

## FVEAA NEWSLETTER - FEBRUARY 1996

**NEXT MEETING - Friday, February 16 at 7:30 PM will be in Room 157, Building K  
at the College of DuPage, Southwest corner of 22nd Street & Lambert Road**

**DISCUSSION TOPICS - 1. Report on Env/96 Conference 2. Project Report 3. EV Policy**

### MEMBERSHIP INFORMATION

Any person interested in electric cars is welcome to join the FVEAA. The cost for a full year's dues is \$20 which will entitle the member to receive our monthly Newsletter that contains useful information about electric car components, construction, policies, and events. Dues for new members joining in February will be \$ 17.

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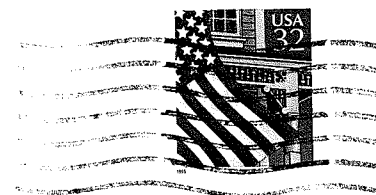
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**ADDRESS CORRECTION REQUESTED**

## MINUTES OF JANUARY MEETING

The meeting at the College of DuPage was called to order by President Woods at 7:30 PM. Eighteen members and five guests attended.

The December minutes were amended to add Bob Barrett's offer to make up the Nissan financial deficiency if volunteers help convert his Sterling, using his digital drive system.

Treasurer Corel reported \$ 2872.20 in the checking account, \$2186.70 in the savings account and \$ 5058.90 spent on the Nissan project.

Tom and Don Baker, owners of Battery Service Corporation in Bensenville, presented a program on lead-acid batteries sold by their firm. They provided handouts and went over differences between flooded electrolyte, gel cells, and minimum electrolyte batteries. They offered to provide GC-2 batteries for club members at a concession price. The firm is an authorized battery recycler.

Bob Munroe, manager for the Nissan project, gave a progress report. Ed Meyer painted the two front battery racks, provided a revised project list that is included with this newsletter and has a final balance calculation for the car that is also included. John Edme announced the 4th motor mount has been purchased and will be installed before the next working session at his shop on January 26. We are making good progress. Remaining tasks have been identified and volunteers were obtained for the dc-dc charger, instrumentation, battery charger, controller selection, and other tasks.

President Woods received a request for a car display at the Beecher celebration of Earth Day's anniversary on April 20th. The subject was postponed.

Bill Shafer stated the Incorporation and By-Laws need updating. President Woods appointed Steve Clark for the task.

The meeting was adjourned at 10:15

Dave Aarvold, Secretary

## PRESSEZ

Member Bob Barrett will report on EnV'96 a Conference he attended on Jan 22 and 23 in Dearborn, Michigan. The co-chairs planning the conference were Maurice G. Isaac of GE Automotive and Bob Stempel of GM/Ovonic. Speakers represented the Big Three as well as others.

Bob Monroe, Manager of our Nissan Project, and others working on the job will report on the progress.

Director Steve Clark will report on his study of the FVEAA By-Laws and recommend revisions.

I also hope we will have time to discuss the pros and cons of mandating EV's as opposed to relying on a market driven policy to promote the growth of EV's. This has been the FVEAA position since submitting our entry to the 1993 Infrastructure Design Competition. If the Organization can reach a consensus, the position will be furnished to authorities responsible for various EV policies.

KEN

## RECENT ARTICLES ABOUT EV'S

**Vermont takes a practical view of electric vehicle technology.** Daily Herald from Reuters 9/30/95 (Auto Showcase) The article notes that Vermont is one of the states mandating 2% ZEV's, but not until technology makes the cars practical. The set up four criteria for practicability: 1. The car must travel 150 miles on a single charge. 2. Recharge must be in two hours or less 3. The car must accelerate 0-60 in 15 seconds 4. Must cost less than \$ 19,000 in 1995 dollars.

**Renault to build 150 electrics for Swedish environmental group** Courier-News, 10/17/95, Section D 3. The article notes that Renault claims the world's biggest single contract for electric cars with the sale of 150 cars to Nutek, a Swedish organization promoting energy conservation and technology. The cars, an adaptation of the Clio hatchback, has a top speed of 57 mph, a range of 51 miles, and costs \$30,400. Each car receives a \$3000 subsidy from the French State utility, Electricite de France.

