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Decisions Must Still Be Made on Energy Policy And Arctic Drilling

THERE was no perceptible change in the country's energy situation in 1988, but there were significant changes in perception.

After inching higher toward the end of 1987, world oil prices relaxed as the oil glut continued, with no disruptions in supply despite high tensions in the Persian Gulf. Consumer prices for petroleum products in the United States remained relatively low, and consumption of imported oil increased, approaching 40 percent of the total. Also increasing were the contents of the Strategic Petroleum Reserve, authorized by Congress to cushion the economy against a sudden interruption of foreign supply. There seemed to be scant reason to worry.

Then, two agencies that make widely followed estimates of future trends in the oil industry made sweeping revisions of their figures. The International Energy Agency announced in January that it had been underestimating the world oil consumption by more than a million barrels of oil per day. The revisions sent shock waves through an industry whose ability to meet demand for more than a few additional decades is in question.

A few months later, the U.S. Geological Survey announced another revision—of its estimates of undiscovered oil and gas in this country, both of which are tied to the price of the products. Using a new method of analysis, the agency concluded the nation has little more than half the undiscovered crude oil projected earlier.

The reduced estimates of domestic reserves had approximately equal effects on the opposing sides in the debate over oil exploration in Alaska's Arctic National Wildlife Reserve. While the oil industry could use the numbers to show an increased need for exploration, environmentalists could use them to belittle potential gains. But there was no question about the impact on the debate of another batch of new data that appeared in May.

Early in 1987, Congressman George Miller of California asked the Interior Department to prepare a report on the impact on the Alaskan environment of develop-

ment of the Prudhoe Bay oil field. The information would help his subcommittee of the House Interior Committee evaluate if industry could, using the Prudhoe experience, safely develop the Arctic refuge.

The report, completed in December 1987, indicated that environmental damage at Prudhoe Bay had been vastly greater than predicted. Whereas the environmental impact studies had envisioned the destruction of 6,000 acres of wildlife habitat, 11,000 acres had actually been destroyed; where no freshwater withdrawal was predicted, 200 million gallons per year had been used; erosion and oil spills had been frequent and extensive.

The report was controversial enough, but the way it was handled was even more so. In December 1987, Congressman Miller was given a brief summary, which, he said later, did not reveal the problems described in the report. Only when the entire report was leaked to environmental groups did Miller get the full information. He accused the Interior Department of suppressing the facts to press for quick opening of the Arctic refuge to exploration. Interior denied the allegation.



The controversy erupted after the Senate Energy and Natural Resources Committee voted in February in favor of a bill that would open the Arctic refuge to oil exploration. But the vote (11-8) was closely divided, and other bills had been introduced in both houses of Congress calling for a wide range of options in the Arctic. Having delayed a decision for six years while waiting for an Interior Department recommendation, Congress found reason to wait for at least one more year—to avoid a floor fight during a presidential election campaign.

In another move possibly tied to presidential politics, the Interior Department delayed the offering of leases for oil exploration in three enormous offshore tracts. A lease sale for one tract off California was postponed one day before that state's presidential primary.

At about the same time, conservationists scored an important victory when a federal appeals judge upheld a 1982 court decision, which had found that federal oil and gas leasing policies violated U.S. regulations. The original lawsuit, filed by the National Wildlife Federation, had charged that government agencies had leased millions of acres of public lands for energy development without first conducting the legally required environmental impact statements.

Meanwhile, the greenhouse effect was on many Americans' minds last summer, as the searing heat added to the already-existing evidence that the trend in global warming is real. Elevated levels of carbon dioxide—produced by burning of fossil fuels—are thought to be responsible for half the greenhouse effect.

Though the United States has reduced the amount of energy it consumes by a fourth (per unit of gross national product) since 1973, experts agree additional conservation tactics must be implemented to further reduce the gases released into the atmosphere. Nevertheless, as 1988 came to a close, the country still lacked a clear national policy linking the nation's energy future to the efficient use of fossil fuels and the development of benign alternatives to such fuels.

