

November 1987

MEETING NOTICE

The next meeting will be Nov. 20th, at CRAGIN FEDERAL SAVINGS & LOAN 333 W. Wesley St. Wheaton, Ill. -Time - 7:30 P.M. sharp. Guests are welcome and need not be members to attend the meeting.

THE PRES SAYS

I have had the Club Car for about 6 weeks. In that time, several improvements have been made. The latest was relocation of the front license plate from the bumper to the grill. This move improves the appearance and will avoid denting of the new plate when it is installed later this month. The new plates were received last week. They no longer have "Electric Vehicle" on them but the plate number followed by the letters "EL". This change will be discussed at the November Meeting.

The conclusion of the battery charger tutorial by Member Meyers at the last meeting revealed a number of members interested in building a charger using his design. If there is sufficient demand, we could have a printed circuit board fabricated. We will also discuss this on the 20th.

Our technical discussion at the November meeting will be on increasing the system voltage of the present 36-volt cars that members have built to improve their sluggish acceleration performance. Participating in the discussion will be Chris Barshi, an electronics expert who has visited a couple of our past meetings. I hope we will also have participation by builders of the present units. Trial conversion of the Club Car was suggested by Member Mock at the last meeting.

November is also dues payment time for membership renewals. Please send or bring your \$15 renewal to Treasurer Vana.

Bill



FOX VALLEY ELECTRIC
AUTO ASSOCIATION
624 Pershing St. Wheaton, Il 60187

FIRST CLASS

ADDRESS CORRECTION
REQUESTED

Minutes FVEAA Meeting October 16, 1987 at Cragin Federal Savings & Loan office, Wheaton, Il.

President W. H. Shafer called the meeting to order at 7:35 P.M.

There were approx 19 members present.

Treasurer V. Vana reported that there is 662.46 in the NOW checking account and 790.37 in the savings account.

Ken Woods gave a very fine report on the Club Car display he set up at his home in connection with his CASA ZEUS II energy efficient home held October 11, 1987. Sounds like he really has a very low cost for energy home and also helps the environment.

Pres. Bill Shafer reported on the Club Car and its condition...A very very detailed report on the many things which this car needs to make it a viable vehicle. Frank Delmonico offered to repair the brakes for free and also go over to Bills house to inspect and possible repair a problem with one of the rear springs. Ken Myers is also going there to inspect the battery charger. Ken Woods is just going there to "Learn something".

Ken Myers discussed battery charger questions and will provide a parts list and also work with John Stockberger to build and design a circuit board and guide a club project to build some, as approximately 6 club members are interested in building a charger.

Pres. Bill Shafer discussed our VIDEO PROJECT and got many rejects of our offer from Edison and Cable T.V. etc. We are pointing to try to get our video shots done by next spring. Joe Pollard to contact Davia H.S. Vocational and Ken Woods to contact Columbia College to see if any help on video shots.

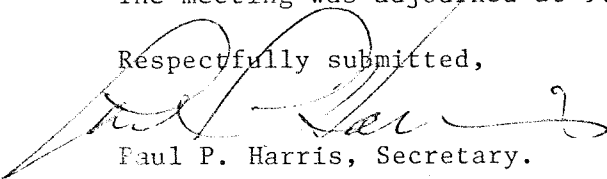
The Hybrid discussion was tabled for a few meetings. Joe Pollard to provide an informational talk on his hybrid in the near future. John Newton discussed his battery problems and expressed a need for a Prestolite motor. Dana Mock brought up converting the club car to higher voltage, especially for the wintertime....Next month, discussion on Controller going to higher voltage by Ken Myers. Members discussed various problems with their cars.

Bob Randerson is working on getting our car sign completed and working. George Krajnovick reported on a rally in Sunnyvale Cal. And now I'll leave you with this...

V. Vana gave a report on his Darlington transistors, which Westinghouse would not replace or do him any good on...so I guess he is just stuck...

The meeting was adjourned at 9:35 P.M. by a motion by Ken Myers.

Respectfully submitted,


Paul P. Harris, Secretary.