**Scholars' "Sky's falling" warnings full of holes.** Daily Herald, 11/20/95, Page 2 (Paul Harvey Opinion Article) The author states that many scholars and institutions secure grant money for research by scaring people. He notes the breaking down of atmospheric ozone and global warming could be in this category. He reports that a UN Report on Climate Change was labeled "For Internal Use Only" was nonetheless distributed. Many of the contributing scientists are embarrassed.

**Time to Phase Out Fossil Fuels?** Wall Street Journal 12/26/95 opinion by Charles Harper, a planetary scientist at Harvard. The author states that burning of fossil fuels may be tipping the planet to an ecological catastrophe, citing a UN Report on Climate Change. The report is based on a computer complex climate-simulation program. In the past century, greenhouse gases have risen 40%. The effect of this rise in the climate model produces a global temperature rise of 1 degree. The author urges actions begin now to reduce carbon emissions and continued climate monitoring to test the model's predications.

**Chrysler, Ford Agree on Charging.** Chicago Sun-Times 12/13/95. Two of the Big 3 automakers have agreed to use the same conductive charging device. GM will stick with its inductive charging system.

**Would you buy an electric car?** Chicago Sun-Times 1/5/ 1996 Business Section, Page 1. (A telephone call-in poll) A slim 57% said "yes" to 47% who said "no". Missing is the number of phone calls responding.

**Alternating currents for Big 3 carmakers.** Chicago Tribune 1/5/1996 Business Section, Page 1. GM announced it will begin selling the Impact EVs in California and Arizona this fall. "Sticker" price is \$30,000 with an additional cost for the inductive-charging system that requires a 240-volt source. Saturn dealers will handle the product that will be built in Lansing, Michigan. GM will also sell converted S-10 pickup trucks. GM stated it was amazed at the positive response it received from the Impact test program. Many persons will accept the limited driving range and higher price for the advanced electric car.

**California waiting: Goal for electric cars on hold.** Chicago Tribune 1/7/1996, Page 4. The article notes that the California decision to postpone the ZEV mandate is reverberating across the US. The decision came after extensive lobbying by oil companies and protests from four Midwestern governors who complained about possible job losses in their states if EVs replaced conventional cars.

**GM's electrifying news leaves unanswered questions.** Chicago Tribune 1/14/96, Section 12, Page 1. The article written by Tribune's Auto Writer, Jim Mateja, started with an observation by a GM Chief Executive, Jack Smith, at the Detroit Auto Show that, "Those folks in New England who want battery-powered cars must be crazy". Against this background, GM will begin marketing the Impact EV thru Saturn Dealers in California and Arizona this fall. Smith said the Impact was the first stage of developing a better battery car. He noted the next generation that is expected to use NIMH batteries are expected to have twice the present 90-mile range with lead-acid batteries.

## RECENT ARTICLES ABOUT EV'S - Continued

**200 Horsepower EVs! Automotive Industries September 1995, Page 79.** In this article author Gerry Kobe asks, "If Detroit is always right, how does it explain unsuccessful cars." He notes that Motor City is about to add another chapter to its legacy - the electric car. Alan Cocconi, the owner of AC Propulsion in San Dimas, CA commutes 60-70 miles per day in his car that is powered by a 200 hp propulsion unit he designed. The IGBT power unit weighs just 70 pounds and converts 336 volts DC into three-phase AC for a 110 pound induction motor. Max peak torque of 160 ft-pounds is delivered from 0-5000 rpm motor speed. The on-board charger in his converted 3200 pound Honda Civic will accommodate either 120 or 240-volts. The car will accelerate 0-60 in six seconds. The car has a single-charge range of 117 miles.

**Ecologists upset as CA moves to soften goal for electric cars. Chicago Tribune 12/28/95, Page 10.** This article from the New York Times News Service reports that air-quality advocates are criticizing the development, calling it a capitulation to the automobile and oil industries. Auto experts said the law change is a practical move because today's technology cannot produce an electric car that consumers want to buy.