BETTER

SAME

WORSE



ELECTRIC DRIVE: Ray Geddes, president of Unique Mobility, shows an exploded display of the company's new motor drive assembly. His right hand is on the stator, a fixed part, and his left on the rotor. All of the parts telescope to fit inside the wheel. *From Roy Titt*

UNIQUE MOBILITY MAKING A BID TO HELP REDUCE L.A. SMOG. The Denver Post for February 2, 1989, displayed the above picture. The accompanying article described a call for bids by the City of Los Angeles for 10,000 electric vehicles which would be part of a program to alleviate air pollution in the L.A. basin. Jerry Enzenauer, electric-vehicle manager at the L.A. Department of Water and Power, feels that the public is ready to accept the electric vehicle as a viable part of the program to clean up the city's air. The program, announced January 4th, calls for 3,000 vehicles by 1991, 3,000 more by 1993 and an additional 4,000 by 1995. It is expected that the first vehicles will be used by Southern California Edison and L.A. Department of Water and Power and would consist of vans, cars, minivans and pickups. The idea is to test the vehicles in actual use in large fleets. Such tests should prove whether or not electrics can do what is claimed.

Unique should be in a favorable position on the bidding as they have been doing R&D on and building of electric vehicles since the late 1970's. They expect to do about \$2.3 million worth of business this year, mainly for the U.S. Navy and Alcan Aluminum Limited, a Canadian company which had a net income of \$433 million in 1987. Alcan is a 7.5% part owner of Unique and recently negotiated with them a 3.5 year, \$4 million R&D contract on a project related to electric motors.

In the drive system pictured, the wheel is driven by a shaft attached to the planetary gear carrier visible just below the sleeve buttons on President Ray Geddes' coat. The ring gear is inside the housing and does not rotate. The sun gear is on the shaft extending from the rotor and is directly below Mr. Geddes' wrist. Since each motor develops over 20 hp and can also be used as a regenerative brake, a vehicle with one of these units in each wheel should have excellent performance.

TAX BREAK FOR ALTERNATIVELY FUELED VEHICLES? We wrote to Governor Roy Romer concerning ways in which electric vehicles could help in controlling pollution in the Denver area and asking for his support on House Bill 1081. He replied as follows:
 "Thank you for your letter concerning electric vehicles. I appreciate hearing from you.

In my announcement of the results from the 1987-88 Metro Denver Brown Cloud Study, I challenged Denver area residents to cut the brown cloud in half by the end of the century. The development and use of alternatively fueled or powered vehicles plays a role in the strategy to accomplish this goal. The use of alternative fuels also has gained added significance recently with the threat of global warming and the need to move from carbon based fuels.

Therefore, I support House Bill 1081 now before the 57th General Assembly of the Colorado Legislature. This bill would provide a tax credit against individual or corporate income taxes for a percentage of the cost of converting a motor vehicle to the use of alternative fuels or electric power. It also would provide a tax credit for a percentage of the cost of purchasing such a motor vehicle. The tax credit would equal 20 percent of the cost of conversion or purchase of such a vehicle, up to a maximum of \$300.

Again, thank you for writing.. I hope I can continue to count on your support in the effort to clean up the brown cloud."

Sincerely,
 Signed: Roy Romer
 Governor

MEMBER UPDATE: Treasurer's Report, ETAP Project, Board of Directors, By-Laws Update, Board Election and Bay Area Members Meeting.

TREASURER'S REPORT for 1988:

Beginning bank balance:		\$623
Income: Dues:	\$9450	
Newsletter ads:	301	
Bank interest:	43	
Other:	20	
	---->	9904
Expenses: Newsletter:	5916	
Dues rebates to chapters:	1710*	
Headquarters expenses:	1528	
Liability insurance:	879	
	---->	10033

Year-end bank balance:		\$494

*Note: About half of EAA members are not affiliated with any chapter so what would be their rebates helps cover Headquarters expenses.

ETAP PROJECT: A project description and invitation to participate were printed in the previous issue of this newsletter. The project is off and running. There have been three meetings to brainstorm design ideas. To date 28 EAA members and Stanford students and faculty have signed on as volunteer participants. Stanford has made indoor working space and meeting rooms available. John Reuyl is directing the project.