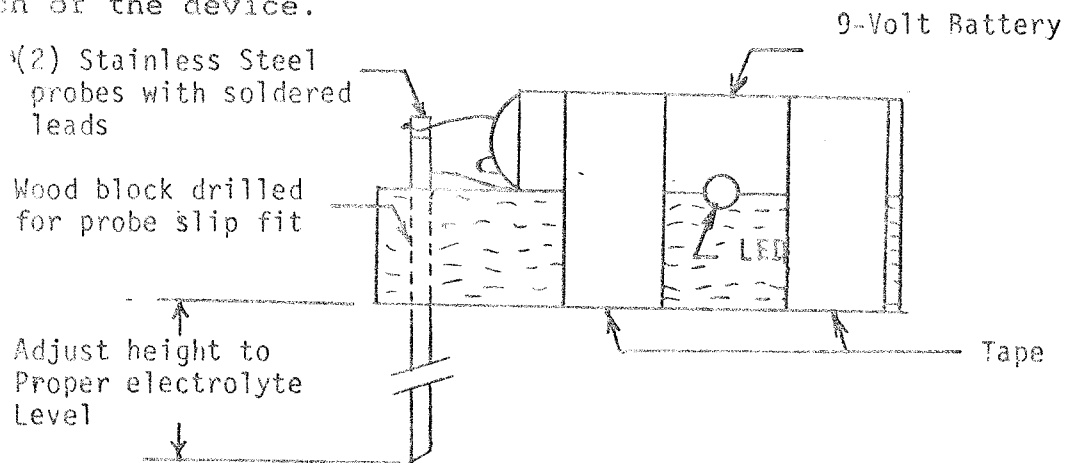
LET'S CUT YOUR ENERGY COSTS
ENERGY TIP #13 Every degree that you set your thermostat over 70 adds about 3% to your heating costs. Every degree under 70 saves about 3% of your heating bill.

9 NOVEMBER, 1987

BATTERY ELECTROLYTE LEVEL LOCATOR (BELL)

Determining the electrolyte level on some of the batteries in the club car was difficult, especially for those units nearest the back seat. The first time I checked the level, a hand mirror and trouble light was employed. Level-checking and rewatering required 52 minutes.

To simplify the process, I constructed a simple level indicator which was used for the second rewatering. I have named the device BELL for Battery Electrolyte Level Locator. The components are a 9-volt transistor battery, a light-emitting diode (LED), a block of wood and two metal probes. Here is a sketch of the device.



In use, the probes are adjusted so the tips are at the correct electrolyte level for the cell. The tips are lowered into the water-filling hole with the bottom of the wood block resting on the top lip of the opening. If the electrolyte covers the probe tips, the LED is illuminated by completing the 9-volt circuit thru the electrolyte. If it does not light, distilled water is added until the LED glows.

