

FVEAA NEWSLETTER FOR SEPTEMBER 2003

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

NEXT MEETING: Friday, September 19 at 7:30 PM in the Triton INDUSTRIAL CAREERS BUILDING, (East Campus), Room 108

DISCUSSION TOPICS: 1. Seminar Evaluation. 2. Dues proposed changes for 2004. 3. 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 October will be \$2.

To obtain information about the FVEAA you may:
Visit the FVEAA Website at www.fveaa.org

Or contact FVEAA President William H. Shafer
1522 Clinton Place
River Forest, IL 60305-1208
(708) 771-5202
E-Mail Assessorbill@cs.com

PRESEZ

The September newsletter is being sent before the September 13th Seminar. Manager Ted Lowe says FVEAA members will benefit by Seminar attendance. We can use you help in staging the event. Be sure to register at our website www.fveaa.org/seminar. It will be worth the five bucks. Our first discussion item will be a Seminar evaluation.

The second topic will concern our future dues structure. It has been \$ 20 for many years. There have been two recent developments affecting our dues that will be discussed.

The first is delivery of the newsletter by e-mail. Fifteen members have chosen this as their exclusive delivery system. I recommend we reduce our 2004 dues to \$ 15 for members choosing this option.

The second development is our affiliation as a Chapter of the National EAA. We receive \$ 10 from the EAA for every EAA member selecting the FVEAA as his home Chapter. I recommend we reduce the FVEAA dues by a similar amount for members having this dual status.

Adoption of these two changes should have no effect on the FVEAA finances.

This issue contains a discussion about the eastern blackout. It was written from my perspective of a career in an electric power utility. Some may wish to discuss this issue.

BILL

MINUTES OF THE AUGUST 15, 2003 MEETING

The meeting at Triton was called to order by President Shafer at 8 PM. Nineteen members attended. There were seven electric cars driven to the meeting.

Minutes were approved as corrected by changing the meeting date published. Dale Corel gave the Treasurers report; \$2721.61 in checking and \$2761.18 in savings. His report was accepted.

Bill spoke about the East Coast Blackout. He pointed out that we, as electric car owners, would not be able to charge our cars without electricity. He thought that portable generator sales probably would increase.

Bill reported that Fred Green of Ottawa (the former editor of the Ottawa electric vehicle club) called him at the beginning of the blackout. Fred's car was T-boned on the passenger side a few months ago and totaled. Fred had \$ 19,000 of collision insurance. After negotiations with the insurance agency Fred accepted \$11,000 cash and his salvage of undamaged electrical and electronic components. He said it was a fair settlement.

The Seminar Manager Ted Lowe conducted the Seminar status section of the meeting. He went over the preparations for the event. Ten member's cars are expected. There was an extended discussion about the exhibit arrangements. It was finally decided that exhibit cars would be placed in the Triton parking lot immediately west of the Industrial Careers building. Traffic cones will be used to separate the exhibit area from other parking. Treasurer Corel volunteered to man an entrance table outside of room 106 to collect the \$5 Seminar entrance fee. Bill concluded the discussion by asking Ted and his Seminar Committee to finalize details and send the document through the Google website to inform members.

Kevin Zak gave an interesting update about the dragster, and told of two motor brush problems. During each of two runs, driver Karl Klein experienced a brilliant arc display. The vehicle is being remodeled to accommodate a Russian-made supercapacitor provided by NASA. The device is 26" long, 9" in diameter, and weighs 70 pounds. It is rated for 400 volts, a 2 farads of capacitance. It is expected to store enough energy to move the vehicle at 90 mph for 5 seconds. The device can be quickly recharged.

Member George Gladic was a little late because he had driven his converted Nissan 60 miles before arriving at the meeting. The car crept in to the garage and was charged during the meeting. It was adequate for him to drive two miles to Bill's house for an overnight charge. George has repainted the car, added text and tasteful symbols that identify his vehicle as electric.

At 9:45 the meeting was recessed to the garage for coffee, doughnuts and discussions around the seven electric vehicles driven to the meeting by members. The meeting was adjourned at 10:45PM.

