

**ELECTRIC
AUTO**



NEWS

ASSOCIATION

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EXCERPTS FROM A PAPER OF THE "FOX VALLEY ELECTRIC AUTO ASSOCIATION of 24 April 1989"

WHY CONSUMERS EVENTUALLY WILL BECOME INTERESTED IN ELECTRIC CARS

William H. Shafer, President

Kenneth R Woods, Vice President

FOX VALLEY ELECTRIC AUTO ASSOCIATION 24 April 1989

National Consumer's Week is proclaimed each year and activities which relate to matters of interest to consumers are featured in this paper. the Fox Valley Electric Auto Association. represented by Ken Woods and me, will outline why The FVEAA believes consumers will become interested in electric cars.

The reasons why we expect an increased future interest in electric cars are:

1. Their simplicity.
2. National and individual economics.
3. Environmental considerations.

This presentation addresses these three factors and is based on the 12-year experience of FVEAA members building and operating over 20 electric cars.

SIMPLICITY

Compared to today's automobiles, electric cars are simple. Until about 1970 all cars were relatively uncomplicated. Today's cars are better than those 30 years ago; they ride better, they handle better, they don't require as much periodic maintenance, they get better gas mileage. but they are also much more complex than a 1957 Chevy. Electric cars are **"much" simpler.**

The electric car drive train contains only four basic elements; the battery, the speed control mechanism, a direct-current motor, and 3-speed manual transmission. There is nothing complicated about any of these components, and they have a history of reliable operation.

Batteries have been around a long time. They have been improved over those available Just 20 years ago; they are longer-lived, can deliver higher peak Currents, require less maintenance, and energy—storage capability has been increased by 30%.

Today's speed controller has also been greatly improved over those produced two decades ago. Power transistors and other components are now available to handle the high peak currents experienced during acceleration. These power components are rugged and reliable. The cost for a controller developed and used by FVEAA members is about \$ 800. This less than a BMW ignition module replacement.

The DC motor is also a proven, well-developed, reliable product. The armature is the only moving element. with periodic cleaning and brush replacements, it will last many years in transportation service. One enterprising electric auto commercial developer recognized that the controller and motor could be recycled in a new electric car chassis. He was prepared to offer a customer a 50% trade-in allowance applied toward purchase of a new electric car from him. That is marketing savvy !

The drive system of an electric car is simple, reliable, and cost-effective when compared with today's trend toward turbocharged electronically-controlled complex cars. Within the next 10 years, it is estimated that 40% of new car cost will be for the electronics. We think consumers will readily come to recognize electric car virtues.

Economic and Environmental consideration in a later news letter.

ELECTRICITY COST FOR ELECTRIC HONDA

[6-17-82 -----> 5-1-84]

Miles: 8,790

KWH: 3,342

KWH PER MILE: .38 ★

COST PER KWH (D7 Rate): .05178

COST PER MILE: .0196

MPG EQUIVALENCE

53.33

55.87

58.41

60.95

AT COST PER GALLON OF

1.05

1.10

1.15

1.20

* Most efficient electric car in 1982 and 1983 EAA Rally.

What It Costs to Own and Drive a Car

Adding Up
The Expenses

15,000 Miles Per Year

	1984 Compact Car Per Mile	1984 Intermediate Car Per Mile
Gasoline, oil ..	6.5¢	8.0¢
Maintenance ..	1.0¢	1.1¢
Tires	0.7¢	0.7¢
Operating costs	8.2¢	9.8¢
Insurance	3.0¢	3.8¢
License, taxes	0.7¢	0.8¢
Depreciation ..	8.2¢	9.0¢
Finance expense	3.5¢	3.9¢
Ownership costs	15.4¢	17.5¢
TOTAL COSTS	23.6¢	27.3¢

Annual Mileage

25,000	20.9¢	Compact
20,000	21.4¢	
15,000	23.6¢	
10,000	28.5¢	
5,000	41.6¢	

25,000	24.1¢	Intermediate
20,000	24.8¢	
15,000	27.3¢	
10,000	33.0¢	
5,000	48.3¢	

Note: Figures assume cars are driven in urban areas and are equipped with air conditioning, automatic transmission and other normal options. Trade-in occurs at 50,000 miles for cars driven 25,000 miles a year, at 60,000 miles for those driven 10,000 to 20,000 miles a year and at 40,000 miles for those driven 5,000 miles a year.