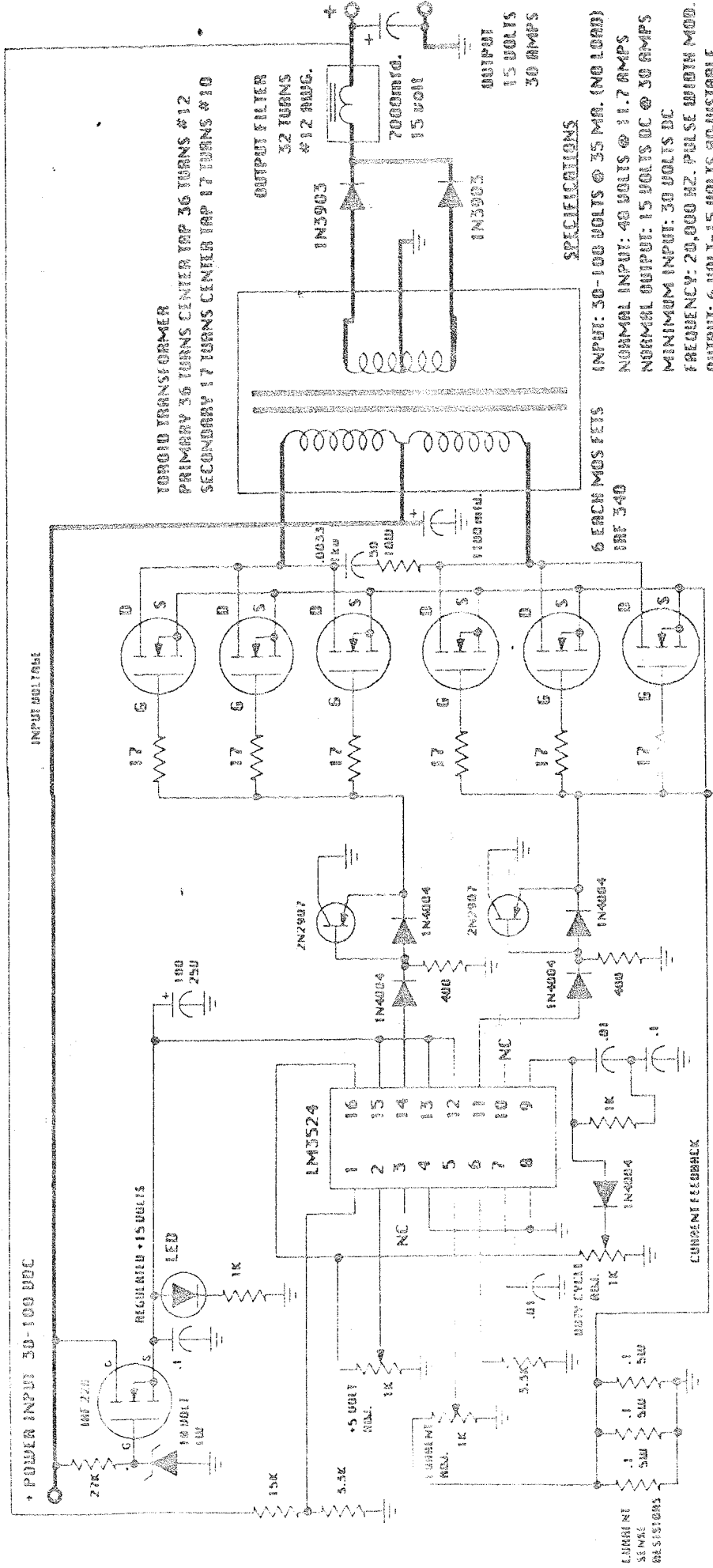
Using the device to check electrolyte level in the 13 batteries of the Club Car reduced the watering time to just 27 minutes.

Bell
William H. Shafer

Drafting by Apple McIntosh and Bob Steinfeld

USE LINE FEEDBACK

DC-DC CONVERTER DESIGNED BY BRUCE MCCASKIE
 30-100 VDC IN FROM MAIN BATTERY PACK OUTPUT IS DCC FOR LIGHTS AND ACCESSORIES

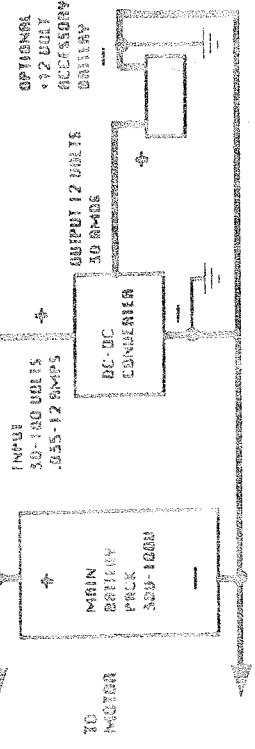


ALL RESISTOR VALUES ARE IN OHMS
 ALL CAPACITOR VALUES ARE IN MFD.

SPECIFICATIONS

- INPUT: 30-100 VOLTS @ 35 MA. (NO LOAD)
- NORMAL INPUT: 40 VOLTS @ 11.7 AMPS
- NORMAL OUTPUT: 15 VOLTS DC @ 30 AMPS
- MINIMUM INPUT: 30 VOLTS DC
- FREQUENCY: 20,000 HZ. PULSE WIDTH MOD.
- OUTPUT: 6 VOLT-15 VOLTS ADJUSTABLE
- 10-37 AMPS ADJ LIMIT
- WEIGHT: 5 POUNDS

BLOCK DIAGRAM SHOWING HOW THE SYSTEM IS USED



AN ACHIEVEMENT BY BRUCE MCCASKIE

(415)-347-1190

AT THE HEART OF A NEW MACHINE IS AN OLD IDEA

Electric motors get no respect. They run the modern world, but people—including most engineers—take them for granted. Hardly anyone has thought about radical design changes since the 1800s, when engine pioneer Samuel Morey suggested that the spinning rotor inside should be made from a solid piece of steel instead of the copper coil that's still used.