BOARD OF DIRECTORS: Your Board of Directors is John Newell, Chairman, Bob Steinfeld, EAA President, Max Rosenstein, Bill Palmer, Jonathan Gable, Clarence Ellers, Stan Skokan and Bob Kincheloe. The last four were added last June to replace two who resigned and to increase the number to eight.

Most of each Board meeting since last June has been devoted to discussion of the ETAP Project, whether EAA should sponsor it, and if so, how should it be managed and how should the funds be utilized.

A majority of the Board (John Newell, Bob Steinfeld, Bill Palmer, Stan Skokan and Bob Kincheloe) favored EAA sponsoring the project as an opportunity for EAA as an association, and each of us who wants to participate as individuals, to accomplish much more progress in electric transportation as a team with some money to work with than we have been able to by ourselves on our limited budgets.

In recognition that John Reuyl conceived the project and spent thousands of hours writing several proposals and negotiating with the California Energy Commission, the same majority favored contracting with him to direct the project. Also, since the State is providing the money and the State approved the budget in the proposal the majority of the Board favored sticking with that budget. The budget provides for the State to provide \$180,000 to be divided among: labor (director's salary) \$85,000, hardware \$50,000, and services, rents, taxes and other \$45,000. These amounts are to be spread over the 27 month project duration. Another provision of the project contract is that the \$180,000 provided by the State be matched by effort of volunteer participants in the work of the project at the rate of \$50 per hour. If the current number of participants (28) continues, for the 27 months each needs to contribute less than five hours per month.

Continued----->

A minority of the Board (Clarence Ellers, Jon Gable and Max Rosenstein) opposed sponsoring the project and contracting with John Reuyl to direct it and distributing the funds as budgeted in the proposal, especially allowing John Reuyl to get \$85,000 for administering the project when the rest of the participants are donating their effort. John, also, is donating his effort on design, constructing and testing. His pay is for organizing and managing the project, arranging for facilities, keeping all the records, managing the funds and writing all the reports required by the State. It is about a half-time job averaged over the 27 months. These minority Board members have refused to accept the decisions of the majority as they are legally obliged to do under California Corporation Code. Some are also publishing negative comments about John Reuyl and the project.

Max Rosenstein has challenged the actions approved and taken by the Board majority as illegal because the EAA By-Laws provide for only six Board members and the additions were made without changing the By-Laws and without an adequate election giving the entire EAA membership opportunity to participate. The Board has had its membership and actions reviewed by legal counsel. The legal opinion is that the newest four members (Clarence Ellers, Jonathan Gable, Bob Kincheloe and Stan Skokan) were not properly elected, and that the prior four members (John Newell, Bob Steinfeld, Bill Palmer and Max Rosenstein) are the legal Board. The legal opinion on actions is that since the contract with the California Energy Commission for the ETAP Project funding and the contract with John Reuyl to direct the project and to use the proposal budget were favored by three of the four legal Board members that those actions are legal.

BY-LAWS UPDATE: Elsewhere in this newsletter you will find the current EAA By-Laws. Please read them carefully and thoughtfully. If you think of any way to improve them please send your suggestions to John Newell at 1249 Lane Street, Belmont, CA 94002.

BOARD ELECTION: An election for members of the EAA Board of Directors will be held as soon as practical. Your nominations for Board members are solicited now. Send them to John Newell also. Since EAA Headquarters are in the San Francisco Bay area, Board meetings are held in that area and Board members must be willing to attend meetings approximately once a month at their own expense. Board members get no remuneration

BAY AREA MEMBER MEETING: On Saturday, March 11th a hastily-called meeting was held for all EAA members who cared to attend. Notices were sent only to members in Northern California. The meeting was requested by the Board minority (Clarence Ellers, Jonathan Gable and Max Rosenstein) to inform members of the actions of the Board majority and to give members an opportunity to state their opinions. It was intended that votes be taken on motions to direct the Board to take action. But, since notice was not sent to the entire membership, it was not a legal meeting of EAA as a whole, so motions passed were taken as advisory to the Board.