**GM's Impact making a big impact. The Sun, 12/8/95, Page 14.** The Copely newspapers, including the Naperville Sun, contains an evaluation of the GM Impact by Mark Maynard. He test drove the car and came away with a favorable impression of its performance and features. His reactions are verified by 440 persons participating in GM's PrEView program. The car includes a preconditioning function that either heats or cools the car while it is still plugged in before being driven.

**Automakers power up electric vehicles. Daily Herald 1/14/96, Page 16.** The Christian Science Monitor's article was reprinted in the Herald. In it they state that just a few years ago batter cars were considered little more than a goofy idea, principally promoted by crackpots and tree-huggers. Today, some of the best minds in the auto industry are working on many projects that will lead to commercial EVs.

**Electric Car May Require A Boost. Chicago Sun-Times 1/8/96, Page 36.** Auto writer Dan Jedlicka observes that the 70-mile single-charge range GM's Impact is a big drawback in consumer's minds. Jay Leno noted that his restored Stanley Steamer seems more practical than an EV. Respected auto analyst Mariann Keller asks, "Who is going to pay \$ 35,000 for a car that can go only 90 miles at best?" Joe Riccardi of GM Electric Vehicles in Troy, MI said that the cold weather range at 20 degrees is only about 30 miles. Ed Cole, director of Auto Transportation Studies at the University of Michigan observes that, "GM knows it can't make money on the Impact right now." Gordon Walker who owns several Chicago area Saturn dealerships asks, "What about a customer who buys an Impact in CA or AZ and brings it to Illinois and is looking for service?"

**Volkswagen** in a short news item confirms it will produce the Concept 1 car in Puebla, Mexico. The powertrain will be offered with three options: diesel, electric, and hybrid. Expected availability about 2000.

**Inventor still on the job. Suburban Life's Citizen 1/13/96, Page 5** article features a bio of FVEAA member Bob Barrett who is still busy with his EV developments at his firm, Energy Efficiency, that he founded in 1980 after retiring from International Harvester. He is a charter member of the National Inventors Hall of Fame in Ohio.

**Looking Into Chrysler's Crystal Ball. Internet posting in January, 1996.** The Detroit Auto show was the first exhibit of a Chrysler concept car. An Intrepid ESX featured a drivetrain consisting of a 3-cylinder diesel engine, coupled to an alternator that delivers power to direct-drive electric motors mounted in the rear hub of each rear wheel that have a combined maximum power of 500 bhp. For passing and hill climbing energy can also be drawn from a set of Optima batteries that are recharged when the extra power is not needed.

## EV INFORMATION ON THE INTERNET

**Member Ken Meyers provided 35 pages of EV info gleaned from the Internet.** As the FVEAA Newsletter Editor, I am unsure of the best way to provide this useful information for FVEAA members. It would be a very demanding task to summarize these articles in a manner similar to the way I handle newspaper and magazine articles. I will start with a simple listing for FVEAA members who have a computer and are online.

**Purdue University School of Engineering and Technology at IUPUI (<http://webster.cadcam.iupui.edu/ev/prod-info.html>) has information on Advanced Vehicle Systems, Inc Electric Trolley, Electric Shuttle, Electric Bus. It also had data on Pepco, Inc TurboZ Battery Charging System and Solectira Corporation's Force and E-10 Pickup Truck. Questions or additional information should be directed to: ([webmaster@enr.iupui.edu](mailto:webmaster@enr.iupui.edu))**

**The Advanced Research Projects Agency (<http://www.ev.hawaii.edu>) home page offers information on 16 areas and an opportunity for comments and suggestions. They can also be accessed at ([webmaster@eve.ev.hawaii.edu](mailto:webmaster@eve.ev.hawaii.edu))**

**CALSTART has upcoming transportation events, Technical paper index, and marketplace items. Access address is (<http://www.calstart.org/news/clandar,index.html>)**

**Electric Vehicle/Solar Array Program at the Electrical Engineering College, University of South Florida in Tampa has news of their program that can be accessed at (<http://www.eng.usf.edu/EE/evprogram.html>)**

**EV Sites on the Web can be found at (<http://www.greenwheels.com/kester/websites.html>)**

**ZAP Electric Bicycle Information can be accessed at (<http://www.nbn.com/inet/zap/zaptech.html>)**

## Events

**The 1996 SAE Meeting in Detroit Feb 26-29 (Yes it is a Leap Year) Contact the SAE at 400 Commonwealth Drive, Warrendale, PA 15096-0001.**

**APS Electric Event in Phoenix AZ March 12-16.** The annual event will feature races and exhibits. For info - Jess Roman, EVTC, PO Box 11088, Glendale AZ 85318, (602) 256-2599.

