

FVEAA NEWSLETTER

NOVEMBER 1994

President	Vice President & Editor	Secretary	Treasurer & Librarian	Director	Director
Ken Woods 1264 Harvest Court Naperville, IL 60564-8956 (708) 420-1118	Bill Shafer 308 South East Ave Oak Park, IL 60302-3512 (708) 383-0186	Dave Aarvold 915 Oak Street DeKalb, IL 60115-3470	Dale Corel 595 North Gatshead Elk Grove, IL 60007-3433	John Emde 6541 Fairmount Downers Grove, IL 60156-2919	John Stockberger 2 S 643 Nelson Lake Rd Batavia, IL 60510-9762

NEXT MEETING - November 18 at 7:30 PM
Will be in Room 1048 in the Student Resource Center at
the College of DuPage, southeast corner of 22nd Street & Lambert Road

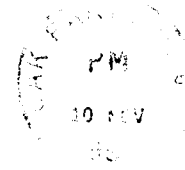
DISCUSSION TOPICS - Report of the ad-hoc committee recommendations for the cooperative construction project.

MEMBERSHIP INFORMATION

Any person interested in electric cars is welcome to join the FVEAA. The cost for a full year's dues is \$15. This will entitle the member to receive our monthly Newsletter that contains useful information about electric car components, conversion techniques, policies, and events. Dues for new members joining in November or present members renewing for 1995 is \$15.00

FOX VALLEY ELECTRIC AUTO ASSOCIATION
308 South East Avenue
Oak Park, IL 60302-3512

FIRST CLASS



Dale Corel
595 Gateshead North
Elk Grove Village IL 60007 -343.

ADDRESS CORRECTION REQUESTED

MINUTES OF 10/21/94 MEETING

The meeting was called to order by President Woods at 7:38 PM. Attending were 15 members and four guests, including former president Dana Mock. September minutes were approved with one typo noted.

Woods reported on an EV debate. Member Helenowska, who attended, reported the EV attitude was very negative. The pro position representative from Argonne failed to provide a convincing case for EVs.

Woods discussed with Ray Oviyach the Munroe proposal, which was expanded to include an EV conversion class for a continuing education college course.

During the discussion Oviyach noted that interest in EVs at Triton seems to have diminished since his retirement. The College has disposed of two of the three EVs in their fleet. Discussion of this situation resulted in the FVEAA authorizing President Woods to write to Triton stating FVEAA willingness to accept a return of the FIAT, donated by the FVEAA, if it is no longer being utilized as intended.

Former member Dick Marsh is developing a controller and may be interested in testing his controller in the FIAT. Bob Barrett, a non-member, also is interested in securing the car to test his theory of EV propulsion. The membership deferred any disposition decision pending a response from Triton.

The subject of a continuing education EV program was discussed. It was noted that it may not be possible to fit a conversion into the usual 13-week college cycle. It was further stated that the original purpose of the Munroe proposal to educate FVEAA members in conversion techniques may not

be best served by the course. Member Oviyach provided a Triton College course syllabus. It became evident that course preparation and instructional arrangements would be quite complex. Further work on the course development was tabled with an option to consider it at a later date.

A discussion of the Munroe proposal then followed. Member Emde offered his facility for the project, **PROVIDED** the FVEAA finds a place to store the two cars and two boats presently there. An ad-hoc committee, chaired by Munroe and including members Poynten, Corel, Mock, and Aloon, was appointed to develop the specific elements of the project and report at the next meeting.