But three years ago two engineers left General Electric Co.'s declining large-motor business and decided to make their

mark by adapting Morey's idea for a revolutionary motor that could combine high power and high speed with ultraprecise controls to regulate the speed. They founded REM Technologies Inc. in Albany, N. Y., and invested more than two years and about \$250,000 in private and state funds.

The payoff is HiDrive, a variable-speed motor rated at 50 hp and 50,000 rpm. Much bigger models, capable of up to 300 hp, are still to come. REM President William H. Miller claims the motors are ideal for energy-saving applications in metal-cutting machinery, air conditioners, and pumps. With current designs, a large rotor with copper windings would tear itself apart at 50,000 rpm. So they are run slow, the output being revved up with a gearbox, which adds cost and inefficiency.

A BATTERY THAT COULD MAKE ELECTRIC CARS PRACTICAL

For years scientists have been struggling to develop batteries that would pack sufficient power and still be light-weight enough to make electric cars practical. Powerful lithium-iron-sulfide batteries were a prime candidate for the job. But because they operate at a temperature of 860F, the batteries need such elaborate insulating and cooling systems that they were ruled out.

Now, however, engineers at Argonne National Laboratory in Chicago have come up with an efficient way to package lithium batteries. They've developed a compact container that keeps the battery at operating temperature whether the car is being driven or not.

In simulated stop-and-go driving tests at the laboratory, the battery delivered the equivalent of 200 mi. of city driving without a recharge. "That range is three times as far as the best that could be achieved with a conventional lead-acid battery of the same weight," declares Albert A. Chilenskas, manager of the battery program. Gould Inc., which built the prototype, plans to construct a full-scale, 216-volt version for testing in 1988.



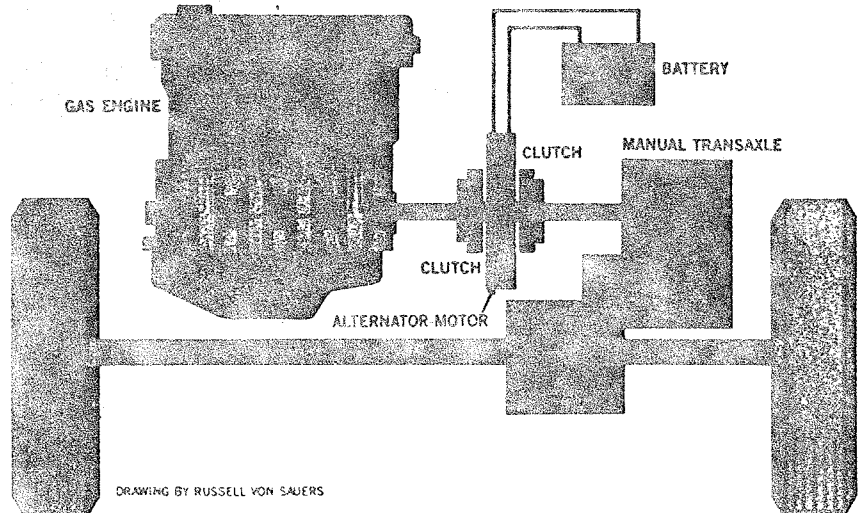
SMART BATTERY CHARGER for Gel Cells or Lead Acid Batteries, by Warren Dion, WISEB, see June 87 QST for details. Complete kit, nothing else to buy, only \$49.95 plus \$3.50 shipping. Order #150-KIT. A&A Engineering, 2521 W. La Palma #K, Anaheim, CA 92804; 714-952-2114.

Gas/electric drive

In one of the first applications of hybrid-drive technology, Volkswagen AG has developed an experimental car powered by a combination gasoline engine and electric drive ["Gasoline/Electric Sports Car," Aug '86]. The project was a joint venture with Robert Bosch GmbH in Germany and a Swiss electric-equipment company.

The system has a combination alternator and eight-horsepower electric motor fitted between the transverse engine and its conventional transaxle. In city driving, the gas engine is automatically shut down and electric power takes over, enabling the car to cruise at speeds up to 30 mph. For acceleration and highway cruising, the gas engine is restarted. A regenerative braking system helps the gas-powered alternator keep the batteries charged.

