

ELECTRIC AUTO



NEWS

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ASSOCIATION

Vol. XXII NO. 8

WASHINGTON -- General Motors Chairman Roger B. Smith said today that GM is taking a major step to assist the country in meeting its transportation needs and environmental goals by proceeding with plans to produce and sell an electric-powered car for personal transportation use.

Speaking at the National Press Club, Mr. Smith said the Corporation's goal is to be the first automobile company to mass produce an electric vehicle that performs as well as current internal combustion engine vehicles.

"We have set an aggressive schedule for ourselves in order to pull along the technological developments that we still need," he said.

Mr. Smith said GM has completed its business plans for an electric vehicle and is working to complete production plans and marketing and service arrangements.

"When we look at the strict clean-air legislation now being proposed for many areas of the country, we are convinced that the Impact has a bright future," he said.

GM's prototype Impact, introduced publicly at the beginning of the year, has range capabilities suitable for most drivers' daily needs. It accelerates from 0 to 60 in eight seconds, has a speed range comparable to that of motor cars on the road today, and has a range of 125 miles.

GM is applying for nearly a dozen patents on various innovations on the Impact, which features new developments in electronics, motor design, structural materials, tires and batteries, coupled with careful attention to weight and rolling design efficiencies.

XA-100 — Unlimited Range Electric Vehicle

The XA-100 is a conventional 5-passenger Chevrolet Corsica converted to hybridelectric propulsion drive. An electric motor and controller have replaced the stock gasoline engine, and an engine/alternator option provides power for long trips.

The XA-100 uses electric power from its batteries for short around town and commute trips, emitting zero exhaust emissions. On long trips the engine/alternator provides a continuous supply of power that permits unlimited range with only periodic stops for refueling like a conventional car. The emissions from the engine are minimized by operating in a constant-speed constant-load operating mode. Vehicle batteries can be recharged from the on-board engine/alternator or from any conventional 110 (or 220) volt outlet.

The vehicle is designed to provide brisk acceleration comparable to the stock Corsica and sustained highway speeds.

This research project is funded by the California Energy Commission's Energy Technologies Advancement Program (ETAP) with matching volunteer labor from members of the Electric Auto Association (EAA) and students and staff from Stanford University.

Additional support has been donated by: Chevron Research; Global Van Lines; Cooley Godward Castro Huddleson & Tatum; Delco Remy div. of General Motors; Hewlett Packard; S.B. Herrick; Walker Engineering; E.A.R. Specialty Components; Jet Propulsion Laboratory; The Gates Rubber Company; Motion Industries; AMETEK; Lamb Electric Division; Hayden, Inc.; AVOCET; Apple Computer; Dana Automotive; Cycle City; Gregg's TV & Appliance; Precision Automotive Service

Key subsystems have been supplied by: Unique Mobility, Inc.; Norton Motors, Ltd.; Curtis PMC and General Electric

PRESS RELEASE

FOR IMMEDIATE RELEASE

July 6, 1990

CONTACT

Claudia Barker (916) 324-3298

PUBLIC INFORMATION OFFICE / 916-324-3298

"Unlimited Range" Electric Car to Debut as "Chase Car" In GM Sunrayce USA, Florida to Detroit Solar Car Race

Solar-powered cars may be the wave of the future. They're non-polluting and get their energy free, directly from the sun. But the sun doesn't always shine; we have cloudy days where the sun doesn't peek out from behind those silver linings. And don't forget about night time.

So, what would an environmentally conscious person drive? If you're from the Electric Automobile Association or Stanford University and are participating in Sunrayce USA, you'd be driving an "unlimited range electric car," a hybrid vehicle that's powered by both electricity and a small fossil-fueled engine/generator.

The GM Sunrayce USA (sponsored by General Motors Corporation, the U.S. Department of Energy and the Society of Automotive Engineers) is an 1,800 mile, ten-day race from Disney World in Orlando, Florida, to GM's Technical Center in Warren, Michigan. The race for solar-powered vehicles begins Monday, July 9th. The top three teams will represent the auto manufacturer at the six-day 1990 World Solar Challenge in Australia, which begins November 25. GM's tear-drop shaped SunRaycer won the first cross-Australia solar-powered vehicle race in 1987.

