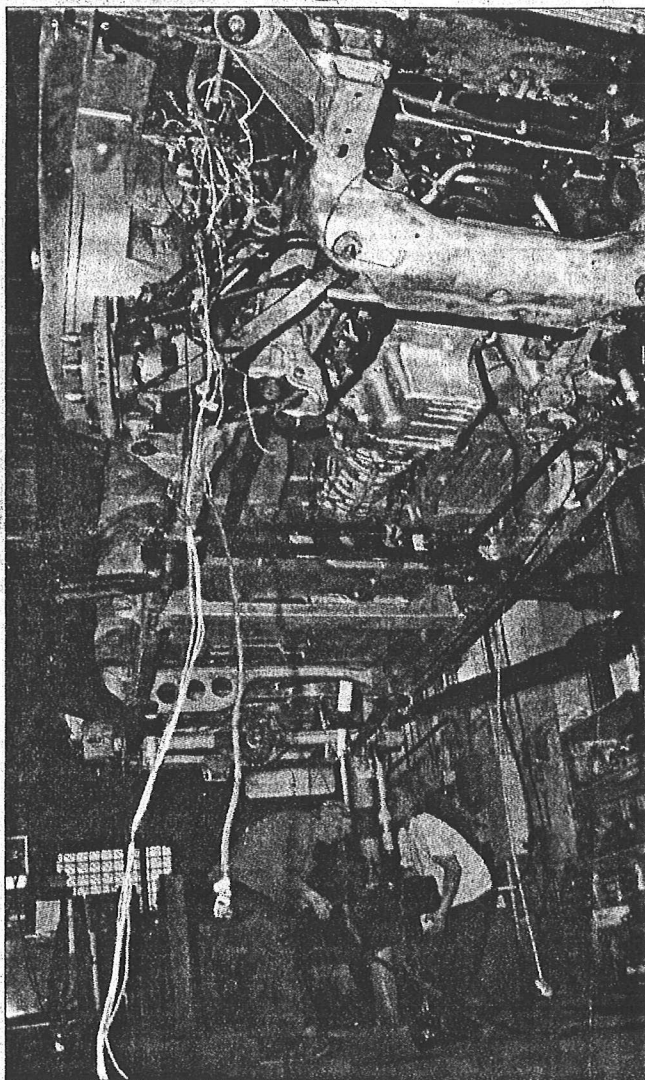
The professors, some of which will start
as early as Summer II, will provide specific
course offerings, expertise and depth to the
school, Newton said.

"The richness of these faculty bring with
them expertise and credentials on the one

see **RANKING**, page 2

Burrelle's
INFORMATION SERVICES431
xzodm

84 XX..C.



NATHAN PIER/Herald photo

UW students Ken Leppen and Anton Kozlovsky work on the truck, which will be entered in the FutureTruck contest.

UW races for FutureTruck competition

FRONT PAGE

■ MOLLY SCHMIDT

News Reporter 25yV

UW-Madison engineering students and staff are putting together a truck that will challenge entries from 15 other schools in the 2001 FutureTruck competition.

The competition, now in its second year, is sponsored by the U.S. Department of Energy, General Motors and Ford. The sponsors donate a Chevrolet Suburban to each team. The teams then rework the truck to include an electrical motor as well as an engine, making the car more energy-efficient and environmentally friendly.

Last year the UW team tied for fourth place in the overall competition, winning several individual awards. This year the team is taking its entry from last year, "Moolenium," and revamping it with full confidence that they'll win first place, according to team leader Julie Marshaus, a UW research assistant and graduate student.

"We have the capacity to win this year — hands down, very easily — and that's the team consensus," Marshaus said. "We have the best technically sound design for a truck in the competition."

UW gained some of its edge in last year's competition by having the only aluminum frame in the competition, according to controls group leader and UW electrical engineering senior Laura Ekern.

"The heat-treated aluminum has the same strength as steel," Ekern said.

This year, the team is reworking the drive-train system and replacing the electrical motor with a custom-design.

"Our best asset this year would be the

See TRUCK, page 5A

TRUCK, from page 1A

overall simplicity of the drive-train system," Marshaus said. "We're having a custom-designed, in-line electric motor which sends a single line of power through the shaft."

Currently, the team is test-driving the car in diesel mode. The 50-member team needs to have the car ready for competition by June 4, when it will be taken to General Motor's Milford Proving Grounds in Detroit, Mich.

The team hopes to have the car running hybrid, on both the diesel engine and the electric motor, by the beginning of May. After the competition, the team will go on to the awards ceremony in Washington, D.C.

"Hopefully this will familiarize people with the technology and encourage them to keep funding in Department of Energy," Marshaus said.

director Glenn Bower, some students receive class credit for participating, but over half of the students are volunteers. Mechanical, electrical, industrial and chemical engineers have all worked on past projects, including FutureCar, a similar competition in 1998 and 1999 in which UW won first place.

Many students get involved out of concern for the environment.

"I got involved with working on hybrid vehicles because they are a great way to reduce emissions and fossil-fuel consumption," Ekern said.

Others like senior Mitchell Pederson, a mechanical engineering major, get involved simply for the love of automobiles.

"I spend way too much time doing it. It's lots of fun and a good hands-on experience," Pederson said. "In classes, students never get to build what

Track-A-Teen lets parents monitor teen drivers

Track-A-Teen in Dallas is partnering with Elite Logistics in Freeport, Tex., to market Elite's vehicle tracking system to bring "peace of mind to anxious parents."

Track-A-Teen is offering the PageTrack vehicle tracking system as a part of its safe driving program for teenage drivers that is marketed nationwide to parents and court systems. Track-A-Teen sells the PageTrack unit for \$795; monthly service plans are between \$3 and \$7 a month, says Erryn Caran, president of the company.

"Will our clients' teenagers be excited by the possibility of being tracked? Probably not!" admits Caran. "However, most teens will surely appreciate other PageTrack safety options such as a panic button, roadside assistance and automatic collision notification. It's all about encouraging teen drivers to think before making crucial driving decisions and we do believe the PageTrack system will promote responsible driving. Will our Elite Package offer parents increased peace of mind? Absolutely!"

Caran and Cindy Fairchild founded Track-A-Teen last year with the goal of offering safe driving programs to young drivers. It has over 3,000 subscribers to programs that include: Driver-Zed, an interactive CD-ROM driver simulation program; Stand (Safety, training and awareness for new drivers), a two-year driver education program; and "How's my driving?" The last program includes a bumper sticker that invites other drivers to report questionable driving by means of a toll-free phone number. Confidential reports are then forwarded to parents by email, fax or mail within 24 hours (www.trackateen.com).

With PageTrack, parents will be able to directly monitor their teen's driving over the Internet instead of relying on others to report incidents, Caran says. Track-A-Teen takes phone orders for PageTrack nationwide and arranges for a local installer to put it in a vehicle. The company has spun off another company, TotalTrack Systems, to pursue vehicle tracking opportunities beyond the teenage market (www.totaltrack.net).

Cisco sponsors telematics event in student FutureTruck competition

Networking solutions company sees telematics field as lacking standards. It sees student involvement as a good way to extend Internet technology to the vehicle "edge" of the network. Says emerging wireless and on-board computing technologies can enhance driver and vehicle safety.

Cisco Systems is sponsoring a telematics event as part of the FutureTruck competition taking place next week at the General Motors Proving Ground in Milford, Mich.

This will be the first year that telematics is part of the program. FutureTruck began two years ago as a joint government-industry project sponsored by General Motors (GM) and the U.S. Department of Energy to make sport utility vehicles "greener." Student teams from 15 North American universities will enter re-engineered Chevrolet Suburbans that use advanced technologies, including hybrid electric

designs, to reduce emissions and increase efficiency.

Cisco says emerging wireless technologies and on-board computing for performing remote vehicle diagnostics and navigation "can enhance driver and vehicle safety and also reduce the vehicle's overall environmental impact."

Shivkumar Kutty, business development manager at Cisco Systems in San Jose, Calif., says Cisco believes that standards are lacking in the telematics area and that students are an ideal forum to leverage standards-based Internet technology for telematics.

"We supply the pipe to the edge of the network," he adds, meaning homes, small offices and personal devices. The next opportunity is in vehicles and their management, he says. In that area, Cisco would like to "emulate the Internet revolution one more time."

Cisco would like to "emulate the Internet revolution one more time" in vehicles.

Andrew Farah is assistant to executive director for chassis and powertrains at GM, and, like Kutty, a judge in the telematics competition. He says, "There are certain needs that passengers and drivers have had for a long time but only now are being able to be addressed by some of the developments in telematics." In FutureTruck, the students decide what customer needs they will go after to solve, he adds.

Data Communications (IDC), a global positioning system (GPS) location technology company, announced successful testing of its GPS Accessory for mobile phones and introduced an aqServer product line earlier this year (see *Inside ITS*, April 15, 2001; www.airbiq-uity.com).

"With more than 44 million members and one of the most trusted brand names in the world, AAA is actively pursuing high quality,

affordable location-based services for members," says Marshall Doney, vice president, AAA Automotive Services.

Response to use GDT map data

Geographic Data Technology (GDT) in Lebanon, N.H., and Response Services Center have announced that GDT will be the map data supplier for telematics services provided by Response.

GDT's Dynamap/Transportation

database will be integrated into Response's call center. The two companies will work together to refine data specifications based on the needs of Response and its customers. They say they will "support delivery of telematics services to virtually any device that can communicate data and provide location, including smart phones, wireless personal digital assistants and vehicle-installed telematics units" (www.geographic.com). **ITS**

UC Davis takes FutureTruck telematics prize

The University of California at Davis won the Cisco Systems Telematics Award and was the overall winner in the FutureTruck student competition (see *Inside ITS*, June 1, 2001; www.futuretruck.org). Penn State and the University of Wisconsin at Madison placed second and third in the telematics competition.

"The highlight of UC Davis's prize-winning entry in the telematics competition was that their system was architected around industry standards, open platforms such as Java on Linux and a system that leverages the strengths of the Internet," says Shivkumar Kutty, business development manager at Cisco Systems in San Jose, Calif.

"Their approach to integrating multiple telematics devices and busses within the vehicle to form local networks as well as the intelligent use of multiple wireless medium (802.11, CDPD) based on bandwidth availability for different applications is noteworthy," he adds.

Cisco believes that standards are lacking in the telematics area and that students are an ideal forum to leverage the standards-based Internet approach. "Open technologies and systems hold the best potential for mass-market acceptance and third-party developer support — which is exactly what events like FutureTruck are able to demonstrate to the telematics industry," Kutty says.

AUTOMATIC VEHICLE LOCATION

Intuicom introduces unit that combines GPS and license-free data transmission

SmartGPS Tracker uses 900 MHz and 2.4 GHz bands to send GPS data from a vehicle back to an operations center. List price for a single unit is \$1,650 with no monthly airtime fees. Boulder Special Transit service is first deployment. Another product to be introduced next month will offer ports for additional data to be added to the wireless network.

Intuicom in Boulder, Colo., has released SmartGPS Tracker, a transceiver that combines real-time global positioning system (GPS) location with wireless data transmission using license-free 900 MHz and 2.4 GHz spread spectrum technology. The company has also announced that it will install SmartGPS Tracker and its

Wireless Gateway Network Management Software (WiGate) as part of a fleet management solution for the Special Transit HOP service in Boulder.

The SmartGPS Tracker unit has a single unit list price of \$1,650. There are no activation or ongoing monthly fees. The company offers it as a cost-effective single unit for

wireless real-time positioning of an asset, such as buses or fleet vehicles. Intuicom describes its network as "always on," enabling real-time bi-directional data flows as high as 115.2 kbps over typical transmission distances of 20 miles. SmartGPS Tracker can provide location update rates up to one time per second.

"While cellular may be acceptable for casual voice communications, it is not an alternative for mission-critical applications that require a continuous connection and flow of information," says Steve Fisher, CEO of Intuicom. "Our customers either cannot tolerate the periodic communications outages that result from cellular network overload or require more substantial bandwidth to extend the reach of their corporate management systems into the field."

TUESDAY, MARCH 27, 2001

ALTERNATIVE FUELS TODAY*(Daily News Summary Covering Natural Gas, Propane & Biofuel Vehicles)*
Internet Archives**Industry Report****NCGA Pushes Policymakers on Future of Ethanol**

The National Corn Growers Association (NCGA) corn board recently urged policymakers to say no to the California ethanol waiver and incorporate a renewable fuel standard in any national energy policy.

The corn board members met with U.S. Department of Agriculture secretary Ann Veneman, Environmental Protection Agency (EPA) administrator Christine Todd Whitman and Kyle McSlarrow, chief of staff to Department of Energy secretary Abraham and senior officials of the National Economic Council at the White House. NCGA said its grower leaders also met with key leaders on Capitol Hill. At each of the meetings, the corn industry reiterated the farmer's support for ethanol.

NCGA said it believes that ethanol must remain a viable value-added product for corn farmers, and therefore a waiver from the oxygenate standard must be denied. There are currently more than 100 ethanol plants nationwide that are in the planning stages, but many of them are on hold due to the uncertainty on the part of grower-investors on the direction of federal policy.

NCGA also said that any federal energy strategy must include renewable energy sources such as ethanol. Corn growers have said that corn-derived ethanol uses a domestically produced, renewable energy source that is immune to manipulation by foreign governments or cartels.

Contact: NCGA, website <http://www.ncga.com>.

(NCGA RELEASE: 3/23)

Ethanol Industry Sets Monthly Production Record

The Renewable Fuels Association (RFA) recently announced that the domestic ethanol industry set its 17th consecutive monthly production record. According to data released by RFA, the ethanol industry produced more than 116,000 barrels per day (b/d) in February of this year. The new record exceeds the previous February record of 108,000 b/d set in 2000.

"The ethanol industry has more records than Sammy Gosa," said RFA president Eric Vaughn. "And we're not stopping until we break Joe Dimaggio's consecutive streak. While the fossil fuel starting line-up of oil, gas, and coal is striking out, renewable energy's clean-up batter, ethanol, is hitting home runs."

RFA said that February's production also set a new all time monthly record, breaking the previous record of 115,000 b/d set last month. After undergoing record expansion of production capacity in 2000, the ethanol industry is expected to break that record in 2001. RFA said there are currently 48 ethanol production facilities being built or expanded. Nearly 20 additional ethanol plants are scheduled to begin construction this year.

"As the debate around national energy policy swirls in Washington, the ethanol industry continues to break records," said Vaughn. "We're not just talking about how to meet America's energy needs, we're doing it."

Contact: Monte Shaw, RFA, phone 202-289-3835.

(RFA RELEASE: 3/22)

file://C:\WINDOWS\TEMP\AFN0327.HTM

3/27/01

Editorials, Reviews & Asides

Many Groups Involved in FutureTruck Program

A variety of government, industry and trade groups are participating in the FutureTruck program, an effort to develop a more environmentally friendly sport utility vehicle. The program was launched by General Motors (GM) and the Department of Energy.