Motions were made and passed to have the Treasurer report at least annually, to give the members an opportunity to revise the By-Laws and to hold elections for Board members in accordance with the By-Laws. There was considerable discussion of the ETAP project, whether it should be sponsored by EAA, who should direct it and how the money should be utilized. There were more speakers in favor of the Board's actions than were opposed.

MODERN BATTERIES: "An Introduction to Electro-Chemical Power Sources" by Colin A Vincents, Publ., By Edward Arnold, 3 East Read St. Baltimore, MD 21202. (ISBN 0-7131-3469-0)

Aircraft Spruce & Specialty Co. Catalog: Fiberglass & Composite materials and Info. Very good if you are interested in light wt. P.O. Box 424 Fullerton, CA 92632 \$5

COMPOSITE CONSTRUCTION: by Jack Lambie Available from Aircraft Spruce \$15.95.

THE ARRL HANDBOOK: The best electronics course for the novice ever written in laymans language. Available at radio/TV & Ham supply houses.

US Navy BASIC ELECTRICITY: From Base PX.

GUIDE TO ELECTRIC AUTO CONVERSION: BY Bill Williams, P.O. Box 1548, Cupertino, CA 95015.

ELECTRIC CAR CONVERSION MANUAL: by Clarence Eilers, P.O. Box 2781 Santa Clara, CA 95055.

ELECTRIC AUTO MANUAL: by Walter Laski, 1674 Merril Dr. #12, San Jose, CA 95124

DIRECTORY OF THE EV INDUSTRY

Alphabetical Listing By Firm

AB Tudor
S-440 41 No1
SWEDEN Tel: 0303-40400
Batteries, traction; Components

**Accumulatorenfabriken
Wilhelm Hagen AG**
Thomastr, 27/28
477 Soest, Nordrhein-Westfalen
WEST GERMANY Tel: 02921/1021
Batteries, traction; Battery
Separators Components

Accumulatorenwerk Hoppecke
Carl Zoeliner & Sohn
Barbarossaplatz 2
D-5000 Köln 1
WEST GERMANY
Tel: (02 21) 219016
Batteries, traction

**Akkumulatorenfabrik
Dr. Leopold Jungfer**
A-9181 Feistritz i.R.
Karnten
AUSTRIA Tel: (0 42 28) 236
Batteries, traction; Battery
Separators

**Akkutechnik Ladegeräte
GmbH & Co**
Lawaetzstr. 9-13
D-2000 Hamburg-Norderstedt
WEST GERMANY
Tel: 040/522 01 500
Components

Alco Battery Company
2980 Red Hill Avenue
Costa Mesa, California 92626
USA Tel: 714-540-6677
Batteries, traction

Allied Electric Vehicle Group
511 Hamilton Street
P.O. Box 931
Toledo, Ohio 43694
USA Tel: 419-255-4068
Batteries, traction; Components

Amerace Corporation
P.O. Box 576
Newburg Road
Hackettstown, New Jersey 07840
USA Tel: 201-850-1400
Battery Separators

**Baker Material Handling
Corporation**
500 Tiedeman Road
Cleveland, Ohio 44144
USA Tel: 216-433-7000
Trucks, fork lift

Baldor Electric Company
P.O. Box 6238
Fort Smith, Arkansas 72902
USA Tel: 501-646-4711
Components

F.W. Bell, Inc.
6120 Hanging Moss Road
Orlando, Florida 32807
USA Tel: 305-678-6900
Components

Brown Boveri & Cie
Postfach 351, Neustadter Str. 61
D-6800 Mannheim
WEST GERMANY Tel: (06 21) 3811
Components

C-Cor Electronics Inc.
3701 E. Miraloma Avenue
Anaheim, California 92806
USA Tel: 714-993-2620
Chargers

C&D Batteries
(see Allied Electric Vehicle
Group)

Cableform Limited
Green Lane, Romiley
Stockport, Cheshire SK6 3JQ
ENGLAND Tel: 061-430-4000
Components

Celanese Fibers Marketing Co.
Barclay Downs Drive
P.O. Box 32414
Charlotte, North Carolina 28232
USA Tel: 704-554-2000
Battery Separators