Stanford University is one of 32 colleges and universities whose student team was selected to participate in the solar-powered road race. But Stanford's team members are taking an extra step in their belief in electricity; they will be driving an experimental chase car that is battery-powered.

The "hybrid" electric vehicle was built by students from Stanford University and members of the Electric Automobile Association under a \$180,000 research contract from the California Energy Commission's Energy Technologies Advancement Program (ETAP). ETAP provides low-interest loans and research contracts to develop new and innovative energy technologies. It is the only state-sponsored research, development and demonstration program in the country.

One of the problems with electric vehicles is that they sometimes lack power to enter freeways or climb long hills. In addition, consumers are concerned about the limited range of an electric vehicle, which is usually 60-100 miles before recharging is need. These problems are resolved through the use of the hybrid fuel/electric vehicle approach. Project director Dr. John Reuhl calls the hybrid an unlimited range electric vehicle.

"The car is intended to show technologies that are available today that can make a dramatic improvement in air quality," Reuhl commented before leaving California for Florida. "We don't have to wait for extensive development and retooling to have a practical electric car. We have made a car that can be plugged right into a conventional electric wall socket and one that uses unleaded gasoline very efficiently."

The unlimited range electric vehicle will be able to do what many electric-powered cars cannot do . . . travel for long distances without needing to be recharged from a socket.

- more -



CALIFORNIA ENERGY COMMISSION 1616 Ninth Street • Sacramento CA • 95814

Hybrid Electric Vehicle to Act As Chase Car in GM Sunrayce USA

Page 2

The car runs on batteries that power an electric motor. When an on-board computer senses that the car's batteries are down to about one-half full charge, a small motor comes on to produce electricity to run the electric drive train motor and to also recharge the batteries. The small, fossil-fueled 25 horsepower engine/generator supplements the electric power when needed, thereby matching the long trip capability of conventional vehicles. The engine operates at a specially chosen constant speed and mode, and burns gasoline much more efficiently than conventional internal combustion engines.

When operating alone on battery power for metropolitan or commuter trips, the vehicle will produce no exhaust emissions, which is one of the research goals of the state's Energy Commission. One-half of all trips in the United States are seven miles or less, and in metropolitan areas, commuter trips are 11 miles or less, said Claudia Barker, Assistant Executive Director and spokeswoman for the California Energy Commission. "This car could go days at a time around town just operating on its batteries. Electric vehicles are one part of the solution for cleaner air."

The hybrid car was put together with more than 6,000 hours of volunteer time from members of the Electric Automobile Association and students at Stanford University. The GM Sunrayce USA is the car's first on-road shake down test. Following the race, the hybrid is scheduled to take part in the Light Wheel Solar and Human-Powered Vehicle Rally from Washington D.C. to New York City, July 24 to 29. It will then return to California for a solar and electric vehicle event scheduled in August.

"We could not have done this without the help of a lot of people," Reuyl explained. "Chevron Research gave us a \$25,000 contribution, Delco Remy division of General Motors contributed the batteries for the hybrid, Montgomery Ward supplied tires, and Global Van Lines is donating \$30,000 worth of free moving expenses to get our hybrid and Stanford University's SunSurfer across country. The Energy Commission's research contract, however, was the key to getting the project off the ground."

Reuyl estimates that the cost of the unlimited range electric car will be no more than the cost of a conventional car. With fewer moving parts, the car should be less costly to service and operate.

Most important, however, this electric car can travel long distances without needing to be recharged, and it can run at night, without the sun — something the solar-powered cars at the GM Sunrayce USA won't be able to do. The solar cars will have to take their nights off.

#

Editors: The Hybrid Electric Vehicle Project can be reached at (415) 857-0378

The EVs are Coming!

By Jack Merelman

Federal legislation has been introduced to accelerate the development and demonstration of electric vehicle technology.

Be ye not downcast, ye smog-ridden Californians!

Help may be on the way — and soon. Along about 1995, check your favorite freeway — you just may soon experience the first wave of the invasion of the EVs!