US&WR—Basic data: Plancher & Company

EXCERPTS FROM A CONFERENCE PAPER BY STANLEY O. BLOIS, P G & E 5/4/74

Over the years, we in the Pacific Gas and Electric Company have seen a large increase in the use of electric off-the-road vehicles in our service area. In the late 1950's, we held electric truck rodeos for manufacturers and prospective users. We found that few people understood either the economics or availability of in-plant electric vehicles.

During the 1960's, with continued use of rodeos and customer educational programs, we experienced a continual increase in the use of these non-polluting, silent vehicles. One vehicle manufacturer told me he was shipping to PGandE's service area on almost a two-for-one basis compared with other utilities. I attribute this to our long-time customer educational program and strict adherence to the fact that electric vehicles are specialized, high capital cost vehicles that can solve specific transportation problems. They are not the universal solution, the panacea, for all transportation problems. They are for special purposes such as mini buses, in-plant fire trucks, fork lifts, refuse loaders, personnel carriers, driverless tractors, platform trucks, reach trucks, etc. In California, the food industry has historically used electric fork lifts for cold storage plants. Electric carts used by golfers travel more than three million miles each year in Northern and Central California. The off-the-road vehicle is here and the market is growing!

We have generally concluded that if electric transportation becomes widespread and people retain their existing driving habits, electric vehicles will not present a load that would require the addition of new generating facilities for many years. Some on-the-road electric vehicles will undoubtedly be connected during the peak periods, however it should be a negligible percentage.

In the U. S. Postal Service test installation (see Figure 4) in Cupertino, California, we have several years of data on one vehicle and we are just beginning to accumulate daily information on 30 vehicles. These vehicles are being driven a total of about 450 miles per day over flat and hilly terrain. Preliminary data for this fleet is correlating very close to that data collected on the original vehicle. Comparisons are made with two typical Jeeps for over a two months average use.

	ELECTRIC	JEEP NO. 1
Cost/Mile	2.5¢/mile	5.6¢/mile
KWH/Mile	1.3 KWH/mile	6.5 Mile/gal.
Mile/Day	11.1 Mile/day	12.4 Mile/day
Cost/Day	27.7¢/day	69.4¢/day
Cost Per KWH	1.85¢/KWH	*Ave. Cost/day
		JEEP NO. 2
Cost/Mile		5.2¢/mile
KWH/Mile		7.0 Mile/gal.
Mile/Day		14.4 Mile/day
Cost/Day		74.9¢/day
Cost Per KWH		36.7¢/gal.

*1972 Prices to U. S. Post Office at Cupertino

1 U. S. Gallon Gas = 129,000 BTU

1 KWH = 3,412.97 BTU

KWH Measured at A. C. Input to Charger

Energy Used by Vehicles:

4,437 BTU/Mile	29,866 BTU/mile	18,447 BTU/Mile
(Electric)	(Gasoline)	(Gasoline)