GM will provide vehicles, funding and consulting to engineering teams from universities in the U.S., all tasked with reconfiguring a standard Chevrolet Suburban for low emissions and high efficiency.

Other participants include Cisco Systems, which is sponsoring an event that encourages student teams to investigate the use of wireless technology and onboard computer systems. Also involved are ArvinMeritor, Delphi Automotive Systems, BP Amoco and The Aluminum Association.

The FutureTruck program will culminate in a series of events June 4 through 11 at the GM Proving Ground in Milford, MI.

Contact: FutureTruck, website <http://www.futuretruck.org>.

(GM RELEASE: 3/23)

EIN Publishing is interested in your company's activities. Send all press releases, article tips and conference announcements to EIN Editorial Staff, fax: 703-683-3893, e-mail editor@einoday.com.

© 2001 EIN Publishing, Inc. 119 South Fairfax Street, Alexandria, VA 22314,
Sales/Mktg: 800-726-6898 - Editorial: 703-683-0774 - Fax: 703-683-3893 - EMail:
editor@einoday.com

It is unlawful to reproduce this page without written permission from the publisher.

Links: EIN Home Page | Industry Classifieds | Industry Links

Future Truck 2001



News Releases
Press Kit Materials
Team PR Kit

Section 4



FutureTruck

Photo Caption

To: «FirstName» «Last Name»

Company: «Company»

Date of Photo: October 23, 2000

Location: General Motors Advanced Technology Vehicle Facility, Troy, Michigan

Subject: Local University Students Meet With Government and Industry Leaders to
Design Cleaner Vehicles for the Future

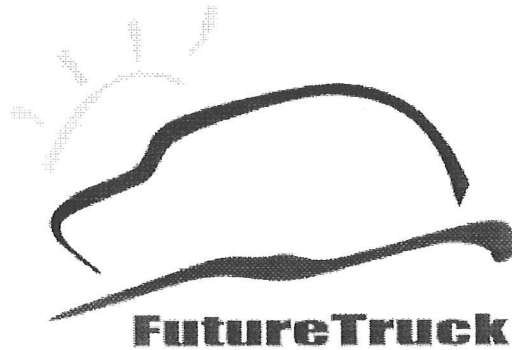
(NOTE: See caption below for information on team members from your area.)

Note: This caption information accompanies photos taken during a facility tour in Troy, Michigan. Students teams from across North America were meeting with General Motors engineers and government researchers to work on the FutureTruck program. Their aim is to develop greener, cleaner SUVs for the future.. Feel free to modify the caption to suit your editorial needs. Additional information, including a news release, should be included in this package. If you need more information, please call ***FutureTruck 2000*** Communications Director Jack Groh by phone at (401)732-1551 or through cell phone/pager at (401)952-0886.

Caption Information

Local students from «Team Photo» tour the General Motors Advanced Technology Vehicle facility in Michigan while attending meetings to design cleaner trucks of the future. Participants in this FutureTruck program include «Name-Hometown».

Students have until June 2001 to increase fuel economy and lower greenhouse gas emissions on a Chevrolet Suburban. 15 university teams are competing in this project co-sponsored by GM and the U.S. Department of Energy.



NEWS RELEASE

For Release: Immediate
October 24, 2000

Contact: Jack Groh
(401)732-1551, (401)952-0886 cell
<http://futuretruck.home.att.net>

«UnivTitle» TEAM WORKING WITH GOVERNMENT AND INDUSTRY TO CREATE GREENER SPORT UTILITY OF THE FUTURE

PONTIAC, Mich. – A team from «University» is working with advanced technology engineers from the auto industry and government researchers to create a cleaner, higher-mileage sport utility vehicle for the future. Engineering students and faculty advisers make up the FutureTruck competition team from «University». They are joined by fourteen similar engineering teams from other prestigious universities throughout the United States and Canada who are entering the second half of this two-year project.

Each team is working on a Chevrolet Suburban sport utility vehicle donated, along with ten thousand dollars in cash, by General Motors. The U.S. Department of Energy (DOE) is the primary government partner in this program.

This month, «University» joined all the other participants in a series of technical workshops at the General Motors Truck Product Center in Pontiac, Michigan. There they reviewed the first year of this FutureTruck program while preparing for the second and final year's work on the Suburban vehicles.

"Increasing fuel efficiency and reducing greenhouse gas emissions while maintaining vehicle towing capability and customer performance expectations is a serious engineering challenge," said Mark Maher, director of powertrain systems at General Motors. FutureTruck aims to increase fuel efficiency and lower emissions by re-engineering the Suburban powertrain, converting the SUVs to hybrid-electric vehicles without compromising safety, performance and utility.

(more)

Each team faces the same challenge but each has chosen a different path to the solution. While all the vehicles use hybrid power (more than one source of energy), the variations as well as other modifications are many. Among the fuels being used by FutureTruck teams are diesel, RFG (reformulated gasoline), biodiesel, ethanol and hydrogen (for fuel cells). Other engineering modifications include weight reduction, improved powertrain efficiency, better aerodynamics, computer-based energy management and advanced energy storage devices.

"These young engineers are learning vital skills and new ways of solving problems," said Bob Larsen of Argonne National Laboratory, the DOE facility that manages the FutureTruck competition. "Developing advanced technology is the program's main focus but these future engineers are also learning how to collaborate effectively with people from the private and public sectors."

Fuel consumption in North America is a critical and growing challenge. In addition to the environmental impact of greenhouse gases, there is the economic impact felt by everyone as we depend more and more on expensive imported oil for our manufacturing, heating and transportation needs. Both the federal government, through the Department of Energy, and the auto industry, represented by General Motors, have made clear their commitment to working on cleaner, more efficient vehicles.

Once the technical sessions in Michigan are completed, the university teams return home to put their theories into practice. In June of next year, the teams will all return to the Detroit area. Each team will go through extensive testing and evaluation at the General Motors Proving Ground in Milford, Michigan. Competing teams win a variety of prizes and awards in several categories including overall accomplishment, greenhouse gas reduction, safety, trailer towing, fuel economy and acceleration. Each vehicle is also evaluated by a panel of government, industry and media judges for a variety of consumer acceptability features.

General Motors and the U.S. Department of Energy are the title sponsors of *FutureTruck*. Other sponsors include the National Science Foundation; the National Highway Traffic Safety Administration; Delphi Automotive Systems; the Illinois Department of Commerce and Community Affairs; Natural Resources Canada; the National Biodiesel Board; the Governors Ethanol Coalition; and the Renewable Fuels Association. General Motors is supplying vehicles, seed money and prize money to the universities for this first stage of competition. Ford Motor Company will replace General Motors as the automotive sponsor in the second two years of competition while the U.S. Department of Energy will continue to provide financial, organizational and technical support.

Competing universities include: Concordia University; Cornell University; George Washington University; Georgia Tech; Michigan Technological University; Ohio State University; Penn State University; Texas Tech University; University of California, Davis; University of Idaho; University of Maryland; University of Tennessee; University of Wisconsin-Madison; Virginia Tech; and West Virginia University.

Additional information about the FutureTruck program is available on the web at <http://futuretruck.home.att.net>



**U.S. DEPARTMENT
OF ENERGY**



FutureTruck
www.futuretruck.org

NEWS RELEASE

For Release: Immediate
November 27, 2000

Contact: Jack Groh
(401)732-1551, (401)952-0886 cell
<http://futuretruck.home.att.net>

FIFTEEN UNIVERSITY TEAMS WORKING WITH GOVERNMENT AND INDUSTRY TO CREATE GREENER SPORT UTILITY OF THE FUTURE

PONTIAC, Mich. – Engineering teams from fifteen North American universities are working with advanced technology engineers from the auto industry and government researchers to create a cleaner, higher-mileage sport utility vehicle for the future. Engineering students and faculty advisers make up each of these “FutureTruck” competition teams working on the second half of this two-year project.

Each team is working on a Chevrolet Suburban sport utility vehicle donated, along with ten thousand dollars in cash, by General Motors. The U.S. Department of Energy (DOE) is the primary government partner in this program.

This fall, each university team joined all the other participants in a series of technical workshops at the General Motors Truck Product Center in Pontiac, Michigan. There they reviewed the first year of this FutureTruck program while preparing for the second and final year’s work on the Suburban vehicles.

“Increasing fuel efficiency and reducing greenhouse gas emissions while maintaining vehicle towing capability and customer performance expectations is a serious engineering challenge,” said Mark Maher, director of powertrain systems at General Motors. FutureTruck aims to increase fuel efficiency and lower emissions by re-engineering the Suburban powertrain, converting the SUVs to hybrid-electric vehicles without compromising safety, performance and utility.

Each team faces the same challenge but each has chosen a different path to the solution. While all the vehicles use hybrid power (more than one source of energy), the variations as well as other modifications are many. Among the fuels being used by FutureTruck teams are diesel, RFG (reformulated gasoline), biodiesel, ethanol and hydrogen (for fuel cells). Other engineering modifications include weight reduction, improved powertrain efficiency, better aerodynamics, computer-based energy management and advanced energy storage devices.

(more)

Concordia University • Cornell University • The George Washington University • Georgia Institute of Technology • Michigan Technological University
The Ohio State University • Penn State University • Texas Tech University • University of California, Davis • University of Idaho
University of Maryland • University of Tennessee • University of Wisconsin-Madison • Virginia Tech • West Virginia University

“These young engineers are learning vital skills and new ways of solving problems,” said Bob Larsen of Argonne National Laboratory, the DOE facility that manages the FutureTruck competition. “Developing advanced technology is the program’s main focus but these future engineers are also learning how to collaborate effectively with people from the private and public sectors.”

Fuel consumption in North America is a critical and growing challenge. In addition to the environmental impact of greenhouse gases, there is the economic impact felt by everyone as we depend more and more on expensive imported oil for our manufacturing, heating and transportation needs. Both the U.S. government, through the Department of Energy, and the auto industry, represented by General Motors, have made clear their commitment to working on cleaner, more efficient vehicles.

Following the technical sessions in Michigan, the university teams returned home to put their theories into practice. In June of next year (2001), the teams will all return to the Detroit area. Each team will go through extensive testing and evaluation at the General Motors Proving Ground in Milford, Michigan. Competing teams win a variety of prizes and awards in several categories including overall accomplishment, greenhouse gas reduction, safety, trailer towing, fuel economy and acceleration. Each vehicle is also evaluated by a panel of government, industry and media judges for a variety of consumer acceptability features.

General Motors and the U.S. Department of Energy are the title sponsors of *FutureTruck*. Other sponsors include the National Science Foundation; the National Highway Traffic Safety Administration; Delphi Automotive Systems; the Aluminum Association; the Illinois Department of Commerce and Community Affairs; Natural Resources Canada; the National Biodiesel Board; the Governors Ethanol Coalition; and the Renewable Fuels Association. General Motors is supplying vehicles, seed money and prize money to the universities for this first stage of competition. Ford Motor Company will replace General Motors as the automotive sponsor in the second two years of competition while the U.S. Department of Energy will continue to provide financial, organizational and technical support.

Competing universities include: Concordia University; Cornell University; George Washington University; Georgia Tech; Michigan Technological University; Ohio State University; Penn State University; Texas Tech University; University of California, Davis; University of Idaho; University of Maryland; University of Tennessee; University of Wisconsin-Madison; Virginia Tech; and West Virginia University.

Additional information about the FutureTruck program is available on the web at [http //www futuretruck.org](http://www.futuretruck.org)

COMMUNIQUÉ DE PRESSE

Pour diffusion immédiate
Le 27 novembre 2000

Personne-ressource : Jack Groh
Tél. : (401) 732-1551 (Cellulaire : (401) 952-0886)
Courriel : <http://futuretruck.home.att.net>

UNE ÉQUIPE DE L'UNIVERSITÉ CONCORDIA MET AU POINT LE VÉHICULE LOISIRS-TRAVAIL ÉCOLOGIQUE DE L'AVENIR

PONTIAC (Michigan) -- Une équipe de l'Université Concordia travaille de concert avec des ingénieurs-technologues de l'industrie automobile et des chercheurs du gouvernement en vue de la mise au point du véhicule loisirs-travail (VLT) de l'avenir, plus écologique et à fortes capacités de kilométrage. Des étudiants en génie et des conseillers de cette faculté forment l'équipe de l'Université Concordia qui prendra part à l'épreuve FutureTruck. Celle-ci se joindra à quatorze autres équipes techniques déléguées par de prestigieuses universités d'Amérique du Nord qui prendront part à la deuxième portion de ce projet de deux ans.

Chaque équipe amorce le travail à partir d'un VLT Suburban de Chevrolet fourni par la société General Motors avec une somme au comptant de 10 000 \$. Le Department of Energy des États-Unis constitue le principal partenaire gouvernemental de ce programme.

Cet automne, l'Université Concordia a pris part, avec tous les autres participants, à une série d'ateliers techniques qui a eu lieu au General Motors Truck Product Centre de Pontiac, au Michigan. À cet endroit, les membres des équipes ont passé en revue la première année du Programme FutureTruck, tout en se préparant pour la deuxième et dernière année des travaux à exécuter sur les véhicules Suburban.

Selon Mark Maher, Directeur des systèmes du groupe motopropulseur à la General Motors, «Accroître l'efficacité du carburant utilisé et réduire les émissions de gaz à effet de serre, tout en maintenant les capacités de traction du véhicule et en répondant aux attentes du client en ce qui concerne son rendement, demeurent des enjeux importants du point de vue technique». Le programme FutureTruck vise à améliorer l'efficacité du carburant utilisé et à réduire le taux d'émissions en réorientant la conception technique du groupe motopropulseur du Suburban. Il s'agit de transformer ces VLT en véhicules hybrides électriques sans pour autant compromettre les aspects relatifs à la sécurité, au rendement et à l'utilité. Chaque équipe doit faire face aux mêmes difficultés, mais se tournent vers diverses solutions pour y arriver. Alors que chaque véhicule est alimenté par un système hybride (c'est-à-dire par plus d'une source d'énergie), on y constate plusieurs variations ou modifications. Parmi les carburants utilisés par les équipes, il y a le diesel, l'essence reformulée, le biodiesel, l'éthanol et l'hydrogène (pour les piles à combustible). Les autres genres de modifications comprennent la réduction du poids du véhicule, l'efficacité améliorée du groupe motopropulseur, une aérodynamique accrue, la gestion énergétique par ordinateur et des dispositifs perfectionnés de stockage de l'énergie.

Selon Bob Larsen, un membre de l'Argonne National Laboratory, le centre du Department of Energy des États-Unis chargé de superviser l'épreuve sur route, «ce groupe de jeunes ingénieurs développe des aptitudes indispensables et apprend de nouvelles façons de résoudre les problèmes. Le programme est certes axé sur le développement d'une technologie de pointe, mais nos ingénieurs de l'avenir se font également la main en vue d'apprendre comment collaborer efficacement avec les représentants du secteur public et du secteur privé.»