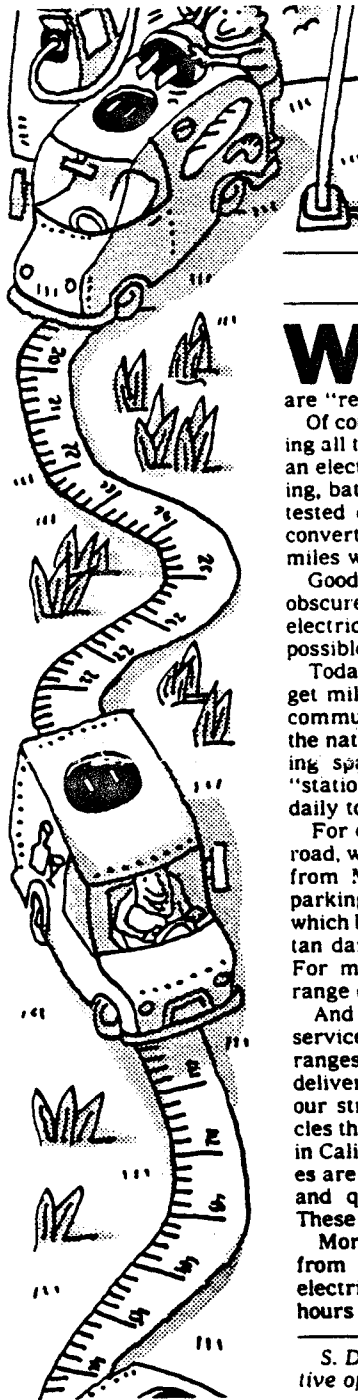
Member Clark presented problems he encountered with the battery charger on his Unique Mobility car. A 20 amp circuit breaker opens when the charger is energized. The charger was rebuilt by Soleq, the original manufacturer, following a minor fire in the unit. The charger bench-tested ok after rebuilding. After considerable discussion, it was decided the operation might be caused by a high initial current into a fully-discharged battery. Test procedures and remedial measures were suggested including individually charging batteries to reduce inrush or disconnecting and checking individual modules. Since the battery pack rolls out on a removable platform, troubleshooting is simplified.

Guest Bob Barrett described the 65 HP Unique Mobility motors and a 200 volt system he would like to install in the FIAT.

The meeting was adjourned at 10:22.

Submitted by
Dave Aarvold
Secretary

Electric Vehicles: They're Practical Now New York Times Sunday August 26, 1994, Page 9.
The article by David Freeman was included in an exchange newsletter and is reproduced in its entirety.



Electric Vehicles: They're Practical Now

By S. DAVID FREEMAN

WHEN people talk about electric cars, someone usually argues that their "range" must be improved before they are "really practical." Well, that's just not true.

Of course, the range of these vehicles is improving all the time. While today's batteries will power an electric car for 60 to 80 miles without recharging, batteries with a range of 120 miles are being tested commercially. And in May a Geo Metro, converted to electricity, completed more than 214 miles without stopping for a recharge.

Good though this progress is, focusing on it can obscure other dimensions of the practicality of electric vehicles. One such dimension is not their possible range, but their necessary range.

Today's electric vehicles can go far enough to get millions of people in small and medium-sized communities to work and back. And in just 11 of the nation's urban areas, more than 250,000 parking spaces are available for commuters using "station cars" that travel much less than 60 miles daily to get to mass transit.

For example, the Metro-North Commuter Railroad, which transports about 100,000 people to and from Manhattan each weekday, provides 27,000 parking spaces. And the Long Island Rail Road, which brings 103,000 riders into and out of Manhattan daily, has about 25,000 spaces at its stations. For many passengers who use these spots, the range of today's batteries is more than adequate.

And they are not alone. Many delivery and service vans operate comfortably within short ranges. Think of all the postal vehicles, package delivery vans, florist trucks and the like that fill our streets. Utilities also own thousands of vehicles that are used in short-range applications, and, in California and Tennessee, battery-powered buses are already operating commercially as a clean and quiet alternative to diesel-fueled vehicles. These are just the tip of the potential market.

Moreover, the range question can be answered from another direction: recharge time. Today, electric cars have a recharge time of four to six hours at 220 volts A.C. But fast-recharge technol-

ogy — usually based on rapid pulses of high energy to the battery — is being perfected. One technology being tested can recharge a battery in 10 to 15 minutes. A converted pickup truck recently ran 831 miles in 24 hours by using a fast recharger.

Soon, a recharge will take no longer than the time to "fill 'er up." And when that happens, range will be irrelevant. Who asks about the range of a gasoline-powered vehicle?