**Mega Alternative Fuel Event in Los Angeles April 12-12.** Sponsored by CALSTART and others for fleet operators. Contact Jim Warren, (612) 545-1515, FAX (612) 545-1818.

**FSEC Sun Day Challenge in Daytona, FL April 13-14.** For info on this annual rally contact Florida Solar Energy Center, 1679 Clearlake Road, Cocoa, FL 32922-5703. (407) 683-1458.

**Michigan Electrathon(s) April 27 in Rockford and May 25 in Eaton Rapids.** For info write to GLEAA Newsletter, 198 East Street, Coopersville, MI, 49404.

**1996 Tour de Sol will start May 10 in New York and end May 17 in Washington DC.** Contact NEASA, 50 Miles Street, Greenfield, MA 01301. (413) 774-6051 or -6053,

**Midwest Energy Fair June 21-23 in Amherst, WI.** For information call (715) 824-5166 or write to MREA, PO Box 249, Amherst, WI 54406.

## FROM OTHER EV NEWSLETTERS

**EEVC, the Eastern group,** feature story in their January Newsletter was the GM decision to begin selling the IMPACT in CA and AZ. Components include Delphi (GM) valve-regulated lead-acid batteries, A Delco battery pack monitor, A Delphi 3-phase, ac induction motor, a Delco power electronics system, a new Galileo electrical braking system derived from Delphi's ABS VI anti-lock technology, a Virtuoso suspension package, a Delphi-Harrison thermal management system, and a Saginaw electro-hydraulic power steering unit. All these components reflect an extensive research program and application.

They also report that Massachusetts will not back down from its 2% ZEV mandate, even though CA is proposing a change. Ford has unveiled at the Detroit auto show. The 2200-pound concept car, labeled Synergy, features an aluminum 1-liter diesel-generator unit, a flywheel for regenerative braking and acceleration boosting.

**Electrathon, a successor to last year's events in Michigan,** is exchanging newsletters with the FVEAA. It is being managed by Jim Nichols at Coopersville High School, a participant in the 1995 competition. They plan three events in 1996, April 27 at the Grattan Speedway in Rockford, May 27 at Michigan Speedway in Eaton Rapids, and - if enough participants sign up - a competition at Coopersville on

**EVOSC, the Southern California organization,** in their January newsletter featured stories on the Atlanta Conference where several subjects were featured. The National Electric Code standards for EVs will affect how EV's will be plugged in. French EV developments were also reported. They also report on revisions to the 2% ZEV mandate and the huge impact of GM's decision to sell the EV-1 in CA and AZ.

**EV Circuit, published by the Ottawa Canada group** in their Nov/Dec issue discusses cold weather performance of EV's (See FVEAA December Newsletter for their report). Cold-weather presents no problem for battery boxes that have 2" foam building insulation and a 400-watt blankets beneath the batteries. The heaters are energized when the battery is plugged in for recharging. They attended and were impressed by the NESEA November Trade Show. A hearty **WELL DONE** to retiring editor, Fred Green.

**GLEAN, the Great Lakes Group** had two excellent publications released in January. The first is the Dec/Jan issue of Global EV News that this time was printed in a 32-page magazine format. Included was a review of the NESEA Trade Show in November, comment on the 2% ZEV mandate controversy, news about Ford's glider production, news about programs, developments, grants, tests, and production of EVs. The issue includes a comprehensive listing of EV suppliers. They provided a Library copy for FVEAA members to consult. If you want your own copy, it's \$40 a year from GLEAA, 6334 York Road, Pataskala, OH 43062-8461.