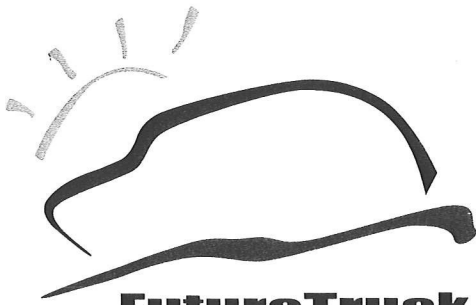
En Amérique du Nord, la consommation de carburant constitue un enjeu de taille et une préoccupation grandissante. Outre les répercussions environnementales des émissions de gaz à effet de serre, les conséquences économiques sont ressenties par chacun d'entre nous à mesure que grandit notre dépendance à l'égard d'un pétrole importé dispendieux pour répondre à nos besoins en matière de fabrication, de chauffage et de transport. Le gouvernement américain, par l'entremise du Department of Energy, et l'industrie automobile, représentée par la General Motors, se sont clairement engagés à travailler à la mise au point de véhicules respectueux de l'environnement et à haut rendement énergétique.

À la suite des ateliers techniques qui avaient eu lieu au Michigan, les équipes universitaires sont retournées à leur base pour mettre en pratique la théorie apprise. En juin de l'année prochaine, celles-ci vont se rendre de nouveau dans la région de Detroit pour y procéder à des essais et des évaluations exhaustifs qui se tiendront, précisément, au General Motors Proving Ground de Milford, au Michigan. Les équipes qui participent à l'épreuve peuvent se mériter divers prix et récompenses dans un grand nombre de catégories, notamment celles de la réalisation globale, de la réduction des gaz à effet de serre, de la sécurité, de la traction de remorques, des économies de carburant et de l'accélération. Chacun des véhicules fait également l'objet d'une évaluation par un jury composé de représentants des gouvernements, de l'industrie et des médias en fonction de divers éléments d'attrait pour les consommateurs.

La société General Motors et le Department of Energy des États-Unis sont les principaux commanditaires du programme FutureTruck. Les autres commanditaires incluent la National Science Foundation, la National Highway Traffic Safety Administration, les Delphi Automotive Systems, l'Illinois Department of Commerce and Community Affairs, Ressources naturelles Canada, le National Biodiesel Board, la Governors Ethanol Coalition et la Renewable Fuels Association. La General Motors fournit aux universités, pour la première étape de l'épreuve, les véhicules nécessaires, les fonds de fonctionnement et les prix en argent. La société Ford va remplacer cette dernière à titre de commanditaire de l'industrie automobile dans la deuxième année de l'épreuve, alors que le Department of Energy des États-Unis va continuer d'assurer le soutien financier, organisationnel et technique de l'événement.

Parmi les concurrents, on retrouve l'Université Concordia, la Cornell University, la George Washington University, la Georgia Tech, la Michigan Technological University, l'Ohio State University, la Penn State University, la Texas Tech University, l'University of California, Davis, l'University of Idaho, l'University of Maryland, l'University of Tennessee, l'University of Wisconsin-Madison, Virginia Tech et la West Virginia University.

On peut obtenir d'autres informations sur le Programme FutureTruck en visitant le site Web (en langue anglaise) qui se trouve à l'adresse <http://futuretruck.home.att.net>



FutureTruck
www.futuretruck.org



**U.S. DEPARTMENT
OF ENERGY**



NEWS RELEASE

For Release: Immediate
March 7, 2001

Contact: Jack Groh
(401)732-1551, (401)952-0886 cell
<http://futuretruck.home.att.net>

FIFTEEN UNIVERSITY TEAMS WORKING WITH GOVERNMENT AND INDUSTRY TO CREATE GREENER SPORT UTILITY OF THE FUTURE

PONTIAC, Mich. – Engineering teams from fifteen North American universities are working with advanced technology engineers from the auto industry and government researchers to create a cleaner, higher-mileage sport utility vehicle for the future. Engineering students and faculty advisers make up each of these “FutureTruck” competition teams working on the second half of this two-year project.

Each team is working on a Chevrolet Suburban sport utility vehicle donated, along with ten thousand dollars in cash, by General Motors. The U.S. Department of Energy (DOE) is the primary government partner in this program.

In addition, more than a dozen other manufacturers, government agencies and trade associations from the United States and Canada have joined as partners in this program.

“Increasing fuel efficiency and reducing greenhouse gas emissions while maintaining vehicle towing capability and customer performance expectations is a serious engineering challenge,” said Mark Maher, director of powertrain systems at General Motors. FutureTruck aims to increase fuel efficiency and lower emissions by re-engineering the Suburban powertrain, converting the SUVs to hybrid-electric vehicles without compromising safety, performance and utility.

Each team faces the same challenge but each has chosen a different path to the solution. While all the vehicles use hybrid power (more than one source of energy), the variations as well as other modifications are many. Among the fuels being used by FutureTruck teams are diesel, RFG (reformulated gasoline), biodiesel, ethanol and hydrogen (for fuel cells). Other engineering modifications include weight reduction, improved powertrain efficiency, better aerodynamics, computer-based energy management and advanced energy storage devices.

“These young engineers are learning vital skills and new ways of solving problems,” said Bob Larsen of Argonne National Laboratory, the DOE facility that manages the FutureTruck competition. “Developing advanced technology is the program’s main focus

Concordia University • Cornell University • The George Washington University • Georgia Institute of Technology • Michigan Technological University
The Ohio State University • Penn State University • Texas Tech University • University of California, Davis • University of Idaho
University of Maryland • University of Tennessee • University of Wisconsin-Madison • Virginia Tech • West Virginia University

but these future engineers are also learning how to collaborate effectively with people from the private and public sectors.”

Fuel consumption in North America is a critical and growing challenge. In addition to the environmental impact of greenhouse gases, there is the economic impact felt by everyone as we depend more and more on expensive imported oil for our manufacturing, heating and transportation needs. Both the U.S. government, through the Department of Energy, and the auto industry, represented by General Motors, have made clear their commitment to working on cleaner, more efficient vehicles.

In June of this year (June 4-11), the teams will all travel to the Detroit area. Each team will go through extensive testing and evaluation at the General Motors Proving Ground in Milford, Michigan. Competing teams win a variety of prizes and awards in several categories including overall accomplishment, greenhouse gas reduction, safety, trailer towing, fuel economy and acceleration. Each vehicle is also evaluated by a panel of government, industry and media judges for a variety of consumer acceptability features.

Following competitive events in Michigan, the teams will travel to Washington, DC for events and displays at the U.S. Department of Energy headquarters and Capitol Hill as well as an awards ceremony webcast live from the Smithsonian National Museum of Natural History on June 13.

General Motors and the U.S. Department of Energy are the title sponsors of ***FutureTruck***. Other sponsors include the National Science Foundation, Cisco Systems, ArvinMeritor, Delphi Automotive Systems, BP Amoco, the Aluminum Association, The MathWorks, Newark Electronics, National Instruments, Natural Resources Canada, the Illinois Dept of Commerce and Community Affairs, the Renewable Fuels Association, the Governors’ Ethanol Coalition, and The Goodyear Tire & Rubber Co. General Motors is supplying vehicles, seed money and prize money to the universities for this first stage of competition. Ford Motor Company will replace General Motors as the automotive sponsor in the second two years of competition while the U.S. Department of Energy will continue to provide financial, organizational and technical support.

Competing universities include: Concordia University; Cornell University; George Washington University; Georgia Tech; Michigan Technological University; Ohio State University; Penn State University; Texas Tech University; University of California, Davis; University of Idaho; University of Maryland; University of Tennessee; University of Wisconsin-Madison; Virginia Tech; and West Virginia University.

Additional information about the FutureTruck program is available on the web at <http://www.futuretruck.org>



**U.S. DEPARTMENT
OF ENERGY**



NEWS RELEASE

For Release: Immediate
March 27, 2001

Contact: Jack Groh,
(401)732-1551, (401)952-0886 cell
<http://futuretruck.home.att.net>

FUTURETRUCK PROJECT EXPANDS: GOVERNMENT, INDUSTRY, TRADE ORGANIZATIONS JOIN EFFORT TO DEVELOP GREENER "SUV"

PONTIAC, Mich. – More than a dozen well-known organizations have now joined forces to tackle one of the toughest engineering challenges of our time – taking the country's most popular working vehicle and taming its environmental impact.

The FutureTruck program, begun two years ago as a joint government-industry project by General Motors Corporation and the U.S. Department of Energy, aims to take the wildly-successful sport utility vehicle and make it a "greener" vehicle. Since the program began, new partners and sponsors have been climbing aboard to offer technical expertise, material support, donated equipment and financial support.

FutureTruck brings together the resources of industry, government, and academia to solve the important environmental and technical problems posed by the growing demand for light-duty trucks. This program challenges student teams from 15 top North American universities to re-engineer a full-size Chevrolet Suburban into a low-emission, high-efficiency vehicle – without sacrificing the performance, utility, safety, and affordability that customers want. To do this, students explore cutting-edge automotive technologies, such as fuel cells and advanced propulsion systems, space age materials, and alternative fuels such as ethanol and hydrogen. All teams are using hybrid-electric design strategies.

General Motors (GM) has supplied brand-new vehicles, \$10,000 seed money and engineering consulting for each team, competition facilities, and operational support. The U.S. Department of Energy (DOE), through its Argonne National Laboratory subsidiary, has provided competition management, staffing, team evaluation, and technical and financial assistance. GM and DOE are headline sponsors of FutureTruck.

Several other major sponsors have teamed up to work on the program this year. The National Science Foundation (NSF) has been involved in FutureTruck since its inception, and has provided financial support as well as national recognition for faculty members who, through their efforts, have made significant contributions to the goals of the FutureTruck program and to engineering education.

Cisco Systems, the worldwide leader in networking for the Internet, has provided an opportunity for teams to compete in the new, Cisco Systems Telematics Event. Participating teams will explore emerging wireless technologies, as well as on-board computing for

Concordia University • Cornell University • The George Washington University • Georgia Institute of Technology • Michigan Technological University
The Ohio State University • Penn State University • Texas Tech University • University of California, Davis • University of Idaho
University of Maryland • University of Tennessee • University of Wisconsin-Madison • Virginia Tech • West Virginia University

performing remote vehicle diagnostics, navigation and infotainment. These technologies can enhance driver and vehicle safety and also reduce the vehicle's overall environmental impact. Cisco Systems is supplying technical assistance as well as cash and equipment prizes to selected teams.

ArvinMeritor, a global supplier of integrated automotive systems and modules, is providing a team of engineers who will be helping to coordinate one of the key technical events of the program - a safety and technical inspection of the competing vehicles. FutureTruck provides ArvinMeritor with an opportunity to network with industry, government and academia and learn more about the emerging hybrid electric vehicle market.

Delphi Automotive Systems, the world leader in mobile electronics and transportation components and systems technology, is supplying batteries and other components to many of the FutureTruck teams and Delphi engineers are involved in judging and coordinating some of the competitive events for the program. Delphi views FutureTruck as a valuable opportunity to recruit new engineers with demonstrated ability to work with advanced automotive technologies.

BP Amoco is providing its emissions control low sulfur diesel fuel, ECD-1, to several of the teams. As vehicle technology continues to advance, fuels and lubricants must change to keep pace. ECD-1 will enable the teams to use sulfur-sensitive control systems, which will be critical for reducing the vehicle's emissions.

The Aluminum Association has been a FutureTruck partner since the program began. An important part of their role is the evaluation and recognition of innovative uses of aluminum that highlight that material's performance advantages. Mirroring current auto industry trends, FutureTruck teams are using aluminum to help boost environmental, safety and handling performance, with a special emphasis on weight reduction for increased fuel efficiency.

All Major Sponsors will provide judges during the competition events, which are scheduled for June 4-11 at the General Motors Proving Ground in Milford, Michigan and will present more than \$60,000 in cash awards to the winning teams at the Smithsonian National Museum of Natural History on June 13 in Washington, DC.

In addition to these major sponsors, several other organizations have joined FutureTruck as competition supporters and are providing varying degrees of financial support, technical expertise and equipment. Each of these organizations is also helping in the evaluation of vehicles and presentation of awards to teams. These supporters include: The Mathworks, Newark Electronics, National Instruments, Natural Resources Canada, the Illinois Department of Commerce and Community Affairs, the Renewable Fuels Association, the Governors' Ethanol Coalition, and the Goodyear Tire and Rubber Company.

Competing universities include: Concordia University; Cornell University; George Washington University; Georgia Tech; Michigan Technological University; Ohio State University; Penn State University; Texas Tech University; University of California, Davis; University of Idaho; University of Maryland; University of Tennessee; University of Wisconsin-Madison; Virginia Tech; and West Virginia University.

Additional information about the FutureTruck program is available on the web at <http://www.futuretruck.org>

COMMUNIQUÉ DE PRESSE

Pour diffusion immédiate
Le 17 avril 2001

Personne-ressource : Jack Groh
Téléphone : (401) 732-1551
(401) 952-0886 (portable)
<http://futuretruck.home.att.net>

LE PROGRAMME FUTURETRUCK PREND DE L'EXPANSION: LES GOUVERNEMENTS, L'INDUSTRIE ET DES ORGANISMES COMMERCIAUX UNISSENT LEURS FORCES POUR METTRE AU POINT DES VÉHICULES UTILITAIRES ÉCOLOGIQUES

PONTIAC (Michigan) - - Plus d'une douzaine d'organisations bien connues unissent leurs forces afin de relever le plus imposant défi technique de notre temps, soit celui de maîtriser les répercussions environnementales du véhicule utilitaire le plus populaire au pays.

Le Programme FutureTruck, lancé il y a deux ans par la General Motors Corporation et l'U.S. Department of Energy en tant que coentreprise gouvernement-industrie, vise à faire du véhicule utilitaire le plus populaire en dehors des sentiers battus un engin plus «écologique». Depuis les débuts du Programme, de nouveaux partenaires et de nouveaux commanditaires se sont ajoutés afin d'offrir des compétences techniques, un soutien matériel, de l'équipement fourni gratuitement et un appui financier.

Le Programme FutureTruck permet de réunir les ressources de l'industrie, des gouvernements et du monde universitaire afin de résoudre les problèmes environnementaux et techniques importants qui se posent découlant de la demande accrue de camions légers. Il s'agit, en fait, d'une épreuve regroupant des équipes d'étudiants provenant de 15 des plus grandes universités nord-américaines, lesquels doivent procéder à la réingénierie de véhicules Chevrolet Suburban à pleine grandeur. Ces derniers sont l'objet d'une transformation en vue d'en réduire les émissions et d'en favoriser l'efficacité énergétique, sans pour autant en sacrifier le rendement, l'utilité, la sécurité et le prix abordable, tous des éléments recherchés par le consommateur. Pour y arriver, les étudiants explorent les possibilités offertes par des procédés technologiques de pointe dans le secteur automobile, comme les piles à combustible, les systèmes perfectionnés de propulsion, les matériaux propres à l'ère spatiale et les carburants de remplacement tels que l'éthanol et l'hydrogène. Toutes les équipes, d'ailleurs, font appel à des stratégies de conception de systèmes hybrides-électricité.