August 26, 2003

Submitted by
Secretary Tim Moore

FROM OTHER EV NEWSLETTERS AND ARTICLES AFFECTING ELECTRIC VEHICLES

Current Events, the Jul-Aug publication of the National EAA had an article and photos of Vancouver's annual Ride Electric Vehicle (REV) event. It featured a number of different electric vehicles; member's conversions, bikes, scooters, an electric couch, electrathon racers, a vintage 1912 electric and a 3-wheel custom design and built tandem recumbent bike. It was well attended.

EVA President Dave Goldman had an article noting that auto companies are risk-averse enterprise. Understandably since they have literally billions of dollars at stake. EV's and hybrids represent a huge unknown and possibly a business threat. They know only too well that hydrogen-fueled cars and their infrastructure requirements are at least 20 years away. He points out that GM *almost got it right* with the EV-1 but there was a change in top management along the way that scuttled the program. He concludes it may take a couple more oil price/availability price shocks to change current thinking.

SEVA Member John Wayland had a humorous, informative article about his experiences with Lithium-Ion batteries.

Step 17 of Michael Brown's conversion series was about battery and component interconnections.

The issue had an account of the Raliegh, NC EV Challenge. Over 1000 attended. Most were students competing with solar model racecars. It also had an article about the *Buckeye Bullet*, a \$500,000 racecar built by Ohio University students to challenge the world's EV land 245 mph speed record currently held by *White Lightning*. The *Bullet* uses 12,000 NiMH batteries and a 500 horsepower motor.

The August issue of the DEVC newsletter had an article about a BMW SUV supercapacitor hybrid. The engine is 4.4 liter V8. The combined torque of the engine and motor is 738-foot pounds at 11000 rpm. DEVC participated in the Boulder County Fair with several conversions and other unusual vehicles, including a Segway scooter.

They report that GEM, producer of the Neighborhood Electric Vehicle, has laid off 100 of its 185 employees and is seeking partners to use the production facility in Fargo, ND

The EEVC August Newsletter from the Eastern folks had a description of the world's largest fuel cell vehicle; a 204-thousand pound locomotive. Shows what you can do when the US Army sponsors a project. The issue also notes that the Department of Energy now has awarded 13 firms and educational institutions \$75-million in contracts for fuel cell development. In addition, 11 firms and universities in eight states have been awarded \$21-million for hydrogen production development projects. Total DOE awards for fuel cell projects now total \$ 96-million.

EV Circuit from the Ottawa group in their July/August issue noted a firm in the city is offering an orientation session for the Segway scooter for \$ 100. A one-hour rental costs \$ 49.95. The website is www.segcanada.com. What a deal! Ten hours of rental adds up to 10% of the Segway purchase price.

Member Earl Wallingford presented a paper about his patented AC drive system at the 20th Electric Vehicle Symposium on August 9th. David Behn has another extensive article about hydrogen. It is titled “Remember the Pinto – or on the relative safety of hydrogen vs other fuels. He recalls the fire on the Hindenberg and that of another zeppelin, the US Navy’s Macon that burned in 1935, even though the lifting cells were filled with helium. For hydrogen in the lift bags to explode there would have to be 4% of oxygen – an unlikely mixture. Most likely the Hindenberg’s flammable, painted outer envelope was ignited by a lightning strike.

There was also a critique of the MIT study on fuel cells. It has raised so much interest that an independent study by L – B Systemstechnik to review both the MIT and GM study that reached a conclusion opposite to the MIT document has been commissioned. The truth will eventually come out.

KEEPING THE ELECTRICITY ON

Owners of electric cars have an interest in keeping the electricity on to recharge their batteries. The East blackout emphasized this. Owners of conventional cars in the blackout area didn’t fare better than electric cars because most gasoline station pumps depend on utility electricity. Their advantage – gasoline tanks held energy to go a significant distance before a refuel was necessary. Ottawa’s EV Circuit Editor, Rick Lane, reported on his experience of driving his EV during the blackout. He waited two days after reaching home to recharge his batteries.