VW claims overall efficiency improvements of about 35 percent compared with the current Golf, with a 55-percent improvement in city traffic.



A combined alternator and motor lets VW use electric power around town.

Low, Low Fuel Consumption. The mechanical engineering department of the University of Saskatchewan in Canada has developed a new commuter car that uses less than a third the fuel of most automobiles. It carries no passengers other than the driver and vaguely resembles the bubble cars of the 1950's in its extreme aerodynamic shape—giving it about half the drag of a conventional automobile. It is also extraordinarily light—weighing less than 800 pounds—yet meets all Canadian safety standards and is licensed to run on Canadian roads. And it gets incredible gas mileage—about 165 miles per gallon at a constant speed of 55 miles per hour, and still over 60 miles per gallon in city driving.

FOR SALE

Gas furnace 130,000 BTU
Useable for garage or house
15 yrs old. Good condition
Direct drive blower. \$50.00
Call Vern Hughes 790-0742
2S081 Stratford Glen Ellyn

GM SUNRAYCER

Solar-powered GM Sunraycer beats Ford and 23 other competitors in 1950-mile endurance race across Australia.

On Friday, November 6th, the GM Sunraycer drove into Adelaide, Australia, hundreds of miles ahead of its closest competitor.

The Sunraycer took on an international field. From Japan. From Europe. From Australia. From the United States. They raced through the barren heart of the continent, driven only by energy from the sun. 1950 miles from the start to finish. GM people and GM solar power going against the best in the world. General Motors teamwork and General Motors technology won.

GM's Hughes Aircraft subsidiary built the Sunraycers solar cells and batteries, adapting space technology used in powering Hughes satellites. The General Motors Research Laboratories built the drive motor, using revolutionary high-efficiency MAGNEQUENCH magnets from Delco Remy.

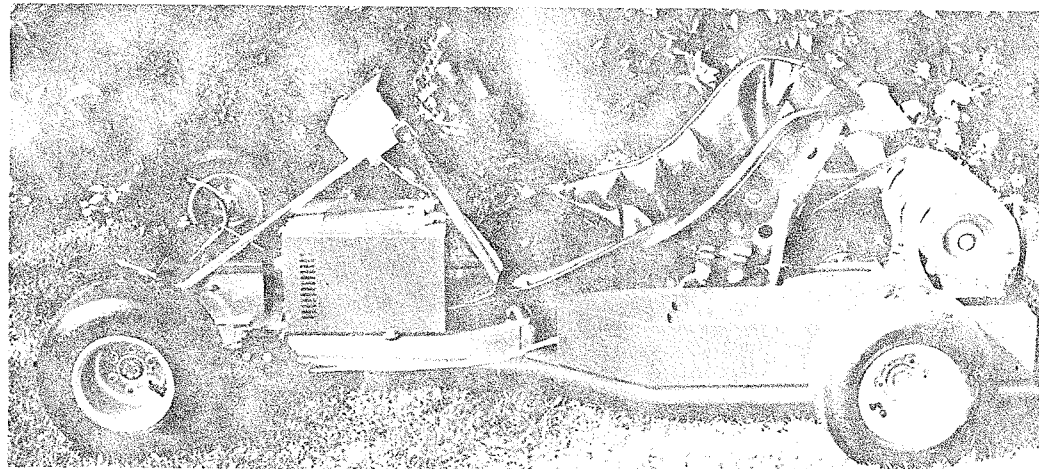
The chassis and suspension are products of teamwork among General Motors' engineering staffs. Low-speed aerodynamics and lightweight structures for the vehicle were perfected by GM's Design Staff.

Years ago General Motors saw that it would take leading-edge technology and the best people to build the best cars and trucks for our customers. What we are learning and proving with the Sunraycer will help us do the job. Teamwork and technology are multiplying the power of people to make the vision pay off.