La General Motors (GM) a fourni des véhicules entièrement neufs, la somme de 10 000 \$ en capitaux

de démarrage, des services-conseils en ingénierie à chaque équipe, des installations pour l'épreuve et un soutien opérationnel. L'U. S. Department of Energy (DOE), par l'entremise de sa filiale, l'Argonne National Laboratory, a assuré la gestion de l'épreuve, la dotation, l'évaluation des équipes, ainsi que l'aide technique et financière. GM et le DOE sont les principaux commanditaires du Programme FutureTruck.

Plusieurs autres grands commanditaires se sont formés en équipe pour contrinuer au Programme cette année. La Fondation nationale des sciences participe au Programme depuis son lancement; elle en assure le soutien financier et la reconnaissance nationale des membres de facultés universitaires qui, grâce à leurs efforts, ont pris une part significative aux objectifs visés par le Programme et à l'enseignement technique.

La société Cisco Systems, le chef de file mondial en matière de réseautage pour l'Internet, a donné l'occasion aux membres qui forment les équipes de compétitionner à l'intérieur du nouveau *Cisco Systems Telematics Event*. Ces équipes auront ainsi la possibilité d'explorer les nouvelles techniques sans fils, ainsi que les systèmes informatiques à l'intérieur des véhicules, en vue d'exécuter des diagnostics, de la navigation et du divertissement éducatif. Tous ces dispositifs sont aptes à améliorer la sécurité des conducteurs et des véhicules, en plus de réduire les répercussions environnementales globales. La société Cisco assure le soutien technique tout en remettant des prix en argent et en équipement aux membres des équipes choisies.

La société ArvinMeritor, qui fabrique partout dans le monde des systèmes et des modules automobiles intégrés, met une équipe d'ingénieurs à la disposition des organisateurs de l'épreuve, laquelle aidera à coordonner l'un des principaux événements techniques de cette dernière, soit l'inspection technique et de sécurité de tous les véhicules en compétition. Le Programme FuturTruck fournit à l'ArvinMeritor l'occasion d'établir des liens avec l'industrie, les gouvernements et les universités, de même que la possibilité d'en apprendre davantage sur les nouveaux marchés des véhicules hybrides électriques.

Delphi Automotive Systems, le chef de file mondial dans le domaine de la technologie reliée aux systèmes et aux éléments mobiles d'électronique et de transport, fournit les batteries et d'autres éléments à plusieurs des équipes du Programme. Les ingénieurs de la Delphi se chargent d'évaluer et de coordonner certaines des épreuves du Programme. Et de fait, la compagnie considère que le Programme FuturTruck constitue une occasion inestimable d'engager de nouveaux ingénieurs possédant des aptitudes éprouvées en matière de techniques automobiles perfectionnées.

BP Amoco a offert à plusieurs équipes son carburant diesel à faibles émissions de soufre, l'ECD-1. Avec la progression de la technologie en matière de véhicule qui se poursuit, les carburants et les lubrifiants doivent être modifiés afin de suivre le courant. L'ECD-1 va permettre aux membres des équipes d'avoir recours à des systèmes de commandes détecteurs de soufre, lesquels s'avèrent des dispositifs indispensables à la réduction des émissions produites par les véhicules.

L'Aluminium Association fait partie des partenaires réunis au sein du Programme FutureTruck depuis les tout débuts. Une partie importante de sa participation à ce dernier s'est révélée être l'évaluation et la reconnaissance de certains emplois originaux de l'aluminium qui, ainsi, ont mis en lumière les avantages liés à ce matériau. Reflets des tendances actuelles dans le secteur automobile, les équipes du Programme font appel à l'aluminium en vue de contribuer aux résultats en matière de protection de

l'environnement, de la sécurité et de la manipulation, tout en mettant particulièrement l'accent sur la diminution du poids des véhicules en vue d'une efficacité accrue des carburants.

Tous les principaux commanditaires fourniront des représentants qui agiront à titre de juges tout au cours des diverses épreuves, lesquelles se tiendront du 4 au 11 juin au «Proving Ground» de la General Motors, situé à Milford, au Michigan. Ces représentants remettront aux équipes gagnantes des prix en argent d'une valeur de 60 000 \$ au cours d'une cérémonie qui aura lieu au Musée national d'histoire Smithsonian, à Washington (D. C.), le 13 juin prochain.

Outre les principaux commanditaires, plusieurs autres organisations participeront au Programme FutureTruck à titre de soutien aux épreuves, procurant ainsi divers degrés d'aide financière, de compétences techniques et d'équipements. Chacune d'entre elles contribue également à l'évaluation des véhicules et à la remise des prix aux membres des équipes. Parmi ces dernières, mentionnons Ressources naturelles Canada, The Mathworks, Newark Electronics, National Instruments, le département du Commerce et des Affaires communautaires de l'Illinois, la Renewable Fuels Association, la Governors' Ethanol Coalition et la société Goodyear Tire and Rubber.

Les universités en compétition sont les suivantes : l'Université Concordia, l'Université Cornell, l'Université George Washington, l'Université Georgia Tech, l'Université Michigan Technological, l'Université Ohio State, l'Université Penn State, l'Université Texas Tech, l'Université Davis de la Californie, l'Université de l'Idaho, l'Université du Maryland, l'Université du Tennessee, l'Université du Wisconsin-Madison, l'Université Virginia Tech et l'Université West Virginia.

On peut obtenir de plus amples informations sur le Programme FutureTruck à l'adresse <http://www.futuretruck.org>.

FutureTruck Media Attendees
June 11, 2001
Media Day at General Motors Proving Ground

Lewis Gulick	EV News Magazine
Keith Bradsher	New York Times, Detroit
Jacques Gordon	Motor Age Magazine
Bridget Ryan	Motor Age Magazine
Richard Truett	Automotive News
Tom Nash	Motor Magazine
Bruce Pollock	U.S. Auto Scene
Sarah Kline	U.S. Auto Scene
Alec Proudfoot	Freelance Video Producer
Kevin Wilson	AutoWeek



Headline Sponsors:

U.S Department of Energy
General Motors Corporation

Major Sponsors:

National Science Foundation
Cisco Systems
ArvinMeritor
Delphi Automotive Systems
BP
Aluminum Association
Yahoo! Broadcast Services

Supporters:

The MathWorks
Newark Electronics
National Instruments
Natural Resources Canada
IL Department of Commerce and
Community Affairs
Renewable Fuels Association
Governors' Ethanol Coalition
The Goodyear Tire & Rubber Co.

Participating Schools:

Concordia University
Cornell University
The George Washington University
Georgia Institute of Technology
Michigan Technological University
The Ohio State University
Penn State University
Texas Tech University
University of California
University of Idaho
University of Maryland
University of Tennessee
University of Wisconsin
Virginia Tech
West Virginia University

What Is FutureTruck?

American buyers have been shifting away from passenger cars - more than half of all new vehicles sold in the United States today are sport utility vehicles (SUVs) and light-duty trucks. These vehicles use more fuel than passenger cars, leading to greater dependence on imported oil and increased exhaust emissions. The challenge is to develop alternative propulsion systems and fuels that demonstrate increased energy efficiency and reduced emissions while continuing to meet customer expectations for performance and comfort.

Four Years of Competition

To meet this challenge, the U.S. Department of Energy has teamed up with General Motors Corporation to challenge more than 200 of the best and brightest students from 15 universities in the United States and Canada to re-engineer full-size SUVs to meet the needs of the future, producing green, efficient transportation that has the performance, utility, and affordability that customers expect.

In the first two years of the competition (2000-2001), teams are modifying Chevrolet Suburbans by using cutting-edge technologies, such as fuel cells and other advanced propulsion systems, space-age materials, and alternative fuels including ethanol (E-85) and hydrogen. The teams are all using hybrid electric design strategies.

Teams Face Technical Challenges

FutureTruck includes a series of technical events, both static design events, such as consumer acceptability, engineering design review and technical oral presentations; and performance events, such as acceleration, trailer tow performance, off-road handling, and on-road fuel economy.

To encourage teams to develop technologies that reduce total cycle greenhouse gas (GHG) emissions, FutureTruck includes an event that measures upstream fuel-cycle emissions (pollution resulting from producing and delivering a fuel) and dynamometer emissions measurements.

FutureTruck 2001 is scheduled for June 4-13, 2001. Events will be held at the General Motors Proving Ground in Milford, Michigan. The teams will then travel to Washington, DC, for a Capitol Hill vehicle display and awards ceremony at the Smithsonian National Museum of Natural History.



**U.S. DEPARTMENT
OF ENERGY**



**GENERAL MOTORS
CORPORATION**

SCHEDULE

Date	Event	Location
Monday, June 4, 2001	Competition Begins Sponsor Reception	General Motors Milford Proving Ground, Milford, MI Delphi Technical Center, Brighton, MI
Tuesday, June 5, 2001	Safety Inspections and Qualifying Events	General Motors Milford Proving Ground, Milford, MI
Wednesday, June 6, 2001	Safety Inspections, Qualifying Events and Opening Ceremony	
Thursday, June 7, 2001	Safety Inspections, Qualifying Events and Live Webcast of Oral Presentations (8 a.m. - 5 p.m.)	
Friday, June 8, 2001	Emissions Testing and Trailer Towing	
Saturday, June 9	Emissions Testing and Trailer Towing	
Sunday, June 10	On-Road Fuel Economy Testing (8:00 am-12:00 pm), Acceleration Testing (1:30-3:00 pm), Off-Road Event (4:00-6:00 pm)	
Monday, June 11	Media Day: Design Review, Materials/Aluminum Event, Vehicle Appearance Event, Safety Event, Static Consumer Acceptability, Dynamic Consumer Acceptability	
Tuesday, June 12	Travel to Washington, DC	
Wednesday, June 13	Washington, DC Events: Finish Line Ceremony (10:30 a.m.) Capitol Hill Display (2 – 4 p.m.) Vehicle Display (6-7:30 PM) Award Ceremony (8 – 10:30 p.m.)	U.S. Department of Energy, 1000 Independence Avenue, SW Garfield Circle, Maryland Avenue and First Street, SW Madison Avenue, between 7 th and 9 th Streets Smithsonian National Museum of Natural History – Baird Auditorium

MEDIA ALERT

FutureTruck Program: Final Day of Two-Year Competition Opened to Media

Date of Event: **Monday, June 11, 2001**

Time: **Media Check-In is at 8:00 a.m.**

Location: **General Motors Milford Proving Ground, Milford, Michigan**
(Media check-in is at Lundstrom House, the first building on the left as you enter the proving ground)

Contact: Jack Groh, FutureTruck Communications (401)952-0886

MEDIA ARE STRONGLY URGED TO CALL JACK GROH AT (401)952-0886 TO REGISTER IN ADVANCE. PLEASE CALL BY FRIDAY MORNING, JUNE 8 TO GUARANTEE ACCESS TO THE SITE ON MONDAY.

Events: Reporters will be able to talk to engineering team members and observe as the vehicles go through the final stages of static and dynamic testing. Government and industry officials involved in the program will also be available on site for interviews. A list of interview availabilities will be provided at the media briefing on Monday, June 11. There will be some limited ride and drive opportunities with a few of the FutureTruck vehicles. Please indicate if you are interested in ride and drives when you call to confirm.

Photography: Photos are usually restricted at the Milford Proving Ground. However, if you notify us in advance that you are bringing photo or video equipment, you will be able to shoot the FutureTruck events on Monday. Please call by Friday to indicate if you will need photo credentials.

Schedule for Monday, June 11, 2001

8:00 a.m.	Media Check-In (arrival time) at Lundstrom House
8:30 - 9:00 a.m.	Media briefing session
9:00 a.m.	Media Access to FutureTruck events begins
9:00 - 10:30 a.m.	Ride and Drive Session One
10:30 - 12:00 p.m.	Ride and Drive Session Two
3:00 p.m.	Media Access to FutureTruck events ends

For two years, fifteen student engineering teams have been working on the challenge of greener transportation - how to make larger vehicles that can get better fuel efficiency and produce less greenhouse gas emissions. Those teams are all assembled right now at the General Motors Milford Proving Ground having their final products evaluated competitively.

More information is on the web at www.futuretruck.org.

FutureTruck Media Day, June 11, 2001

Monday June 11 Media Day	7 a.m.	Event Judging begin	Bldg 94, R&H Loop
	7:30 a.m.	Communications Staff Meeting	Lundstrom House
	8 a.m.	Media arrival/Breakfast	Lundstrom House
	8:30-9:00 a.m.	Group Media briefing Jack Groh Mark Maher Bob Larsen Gerry Wilson	Lundstrom House
	9:00-3:00 p.m.	Escorted Media Access to All Events	Bldg 94, R&H Loop, Ride and Drive Area
	10:30-12:30 p.m.	Media Ride and Drives (first session)	Behind Bldg 94
	12:30-1:00 p.m.	Media Lunch Break (lunch times are staggered – all media and PR staff should try for a 12:30 lunch)	Bldg 94 Food Tent
	1:00-3:00 p.m.	Media Ride and Drives (second and final session)	Behind Bldg 94
	3:00 p.m.	Media Day ends	

PR Event Locations and Staffing Assignments:

Event Location	PR Staff Assignments	Times
Registraton (Lundstrom)	Gerry Wilson, all other Comm staff (Freda Ballard will staff until 1 p.m.)	7:45 a.m.
Building 94	Paul Zangari, Lynda Palombo	9:00-3:00 p.m.
Reporter Groups (4):	Juanita Kukla, Jennifer Kissel, Gerry Wilson, Heidi Bailey	9:00-3:00 p.m.
R&H Loop	PR Escorts with groups	9:00-3:00 p.m.
Ride and Drive Area	Nick and Joan Spiroff	9:00-12:30 p.m.

PR Escorts should call into Jack Groh at Nextel 1265 when their media group is moving from one location to another (for example, from Bldg 94 to the R&H Loop).

FutureTruck Media Attendees
June 13, 2001
Finish Line Ceremony at DOE/Capitol, 10:30 a.m./2:00 p.m.