Chloride Group Limited
52 Grosvenor Gardens
London SW1W 0AU
ENGLAND Tel: 01-730 0866
Batteries, traction

Chloride Technical
Wynne Avenue
Swinton, Manchester M27 2HB
ENGLAND Tel: 061-793-5000
Batteries, traction; Battery Sep-
arators; Buses, 10 or more
passengers; Components;
Trucks, on-the-road

Club Car, Inc.
P.O. Box 4658
Augusta, Georgia 30907
USA Tel: 404-863-3000
Golf Cars

Commuter Vehicles Inc.
Division of General Engines Co.,
Inc.
P.O. Box 1479
Sebring Air Terminal
Sebring, Florida 33870
USA Tel: 800-257-7955; or
813-655-2131
Bikes, 2 and/or 3-wheel,
scooters; Cars, passenger;
Components; Vans, passenger/
cargo

Conde Barao, SARL
Avenida 24 de Julho, 62
Lisbon
PORTUGAL
Batteries, traction; Com-
ponents; Trucks, fork lift

Curtis Instruments, Inc.
200 Kisco Avenue
Mount Kisco, New York 10549
USA Tel: 914-666-2971
Components

Curtis Instruments (UK) Ltd.
Spencer Bridge Works
Spencer Bridge Road
Northampton NN5 7EY
ENGLAND Tel: 0604-581137
Components

Cushman-Outboard Marine Corp.
P.O. Box 82409
Lincoln, Nebraska 68501
USA Tel: 402-475-9581
Trucks, burden carriers, in-
plant

Daihatsu Motor Co., Ltd.
1-1 Daihatsu-cho
Ikeda-city, Osaka 563
JAPAN Tel: 0727-51-8811
Buses, 10 or more passengers;
Cars, passenger; Components;
Golf Cars; Trucks, burden car-
riers, in-plant; Trucks, on-the-
road; Vans, passenger/cargo

Daimler-Benz AG
Postfach 202
7 Stuttgart 60
WEST GERMANY Tel: 0711/3021
Buses, 10 or more passengers

Dana Corporation
Spicer Clutch Division
P.O. Box 191
Auburn, Indiana 46706
USA Tel: 219-925-3800
Components

Delco-Remy Division
General Motors Corporation
2401 Columbus Avenue
Anderson, Indiana 46011
USA Tel: 317-646-2000
Batteries, traction

Roberto Diener y CIA., S.A.
Avenue Chapultepec #61
Mexico 1 D.F.
MEXICO
Batteries, traction

Douglas Battery Mfg. Co.
P.O. Box 12159
Winston-Salem, North Carolina
27107
USA Tel: 919-788-7561
Batteries, traction

E-Z-GO
(see Polaris E-Z-Go)

Eagle-Picher Industries, Inc.
P.O. Box 47
Joplin, Missouri 64801
USA Tel: 417-623-8000
Batteries, traction

Eaton Corporation
11000 Roosevelt Boulevard
Philadelphia, Pennsylvania 19115
USA Tel: 215-698-6000
Trucks, fork lift

Electric Transportation Management Inc.
4747 North Ocean Drive
Ft. Lauderdale, Florida 33308
USA Tel: 305-785-2228
Engineering, Research, & Consultants

Electric Vehicle Consultants, Inc.
327 Central Park West
P.O. Box 20041
New York, New York 10025
USA Tel: 212-222-0160
Engineering, Research & Consultants

Electric Vehicle Industries
21 West Street
Lawrence, Massachusetts 01841
USA Tel: 617-683-3675
Cars, passenger; Trucks, on-the-road

Electric Vehicles, Inc.
2736 Winfield Drive
Mountain View, California 94040
USA Tel: 415-964-3974
Components; Engineering, Research & Consultants

Electro Automotive
P.O. Box 1113
Felton, CA 95018
USA (408) 429-1989
Components

Electrona S.A.
Rue du Pre-Landry 20
CH-2017 Boudry/Ne
SWITZERLAND Tel: 038/44 21 21
Batteries, traction; components