Australia

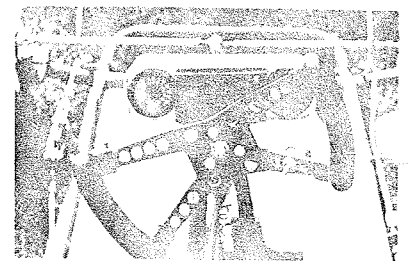


Pentax World Solar Challenge



200 amp aircraft generator drives the 'Volts-Wagen' from behind the seat, which is drilled for weight reduction

Larry Goddard of Santa Monica, California is still getting around on his 'Volts-Wagen' (though we're not sure where) after more than four years. The kids apparently haven't outgrown it yet (and neither has Larry). The kart is a true innovation, powered by 240 NiCad batteries feeding a 15 hp aircraft generator. The batteries are good for up to an hour and recharge in about three. The frame is chromemoly with standard pedals and brakes. The car did 70 mph when we last got word, though the inventor swore at the time he could do better. A race would be real tricky—would you ever hear the competition coming upon you. (And could you be DQed for substituting trick nitro-acid batteries?)



Butterfly steering wheel provides better view of gauge, amp meter, and digital display

FOX VALLEY ELECTRIC AUTO ASSOCIATION

Rev. Dec. 1984

MEMBERSHIP

A membership in the FOX VALLEY ELECTRIC AUTO ASSOCIATION (FVEAA) is open to everyone. Currently there is only one grade of membership regardless of the members degree of participation in association activities. Membership in the FVEAA is contingent upon payment of the annual membership fee. The membership fee can only be waived by special vote of the board of directors. Each member in the FVEAA receives a copy of the FVEAA NEWSLETTER each month. They are also entitled to attend and vote at all association meetings.

All memberships in the FVEAA run from November 1st to October 31st of the following year. The dues are \$15.00 per year payable at the November meeting. NEW members joining after November shall only pay \$1.25 for each month remaining before the following November. (see chart below)

Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
15.00	13.75	12.50	11.25	10.00	8.75	7.50	6.25	5.00	3.75	2.50	1.25

The following form may be used to apply for membership or to renew your membership.

----- cut -----

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APPLICATION FOR MEMBERSHIP OR RENEWAL

Date _____

Name _____

Address _____

City _____ State _____ Zip _____

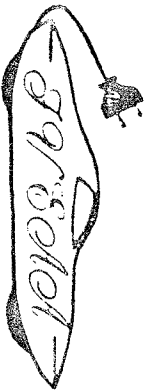
Phone # _____

- Just interested in electric vehicles
- I have an electric vehicle (describe) _____
- I wish to build an electric vehicle

Amount enclosed \$ _____ for _____ months.

Make checks payable to: **FOX VALLEY E. A. A.**

Mail to: MR. VLADIMIR VANA, FVEAA TRES.
5558 FRANKLIN
LA GRANGE, ILL. 60525



See policy electric utility association inc.

Revised - July, 1982

ARTICLE II: OFFICERS AND BOARD OF DIRECTORS

- A. **OFFICERS** There shall be five officers of the Corporation- President, Vice President, Secretary, Treasurer, and Property Custodian. Their duties shall be those normally performed by those officers and as outlined in these By-Laws.
- B. **BOARD OF DIRECTORS** The five officers of the Corporation and one additional director shall comprise the Board of Directors. The President of the Corporation shall also be the Chairman of the Board. The Board of Directors shall meet as necessary to transact any and all business that comes before it as set forth by these By-Laws and amendments thereto.
- C. **ELECTION PROCESS** The four officers and additional board member shall be duly elected by a majority vote of the members present at the annual meeting and shall serve a term of one year from the date of election or until their successors are elected.
- D. **VACANCIES** Vacancies in elective offices shall be filled by a majority vote of the Board of Directors for the interim between the time the action is taken and the next annual meeting, at which time the offices shall be filled as specified in Paragraph C, above.
- E. **REMOVAL FROM OFFICE** A proposal for removal from office of any officer of the Corporation shall be discussed at the meeting such proposal is made, but action can not take place until the next regular meeting. A two-thirds affirmative vote of the membership present shall be required to remove an officer from office.

ARTICLE III: COMMITTEES

- A. **STANDING COMMITTEES** This organization shall have the following standing committees:
 1. **LIBRARY COMMITTEE** This committee shall be composed of three appointed members, one of whom shall be appointed as chairman. It shall be the duty of this committee to keep a file of all articles and literature relative to electric vehicle construction and maintain an index of material available to the membership.
 2. **PUBLIC RELATIONS COMMITTEE** This committee shall be composed of the Secretary and two appointed members. The Secretary shall serve as chairman. The committee shall publicize the meetings, programs, public exhibits and other work of the Corporation to help keep the members and the public aware of Corporation activities. One appointed member of this committee shall serve as Association Historian.
- B. **SPECIAL COMMITTEES** The President shall appoint special committees and their chairmen as needs arise.
- C. **COMMITTEE VACANCIES** Vacancies on committees (except for the Chairman of the Public Relations Committee) shall be filled immediately by presidential appointment.