Tom Walker	Columbus Dispatch Broadcast Group (DOE)
Gary Murehberg	Technology TV (both)
Rob Michaud	Belo Television (DOE)
Michael Addison, Christian Kettlewell	Conus Television (DOE)
Matt Wald	New York Times, DC Bureau (DOE)
Alec Proudfoot	Freelance Video Producer (both)
Earl Lane	Newsday (Capitol Hill only)
Bernie Geyer	Fuel Cells 2000 (DOE)

MEDIA ADVISORY

FutureTruck Events: Advanced Technology Competition Finishes in DC

Date of Event: **Wednesday, June 13, 2001**

Contact: **Jack Groh, FutureTruck Communications (401)952-0886**

What: **A fleet of advanced technology sport utility prototypes coming to Washington, DC, the end of a two year project by 15 university engineering teams to design a "greener" SUV with higher fuel economy and lower greenhouse gas emissions.**

Time: **Events begin at 10:00 a.m. and at 2:00 p.m.**

Location: **Finish Line Ceremony (10 - Noon) at U.S. Department of Energy
1000 Independence Avenue, SW
Display (2-4 p.m.) U.S. Capitol, Garfield Circle
Corner of Maryland Avenue and First Street, SW**

Details: **Officials from General Motors and U.S. Department of Energy, primary sponsors of FutureTruck, will be at DOE as vehicles cross the finish line. Interviews will be available with government and industry officials as well as FutureTruck team members from across the country. Teams include: Concordia University; Cornell University; George Washington University; Georgia Tech; Michigan Technological University; Ohio State University; Penn State University; Texas Tech University; University of California, Davis; University of Idaho; University of Maryland; University of Tennessee; University of Wisconsin-Madison; Virginia Tech; and West Virginia University.**

Photography: **In addition to all the competing vehicles (15) the U.S. Navy Rock Band will perform to welcome the teams.**

Schedule for Wednesday, June 13, 2001

10:00 a.m.	Ceremony begins at U.S. Department of Energy (L'Enfant Plaza)
10:30 a.m.	FutureTruck vehicles arrive
Noon	Display ends vehicles move to U.S. Capitol
2:00 - 4:00 p.m.	Capitol Hill display (near Botanic Gardens)
8:00 p.m.	Awards Ceremony, Smithsonian Museum

More information is on the web at www.futuretruck.org.

NEWS RELEASE

For Release: Immediate
June 13, 2001

Contact: Jack Groh
(401)732-1551, (401)952-0886 cell
<http://futuretruck.home.att.net>

GOVERNMENT – INDUSTRY - UNIVERSITY PARTNERSHIP CREATES GREENER SUVs OF THE FUTURE

WASHINGTON – Engineering teams from fifteen North American universities have been working with advanced technology engineers from the auto industry and government researchers to create a cleaner, higher-mileage sport utility vehicle for the future. Engineering students and faculty advisers make up each of the “FutureTruck” competition teams that participated in this two-year engineering challenge.

Each team began with a Chevrolet Suburban sport utility vehicle donated, along with ten thousand dollars in cash, by General Motors. The U.S. Department of Energy (DOE), as the primary government partner in this program, supplied additional resources and managed the program.

In addition, more than a dozen other manufacturers, government agencies and trade associations from the United States and Canada joined as partners in this project.

“Increasing fuel efficiency and reducing greenhouse gas emissions while maintaining vehicle towing capability and customer performance expectations is a serious engineering challenge,” said Mark Maher, director of powertrain systems at General Motors. FutureTruck aimed to increase fuel efficiency and lower emissions by re-engineering the Suburban powertrain, converting the SUVs to hybrid-electric vehicles without compromising safety, performance and utility.

Each team faced the same challenge but each chose a different path to the solution. While all the vehicles used hybrid power (more than one source of energy), the variations as well as other modifications have been many. Among the fuels being used by FutureTruck teams are diesel, RFG (reformulated gasoline), biodiesel, ethanol and hydrogen (for fuel cells). Other engineering modifications included weight reduction, improved powertrain efficiency, better aerodynamics, computer-based energy management and advanced energy storage devices.

(more)

Fuel consumption in North America is a critical and growing challenge. In addition to the environmental impact of greenhouse gases, there is the economic impact felt by everyone as we depend more and more on expensive imported oil for our manufacturing, heating and transportation needs. Both the U.S. government, through the Department of Energy, and the auto industry, represented by General Motors, have made clear their commitment to working on cleaner, more efficient vehicles.

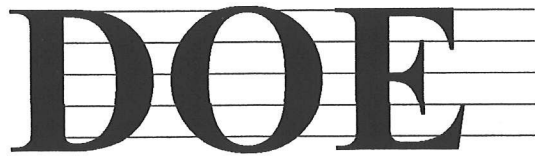
From June 4 through June 11, each team went through extensive testing and evaluation at the General Motors Proving Ground in Milford, Michigan. Competing teams win a variety of prizes and awards in several categories including overall accomplishment, greenhouse gas reduction, safety, trailer towing, fuel economy and acceleration. Each vehicle was also evaluated by a panel of government, industry and media judges for a variety of consumer acceptability features.

Following the events in Michigan, the teams traveled to Washington, DC for events and displays at the U.S. Department of Energy headquarters and Capitol Hill as well as an awards ceremony to be webcast live from the Smithsonian National Museum of Natural History on the evening of June 13.

General Motors and the U.S. Department of Energy are the title sponsors of ***FutureTruck***. Other major sponsors include: National Science Foundation, Cisco Systems, ArvinMeritor, Delphi Automotive Systems, BP, Aluminum Association, and Yahoo! Broadcast Services. Additional supporters include: The MathWorks, Newark Electronics, National Instruments, Natural Resources Canada, Illinois Department of Commerce and Community Affairs, Renewable Fuels Association, Governors' Ethanol Coalition, and The Goodyear Tire & Rubber Company. General Motors is supplying vehicles, seed money and prize money to the universities for this first stage of competition. Ford Motor Company will replace General Motors as the automotive sponsor in the second two years of competition while the U.S. Department of Energy will continue to provide financial, organizational and technical support.

Competing universities include: Concordia University; Cornell University; George Washington University; Georgia Tech; Michigan Technological University; Ohio State University; Penn State University; Texas Tech University; University of California, Davis; University of Idaho; University of Maryland; University of Tennessee; University of Wisconsin-Madison; Virginia Tech; and West Virginia University.

Additional information about the FutureTruck program is available on the web at <http://www.futuretruck.org>. Complete results for all FutureTruck events will be available after the awards ceremony on the evening of June 13.



NEWS

NEWS MEDIA CONTACT:
Lisa Cutler, 202/586-5806

FOR IMMEDIATE RELEASE
Thursday, June 14, 2001

University of California-Davis Students Win National Contest to Design Cleaner, More Efficient SUV

WASHINGTON, DC -- After two years of research and development, a team of students from the University of California-Davis won the Department of Energy's FutureTruck competition to increase the fuel efficiency and reduce greenhouse gas emissions of a stock General Motors Chevy Suburban vehicle without sacrificing performance or safety. The competition attracted 15 teams from 14 universities around the country. Second place went to the University of Wisconsin.

"I congratulate all the contestants, schools and faculty members who embraced the FutureTruck challenge of taking a well-engineered, top-of-the-line sport utility vehicle and making it even better by increasing the fuel efficiency, lowering greenhouse gas emissions, and achieving ultra-low exhaust emissions," said Secretary of Energy Spencer Abraham after meeting with the student teams and viewing the technology they deployed. "I also want to thank General Motors for being so supportive and working with us to make this project a success."

Each team developed a unique approach and spent thousands of hours testing theories through computer simulations and models as well as actual engineering modifications. Modifications include hybrid powertrains, fuel cells, advanced electronics, lightweight material substitution, alternative fuels and other advanced technologies.

"At General Motors, we measure our environmental progress in three major areas, products, plants and partnerships," said Dennis R. Minano, GM Vice President, Energy & Environment and Chief Environmental Officer. "GM is very proud of its FutureTruck partnership with DOE, because it addresses our goals of developing more environmentally sensitive vehicles through the use of advanced technologies, and facilitating the growth of tomorrow's engineering talent. The GM team has always been energized by FutureTruck's mentoring relationships, and continues to be impressed by what the participating engineering students accomplish."

(MORE)

R-01-094

The FutureTruck competitive events and testing took place June 4-11, 2001, at the General Motors Milford Proving Ground in Milford, Michigan. Following the competition, vehicles moved to a finish line ceremony yesterday at the U.S. Department of Energy headquarters in Washington, DC before being displayed at the Capitol. The FutureTruck awards ceremony was held last night at the Smithsonian National Museum of Natural History.

General Motors and the U.S. Department of Energy were the title sponsors of FutureTruck. Other major sponsors included the National Science Foundation, Cisco Systems, ArvinMeritor, Delphi Automotive Systems, BP, Aluminum Association, and Yahoo! Broadcast Services. Ford Motor Company will replace General Motors as the automotive sponsor in the second two-year competition.

Competing universities were Concordia University, Cornell University, George Washington University, Georgia Tech, Michigan Technological University, Ohio State University, Penn State University, Texas Tech University, University of California at Davis, University of Idaho, University of Maryland, University of Tennessee, University of Wisconsin-Madison, Virginia Tech, and West Virginia University.

Complete information about FutureTruck can be found on the web at www.futuretruck.org.

-DOE-

R-01-094

NEWS RELEASE

For Release: Immediate
June 15, 2001

Contact: Jack Groh (401)732-1551
(401)952-0886 cell

FutureTruck: Proof of Progress Is In The Results

WASHINGTON - After two years of development, the results are in and they show the FutureTruck program to be an unqualified success. Fifteen prototype "sport utility vehicles of the future" crossed the finish line at the U.S. Department of Energy and later that day, were on exhibit at the U.S. Capitol to tout their progress toward cleaner, greener transportation of tomorrow.

"At General Motors, we measure our environmental progress in three major areas, products, plants and partnerships," says Dennis R. Minano, GM vice president, energy & environment and chief environmental officer. "GM is very proud of our FutureTruck partnership because it addresses our goals of developing more environmentally-sensitive vehicles through the use of advanced technologies, and facilitating the growth of tomorrow's engineering talent. The GM team has always been energized by FutureTruck's mentoring relationships, and continues to be impressed by what the participating engineering students accomplish."

The engineering goals of FutureTruck were a tough challenge: take a well-engineered, top-of-the-line sport utility vehicle, and make it even better by increasing its fuel efficiency and lowering its greenhouse gas emissions while achieving ultra-low exhaust emissions: the same challenge facing every automotive manufacturer and engineer worldwide.

The top performing vehicles met or exceeded those goals with the University of Wisconsin at Madison, for example, demonstrating on-road fuel efficiency of 28 miles per gallon (gasoline equivalency), a 65 percent improvement over a stock Suburban and the same team, University of Wisconsin, reducing greenhouse gas emissions by a remarkable 50 percent when compared to the stock Chevy Suburban.

The challenge was straightforward but there was a catch. The teams were required to maintain the performance, safety and features that consumers demand in a utility vehicle. This aspect of FutureTruck elevates it from a student project into a real-world challenge.

Each team developed a unique approach – spending thousands of hours testing theories through computer simulations and models as well as actual engineering modifications. Modifications include hybrid powertrains, fuel cells, advanced electronics, lightweight material substitution, alternative fuels and other advanced technologies.

The FutureTruck competitive events and testing took place June 4-11, 2001 at the General Motors Milford Proving Ground in Milford, Michigan. Following the weeklong competition, vehicles moved to a finish line ceremony and media event on June 13 at the U.S. Department of Energy headquarters in Washington, DC. Later that day, vehicles were on display at the U.S. Capitol Building where Members of Congress met with the university teams. The FutureTruck awards ceremony was held that same evening at the Smithsonian Museum in Washington.

General Motors and the U.S. Department of Energy are the title sponsors of ***FutureTruck***. Other major sponsors include: National Science Foundation, Cisco Systems, ArvinMeritor, Delphi Automotive Systems, BP, Aluminum Association, and Yahoo! Broadcast Services. Additional supporters include: The MathWorks, Newark Electronics, National Instruments, Natural Resources Canada, Illinois Department of Commerce and Community Affairs, Renewable Fuels Association, Governors' Ethanol Coalition, and The Goodyear Tire & Rubber Company. General Motors is supplying vehicles, seed money and prize money to the universities for this first stage of competition. Ford Motor Company will replace General Motors as the automotive sponsor in the second two years of competition while the U.S. Department of Energy will continue to provide financial, organizational and technical support.

Competing universities include: Concordia University; Cornell University; George Washington University; Georgia Tech; Michigan Technological University; Ohio State University; Penn State University; Texas Tech University; University of California, Davis; University of Idaho; University of Maryland; University of Tennessee; University of Wisconsin-Madison; Virginia Tech; and West Virginia University.

Complete information about FutureTruck can be found on the web at www.futuretruck.org.

FutureTruck 2001 Awards

Lowest Greenhouse Gas Emissions:	University of Wisconsin, Madison (49.5 percent reduction over stock)
Lowest Regulated Tailpipe Emissions:	University of Maryland
Best On-Road Fuel Efficiency:	University of Wisconsin, Madison (equivalent to 28.05 mpg of gasoline)
Best Trailer Towing Performance:	University of Maryland/West Virginia University (tie)
Best Acceleration:	Georgia Tech
Safety Award:	University of Wisconsin, Madison
Best Consumer Acceptability:	Georgia Tech
Best Dynamic Handling:	Georgia Tech
Best Off-Road Performance:	University of Tennessee, Knoxville
Best Use of Advanced Vehicle Technology:	Michigan Technological University
Best Appearing Vehicle:	University of Wisconsin, Madison
Best Vehicle Design Inspection:	University of Wisconsin, Madison
Best Oral Design Presentation:	University of California at Davis
Best Technical Report:	University of Wisconsin, Madison
Best Workmanship:	University of Wisconsin, Madison
Innovations in Aluminum (1 st):	University of Wisconsin, Madison
Best Use of Materials:	University of Wisconsin, Madison
Excellence in Renewable Fuels:	Cornell University
The MathWorks Vehicle Modeling Award (1 st):	University of California at Davis
Cisco Systems Telematics Award (1 st):	University of California at Davis
Best Teamwork:	University of Tennessee
Best Sportsmanship:	Texas Tech University
Outstanding Faculty Advisor:	Dr. Jeff Hodgson (Tennessee)

Overall Awards:

First Place:	University of California at Davis
Second Place:	University of Wisconsin, Madison
Third Place:	University of Maryland
Fourth Place:	Georgia Tech
Fifth Place:	Cornell University
Sixth Place:	West Virginia University

FutureTruck 2001 Sponsors

Headline Sponsors

U.S. Department of Energy General Motors Corporation

Major Sponsors

**National Science Foundation
Cisco Systems
ArvinMeritor
Delphi Automotive Systems**

**BP
Aluminum Association
Yahoo! Broadcast Services**

Supporters

**The MathWorks
Newark Electronics
National Instruments
Natural Resources Canada
Illinois Department of Commerce and
Community Affairs**

**Renewable Fuels Association
Governors' Ethanol Coalition
The Goodyear Tire & Rubber
Company**

FutureTruck 2001 Participants

Concordia University

Cornell University

George Washington University

Georgia Tech

Michigan Technological University

Ohio State University

Penn State University

Texas Tech University

University of California, Davis

University of Idaho

University of Maryland

University of Tennessee

University of Wisconsin-Madison

Virginia Tech

West Virginia University

From Rising Gas Prices and Fighting Global Warming, to Boosting Fuel Economy – All Roads Lead to Aluminum

The auto industry today is challenged with boosting fuel economy and cutting emissions, while maintaining the vehicle size that consumers demand for both safety and convenience. Addressing that challenge, teams of engineering students are maximizing the many performance advantages of automotive aluminum as part of their efforts to win the FutureTruck competition.

