

## FVEAA NEWSLETTER FOR JUNE 2004

An Independent Not-For-Profit Corporation associated with the National Electric Auto Association

**NEXT MEETING: Friday, June 16 at 8:00 PM in the Triton INDUSTRIAL CAREERS BUILDING, (East Campus), and Room 108**

**DISCUSSION TOPICS: 1. Seminar status. 2. Wheaton's 4<sup>th</sup> of July participation. 3. Getting your EV plates. 4. Changing battery packs. 5. Open Topics.**

### MEMBERSHIP INFORMATION

Any person interested in electric cars is welcome to join the Fox Valley Electric Auto Association. The cost for a full year's dues is \$ 20 which will entitle members to receive our monthly Newsletter that contains useful information about electric car conversions, construction, news, policies, and events. Membership is not required to attend our meetings. Dues for NEW members joining in June will be \$ 10.

To obtain information about the FVEAA you may:  
Visit the FVEAA Website at [www.fveaa.org](http://www.fveaa.org)

Or contact FVEAA Vice President Steve Grushas  
924 South 7<sup>th</sup> Avenue  
LaGrange, IL 60525  
(708) 579-9128

### PRESEZ

The proposed Seminar is in jeopardy. The response to my request that Com Ed to become the sponsor was disappointing. In my opinion they are just not interested. We will discuss the topic at the June meeting.

The FVEAA will participate in the Wheaton Independence Day parade. Members Ted Lowe, who lives in Wheaton and Tim Moore who lives nearby, have agreed to provide their vehicles. Ted has offered plug-in privileges at his house so anyone with an EV can get a recharge of solar energy from his newly installed 2 kW solar array. I am having made two magnetic signs identifying the FVEAA. We would like to have a third car there. Any takers? The Wheaton celebration is the most significant in the suburbs. Lots of politicians.

This issue contains a letter written to Illinois Secretary of State, Jesse White, about the difficulty Member Dave Lewis is having getting EV plates for his nearly- complete pickup conversion. I received a telephone response from Diane McAfee (917) 772-2784. Call Susan Anderson, who handles EV plates in the Secretary's Office, (917) 782-2434 for instructions.

This issue also contains a letter written to Senator Richard Durbin about the change in the Statues that prohibits converted vehicles from receiving a 10% federal income tax credit. We will discuss his response if one is received by meeting time.

Finally, we will discuss the e-mail to Member Tim Moore about his battery replacement question. A copy is included in this Newsletter.

BILL

## MINUTES OF THE May 21<sup>st</sup> MEETING

The meeting at Triton College was called to order by President Shafer at 8:00pm. Fifteen members and three guests; Al Snook from Geneva, Robert Morden from Aurora, and John Jeide from St. Charles attended. The April meeting minutes were approved. Bill stated he will again ask ComEd to sponsor the proposed Seminar. They declined his first request, saying they currently have no EV program. Bill also circulated a letter sent to the National EAA asking for their assistance to get restoration of the 10% federal tax credit for converted electric vehicles.

Tim Moore's battery replacement question posed on the Yahoo site was next. Should he change all his batteries this summer or only the weak ones? The response will be in the June Newsletter.

Dave Lewis is finding it difficult to get an electric license plate. Several members commented that they also had trouble. Bill's letter to Secretary Jesse White will be included in the June Newsletter.

A 1977 Beetle is for sale by A. Nelson in Wheaton. He only recently became aware of the FVEAA. Medical problems are the reason for selling. The car has six batteries and a likely 12-mile range. Bill said a realistic price might be about \$ 1000 due to this restriction.

The group welcomed back George Kranovich following his accident and speedy recovery.

Ted Lowe stated he will be in the Wheaton July 4<sup>th</sup> parade. He asked for other members to join him. Tim Moore and Ted will be in the parade. We would like to have a third or even fourth car.

Ray Oviyach plans to tow the Triton Ranger to the Moraine Valley Community College for display at their May 23d event. The College is close to his home.

The NGT team was absent. They were investigating the Joliet Raceway for a later debut of the improved Dragster. Presently the vehicle is in pieces in John's shop.

One of the necessary conditions for a conversion is a place to do the work. The Triton Auto Lab would be a good choice, but not to repeat of the previous for-credit course. Ray Oviyach was asked to check the availability of workspace in the Triton Auto Lab.

Several members commented that an EV repair and maintenance is an easy do-it-yourself. This is a contrast to the modern car with its electronic control modules usually must be returned to dealer when something goes wrong. Ray Oviyach, retired auto professor at Triton, said that even he is at the mercy of dealerships when it comes to maintaining his gasoline vehicle. Bill noted that, "When you make a conversion you can repair it yourself". This is an overlooked advantage for an EV conversion.