EVs? Not ETs?

No. EVs — electric vehicles!

As a matter of fact, new efforts on Capitol Hill to make it happen are spearheaded by a strong, bipartisan band of California representatives.

Rep. George Brown has introduced HR 3852, the Electric Vehicle Technology and Demonstration Act of 1990. Joining Brown as original co-sponsors — all California colleagues — are Reps. Vic Fazio, Jerry Lewis, Carlos Moorhead, Tom Campbell, Ron Packard, Jim Bates and Henry Waxman. The bill has been referred jointly to the House Committee on Energy and Commerce and to the House Committee on Science, Space and Technology.

The measure requires that the secretary of energy carry out a program for purposes of accelerating the development and demonstration of electric vehicle technology.

It is supported by broad congressional findings that the use of electric vehicles could significantly improve the quality of air in non-attainment areas. "Because the substantial potential envi-

ronmental and domestic energy security benefits that will result from the commercialization of electric vehicles are so great for the United States, it is in the public interest for the United States government to assist in the development, demonstration and commercialization of domestically produced, cost competitive, electric vehicles," the bill says.

Brown, upon introduction of the EV bill, observed, "Compared to gasoline-powered vehicles, electric vehicles show a 98 percent reduction of major pollutant emissions." Yet, the congressman pointed out, "electric vehicles largely have been

"Compared to gasoline-powered vehicles, electric vehicles show a 98 percent reduction of major pollutant emissions."

overlooked in the developing national policy debate about alternative vehicle fuels."

The real issue facing Congress today, the author said, "is how to move electric vehicles from the drawing boards onto our nation's roads, particularly in

those urban areas where they can contribute significantly to air quality improvement efforts."

The legislation — a federal cost-sharing program — would establish a government-private sector partnership to accelerate the commercial availability of electric vehicles.

The public-private theme is well known to Californians because of the impressive record of the California Council on Partnerships, initiated by the County Supervisors Association of California (CSAC). The council brings together public and private enterprises in cooperative endeavors to confront major California problems.

California, of course, has been accelerating since 1988 with creation of the California Electric Vehicle Task Force, comprised of a broad range of public agencies and electric utility organizations. The task force has produced a California Plan for the Commercialization of Electric Vehicles. The major focus of the task force is to identify barriers and recommend incentives to promote electric vehicles.

The new federal legislation, through the federal cost-sharing program, seeks to stimulate market demand for electric vehicles by cutting the high per vehicle purchase cost of initial models off the production line.

And just what is an electric vehicle in the proposed legislation? It is defined as "a vehicle powered by an electric motor that draws current from rechargeable storage batteries, fuel cells or other portable sources of electric current, and that may include a non-electrical source of power designed to charge batteries and components."

Actually, Congress made a run at the EV challenge back in 1976 with passage of the Electric and Hybrid Vehicle Research, Development and Commercialization Act. But, as Brown observed, "The ambitious objectives of the act have yet to be fully realized..." The author lamented that technology, espe-

cially with reference to electric storage batteries, has not proceeded at the pace Congress expected in 1976. Congress is recharging itself with a time frame of the mid-1990s for availability of electric vehicles in non-attainment areas.

Fazio noted that "this legislation complements the objectives of the alternative fuel proposals already under consideration" and expressed hope that Congress will act on the bill in the very near future.

Under the bill, the secretary of energy is authorized to enter into contracts with manufacturers of electric vehicles for purposes of carrying out the act covering a five-year period. The measure authorizes an appropriation of \$10 million for each of the five years. Fazio observed that the program "will provide stability and permit the integration of technology improvements ..." The congressman predicted that improved vehicle range and

performance will come with improved battery technologies.

Congress, in view of urgent health considerations in non-attainment areas,

The real issue facing Congress today is how to move electric vehicles from the drawing boards onto our nation's roads.