To "fill 'er up" requires a place to do so, of course, and in this regard electric vehicles are in a much better position than were gasoline vehicles at a similar stage. When Henry Ford started mass producing his cars, filling stations had to be built and a whole gasoline transportation industry created. But electric power is already everywhere.

In this task, electric utilities can lead the way. When I headed a utility in Sacramento, Calif., for example, we refueled our fleet of electric vehicles in the parking lot, plugging them into a "filling station" powered by a solar photovoltaic cell. Indeed, drivers can recharge their batteries at home or wherever they park. They can do so at night, too, when there is surplus capacity.

Like faster recharge, ease of recharge offers another answer to the range question.

Finally come flywheels. A flywheel battery can supplement a conventional chemical battery by providing surges of power during start-up and acceleration. American Flywheel Systems and Honeywell have made progress in flywheel research, and United Technologies has already delivered such devices to the German auto maker BMW and the American Government for testing. Because power surges can take a lot out of conventional batteries, flywheels may extend battery ranges to 200 miles to 300 miles in a few years. Fuel cells, which produce electricity by combining hydrogen with oxygen from the air, offer still greater potential for increasing range.

The range of electric cars will only get better — especially as research progresses and as many states impose minimum-sale requirements for these vehicles on auto companies. But electric cars are "really practical" already, and progress in areas other than range will only make them more so. As work proceeds on all these fronts, we will benefit from the cleaner air, quieter streets and reduced dependence on foreign oil that electric vehicles will bring. ■

S. David Freeman is president and chief executive of the New York Power Authority.

Chrysler to spread electric bill around - Chicago Tribune October 9, 1994

Chrysler plans to boost prices of gasoline cars - perhaps by \$2000 - in California and other states that mandate zero emission vehicle sales according to a statement by Chairman Robert Eaton. He observed EVs have limited range, require frequent recharging and will cost \$ 45,000 to manufacture but sell at \$18,000 with the difference being supplied by purchasers of conventional cars. (Editor's comment - wanna bet?)

RECENT EV ARTICLES - Continued

VW Update - Chicago Tribune September 18, 1994

VW says a production decision on its Concept I vehicle will be made within two months. This is a car derived from the famous Beetle and may be offered in internal combustion, electric and hybrid power plant choices.

EPA Nudges the Northeast Toward More Electric Cars - Christian Science Monitor 9/19/94, Page 3.

EVs could become a more common sight on East Coast roads if the 12 Northeast states adopt the California -originated ZEV mandate to meet requirements of the 1990 revision to the Clean Air Act. EVs are opposed by auto manufacturers and supported by utility companies who note that present generating facilities would be adequate to supply 40-million EVs that are load-managed to charge during off-peak hours at night. The major marketing question is how many persons would buy an EV.

Total Cost of New Car Rises to a Record - Chicago Sun-Times, 8/24/94.

The David Littman Auto Affordability Index stated that the average total cost of a new car has risen to \$22,136 in the second quarter of 1994. This amount includes the interest paid over the term of a new car loan. The major components are: car price - \$18,887, Down payment of \$ 3,693, Interest rate is 8.85% with a term of 53.5 months

An Idea Revisited - EVs first marketed to women during WWI - Chicago Tribune 10/16/94

Electric cars were popular in the early part of the 20th Century. The article recounts the restoration of a 1913 Ohio Electric Car. The restored vehicle is steered from either the front or by a tiller from the rear which allowed occupants of other swiveling passenger seats to face the driver and converse during travel at a top speed of 22 mph.

Clean Cars Seen As Next Challenge - Chicago Tribune 8/22/94.

The environmental and energy effects of increasing auto usage in developing countries is seen as the creates future challenge according to the Honda Motors president. He expects only modest growth in mature markets but much potential in other areas. This will result in increasing oil-supply demands and challenges to develop more efficient products. The auto industry will have to lead customers to a product they don't know and might not like.

Advances May Help Converters Cut Emissions - New York Times, Section E.