Ted Lowe described installation of a 2 kW solar array at his house. He invited people to see his new acquisition for charging his converted Chevy S-10 pickup.

The meeting was recessed to the auto lab for "coffee and" + discussion at 9:45PM. It was adjourned at 10:45 PM.

Submitted June 7, 2004  
By Secretary Tim Moore

## FROM OTHER EV NEWSLETTERS AND OTHER ARTICLES AFFECTING EV'S

**The EEVC May newsletter from the Eastern Group** had a story about the seventh consecutive appearance in the annual *Tour de Sol* of the Cinnamonson High School's EV conversion of a Ford Escort. Last year four batteries out of 24 became inadequate. A recharging attempt proved disastrous because the charger did not shut off and the overcharge "cooked" many. A few days later the charger was stolen. GNB batteries came to their rescue and provided the school with 24 new batteries in time for the Tour.

**The May-June issue of *Current Events***, the publication of the national EAA, had a lead story by a guest author from Winter Park Florida entitled, "How much for Gas?" He derides the current development of hydrogen vehicles as, "'fools-sell hydrogen". He concludes the best policy would be for the auto and oil companies to just "get out of the way".

John Wayland had another of his irrepressible articles. This one was about his refitting the *White Zombie* battery, made up of 28 Hawker units, with 728 pounds of Chinese-Made *Orbitals*. These proved to be a failure. The next attempt tried *Orbital XCD* units that had side posts. These wouldn't fit. The final configuration used Exide Marine units. To make them fit he had to saw off the ribbed sides of each unit.

Mike Brown had the final chapter of his conversion workshop manual. It covers driving an EV in the real world of traffic.

**The Spring-Summer issue of *Electrifying Times***, the publication by Bruce Meland in Bend, OR was mostly devoted to hybrids and fuel cell cars. There was a story about an EV that competed in the annual Pike's Peak climb contest this year. The ER 3 used Compact Power's LG Chem Li-ion batteries. The electric's big advantage was that its performance was unaffected by the rarefied atmosphere at the top. Jerri Unser drove the car. She made the run in 14:33.120. Compact Power is located at 1200 S Synthes Avenue, in Monument CO 80131.

Bruce wrote an article about Southern California Edison's (SCE) experience of using 260 Toyota RAV-4 EVs in their fleet. The SCE fleet manager said these have been by far the most reliable and effective alternative fueled vehicles tested. So far the vehicles have logged 11-million miles of use. The vehicle has a 45-mile range. Energy use has been the equivalent to 100 mpg. Maintenance costs have been minimal.

**Denver's DEVA May newsletter** reported on the May 2<sup>nd</sup> *Elecrathon* race. Five cars started the race. They also reported that Dennis Berube, the current EV dragster record-holder (1/4 mile in 8.8 seconds at 137.65 mph) competed at the recent Phoenix event. Dennis beat out the top super gas roadster, top super comp dragster, and many other highly ranked competitors. At 2:15 AM he lost the final by 0.002.

At the same event John Wayland raced his Datsun 1200 street-legal machine, *White Zombie*. John's time at the 1/8 was 8.230 at 84.11 mph. Exit speed 100.03 mph, a NEDRA new record.

**WILLIAM H. SHAFER – President**  
**FOX VALLEY ELECTRIC AUTO ASSOCIATION (FVEAA)**  
**A Not-For-Profit Organization affiliated with the National EAA**  
1522 Clinton Place  
River Forest, IL 60302-1208  
(708) 771-5202  
Email [Assessorbill@cs.com](mailto:Assessorbill@cs.com)

May 24, 2004

Honorable Jesse White  
Illinois Secretary of State  
Springfield, IL 62756

Dear Secretary White

I request your assistance to help members of the Fox Valley Electric Auto Association acquire Electric Vehicle Titles and Licenses for their vehicles that they have converted to electric power.

The Illinois Statutes provide for issuance of electric vehicle 2-year license plates. I have held Illinois Electric Vehicle License Plate # 137 since 1976. I use my converted Mazda RX-7 for all of my short-trip driving. EPA regulations also exempt electric vehicles from emission check notices.

Recently one of our members, Mr. Dave Lewis, who lives at 5244 German Place Road in Byron, IL 61010, was unable to obtain an EV Plate for the pickup truck he is converting. He was informed by your office near his home that a pickup is not eligible for an EV plate. Three FVEAA members who have converted pickup trucks have received EV plates; Mr. Ted Lowe 2003 Paddock Court in Wheaton 60187 and Mr. John Berton 4807 North Hoyne in Chicago 60605, and Mr. Fred Kitch of Riverside. Each of these had a struggle.