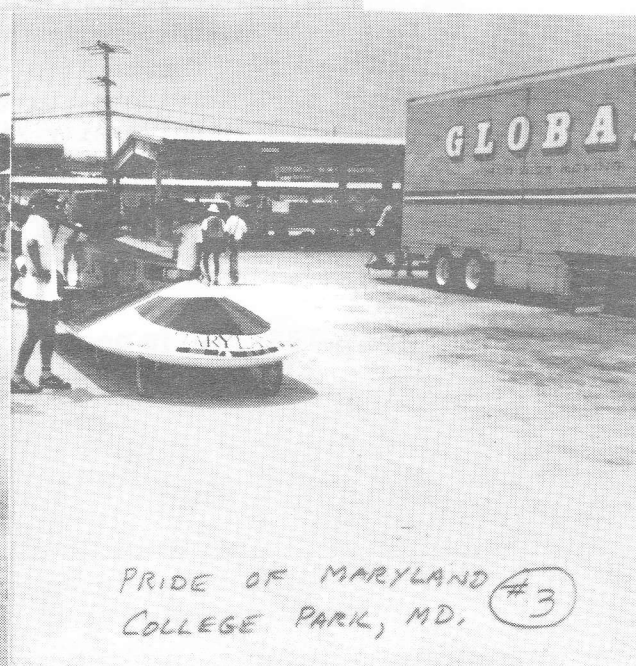
wants to keep an eye on this renewed effort. Thus, the secretary of energy is required to make an annual report to

Congress on the programs and projects supported under the act and the progress being made toward accomplishing its goals.

Meanwhile, back at the Department of Energy, the Electric and Hybrid Vehicle program launched by the 1976 act continues to conduct research, development, testing and evaluation activities to assess the use of electricity as an alternative fuel system for transportation.

Be on the lookout for a new EV law. Keep your eye on the road for some exciting, electrifying developments. The EVs are coming ... the EVs are coming! 

Jack Merelman is the County Supervisors Association of California's deputy director of national affairs.

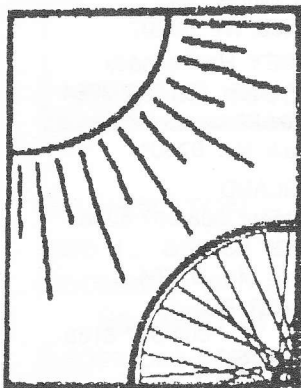


RESULTS OF THE GM SUNRAYCE OF 3,000 KILOMETERS, JULY 1990

1	University of Michigan	72 hr. 50 min.
2	Western Washington University	74 10
3	University of Maryland	80 10
4	California State, Los Angeles	81 3
5	Crauder	81 6
6	Massachusetts Institute Technology	84 17
7	Stanford University	93 56
8	Western Michigan University, Jordan	96 55
9	Colorado State	97 55
10	California Poly, Pomona	99 5
11	Drexel	103 3
12	Rochester Institute	104 21
13	Stark Technical College	105 6
14	Worcester	106 34
15	Auburn	107 24
16	Mankato	108 18
17	Iowa State	109 8
18	University North Texas	110 48
19	California State, Northridge	110 49
20	Rose-Hulman	111 7
21	Cal Poly, San Louis Obispo	113 0
22	University Texas	113 15
23	Dartmouth	113 48
24	Waterloo	114 37
25	Florida Tech.	114 38
26	University Pennsylvania	122 14
27	Virginia Tech.	130 27
28	Clarkson	131 52
29	University Ottawa	132 48
30	Puerto Rico	135 44
31	Arizona State	136 49
32	University Vilinova	137 4

The fact that all of the students finished seems to be indicative of their determination.