ARTICLE III: MEETINGS

- A. **ANNUAL MEETING** The annual meeting shall be held on the third Friday of September.
- B. **REGULAR MEETINGS** Regular meetings shall be held on the third Friday of each month unless changed by the Board of Directors.
- C. **SPECIAL MEETINGS** Special meetings may be called by the Board of Directors as necessary. In addition, any five members may request a special meeting which the President shall call as soon thereafter as possible.
- D. **NOTIFICATION** All current members shall be notified by mail of each Annual, Regular and Special Meeting by the Secretary at least one week prior to the meeting.

ARTICLE IV: MEETING PROCEDURE AND QUORUM

- A. **PROCEDURE** Standard parliamentary procedure shall be the normal authority for action by the Association except in those cases covered specifically by these By-Laws.
- B. **QUORUM**
 1. **ANNUAL MEETING AND REGULAR MEETINGS** All matters shall be decided by a majority of those members present and voting except for any matter for which a different requirement is specifically set forth in these articles.
 2. **SPECIAL MEETING** A quorum for a special meeting shall be fifty percent of the full membership of the Corporation.

ARTICLE V: MEMBERSHIP

- A. **DUES** Dues shall be \$15.00 per year payable at the regular November meeting. New members joining after November shall pay \$12.00 for each month remaining before the following November.
- B. **MEMBERSHIP-IN-GOOD-STANDING** A member shall be in good standing if his dues have been paid for the current year. Members in good standing shall have voting rights at the annual meeting and at all other meetings.
- C. **FORFEITURE OF MEMBERSHIP** A member may be dropped from membership if:
 1. A written resignation is submitted.
 2. He fails to abide by the Articles of Incorporation, By-Laws (including amendments thereto) or the policies of the Corporation. Such a case is to be judged by the Board of Directors and is subject to a majority vote of the membership at the next regular meeting if the member in question so requests.
 3. Annual dues are not current. The Board of Directors may defer dropping a member for non-payment of dues if it so elects.

ARTICLE VI: CORPORATION PROPERTY AND FUNDS

- A. **OFFICIAL BOOKS** The official books of the Corporation, including the official copy of the Articles of Incorporation and By-Laws as amended, minutes and other similar records, shall be maintained by the Secretary.
- B. **FUNDS** All funds in excess of \$ 50.00 shall be kept by the Treasurer in a bank account. Signatures authorizing the withdrawal of funds shall be those of President or Vice-President and the Treasurer.
- C. **OTHER PROPERTY** All other property shall be under the control and responsibility of the Property Custodian. The Property Custodian shall keep control and cost data on all Corporation owned equipment in a permanently bound book provided by the Corporation for that purpose. Such equipment shall be loaned to and used by Corporation members only, and only for stated periods of time. A member borrowing equipment shall sign for it in the record book. Members shall be required to return equipment to the Property Custodian at the time specified, and shall not lend it to other members for non-members. It shall be the responsibility of the Property Custodian to keep the equipment in good working condition, requesting any assistance needed from Corporation members. Where amounts greater than \$10.00 are required to repair equipment, authorization must be secured from the Board of Directors.

ARTICLE VII: AMENDMENTS TO THE BY-LAWS

- Amendments to these By-Laws may be proposed and discussed at any regular meeting. Proposed amendments may not be voted upon until the next regular meeting. Prior to the next regular meeting, the secretary shall notify the entire membership of the proposed amendment along with the notification of that meeting.
- Adoption of an amendment shall require a two-thirds affirmative vote of the entire membership. Members may vote on an amendment by proxy.

ARTICLE VIII: DISSOLUTION

- In the event of dissolution of the Corporation, all donated property and funds shall be returned to the donors. All assets shall be sold and the resulting funds along with any other funds the Corporation has shall be used to pay any liabilities the Corporation may have accrued. Any residue shall be divided among the members-in-good-standing.