Two or three times a year FVEAA members have trouble with the procedure. It is my opinion that this procedure is too rare to expect all of your branch offices to be knowledgeable about this subject. I believe it would be efficient to centralize this process in the Non-Standard Plate Section of your Office.

I support a change that would increase the 2-year plate fee for an EV from \$35 to \$78, the present annual fee for a passenger car. This would be to compensate the state for an EV not paying gasoline sales taxes on their limited annual mileage while continuing to recognize electric car environmental advantages.

I will appreciate a procedure guideline for EV titles and licenses. I will see that all Illinois members of the FVEAA get and use this document.

For your information, enclosed is a handout that we provide to persons inquiring about our organization and a copy of the latest FVEAA monthly Newsletter.

Sincerely,

cc Dave Lewis

## BATTERY CYCLE LIFE

Member Tim Moore sent me an e-mail asking if he should consider changing the batteries in his Escort. He has driven his converted car 15,000 miles over the past two years. Tim has a 120-volt system made up of 20 six-volt, deep-discharge batteries. Each of these stores about 1 kWh of energy. When fully charged, the car has a total of 20 kWh onboard. At 0.5 kWh of energy use per mile car's range is about 40 miles. Tim's drive from home to work is 13 miles. He has plug-in privileges at work so the depth of discharge after each trip is  $13/40 = 33\%$ .

Depth of discharge is an important factor in battery life. Individual batteries do not have a "one-horse shay" characteristic in which all batteries fail at the same time. A test at Argonne Lab using 48 Exide EV 106 batteries revealed that ten failed at 400 cycles with a 50% depth of discharge Twelve were still functioning after 650 cycles. In the second test the discharge depth was 75%. Most batteries failed at 350 cycles. An EV battery pack should last for at least 400 discharge cycles. Most of the difference is due to manufacturing variations.

Every time a battery is discharged lead oxide molecules in the plate are converted to lead sulfate. A sulfate molecule deposited on the plate surface blocks electrolyte from reaching interior oxide molecules. Charging the battery converts most of sulfate back to the oxide, but not all of it. Correcting requires an overcharge that causes the electrolyte to bubble. A periodic equalization charge is the usual way to compensate for the sulfate remaining after a normal charge.

Weak units can be identified by load testing each battery. Batteries that have a less terminal voltage than usual on discharge are replacement candidates. Selective replacement would be more economical but it involves additional work. Most persons elect to replace the whole pack.

Let's consider the economics of Tim's first set of batteries. Battery amortization is  $\$ 1400/15000 = 9.3$  cents/per mile. Electrical energy used has been found to range from  $1/3$ - $1/2$  kWh/mile. Tim is a careful driver and we will assume  $1/3$ . He used 5000 kWh. At Com Ed's marginal rate of 6.2 cents/kWh energy cost was \$ 310. His total energy cost is therefore is  $\$1400 + 310 = \$ 1710$ , (11.4 cents per mile).

If Tim used a standard Escort getting 25 miles per gallon he would have consumed  $15000/25 = 600$  gallons of gasoline which, at the current price of \$ 2/gal, would cost \$1200 (8 cents/mile). The conversion cost him an extra \$ 510 for electricity. But this is only a part of the story. His conversion should have a remaining life of at least 15 years. A standard car life is half this. The converted Escort's reduced depreciation, maintenance and financing costs makes it much less expensive to own and operate than a conventional car. The AAA estimates the current per-mile cost for a family sedan is 64.2 cents/mile.

William H. Shafer  
May 19, 2004

**WILLIAM H. SHAFER – President**  
**FOX VALLEY ELECTRIC AUTO ASSOCIATION (FVEAA)**  
A Not-For-Profit Organization affiliated with the National EAA  
1522 Clinton Place  
River Forest, IL 60302-1208  
(708) 771-5202  
Email [Assessorbill@cs.com](mailto:Assessorbill@cs.com)

June 1, 2004

Honorable Richard Durbin  
US Senator – Illinois  
555 Dirksen Senate Building  
Washington, DC 20510

Dear Senator Durbin,

I watched your recent discussion about vehicle efficiency on WTTW's *Chicago Tonight* program. We believe energy policy is an important matter now before the Congress.

Specifically, you mentioned the importance of fuel efficiency. Oil production is now at its peak. In the 100 years since the first use of gasoline for automobiles half the world's supply has been used. In another 50 years half of the **remaining** supplies will be consumed. Increased production to reduce gasoline prices today will accelerate depletion of this resource. My grandchildren will have to learn to live without the mobility the automobile provides. I hope they won't have to rely on a horse.