Automotive engineers have long known that cars do their most serious polluting right after they are started. Three-fourths of hydrocarbon emission are ejected in the first two minutes before the catalytic converter becomes heated and effective. Electrically-heated converters are one means of solving this problem.

Alternative Fuels Still Miss the Point - Chicago Tribune 10/17/94, Section 4 Page 7.

Cars fueled with natural gas, propane, methanol, or powered by batteries all have problems with cruising range and availability of places to obtain fuel. Gasoline enjoys a ubiquitous infrastructure but other fuels are dispensed at only a relatively few places, except for electricity which is found in every household.

Zealots Can't Drive Us Off the Road - Chicago Sun-Times 10/30/94 Page 39

In his editorial, Sun-Times Executive Vice President, Dennis Byrne, recounts an experience with a questionnaire regarding his method getting to and from work. This was a part of the Employee Trip Option program selected to comply with the Clean Air Act requirements. "Federal bureaucrats are running amok with requirements which will move work commuters out of their cars. Shove 'em into vans. schedule oddball hours, guarantee rides for employees who miss the bus after work, install showers and lockers for bikers, compress work weeks, give transit subsidies, eliminate 25% of the cars in the employee parking lot during ozone alert days" are options mentioned by Byrne. This year the Chicago area failed to meet the arbitrary ozone standard twice. Last year there were no violations The remedy seems disproportionate. "No one has calculated the costs for these measures" Byrne notes. He advises before it is too late, now's the time to squeeze a few fat heads in Washington, to tell them we want no part of this folly.

Batteries Fixed - Chicago Sun-Times. 10/25/94

Ford announced that it had fixed the ECOSTAR electric van battery fire problem. No details were provided. The trouble had temporarily halted a 50-vehicle test program with 12 customers.

Events

EVS - 12 (Twelfth International EV Symposium) Disneyland Hotel, Anaheim CA, Dec. 3-7 Registration fee for this gathering that features an extensive technical program and exhibits is \$ 750. Information can be obtained from SHO (Electric Power Research Institute) 167 South San Antonio Road # 10, Los Altos CA 94022. (415) 949-2050

1995 American Tour-de-Sol, Waterbury CT, May 20-27.

FROM OTHER EV NEWSLETTERS

AVEA, The Aussies, in their October Newsletter includes description of a GNB development of the Champion, a sealed motive power battery. These 2-volt units are designed to be mounted horizontally. They are more costly than the usual deep-discharge flooded batteries usually used for conversions. The first Australian EV race, 1995 Electric Grand Prix, was announced. Another article describes the Mercedes C-class electric prototype that has a range of 110 km in urban traffic, an acceleration of 0-50 km in 9 seconds, and a top speed of 120 km. The vehicle also has a power steering unit active only when the wheels are turned. A compressed air car using double acting pneumatic motors was described. The first chamber is 50 mm in diameter, a 250 mm stroke, and operating with pressure of 3.5 megapascals. The second chamber has a 63 mm bore, the third is 76 mm in diameter, and the fourth has a 105 mm bore. Exhaust pressure is only 25% above atmospheric. Piston rods turn a 20-tooth gear which drives a 140-tooth gear on the wheel. The car has been tested in Joplin, MO by Pneumacon, the developer.

EVAOSC, The Southern California Association, October Newsletter describes the CAL-POLY hybrid vehicle built as a design challenge by Ford to universities to build their version of a hybrid car. Engine power for their car was a Briggs & Stratton "V-twin" 2-cylinder engine coupled to a Fisher alternator to provide an output power of 10 kw, 90 amps, 150 volts. The battery was made up of ten 12-volt modules. Vehicle weight was 2050 pounds. In the Detroit competition, the car went 150 miles on two gallons of gas. The engine would not pass emission requirements, although another team modified a similar engine for fuel injection which did pass. The issue also notes that auto manufacturers (except GM) have agreed to use conventional 220-volt plugs as the eventual vehicle standard. They also note that DOE has 44 EV programs with 200 awards expected in 1994-5. Two pages of the issue show photos of vehicles participating in the SEER 1994 rally and there is 1 1/2 pages of classified ads

SEVA, The Sacramento CA group, in their September Newsletter has part III of Tony Cygan's Yellow Porsche conversion. Scott Perry also has an article on his initial decision making process on a vehicle to convert.