The students' use of aluminum to improve environmental performance is reflective of real-world trends. Aluminum use doubled in autos over the past decade (and tripled in the lucrative light truck market), and it recently passed plastic in terms of overall vehicle content. With leading automakers committing to increase the fuel economy of their light trucks further in the near term, aluminum is likely to have an even greater role in the future.

If you'd like to learn more the environmental, safety and driving performance advantages of aluminum and why aluminum benefits automakers and consumer alike, please call Becky Snedeker at 248.784.3008.

FutureTruck 2001

Quick Facts and Background for Editors and Writers

How The Vehicles Are Judged:

- On-Road Energy Efficiency
- Greenhouse Gas Impact
- Exhaust Emissions
- Acceleration
- Trailer Towing Capability
- Engineering Design
- Consumer Acceptability
- Cost/Manufacturability

Performance Targets For *FutureTruck 2000* Competitors:

- Greenhouse Gas Impact: Reduction of two-thirds from stock
- Emissions: Equivalent to California's ULEV II exhaust emissions
- Acceleration: 0-60 mph in 12 seconds
- Towing Capacity: 7,000 lbs
- Range: 325 miles
- Luggage Space: 45.7 cu ft.
- Interior Climate Control (HVAC): Operation of HVAC and other power electronics comparable to the stock vehicle

**For further media information,
contact: Jack Groh
at (401)732-1551, or at
(401)952-0886 cell/pager.
On the web at:
<http://futuretruck.home.att.net>**

About The Competition:

The U.S. Department of Energy and General Motors Corporation are the headline sponsors for *FutureTruck 2001*. Fifteen universities from across North America were selected to participate in this competition. Each university team starts with a model-year 2000 Chevrolet Suburban SUV and ten thousand dollars in "seed" money donated by General Motors.

The primary objective of each team is to modify the existing powertrain to increase the fuel economy (energy efficiency) as measured by the total greenhouse gas impact of the vehicle without compromising the safety, convenience and performance consumers expect in this type of vehicle.

FutureTruck also creates a valuable pool of future engineers with hands-on experience in advanced vehicle technologies and awareness of their environmental impact.

Judging for *FutureTruck* takes place at the General Motors Milford Proving Ground in Milford, Michigan from June 4 to June 11, 2001. Industry experts, government officials and scientists and members of the automotive media will be involved in judging the vehicles.

Significance Of *FutureTruck*:

- Increased fuel efficiency means a stronger domestic economy.
- Cooperation between the auto industry

and government is an effective way to solve problems

- The U.S. DOE is addressing the challenge of developing clean, fuel-efficient vehicles.
- The U.S. auto industry supports the development of greener, more efficient vehicles that meet customer expectations for convenience, cost and performance.
- Training young engineers in these technologies benefits the entire country, not just the auto industry, in a number of ways (global competitiveness, energy efficiency, domestic job creation)
- Government, industry and academia are cooperating to increase fuel efficiency.
- Industry-government cooperation is a more successful strategy than industry-government confrontation.
- A decrease in foreign oil imports has a positive impact on balance of trade and provides strategic benefits to the U.S.
- Development of fuel efficiency and advanced automotive technologies improves U.S. global competitiveness.
- Nearly half of all imported oil is used for transportation needs.
- Increased fuel-efficiency is possible however there is a wide range of technical, engineering and production challenges before bringing it to market.
- Despite their traditional rivalry, the major U.S. automakers are working together to address the problem of fuel efficiency.
- The automotive industry is responsible,

directly and indirectly, for nearly 15 percent of the country's employment.

Important Dates:

September 1999: Fifteen universities each granted \$10,000 seed money to begin *FutureTruck 2000* projects.

June 4-11, 2001: Evaluation of student-modified Suburbans held at GM Milford Proving Grounds (MI)

June 7, 2001: Live web cast of student design presentations

June 13, 2001: Finish line ceremony, U.S. DOE, FutureTruck display at U.S. Capitol, award ceremony at Smithsonian Museum (web cast live) Check www.futuretruck.org for web cast details

Participating Universities:

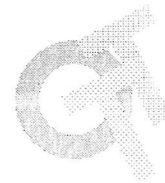
Concordia University
Cornell University
George Washington University
Georgia Institute of Technology
Michigan Technological University
Pennsylvania State University
Texas Tech University
The Ohio State University
University of California, Davis
University of Idaho
University of Maryland
University of Tennessee, Knoxville
University of Wisconsin - Madison
Virginia Tech
West Virginia University

Student Vehicle Competitions

Government and Industry sponsoring tomorrow's engineers

U.S. DEPARTMENT OF ENERGY

OFFICE OF TRANSPORTATION TECHNOLOGIES



Transportation FOR THE 21ST CENTURY

For America's advanced vehicle technology efforts to be successful, the nation needs a continuing pool of talented, innovative engineers. The U.S. Department of Energy (DOE) has been in the vanguard of fostering our national competitiveness by sponsoring competitions to help identify and encourage young engineering talent. Over the years, these programs have provided high school and college students with the opportunity to gain real-world, hands-on experience tackling the problems associated with building more efficient vehicles. These efforts are already paying off since more than half the students who graduate from these competitions go on to take jobs in the auto and related industries. Employers often look for students who have participated in these competitions.

Since 1988, more than 14,000 students, ranging in age from fourteen to their early twenties, and representing more than 600 institutions, have participated in DOE-sponsored alternative fuel, advanced vehicle technology competitions. In these events, the students have been presented with the challenge of building a vehicle running on cleaner, domestically-produced, and alternative fuels, such as propane, methanol, ethanol, natural gas, biodiesel, and electricity.

A wide range of student events:

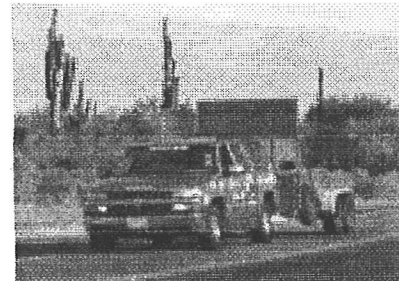
FutureCar Challenge

One of the most ambitious competitions held was the FutureCar Challenge in which university teams converted a midsize production vehicle to one which got greatly improved gas mileage without sacrificing the safety, performance, or utility of its conventional counterpart. The FutureCar Challenge ran for four consecutive years, concluding in 1999, and was sponsored by DOE and the U.S. Council for Automotive Research (USCAR), a consortium begun by America's Big Three automakers in 1996. Over the course of the program, several of the participant teams were able to increase the fuel economy of the production counterpart by as much as 100%, while at the same time achieving

spectacular reductions in tailpipe emissions. University teams also demonstrated the feasibility of using fuel cells in the automobile's powertrain and a high percentage of aluminum in the body and components to make a lighter weight vehicle. The University of Wisconsin, for instance, winner of the 1999 FutureCar Challenge, built a hybrid electric vehicle that weighed less than its conventional counterpart. In 1997, the winning FutureCar team from the University of California at Davis achieved highway fuel economy of 63 mpg with its re-engineered Ford Taurus.

Ethanol Vehicle Challenge

The Ethanol Vehicle Challenge, which began in 1998, gave college teams the opportunity to demonstrate the performance of E85 (85% ethanol, 15% gasoline) as a transportation fuel as they converted conventional vehicles into dedicated E85 vehicles. Vehicle performance, including cold-start capabilities, exhaust emissions, engineering design, on-road performance, driveability, trailer towing, off-road performance, and fuel economy were the judging criteria. Sponsored by DOE, General Motors, and Natural Resources Canada, the 2000 Ethanol Vehicle Challenge was the first to be held entirely in Canada, and was a cooperative effort of the U.S. and Canadian auto, ethanol, agriculture, and petroleum industries, academia, and government. Together, these organizations worked to advance E85 technology and provide an unparalleled engineering experience for hundreds of engineering students from 16 universities who re-engineered a Chevrolet Silverado 4x4 pickup truck to run on E85. The students' goal was to produce the most efficient, lowest-emission, and best performing vehicle. A team from the University of Texas at Austin won first place overall in the 2000 competition, beating out the other fifteen North American college and university teams to take home \$6000 in prize money. Second place went to the Canadian team from the University of Waterloo, while the University of California, Riverside, captured third place. Past winners of the Challenge have been the University of



FutureTruck 2000: The University of Maryland team demonstrates its vehicle's capabilities in the towing competition



FutureTruck 2000: West Virginia University's entry performs during the dynamic competition



The University of Texas at Austin team and their modified Silverado, winners of the 2000 Ethanol Vehicle Challenge

Illinois at Chicago (1999), and Wayne State University (1998).

FutureTruck

The growing customer demand for light-duty trucks, including pickups, sport utility vehicles, and vans, poses new rewards and challenges. In response to this demand, vehicle manufacturers are providing trucks that offer high levels of comfort and refinement, along with improved functionality. Light-duty trucks now account for nearly 50% of vehicle sales. The success of these and other vehicles in providing mobility and utility to the customer has created some serious challenges from a societal perspective. Building upon the success of the FutureCar Challenge, General Motors and the Department of Energy teamed up to sponsor FutureTruck in 2000 and 2001. Ford Motor Company will replace GM as the automotive sponsor in 2002 and 2003. During the course of this four-year competition, FutureTruck will challenge over 400 students from 15 U.S. and Canadian universities to re-engineer full-size sport utility vehicles to meet the needs of the future – producing green and efficient vehicles that will have the performance, utility, and safety that customers expect. In the first two years, General Motors is supplying the vehicles, seed money, and prize money to the university teams who are modifying model year 2000 Chevrolet Suburbans. Strategies include using cutting-edge technologies, such as fuel cells and other advanced propulsion systems, space-age materials, and alternative fuels like biodiesel and E85. The 2000 event was hosted by the General Motors Desert Proving Ground in Mesa, Arizona from June 8-15, where the winning teams proved that it was possible to increase on-road fuel economy as much as 13% over the stock Suburban. Although the University of Maryland and West Virginia University tied for first place in the 2000 competition, everyone came out a winner. "FutureTruck involves working to solve one of the most serious problems facing the entire globe. It feels good to make a difference!" one team leader was heard to say.

To pass on their engineering enthusiasm to younger generations, nearly all of the FutureTruck teams developed active partnerships with local middle or secondary schools. The younger students attended FutureTruck

workshops, met with team members, and learned how science and engineering can be exciting career choices that provide opportunities to create positive change in the world. During the visits, FutureTruck team members talked with the students, exhibited their advanced vehicle projects, and became real-life role models for the younger students.

Other Competitions

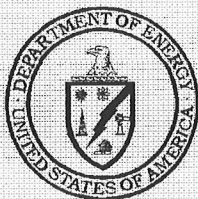
The Office of Transportation Technologies has also been a major sponsor of competitions for students in the middle grades, as well as for those in high school. For middle school students there is **Junior Solar Sprint**, a fun, hands-on educational program in which 6th, 7th, and 8th graders try their skill at constructing a solar powered vehicle capable of completing a 20-meter, wire-guided sprint race. The **Electric Vehicle (EV) International Challenge** gives high school students, teachers, electric vehicle experts, and the general public an opportunity to display their knowledge or learn about EVs. In addition, the **American Tour de Sol** is open to any group with an electric or hybrid vehicle. This competition is a long-distance road rally, with prizes going to the vehicles demonstrating the greatest range. The **Sunrayce** program, which is sponsored by the Office of Solar Energy Technologies within the Department of Energy, conducts a biennial intercollegiate competition to design, build, and race solar-powered cars in a challenging, long-distance event.

As concern grows over the possible effects of greenhouse gas emissions, depletion of nonrenewable fossil energy resources, and an increasing dependence on imported oil, society will be challenged to develop alternative propulsion systems and fuels. The DOE-sponsored student competitions are one way of stimulating interest in science and engineering among our nation's young people while increasing the pool of valuable human resources necessary to meet the challenge.


If you would like more information about the Office of Transportation Technologies, please visit our Web site at <http://www.ott.doe.gov>. If your organization is interested in becoming a sponsor of the 2001 FutureTruck competition, visit the FutureTruck Web site at <http://www.futuretruck.org>.

For more information on how DOE is helping America remain competitive in the 21st century, please contact:

Shelley Launey
Office of Transportation
Technologies
(202) 586-1573
shelley.launey@ee.doe.gov
<http://www.ott.doe.gov>



November 2000

Printed on recycled paper 

FutureTruck Team Publicity Kit

Contents

This Team Publicity Kit contains:

- ◆ Customizable News Release
- ◆ Customizable “Quick Facts For Writers and Editors”
- ◆ Customizable Media Advisory
- ◆ Sample Event Schedule
- ◆ Sample Event Plan
- ◆ Press Kit List
- ◆ FutureTruck 2001 Letterhead (2 sheets)
- ◆ Local Media/Congressional Information Guide

NEWS RELEASE

For Release: Immediate
(Enter Date)

Contact:

Name of Team Contact
Contact Phone number(s)
University team web site

(YOUR UNIVERSITY) WORKING WITH GOVERNMENT AND INDUSTRY TO CREATE GREENER SPORT UTILITY OF THE FUTURE

YOUR CITY, State. – Engineering teams from (your university) and fifteen North American universities are working with advanced technology engineers from the auto industry and government researchers to create a cleaner, higher-mileage sport utility vehicle for the future. Engineering students and faculty advisers make up each of these “FutureTruck” competition teams working on the second half of this two-year project.

Each team is working on a Chevrolet Suburban sport utility vehicle donated, along with ten thousand dollars in cash, by General Motors. The U.S. Department of Energy (DOE) is the primary government partner in this program.

In addition, more than a dozen other manufacturers, government agencies and trade associations from the United States and Canada have joined as partners in this program.

“Increasing fuel efficiency and reducing greenhouse gas emissions while maintaining vehicle towing capability and customer performance expectations is a serious engineering challenge,” said Mark Maher, director of powertrain systems at General Motors. FutureTruck aims to increase fuel efficiency and lower emissions by re-engineering the Suburban powertrain, converting the SUVs to hybrid-electric vehicles without compromising safety, performance and utility.

Each team faces the same challenge but each has chosen a different path to the solution. While all the vehicles use hybrid power (more than one source of energy), the variations as well as other modifications are many. Among the fuels being used by FutureTruck teams are diesel, RFG (reformulated gasoline), biodiesel, ethanol and hydrogen (for fuel cells). Other engineering modifications include weight reduction, improved powertrain efficiency, better aerodynamics, computer-based energy management and advanced energy storage devices. (Brief description of your team’s strategy.)

“These young engineers are learning vital skills and new ways of solving problems,” said Bob Larsen of Argonne National Laboratory, the DOE facility that manages the FutureTruck competition. “Developing advanced technology is the program’s main focus

but these future engineers are also learning how to collaborate effectively with people from the private and public sectors.”

Fuel consumption in North America is a critical and growing challenge. In addition to the environmental impact of greenhouse gases, there is the economic impact felt by everyone as we depend more and more on expensive imported oil for our manufacturing, heating and transportation needs. Both the U.S. government, through the Department of Energy, and the auto industry, represented by General Motors, have made clear their commitment to working on cleaner, more efficient vehicles.