I wish to draw to your attention to the matter of tax credits for energy-efficient automobiles.

There currently is a 10% Federal tax credit for electric vehicles. It now only applies to commercially – produced cars, something that Detroit has abandoned following the California test fiasco. It **does not apply to vehicle conversions by individuals**. This was not always the case.

In 1992 I received a \$400 tax credit for my \$ 4000 conversion of a 1980 Mazda RX-7. Eligibility was then defined by the Federal Register of Tuesday February 12, 1980 (Page 9545). This was changed in 1994 in the Federal Register on Friday, October 14, 1994 - Page 52107, Part 1.30-1. It changed eligibility. It stated, "*Accordingly a qualified electric vehicles does not include any motor vehicle that has ever been used (for either personal or business use) as a non-electric vehicle.* What caused this change?

The FVEAA is a group of persons interested in electric cars. We believe this exclusion is unfair. A few members have converted a donor conventional vehicle to electric power. This is a do-it-yourself project. Each has spent about \$ 8000 of their money on their project. They use converted cars for short-trip driving within the capability of these battery cars. Some examples:

Continued on next page

Every workday high school teacher Tim Moore drives 13 miles in his converted Escort from home to school. In two years he had logged 13,000 miles. He has plug-in privileges at the school

Peter Hartel drives his converted Geo Metro from home on the northside of Chicago to Columbia College where he a member of faculty.

Steve Grushas uses his converted Escort to commute on I-80 between his home in LaGrange to his job in Bolingbrook. He also has plug-in privileges at work.

Doug Mather for four years has driven his converted Fiero between in Harvard and his plant in Woodstock. There he recharges the car for the return trip.

I have used my electric car(s) for local driving around Oak Park and River Forest since 1979. I currently have a converted Mazda RX-7. Last year I drove it a mere 1188 miles.

The federal tax credit is egregious. Compare the denial of credit for our converted cars to the \$ 100,000 credit for buying a Hummer, and using it as a truck at least 50% of the time. How did Congress ever approve that that? How is the use provision enforced?

The electric vehicle has advantages of a long life, environmental improvement, owner maintenance capability, and use of any energy source (solar, wind, hydroelectric for example). It is economic. Enclosed is a 2001 economic analysis comparing the annual cost for my electric with a standard Honda Civic DX that I also own. This is also posted on our website [www.fveaa.org](http://www.fveaa.org).

We request you consider this matter and draw it to the attention of the Congress when it further debates the proposed new Energy Policy Act.

Also enclosed is a handout describing our organization.

Sincerely,

Encl.

**MAZDA RX-7 ANNUAL COST FOR YEAR 2000**

Project Cost			\$ 7300
	<b>Annual Cost</b>		
<b>Fixed Costs</b>			
Depreciation period	15 years		
Capital Recovery	(Project Cost)(CRF, 15 years @8%)	(7300)(0.10979)	801
Insurance	Liability only		184
License Fees	State & local		53
Subtotal			\$ 1038
<b>Operating Costs</b>			
Annualized repair and maintenance			123
Battery Amortization	(miles driven)(\$0.11/mile)	(1406)(0.11)	155
Electricity	(kWh)(marginal rate)	(745)(0.0657)	49
Subtotal			327

CRF = Capital Recovery Factor

**Total 2000 Annual Cost**

**\$ 1365**

**FOR COMPARISON, HONDA CIVIC ANNUAL COSTS FOR YEAR 2000**

For other driving we use a 1996 Honda Civic DX. In 2000 we drove it 3423 miles, consumed 102 gallons of gasoline (Average mileage = 33.6 mpg) and spent \$170 for fuel (Average cost/mile = \$ 0.049). Purchase price in 1996 was \$ 17,173. Maintenance cost for 5 years of was \$ 610 (\$ 122/year). I expect the car to last at least 15 years. The following table lists the Honda costs:

Purchase			\$ 15,173
	<b>Annual Costs</b>		
<b>Fixed</b>			
Depreciation period	Fifteen years		
Capital Recovery	(Purchase cost)(CRF, 15 years @8%)	(17,173)(0.10979)	1885
Insurance			319
License Fees			93
Subtotal			2297
<b>Operating</b>			
Annualized repair & maintenance			\$ 122
Fuel			167
Subtotal			289

**Total 2000 Annual Cost**

**\$ 2586**

There is one item missing in this analysis. By substituting the Mazda for the Honda for short-trip driving I am extending the life of the Honda. A rigorous analysis would include this item. The Mazda cost in 2000 was 97 cents per mile, the Honda was 76 cents. The Mazda and Honda per-mile cost would have been equal had I driven the Mazda an additional 600 miles.