There are many ideas to rectify the transmission system deficiencies. They range from a huge investment in transmission capacity to “distributed generation”. A review of the present electrical system is a good place to start.

Edison’s first electrical systems used distributed generation. Generation and distribution operated at 120 volts DC. Coal-fired steam engines belted to generators were built every few blocks. The DC system became obsolete when George Westinghouse utilized Tesla’s invention of alternating current and transformers. The generating sources became larger and could be moved away from the customer.

The capital cost of building ever-larger central power generating stations and distributing electricity to each customer, as well as financial abuses by power companies led to state government *regulation* of the industry. In exchange for an exclusive service area a utility assumed total responsible for every aspect of supplying electricity

This system worked for nearly a century. It grew increasingly complex as technology produced ever-larger generating units that required transmission systems having higher voltages. Eventually interconnections were made between utilities. An interconnection between two utilities over a state boundary subjected each to federal regulation. ComEd didn’t interconnect until the 1960’s.

With an isolated system, generators are loaded under their capability to protect against a system collapse when a generator was tripped. This is called spinning reserve. By interconnecting, the risk of an unexpected tripping could be shared by operating units on all the interconnected system. Interconnection transmission lines were sized to cover the loss of the largest unit on the interconnected system. They were never intended to accommodate extended flows of power.

The electric power systems in North America all operate at 60 hertz (cycles per second). Power flows between systems are controlled by automatically adjusting the throttles on generator turbines. The objective is to normally have zero power flow across the interconnection. Utilities were vertically integrated business entities. Each utility owned and operated production, transmission, distribution, and business systems

Concluded on the next page

KEEPING THE ELECTRICITY ON - Concluded

The regulated cost for electricity was fairly arrived at. State regulator authorities. They allowed a utility a fair return on the depreciated value of the facilities in service plus a reasonable profit on the costs of conducting the business. The regulatory system failed when the regulatory authorities became more intrusive and made decisions that should be made by management. This produced unacceptably long delays for major projects.

Enter deregulation as a national policy. Economists thought transmission interconnections could be used for the long-term transfer of energy from a low-cost to a high cost area and reduce rates. The Federal Energy Regulatory System (FERC) adopted policies that changed the nature of the electric utility business.

The FERC called for changes in the utility business from a vertical to a horizontal ownership. Generation had to be sold. For example, Southern California Edison sold its generating assets there and bought commode's fossil-fueled plants. Independent power producers were mandated access to utility transmission systems. Transmission and distribution system ownership remained with the utility.

State governments became active in implementing deregulation after the FERC change. Legislators wanted to be seen as consumer-friendly and encouraging alternative energy sources. Everywhere except Texas. It is not part of the national interconnected systems.

There have been three large-scale blackouts in the last two decades. An improper setting on a transmission line protective relay caused the first. The resulting blackout principally affected New York City. The second occurred on the West Coast. A lot of energy generated by the Bonneville Power in Washington State is moved south to California. During a hot summer day, the load on a transmission line caused a wire to sag into a tree. Other lines were quickly overloaded and tripped. The most-recent East Coast blackout cause is being investigated. The most-likely cause was, again, a transmission line sagging into a tree. The resulting dynamic power transients resonated across the Eastern Interconnection and caused the widespread blackout.

The interconnected system forms an electrical is an electrical matrix. Each element has its unique system parameters of resistance and reactance. There is no model of the entire electrical transmission system and no studies of its response to electric transients (surges).

Solutions have been proposed to change the system. All are expensive; an estimated; \$100-billion to add transmission lines. Another is construction of asynchronous dc power transmission lines between load centers. Another would change the management of transmission interconnections. Hang on to your hat folks.

What's the solution? I required my employees to always tell me when they knew of a problem and to also tell me what they think should be done about it. Here is my conclusion of how the blackout problem should be handled:

I believe technical realities trump economics. Electrical service is absolutely vital to our society and must be accorded special consideration. Necessity trumps low cost. I believe the FERC (National Government) must reverse its stance on utility regulation. States must be mandated to return to a regulated system that worked; where extensive blackouts were rare and confined.

William H. Shafer
September 3, 2003