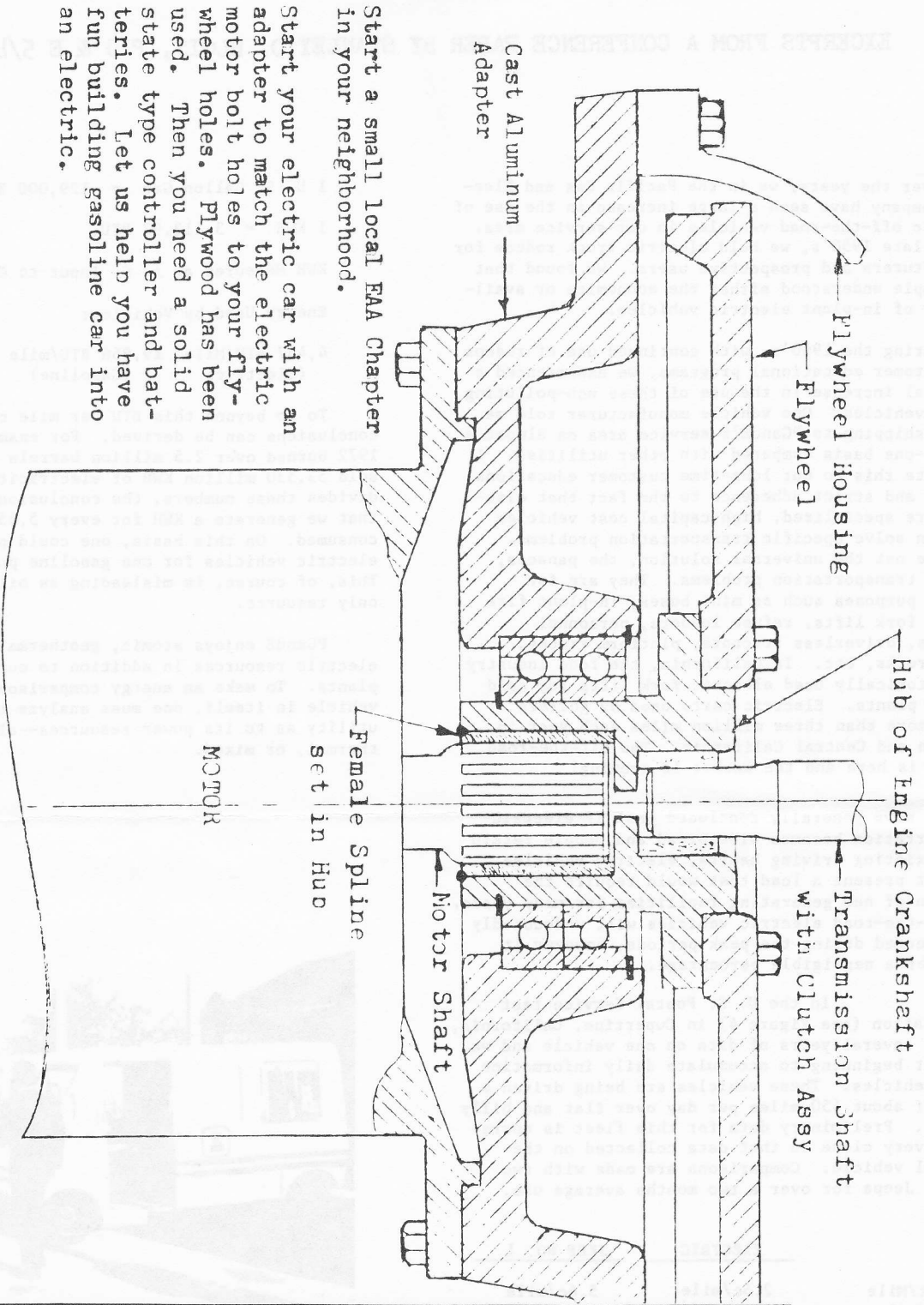
To go beyond this BTU per mile comparison, other conclusions can be derived. For example, PGandE in 1972 burned over 2.5 million barrels of fuel oil and sold 53,530 million KWH of electricity. If one divides these numbers, the conclusion could be drawn that we generate a KWH for every 5,550 BTU's of fuel consumed. On this basis, one could power three electric vehicles for one gasoline powered vehicle. This, of course, is misleading as oil is not our only resource.

PGandE enjoys atomic, geothermal and hydro-electric resources in addition to our fossil fueled plants. To make an energy comparison beyond the vehicle in itself, one must analyze the serving utility as to its power resources--all hydro, all thermal, or mixed.



Figure 4 Electric Vehicles Inc. Mail Delivery Trucks in service in Cupertino, California. Part of a fleet of 30 vehicles.

I think it is generally agreed that where any gasoline vehicles have considerable idling time and miles per gallon are extremely low, the electric vehicle can compete using lead acid batteries.



Start a small local FAA Chapter in your neighborhood.

Start your electric car with an adapter to match the electric motor bolt holes to your flywheel holes. Plywood has been used. Then you need a solid state type controller and batteries. Let us help you have fun building gasoline car into an electric.