EEVC, The Eastern Association, in their October Newsletter provided information on two Formula Lightning electric race cars. Bowling Green (KY) car weighed 2650 lbs including a 1200 lb battery operating at 316 volts is made up of 26, 39-lb lead acid batteries from Optima that delivers 45kw for 17 minutes. The motor is an 80HP, oil-cooled custom built motor by Lincoln Electric. The controller is a VGU-2055 Vector unit from Electric Motor Systems.

FROM OTHER EV NEWSLETTERS (CONTINUED)

EEVC (Continued)

The second racer was designed and built by Wayne State University (Dayton OH). It is built with off-the shelf components. Weight is 2380 lbs including 790 lbs of Johnson Controls Group 24 marine batteries made up of 16 modules and operating at 192 volts. Batteries will prove 38 A-h under race conditions. Motor power is a pair of 45 HP AC motors from Solectria. The controller from the same company is an AC 325 unit.

The issue also notes a new line of dc-dc converters with inputs from 12-300 volts and outputs from 3.3-24 volts is available from Powerlab at 7578 ElCajon Blvd, LaMesa CA 91941, Phone (619) 589--0444.

Great Lakes ELECTRATHON Association (Jordan College) provided a newsletter about the first Michigan High School Electrathon Competition held on October 15th. There were four entries in the event. The winner covered 22.56 miles and won the \$ 200 first prize. Thirty two high schools were invited and 17 have indicated an interest in participating in the 1995 event.

GLEAA (Great Lakes) September-October Newsletter announced their ZeeVee will be entered in the '95 American Tour de Sol. This 1947 lb ground-up designed EV has been road tested in Ohio for more than 4 years. An EV electric heater by RUSSCO in Santa Barbara CA is rated at 1500 watts that weighs 6.25 pounds is described in the issue. An interesting table showing the watts/lb of various energy sources was published. Values range from 17,897 for hydrogen, 5,946 for gasoline, to 13.6 for a lead-acid storage battery.

PRESEZ

Bob Munroe's Adhoc Committee is hard at work to develop an action program for the conversion of a late model car or truck using off the shelf components. The membership response to last month's questionnaire was very positive in support of this program.

Member John Emde has volunteered the use of the space in his shop for the conversion work. The one provision is that the FVEAA provide a place to temporarily store two boats and two cars to make room for the project. If any member can help with storage space please call me.

I received a call from a young engineer in response to a mention of our club over radio station WYLL, 106.7 FM. Thanks to member Jerry Mitchell, a member of the WYLL staff and a regular user of a VW conversion, for the plug.

GO ELECTRIC - SAVE MONEY AND THE ENVIRONMENT

Ken

THE MUNROE COOPERATIVE CONSTRUCTION PROJECT

The Munroe proposal is one of the best ideas to be suggested by the FVEAA that can facilitate conversions of recycled cars to electric power. Early FVEAA exhibits of cars at shopping centers and community events have added to our membership but have not produced new conversions. We have tried parades, press releases, and other events.

It has been noted that many FVEAA members, particularly those without a technical background, are uncertain about their ability to complete a conversion and are unwilling to risk the \$ 5,000 component cost to find out. Munroe's up-front financing addresses another major obstacle for individuals contemplating conversion.

Implementation of his proposal requires help of the membership. We have a place for the work with member John Emde's offer to use a no-cost facility in his plant where the project can proceed for the time a conversion will require. It is now necessary for the FVEAA to find a suitable storage place for John to store his Corvair, another car, and two boats to make the space available. Please call President Woods if you have something to suggest or offer.

The response to last month's questionnaire regarding the proposal has been encouraging. Those returning the document to President Woods indicate willingness to support the project, to purchase shares, and to work. Before a final decision to proceed can be made the FVEAA needs to hear from those members who have not returned their questionnaire. At least please call President Woods and express your opinion.