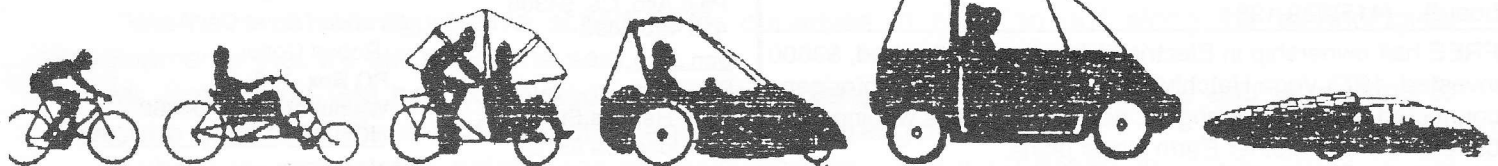
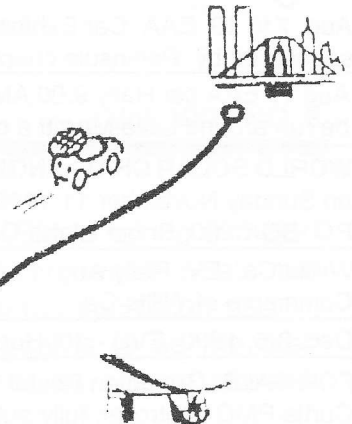
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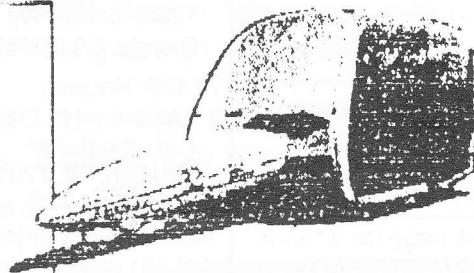


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Lightwheels Schedule

SAT. 7/21	Tour of D.C. Exhibit - Brooks Mansion
SUN. 7/22	Lightwheels Exhibit and A-V Show
MON. 7/23	Light Wheels Conference
TUE. 7/24	Tour starts at D.C. Mall Exhibits in Columbia, MD & Baltimore, MD
WED. 7/25	Exhibits at Havre de Grace, MD. & Wilmington, DE.
THUR. 7/26	Exhibits and tour in Philadelphia, PA.
FRI. 7/27	Demonstrations at Princeton, NJ. Exhibits at New Brunswick, NJ.
SAT. 7/28	Tour arrives in New York City Reception at Municipal Arts Society
SUN. 7/29	Tour of NYC & Exhibits
MON. 7/30	Lightwheels Workshops Conference



New York City, NY July 28-30
Steve Stollman (212) 431-0600
Lightwheels

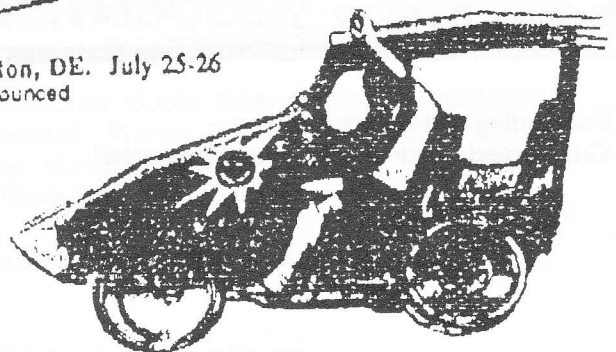
New Brunswick, NJ. July 27-28
Eileen Langan (609) 855-8030
Youth Environmental Society

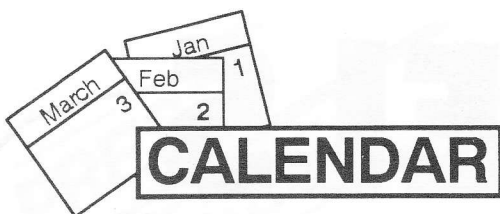
Philadelphia, PA. July 26-27
Dave Wolfe (215) 388-4590
Phila. Solar Energy Soc.

Wilmington, DE. July 25-26
To be announced

Baltimore, MD. July 24-25
Robin Raindrop (301) 337-8625
Baltimore Resources

Washington, D.C. July 21-24
T Whiting (202) 673-2111
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Aug. 7 to 19 EAA Car Exhibit at San Mateo Fair Grounds sponsored by Peninsula chapter

Aug. 11 EAA car Rally 9:00 AM at 5th Ave. & E 7th Street. Will be run around Lake Merritt a distance of about 4.0 Miles

WORLD SOLAR CHALLENGE-Due to start in Darwin, Australia on Sunday November 11 1990. **ENERGY PROMOTIONS** P.O. BOX 290, Bribie Island Qld. 4507, Australia

Willits Ca. EV Rally Aug. 11 & 12, 1990 Contact Chamber of Commerce of Willits Ca.

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