**FVEAA**  
**1990 NISSAN CONVERSION PROJECT**  
**Weight & Balance Data**

Maximum gross weight (Lbs)	Per Specification	After Conversion (No Passengers)
	3117	2891
Maximum allowable - front (Lbs)	1764	1472
- rear	1786	1419
Empty Weight ( As measured - Lbs.)	Engine Removed	Calculated
Left front wheel	402	751
Left rear "	380	724
Subtotal	782	1475
Right front "	395	721
Right rear "	356	695
Subtotal	751	1416
Total	1533	2891

**Final Center of Gravity Will Be 0.56 Inches Left of Vehicle Centerline.**

**Final Weight & Balance Predictions Based On:**

A.	Motor Weight =	143.0 Pounds
	Transmission Weight =	70.0 Pounds
	Flywheel & Clutch Weight =	25.0 Pounds
	Total =	238.0 Pounds
	Location =	7" forward of front axle
B.	3 Batteries @ 70 Lbs. Ea. =	210.0 Pounds
	Location =	1" behind front axle
C.	3 Batteries @ 70 Lbs. Ea. =	210.0 Pounds
	Location =	17 1/2" forward of front axle
D.	5 Batteries @ 70 Lbs. Ea. =	350.0 Pounds
	Location =	Over Rear axle
E.	5 Batteries @ 70Lbs. Ea. =	350.0 Pounds
	Location =	10" behind rear axle
	Total Added Weight =	1,358.0 Pounds

Calculations by Member Ed Meyer January 19, 1996

**FOX VALLEY ELECTRIC AUTO ASSOCIATION**  
**(NISSAN CONVERSION PROJECT)**

Report Date

01-19-96

**Balance Sheet**

Expenses

Income

1	Car procurement	\$	550.00		1	Sale of unused engine components	\$	97.00
2	Tow bar attachment	\$	75.00		2	Sale of Certificates	\$	4,200.00
3	Repair body rust	\$	20.00 Estimate		3	Authorized transfer from treasury	\$	2,000.00
4	Paint	\$	38.00 Estimate		4		\$	
5	Motor	\$	1,654.00		5		\$	
6	Controller	\$	1,100.00 Estimate		6		\$	
7	Battery (trial)	\$	100.00		7		\$	
8	Battery (Permanent)	\$	639.20 Estimate		8		\$	
9	Main Charger	\$	720.00 Estimate		9		\$	
10	Suspension Upgrade	\$	100.00 Estimate		10		\$	
11	Motor adapter plate	\$	114.65		11		\$	
12	Machined plate	\$	200.00		12		\$	
13	Broach to cut keyway	\$	51.55		13		\$	
14	Machine steel Hub	\$	320.00		14		\$	
15	Lifting eyebolt	\$	4.10		15		\$	
16	Misc. Nuts & bolts	\$	17.22		16		\$	
17	Power cable 2/0	\$	48.00		17		\$	
18	Clutch Disc	\$	32.59		18		\$	
19	Tow bar nuts and bolt	\$	6.41		19		\$	
20	Steering wheel & Ign.	\$	50.00		20		\$	
21	Motor shock mount	\$	24.70		21		\$	
22	Master relay	\$	- Owned		22		\$	
23	Circuit breaker	\$	- Owned		23		\$	
24	Pot-box	\$	75.00 Estimate		24		\$	
25	Auxiliary battery	\$	50.00 Estimate		25		\$	
26	Vacuum assist (brake)	\$	39.00 Estimate		26		\$	
27	DC-DC Converter	\$	450.00 Estimate		27		\$	
28	Electrical Meters	\$	- Owned		28		\$	
29	Heater	\$	100.00 Estimate		29		\$	
30	Splash pan	\$	20.00 Estimate		30		\$	
31	Tire replacement	\$	75.00 Estimate		31		\$	
32	Licensing	\$	28.00 Estimate		32	Shortfall recovery	\$	405.43
	<b>Total expenditure</b>	<b>\$</b>	<b>6,702.43</b>			<b>Total income</b>	<b>\$</b>	<b>6,702.43</b>
	<b>Original Estimate</b>	<b>\$</b>	<b>7,000.00</b>					