In June of this year (June 4-11), the teams will all travel to the Detroit area. Each team will go through extensive testing and evaluation at the General Motors Proving Ground in Milford, Michigan. Competing teams win a variety of prizes and awards in several categories including overall accomplishment, greenhouse gas reduction, safety, trailer towing, fuel economy and acceleration. Each vehicle is also evaluated by a panel of government, industry and media judges for a variety of consumer acceptability features.

Following competitive events in Michigan, the teams will travel to Washington, DC for events and displays at the U.S. Department of Energy headquarters and Capitol Hill as well as an awards ceremony webcast live from the Smithsonian National Museum of Natural History on June 13.

General Motors and the U.S. Department of Energy are the title sponsors of ***FutureTruck***. Other major sponsors include: National Science Foundation, Cisco Systems, ArvinMeritor, Delphi Automotive Systems, BP, Aluminum Association, and Yahoo! Broadcast Services. Additional supporters include: The MathWorks, Newark Electronics, National Instruments, Natural Resources Canada, Illinois Department of Commerce and Community Affairs, Renewable Fuels Association, Governors' Ethanol Coalition, and The Goodyear Tire & Rubber Company. General Motors is supplying vehicles, seed money and prize money to the universities for this first stage of competition. Ford Motor Company will replace General Motors as the automotive sponsor in the second two years of competition while the U.S. Department of Energy will continue to provide financial, organizational and technical support.

Competing universities include: Concordia University; Cornell University; George Washington University; Georgia Tech; Michigan Technological University; Ohio State University; Penn State University; Texas Tech University; University of California, Davis; University of Idaho; University of Maryland; University of Tennessee; University of Wisconsin-Madison; Virginia Tech; and West Virginia University.

Additional information about the FutureTruck program is available on the web at <http://www.futuretruck.org>

FutureTruck

Quick Facts and Background for Writers and Editors

How the vehicles are judged:

- On-Road Energy Efficiency
- Greenhouse Gas Impact
- Exhaust Emissions
- Acceleration
- Trailer Towing Capability
- Engineering Design
- Consumer Acceptability
- Cost/Manufacturability

Judging Targets for *FutureTruck* Competitors:

- Greenhouse Gas Impact: Reduction of two-thirds from stock
- Emissions: Equivalent to California's LEV II (low emission vehicle) standard
- Acceleration: 0-60 mph in 12 seconds
- Towing Capacity: 7,000 lbs
- Range: 325 miles
- Luggage Space: 70.6 cu ft.
- Interior Climate Control (HVAC): Equal to current production standards

**For further media information
about FutureTruck,
contact: Jack Groh
at (401)732-1551, or at
(401)952-0886 cell/pager.
On the web at:**

<http://members.aol.com/futurcar>

About the Competition:

FutureTruck is sponsored by the U.S. Department of Energy and General Motors Corporation. Fifteen universities from across North America were selected to participate in this competition. Each university team starts with a model-year 2000 Chevrolet Suburban SUV and \$10,000 in "seed" money donated by General Motors.

The primary objective of each team is to modify the existing powertrain to increase the fuel economy (energy efficiency) as measured by the total greenhouse gas impact of the vehicle without compromising the safety, convenience and performance consumers expect in this type of vehicle.

FutureTruck also aims to create a valuable pool of future engineers with hands-on experience in advanced vehicle technologies

Judging for *FutureTruck* takes place at the General Motors Proving Ground in Milford, Michigan from June 4-11, 2001. Industry experts, government officials and scientists and members of the automotive media will be involved in judging the vehicles.

Significance of *FutureTruck* 2000:

- Increased fuel efficiency means a stronger domestic economy.
- Cooperation between the auto industry and government is an effective way to solve problems

- The U.S. DOE is addressing the challenge of developing clean, fuel-efficient vehicles.
- The U.S. auto industry supports the development of greener, more efficient vehicles that meet customer expectations for convenience, cost and performance.
- Training young engineers in these technologies benefits the entire country, not just the auto industry, in a number of ways (global competitiveness, energy efficiency, domestic job creation)
- Government, industry and academia are cooperating to increase fuel efficiency.
- Industry-government cooperation is a more successful strategy than industry-government confrontation.
- A decrease in foreign oil imports has a positive impact on balance of trade and provides strategic benefits to the U.S.
- Development of fuel efficiency and advanced automotive technologies improves U.S. global competitiveness.
- Nearly half of all imported oil is used for transportation needs.
- Increased fuel-efficiency is possible however there is a wide range of technical, engineering and production challenges before bringing it to market.
- Despite their traditional rivalry, the major U.S. automakers are working together to address the problem of fuel efficiency.
- The automotive industry is responsible, directly and indirectly, for nearly 15 percent of the country's employment.

Important Dates:

September 1999: Fifteen universities each granted \$10,000 seed money to begin *FutureTruck 2000* projects.

December 1999: 2000-model year Chevrolet Suburban SUV delivered to each *FutureTruck 2000* university.

June 2000: Initial judging of student-modified Suburbans held at General Motors Desert Proving Grounds, in Mesa, Arizona.

June 2001: Final judging of student-modified Suburbans held at General Motors Proving Grounds, in Milford, Michigan.

Participating Universities:

Concordia University
Cornell University
George Washington University
Georgia Institute of Technology
Michigan Technological University
Pennsylvania State University
Texas Tech University
The Ohio State University
University of California - Davis
University of Idaho
University of Maryland
University of Tennessee, Knoxville
University of Wisconsin at Madison
Virginia Polytechnic Institute
West Virginia University

Media Advisory

Date of Event: Contact: ((fill in name and number of person the media can
((Day and date of event)) contact – particularly on the day of the event.))

What: Announcement of the FutureTruck advanced vehicle competition and display of the vehicle, a model year 2000 Chevy Suburban. ((Name of university)) is one of 15 prestigious universities across North America chosen to re-engineer this sport utility vehicle to make it a “greener” vehicle.

Where: ((Fill in exact location on campus and brief directions))

When: ((Fill in the day of the week, date and time of event.))

Who: ((Fill in the name of two or three VIPs who will be participating, including the person designated to be the FutureTruck team spokesperson.))

Significance: ((Name of university)) is participating in one of the most important engineering challenges in the world today: to make vehicles more environmentally friendly by increasing fuel efficiency and decreasing overall greenhouse gas production.

Photo Ops: ((Mention what types of photo ops will be available. For example you can say that the vehicle will be displayed inside or outdoors, describe any other vehicles or exhibits that might accompany it, and list any other activities that will be going on. Activities could include mechanical work being done, test drives, award presentations, school tours, public displays, etc.))

FutureTruck Team Publicity Kit

Sample Schedule

You can use this sample schedule for organizing a publicity event. "D" equals the date of your event. All dates are measured from that date. For example "D-8" would be eight days before the event.

<u>Date:</u>	<u>Activity:</u>
D-?	At earliest opportunity, contact University PR office and tell them about the event. Ask them if they can help you organize it and invite VIPs.
D-7	Contact VIPs by phone to invite them and follow up with a faxed letter of invitation asking for an RSVP. Indicate in your invitation if you want them to speak or otherwise participate actively in the event.
D-6	Prepare customized version of news release and Quick Facts, Submit media materials to appropriate parties for approval
D-4	Follow up calls to VIPs who have not RSVPed, Add names of attending VIPs to media advisory listed under "Who"
D-3	Send Media Advisory to all local media including TV, newspaper, news radio and local bureau for wire services
D-2	Print up copies of news release, Quick Facts and other media materials, Prepare press kits
D-1	Call TV Assignment Editors and newspaper City Editor between 7-8 a.m. to remind them of event, Let them know what your rainy weather plan is
D	Event Date, Final calls to local media between 7-8 a.m., Event photography, Press Kits or news releases distributed on site, Videotape newscasts to record coverage of your event
D+1	Get copies of local newspaper clippings

FutureTruck Team Publicity Kit

Public Relations/Team Publicity Plan

Getting Started

Every team needs to get involved in their own publicity and public relations efforts. You know your team the best and can do the best job “selling” your team to the different audiences that you need to reach. An audience is just a group of people who you are trying to get involved in some way with your efforts. The key audiences you need to reach include: university officials, on-campus publications, off-campus media, local members of Congress, local government officials, existing sponsors, potential future sponsors and potential employers.

The arrival of your vehicle on campus – as well as any other event you can identify that will mark “milestones” in your team’s progress – provides you with an opportunity to put together a publicity event that will reach out to some or all of these key audiences. In most cases, the vehicle arrival is the first time you will have a really good “hands on” opportunity to show people what your project is about.

Type of Event

The first thing you need to determine is the type of publicity event you will hold. It can be as simple as just writing and sending out a news release to local campus and news media. It could involve sending out a media advisory that invites media to an event on campus to unveil your new vehicle and talk about your university’s role in the much-larger national effort to increase vehicle fuel efficiency. Or it could even be a full-blown media event and reception that includes sponsors, university officials, members of Congress and others to really kick off your program with a bang.

The type of event depends on a number of things including: how much team-time you have to devote to a publicity project, how much support and participation you will have from the university PR department, and how important it is to your team, at this particular time, to reach those key audiences.

Start by contacting the university PR department and telling them you are planning to publicize your vehicle’s arrival and ask them how much of the work they feel comfortable doing in partnership with you. Also ask them how much they are comfortable having your team members do. Once you’ve done this, you should have a pretty good idea of how involved you want to make the event.

Timing and Location

The timing of the event is flexible. You don’t need to do an event on the day your vehicle arrives. In fact, it is better to wait anywhere from a few days to a few weeks so that you can set things up after the vehicle arrives and so that the team will have had a chance to look over the vehicle and perhaps even have begun work. The week just before Christmas is usually not a good time for an event in most media markets. Most news organizations have a fairly regular set of holiday theme stories they are planning to cover and aren’t looking for

new ideas quite as much. The week between Christmas and New Year's can be a good time for an event since a lot of other regular news-type events are not scheduled. Also consider scheduling a media event right after the first of the year and trying to tie in the theme of "new types of transportation technology for the future."

During the next seven months, you should keep looking for other opportunities for publicity.

When you select a location, you should always think in terms of pictures – whether for newspapers or for television. If you have an active laboratory/workshop area where there are good photo opportunities, consider using that. Depending on weather, you may want to choose an outdoor location where there is foot traffic and a good chance of drawing spectators.

Media Materials and Schedule

Check through this Team Publicity Kit and you will find a sample event schedule and lots of media materials you can use. All scheduling should be timed backwards from the day of the event so as to allow you enough time to prepare properly. Always make sure you have a rain plan. Let me say that again: Always have a rain plan! If you are going to cancel in case of bad weather, let media organizations know that in advance. If you are going rain or shine, let them know that as well. And if you have either an alternative rain location or an alternative rain date, make that known in advance as well.

The media materials in the Team PR Kit are easy to customize. We've clearly marked the parts of the news release and the quick facts that should be customized. In the news release, most of what needs to be done is adding references to your university.

In the Quick Facts, you should remove some or all of the red-highlighted sections and substitute information such as:

1. The make-up of your team including team members' area of study (majors), genders, graduate/undergrad breakdown, and the size of the team
2. The powertrain strategy you are planning to use
3. Any other significant engineering modifications you're planning
4. A brief history of the university's advanced vehicle projects.
5. A list of key supporters and sponsors to date for your team

Contacting VIPs

There are several local VIPs who you can consider asking to participate in a media event. These include the Congressman who represents the district where your university is located, the university president or chancellor, the local city mayor or city council member, as well as sponsors and local employers. Invitations to these folks should be made, by phone call and fax, at least a week in advance of the event.

Before inviting any of these VIPs, you need to determine how long your entire program will be and then figure out how long you want any one person to speak. For example, if your Congressman attends you can presume that he or she is planning to speak – that's what members of Congress do. When you invite a member of Congress, you will be dealing with either a scheduler or a press secretary in the Congressman's local office. Tell that contact person how much time you have set aside for the Congressman's remarks – anywhere from three to five minutes is usually fine – and also ask the contact person where in the speaking order the Congressman would prefer to appear. Tell them who else is speaking and ask them who they would like to have introduce the Congressman.

If you are able to get one of the state's U.S. Senators to attend, the procedure is also the same. For other VIPs, you should follow much the same routine as for the members of Congress. A Senator or member of Congress will almost always plan to address the attendees. However, other VIPs may or may not want to speak and you may or may not invite them specifically for that purpose. Make sure you have decided that in advance and tell the VIPs in advance whether you want them to speak or not and, if they are speaking, how long they have for their remarks. In general, for a short news event, you should try to limit the entire speaking program to twenty minutes or less. Less is almost always better.

Equipment Setup

For any media or public event you will need some equipment set up. In many cases, the university will have a standard setup to use and will take care of the details. However, you should know what the needs are just in case you have to set things up yourself or supervise the setup.

The list will vary depending on the size and the type of event but, in general, some things you may need are:

1. Podium with microphone and the university logo attached on the front of the podium
2. Convenient electric outlets for use by photographers and videographers in lighting the presentation area
3. Chairs for speakers and/or attendees
4. Water and water glasses for attendees
5. Refreshments for attendees, especially beverages
6. Press materials either in a "kit" folder or as separate sheets
7. Sign-in sheet for media or VIPs
8. A Master of Ceremonies who can call things to order and introduce speakers
9. Proper lighting for photography (indoors)
10. Parking permits for VIPs and press
11. Signs or guides to direct press and VIPs to the event area
12. Photographer who can get pictures for your post-event use – this can be a team member who is good with a camera, a university photographer, or a free-lance photographer hired specifically for this event. The last option is expensive so I would recommend that you try to do this "in-house" using a team member or university photographer.

Follow Up

After the event is over, there are several things you should do. First, you should videotape any television news coverage – a regular VCR set at high speed (SP) will do just fine. You should also check local newspapers for articles for the next several days. Some newspapers will do the story the next day while others, particularly weeklies, may hold the story a few days or even a week before it appears.

Next, you should get your photos developed and attach captions to the backs of the photos. Don't write directly onto the photos. Instead, write the names of the people on a label and then glue the label to the back of the photo. Always list people from left to right when you write these photo captions.

Send copies of photos with captions attached to the back, to Jack Groh at the FutureTruck Communications Office. You can send prints or you can scan them and email

them. If you email a photo, please scan it twice – once at 75 dpi for use on our web site and a second time at 300 dpi for publication. Guidelines for the photos we can use include:

1. Take photos in small groups rather than huge ones. A photo of three to seven people will always look better than one with 15 people in it.
2. Keep your VIPs in the photos (Congressman, Senator, university president) and change the students or team advisers.
3. Get shots with different students in each.
4. Use an interesting background. If possible, show the vehicle in the photo background. You can also include the school logo or name as long as it is in the background.

The FutureTruck Communications Office already has lists of newspapers from many of the FutureTruck team members' hometowns. In addition to the newspaper placements that you are able to get in your local area, we can often get some publicity in the hometown newspapers of team members.