EXPERTS OPTIMISTIC AT ELECTRIC VEHICLE SYMPOSIUM

A press release from the National Sustainable Energy Association said that one thousand persons attended the 1994 Symposium. The second annual event was the largest of its type in the country that included a trade show and three days of technical presentations and workshops.

Those attending heard keynote speaker Robert Stemple, retired CEO of GM, state he was encouraged by the technical progress that will produce practical electric vehicles soon. His observation was echoed by Tom Gross, DOE Assistant Secretary of Transportation, who said, "--electric transportation options can provide significant national benefits, such as meeting energy, environmental, and economic challenges of our times."

Amory Lovins, founder of the Rocky Mountain Institute observed, "--theoretically a car could achieve 1000 miles to the gallon, so surely we can design a (practical) hybrid electric car that goes 300"

NESEA is celebrating its 20th year of working successfully in the fields of transportation, building construction, and energy policies.

WILL THE NEXT CONGRESS CONSIDER A GASOLINE TAX INCREASE?

Members of the FVEAA and other similar organizations should carefully watch the next Congress where a gasoline tax increase may be considered. A 25% increase in the present federal tax of 14.5 cents per gallon tax failed in 1993. There are two driving forces that may cause a new attempt to revive the measure. Congress rejected both a Btu tax and a 25 % increase in the gasoline levy as a means to reduce the budget deficit. The second factor would be a shift in the auto industry position that previously objected to the gas tax increase. Higher fuel prices would encourage scrapping of older, low-mileage cars in favor of new cars with higher efficiency.

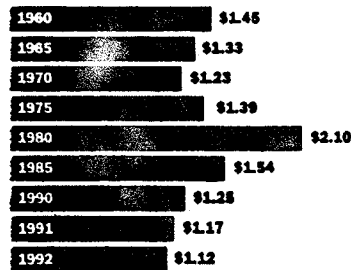
In 1991, then Senator Paul Tsongas, now a principal with the Concord Coalition, proposed a 50-cent increase for deficit reduction. A boost of this magnitude would cost the average American family \$ 550 a year, It would likely boost electric car interest, unless EV electrical energy is taxed at the same level as gasoline.

The present Corporate Average Fuel Economy (CAFE) standard is 27.5 mpg. An 1993 effort to increase it failed. Support for a higher standard has been sandbagged by low gasoline prices. Auto manufacturers have all but exhausted their bag of tricks to meet the present standard. For example, their test vehicles consistently achieve higher mileage than vehicles sold from the showroom floor. The Corvette is equipped with a "skip-shift" device that forces the driver of this 6-speed manual transmission to move from first to fourth gear unless the accelerator pedal is pushed hard. Sales of light trucks that have lesser CAFE requirements are promoted and are becoming increasingly popular. It seems ironic that manufacturers have yet to support EVs, although the standard allows each EV sold is considered equivalent to 400 conventional vehicles meeting the standard.

The following exhibits taken from a US News & World Report article shows a 10-year trend of price costs in the US and abroad (Note the tax component in each country). .

Average price per gallon of gasoline in the U.S.

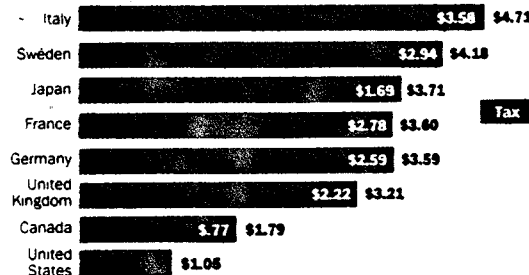
Adjusted for inflation, gasoline costs Americans less today than it did in 1960.



Note: Prices for 1960-75 are for leaded regular, 1980-92 for unleaded regular. Price for 1992 is as of September. USN&WR- Basic data: Energy Information Administration

Total price of gasoline per gallon, including tax

Because of the low gas tax, U.S. consumers pay far less at the pump than their counterparts in the industrialized world.



Note: Figures are for first quarter 1992. USN&WR- Basic data: American Petroleum Institute, Energy Information Administration, OECD

This development is worth watching.

William H Shafer
November 11, 1994