ELECTRIC MOTOR ADAPTER
for conventional auto
with clutch
Design by Bill Palmer

THE IDEAL ALL-SEASON GEAR LUBRICANT:

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EXCERPTS FROM SECRETARY'S REPORT OF THE PHOENIX CHAPTER OF EAA, 5/22/89

Jim Westburg from the Arizona Energy Office of the Arizona Department of commerce was introduced. Mr. Westburg was kind enough to come and speak to us in place of Mark Ginsburg who had been unable to attend. Mr. Westburg had been invited to speak on the subject of the funds that were available for distribution from the Petroleum Restitution Funds which was a result of the major oil companies overcharging for their products from 1974 to 1981 while price controls were in effect. At the present time there is \$15,000,000 available for distribution in Arizona. The money is allocated for energy conservation projects. It is not to be used for research, but can be made available for existing federal programs. The money can be used to demonstrate new technologies or the application of new technology. The present proposal before the legislature now is to not only spend funds in transportation but to also spend funds for energy conservation in buildings within the state of Arizona. Mr. Westburg mentioned that a certain amount of the money could be set aside to support request for proposals. This would be go to support people while they were in the process of making a proposal for some type of energy conservation project.

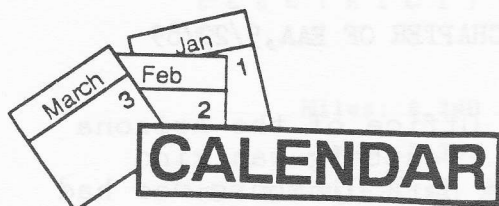
Mr. Westburg suggested that the Phoenix Chapter of the EAA get on the mailing list for a request for proposal. By the fall of 1989 the legislature should have set the guidelines for the proposals. At this time a proposal for a project could be submitted for consideration.

Mr. Westburg suggested the Phoenix Chapter of the EAA might submit a proposal for funds to build an Electric Vehicle as a group. He further suggested that the group might be able to obtain some of the funds to help generate publicity for electric vehicles and make more people aware of the technology available at the present time. In the past some funds had been made available for education programs in energy conservation but Mr. Westburg went on to point out that the Energy Office was interested in dispensing the funds to benefit the whole state so there would be some hesitation to give funds to a small group.

After Mr. Westburg's talk President Bob Sharp called on the members present to give some serious thought toward the formulation of a project to submit to the Arizona Energy Office to generate funds to further electric vehicles in Arizona. There were no suggestions at the time so the subject was left open for further discussion at a later meeting.

Harold Bell mentioned that he had read of a local legislator named Wrzesinski and eight others who have sponsored a bill to give a prize of \$5,000,000 to anyone who produced a working model of a device that eliminates motor vehicle pollution. Harold suggested that we should be first in line as several of us had such a device - an electric auto. The point of mentioning this bill was to show that others are as interested as we are in reducing pollution.

Secretary Lee Clouse



June 24 1:30PM EAA ANNUAL PICNIC
COYOTE POINT PICNIC GROUNDS. The usual
location and the usual great pot luck.
The Peninsula Chapter will provide ham-
burgers and hot dogs. Please call Jean
at 415-355-3060 to insure the meat supply
Come with friends and family for a good
time and good food.

June 04 EV show at DeAnza College
Cupertino, Ca. Parking L-E
June 05-08 34th Int'l Gas Turbine
Congress, ASME, Toronto,
June 11-16 48th Congress Int'l Union
Public Transit, Budapest
June 12-14 5th Windsor Workshop on
Alternate Fuels, Windsor
June 26-July 1 TOUR DE SOL '89, SWITZER.
August 07-10 SAE Conf&Expo Future Tran-
Technology, Vancouver, BC
August 06-11 IECE '89, Intersociety
Energy Conf. Washington DC
Sept 08-16 ENER RUN alternatively
powered vehicles, Temecula, Ca
Sept 18-21 15th Intern. Human Powered
Speed Champs, Adrian, Mich

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90% restored (gas) - for electric car of
similar value. If too many electric cars,
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also 2 - 48V Prestolites. 707-463-1812,
Joe or 707-961-0459, John (leave message)

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