Another use for photos is to send them to your own local newspapers. If you have some interest by local newspapers but for whatever reason they are unable to send someone to cover the event, you can call and ask them if they would like you to send a photo of the event. You should do this regardless of whether you have any VIPs attending. Often, local newspapers are more interested in local people than they are in VIPs who may have already been photographed a lot recently and may be a bit overexposed in the local press.

How To Get Help

Your first stop for assistance should be the university public relations, communications or community affairs department – whoever handles internal and external university publicity. They can be a very helpful partner and multiply your efforts many times over by their participation. You may also want to check with your key sponsors and find out who their PR contact is. Ask the sponsor PR contact if they would like to help you plan an event to promote your team and to promote the sponsor's role in the project.

The next step is to contact us at the FutureTruck Communications Office. Jack Groh and Paul Zangari work on communications planning for the overall competition but can also help with individual team promotion. At the very least, you should let them know what you are working on and make sure you forward any news clippings to them during the months leading up to and following the competition. They can also help you with contact information on your local media and local members of Congress if that information is not readily available from your university PR department.

You can reach Jack or Paul by phone at (401)732-1551, by fax at (401)732-0547 or by email at GrohPR@aol.com. If you are mailing photo prints, send them to: Jack Groh, FutureTruck Communications Office, 40 Moulton Circle, Warwick, RI 02886.

FutureTruck Team Publicity Kit

Press Kit Contents List

You can use this sample list for organizing your press kit. You may choose to have a simple news release and a backgrounder or a more extensive press kit. Either way, you should only include material that will help a writer or editor understand the significance of your project. Don't include extra material just to "pad" the press kit.

<u>Item:</u>	<u>Description:</u>
News Release	This should be customized (see included sample news release) to the particular event. Keep in mind the purpose of the media event. Whatever the "news" is should be near the top of the release, not buried someplace down the page.
Quick Facts	This is like a set of "Cliff Notes" for a reporter. It contains all those detailed bits and pieces of information that help a writer sound like they really know the subject they're writing about. A sample is included in this press kit along with instructions on how you can customize it to highlight your own team, university and vehicle.
Team Info Sheet	If you already have an information sheet about your team, including some background on other alternative vehicle projects the university has been involved in, include it as background information.
Schedule	If you are doing a formal presentation, for example having the university president speak or having local VIPs attend or speak, you should make up a schedule listing events and speakers in order.
University Info	Ask the university PR department if they have a standard piece or brochure that they would like you to include.

FutureTruck Team Publicity Kit

Local Media List

List Contents

You will need a list of local media organizations to send your news release or media advisory to in order to generate coverage. The list should contain the name of the media organization, address, telephone and fax number, and the name of a contact person at the media outlet.

The list should contain the local daily newspaper(s), local weekly newspaper, local weekly alternative newspaper, local television stations (usually three or four depending on market size), the local bureaus of Associated Press and United Press International, and the local news radio station(s) including the NPR affiliate. You should also have a list of the college publications and where to submit material for each of them.

List Access

So where do you get this list? Well, you can look all this stuff up but that's the hard way to do it. Your university communications or public relations or university relations department will already have a complete list including all the contact information you need. In fact, in many cases, the university PR department will handle many of these details for you including sending out the news release and contacting local media. But in case the university PR department is unable to assist, you will need to send out the news release and do the follow-up calls yourself.

If the university PR department can't supply you with a local media list, please contact our office (Groh Associates/FutureTruck Communications Office – Jack Groh or Paul Zangari 401-732-1551) and we will email or fax you a local media list right away for your local university area. We keep all this information on file and can print you a copy upon request.

Local Congressional List

Another contact you may want to make to publicize the arrival of your vehicle and the beginning of your project is the local Congressional office. As with the local media list, the university PR department should be able to supply you with the name of your local Congressman as well as a phone number and contact name in the Congressman's local office. The same holds true for your U.S. Senators.

Why should you invite members of Congress? Since FutureTruck is a jointly sponsored program of General Motors and the U.S. Department of Energy it is considered a public (DOE) and private (GM) sector venture. Members of Congress are the ones who vote to appropriate funds for programs like this one and they are more likely to do so if they have had an opportunity to see, in person, what these competitions

are all about. Because a great deal of the support for these competitions comes from the federal government, members of Congress deserve credit for their support of such programs and the opportunities that these programs offer to students, to industry and to the entire country.

As with the local media list, if there is any reason that your university PR office can't supply this list, contact Jack or Paul right away and we will get you the Congressional contact information.

Other Contacts

Depending on how large you and the university want to make your publicity event, you or the university may want to invite top university officials, other civic leaders (mayor or city council members), local business leaders and potential sponsors. This is also a good time to invite your existing local sponsors in order to pay a little extra attention to them.

There are also a number of other people who you may decide to invite to the event – some of whom may not have occurred to you. These include: families of team members, the general public, the university population in general, other professors in engineering and technical disciplines, members of the local Society of Automotive Engineers (SAE) chapter, members of the International Motor Press Association (IMPA) and local employers – particularly those who employ engineers and other technically trained people.

FutureTruck 2001



Congressional Attendees Congressional Campaign Materials

• • *Section 5* • • • • • • •

**U.S. Representatives Attending FutureTruck Capitol Hill Display
June 13, 2001**

<u>Representative's Name</u>	<u>Rep Dist/Party</u>
Roscoe Bartlett	MD 6 R
Larry Combest	TX 19 R
John Dingell	MI 16 D
Wayne Gilchrest	MD 1 R
Mark Green	WI 8 R
Van Hilleary	TN 4 R
Johnny Isakson	GA 6 R
Paul Kanjorski	PA 11 D
Dale Kildee	MI 9 D
Sander Levin	MI 12 D
John Linder	GA 11 R
Jim McGovern	MA 3 D
George Miller	CA 7 D
Butch Otter	ID 1 R
Tom Petri	WI 6 R
Thomas Reynolds	NY 27 R
Mike Rogers	MI 8 R
Charles Stenholm	TX 17 D
Bart Stupak	MI 1 D

**U.S. Senators Attending FutureTruck Capitol Hill Display
June 13, 2001**

<u>Senator's Name</u>	<u>State/Party</u>
Carl Levin	MI-D
Bob Smith	NH-R
Debbie Stabenow	MI-D
George Voinovich	OH-R

FutureTruck 2001

Congressional Contact Kit Instructions/Checklist

PLEASE READ THIS PAGE FIRST.

Your help in contacting your Congressman is very important. If you have any questions, please call Jack Groh or Paul Zangari at (401)732-1551.

Improving efficiency and lowering emissions of SUVs is a key goal of the *FutureTruck Program*. While the teams are in Washington, we want to inform Congress about the program and its benefits. To this end, all *FutureTruck* participants, like yourself, have Congressional contact kits.

As a constituent, you are important to your Senators and Representative. The aim of this kit is to help you contact the members of your delegation and encourage them to see the accomplishments of the *FutureTruck Program* first-hand when we go to Washington in June.

Packing list:

Your *FutureTruck* Congressional Contact Kit contains the following:

- A letter to your home-district U.S. Congressman;
- A letter to the senior U.S. Senator from your home state;
- A letter to the junior U.S. Senator from your home state;
- Pre-addressed, stamped envelopes, one for each Congressional letter;
- Talking points and telephone script for use in contacting your Congressman's office;
- Form for reporting back to us on your Congressional contact;
- and this letter.

YOUR JOB IS EASY! ALL YOU HAVE TO DO IS:

1. Sign the 3 letters to your Senators and Congressman AS SOON AS YOU RECEIVE THEM! Make sure the addressee on the letter matches the address on the outside of the envelope. (You have three letters and each has only one matching envelope).

2. Seal and mail them IMMEDIATELY!

3. About 2-3 days after you mail the letters, make the phone call you have been assigned. You will find details on who to call on your "talking points" sheet in this package. Fill out your report form during the call and fax it to us right away.

4. Go celebrate. Your job in the Congressional campaign is completed!

Good luck and thanks for your help in this important aspect of *FutureTruck*.

Jack Groh
Communications Director



May 25, 2001

The Honorable Sue Kelly
U.S. House of Representatives
1127 Longworth House Office Building
Washington, DC 20515

Dear Representative Kelly:

I am an engineering student at Pennsylvania State University a member of the team taking part in the *FutureTruck Program*, and one of your constituents. I am writing to let you know that our *FutureTruck* team from Pennsylvania State University will have our vehicle on display on the Southwest side of Capitol Hill on June 13 from 2:00 p.m. to 4:00 p.m. at Garfield Circle (located at the intersection of Maryland Avenue and First Street).

I invite you to stop by, see what we have accomplished over the past two years, and join us in a photograph we will be sending back to the college and to local newspapers.

Pennsylvania State University is one of fifteen engineering colleges chosen to compete in the *FutureTruck Program*. Major event sponsors include the U.S. Department of Energy and General Motors Corporation in cooperation with more than a dozen other key sponsors nationwide. Our "challenge" has been to modify a brand new Chevrolet Suburban sport utility vehicle to increase fuel efficiency and lower greenhouse gas emissions while maintaining the performance, utility, and safety that American consumers demand.

Each school has taken a unique approach to the challenge. While most teams have decided to create a hybrid power train, each of us has selected different ways to do that and made many other modifications as well to reach our goal.

I know that members of Congress have very busy schedules, but I believe what we're trying to accomplish is important. I hope you can join my teammates and me on June 13 at the outdoor vehicle display. Either Jack Groh or Paul Zangari from *FutureTruck* will be in touch with your press secretary soon to see if you can join us. Meanwhile, if you have any questions, they may be reached at (401)732-1551. Thank you very much.

Sincerely,

Megan J. Carroll

Headline Sponsors

U.S Department of Energy
General Motors Corporation

Major Sponsors

National Science Foundation
Cisco Systems
ArvinMeritor
Delphi Automotive Systems
BP Amoco
Aluminum Association

Supporters

The MathWorks
Newark Electronics
National Instruments
Natural Resources Canada
IL Department of Commerce and
Community Affairs
Renewable Fuels Association
Governors' Ethanol Coalition
The Goodyear Tire & Rubber Co.

Participating Schools

Concordia University
Cornell University
George Washington University
Georgia Institute of Technology
Michigan Technological University
Ohio State University
Pennsylvania State University
Texas Tech University
University of California, Davis
University of Idaho
University of Maryland
University of Tennessee
University of Wisconsin-Madison
Virginia Tech
West Virginia University



**U.S. DEPARTMENT
OF ENERGY**



**GENERAL MOTORS
CORPORATION**

TELEPHONING YOUR CONGRESSMAN

IF THIS DOCUMENT IS IN YOUR PACKAGE, THEN YOU HAVE BEEN DESIGNATED TO CALL YOUR MEMBER OF CONGRESS.

NOTE: When you reach the office of the Congressman, ask for the contact we have identified on the Congressman's staff. (That information will be on a separate document.)

The following script has been prepared for your use in phoning your Congressman. *It is only here to make your role easier.* Feel free to use your own ideas and add any information you think would be of interest.

TELEPHONE SCRIPT:

"Hello. My name is (fill in your full name) from (fill in your hometown)."

"I am a constituent of Congressman (fill in Congressman's last name) and a member of the (name of your university) **FutureTruck** team. I am following up on the invitation sent to Congressman (fill in Congressman's last name) a few days ago to visit my team when we're in Washington on Wednesday, June 13. We are hoping the Congressman could come by and see what we're accomplishing, and to pose with us for a photo. That picture will be provided to your own press secretary and to newspapers back home."

"Our FutureTruck vehicle will be on display on Capitol Hill from 2:00 until 4:00 on the afternoon of Wednesday, June 13 at Garfield Circle on the Southwest side of the Capitol at the intersection of Maryland Avenue and First Street. Will Congressman (fill in Congressman's last name) be able to come by?"

If the congressional staffer says the Congressman CAN attend:

"I'm glad that Congressman (fill in Congressman's last name) can come. Please let him/her know there will be a table set up near the FutureTrucks where someone can direct the Congressman to my team, and arrange for a team photo with the Congressman. Thanks very much."

If the congressional staffer says the Congressman MIGHT attend:

"When would be a good time to have someone call back to check with you?"

If the Congressman can NOT attend:

"I'm sorry to hear that. Perhaps he/she could us at the university when he/she is back in the district? Thank you."

TALKING POINTS FOR CONGRESSIONAL CALLS
for Megan J. Carroll
(please see attached telephone script for more information)

You are calling the office of Representative Sue Kelly who represents your own home district. As a constituent, you are someone important to the people in this offices. The office should have already received your letter, and in some cases, letters from several teammates. Even if the letters have not arrived yet, tell them the letter is on the way and continue with your phone script.

This is the person you should ask for:

Nick Curran, the Legislative Director in Representative Sue Kelly's office

Telephone: 202-225-5441

The purpose of your call is to encourage your Congressman to visit you and your team when *FutureTruck* is in Washington on Wednesday, June 13. We hope they will be impressed by your effort and will better understand the importance of student competitions like *FutureTruck*.

Points to make when speaking to the designated contact person in the office:

- Identify yourself by name and as a student at Pennsylvania State University and a participant in *FutureTruck*.
- Explain how proud you are of what you and your teammates have accomplished in building your *FutureTruck* , and how you want to show what you've done to your own Representative in Congress.
- All teams and cars will be displayed on Capitol Hill (Garfield Circle at the intersection of Maryland Avenue and First Street, SW).
- Remind the contact person that you want to have your photo taken with the Congressman and that the photo will be made available to your college and local newspapers back home.
- Ask specifically if the Congressman is planning to visit the *FutureTruck* display on Wednesday, June 13 between 2- 4 p.m..

Tell the contact person that there will be a table set up near the cars with information about *FutureTruck* and someone to take the Congressman's photo and to make sure a copy reaches their press secretary.

FutureTruck 2001

Congressional Contact Report Form

Please fill out **one** copy of this form during your call to **each** Senator and Congressman and fax this form **IMMEDIATELY** to Groh Associates at (401)732-0547.
If you have questions, contact Paul Zangari or Jack Groh at (401)732-1551.

Your name: _____

University: _____

Name of Senator/Congressman: _____

Date of call: _____

Name of person you called: _____

Were you referred to someone else?

If so, write their name/title: _____

Circle a number to represent the person's interest (1=no interest, 10=enthusiastic interest):

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Ask specifically if the Senator/Congressman will attend the display and team photo opportunity on Wednesday afternoon, June 13 between 2:00 - 4:00 p.m. on Capitol Hill on the Southwest side at Garfield Circle located at the intersection of Maryland Avenue and First Street.

What was the answer? _____

If they are unable to confirm the Senator/Congressman's appearance right now, ask what would be a good date to call them back. What date did they suggest? _____

Please ask if there is any additional information they would like about FutureTruck and who they would like it sent to. Groh Associates will send the material to them. What did they request and to whom? _____

Please list any other information/ideas/suggestions that you think would be helpful in getting your Senator/Congressman to attend the display: _____