Ellenberger & Poensgen GmbH
D-8503 Altdorf bei Nurnberg
(BRD)
WEST GERMANY Tel: 0 9187-10-1
Components

Energy Development Associates
103-B Creek Ridge Road
Greensboro, North Carolina 27406
USA Tel: 919-379-7460
Batteries, traction

Espar Products Inc.
6480 Viscount Road
Mississauga, Ontario L4V 1H3
CANADA Tel: 416-678-1661
Components

Evans Products Company
P.O. Box E
Corvallis, Oregon 97330
USA Tel: 503-753-1211
Battery Separators

Evelec S.A.
Rue de la Pepiniere 41
Bruxelles 1000
BELGIUM
Cars, passenger

Exide Battery
101 Gibraltar Road
Horsham, Pennsylvania 19044
USA Tel: 215-674-9500
Batteries, traction; Components

Exide Canada Inc.
2301 Dixie Road
Mississauga, Ontario L4Y 1Z9
CANADA Tel: 416-277-3131
Batteries, traction

Facile Technologies, Inc.
185 Sixth Avenue
Paterson, New Jersey 07524
USA Tel: 201-684-1000
Battery Separators

FIAMM SpA
36075 Montecchio Maggiore
Vicenza
ITALY Tel: 0444-76522
Batteries, traction

FIAT
Strada del Drosso 145
10135 Torino
ITALY Tel: 347-71271
Cars, passenger; Trucks, on-the-road

Flight Systems, Inc.
P.O. Box 25
Mechanicsburg, Pennsylvania 17055
USA Tel: 717-697-0333
Components

Flight Systems, Ltd.
6480 Viscount Road
Malton, Ontario L4V 1H3
CANADA Tel: 416-678-9470
Components

Fulmen (UK) Ltd.
Blackwater Way, Aldershot
Hampshire GU 12 4DR
ENGLAND Tel: 0252-21326
Batteries, traction; components

GES mbH
Frankenstrasse 348
43 Essen 1
WEST GERMANY Tel: (02 01) 437-1
Engineering, Research & Consultants

GNB Batteries
P.O. Box 43140
St. Paul, Minnesota 55164
USA Tel: 612-681-5000
Batteries, traction; Components

General Battery Corporation
P.O. Box 1262
Reading, Pennsylvania 19603
USA Tel: 215-378-0500
Batteries, traction; Components

General Engines Company, Inc.
(see Commuter Vehicle Inc.
Division and Pedal Power Division)

Germanium Power Devices Corp.
P.O. Box 65, Shawsheen Village
Station
Andover, Massachusetts 01810
USA Tel: 617-475-5982
Components

Globe Battery Division
Johnson Controls
5757 N. Greenbay Avenue
Milwaukee, Wisconsin 53201
USA Tel: 414-228-1200
Batteries, traction

Gottfried Hagen AG
Rolsloverstrasse 95-101
5000 Cologne 91
WEST GERMANY Tel: 0221-83941
Batteries, traction; Components

W.R. Grace & Company
55 Hayden Avenue
Lexington, Massachusetts 02173
USA Tel: 617-861-6600
Battery Separators

Grumman Allied Industries, Inc.
445 Broad Hollow Road
Melville, New York 11747
USA Tel: 516-454-8400
Trucks, on-the-road

Gurgel Industria e Comercio de Vehiculos Ltda.
KM 171, Rodovia Washington Luiz
Rio Claro
Sao Paulo S.P.
BRAZIL Tel: 24.4899
Cars, passenger; Trucks, on-the-road; Vans, passenger/cargo

HB Electrical Mfg. Co., Inc.
(see Allied Electric Vehicle Group)

HIL Electric Ltd.
Unit 17G
Shrub Hill Industrial Estate
Worcester WR4 9EL
ENGLAND Tel: (0905) 20651
Cars, passenger; Trucks, on-the-road

Hi-Tech Batteries, Limited
P.O. Box 592996
Miami, Florida 33159
USA
Batteries, traction

Harbilt Electric Vehicles Ltd.
Rockingham Road
Market Harborough
Leicestershire LE16 7PU
ENGLAND Tel: (0858) 67491
Maintenance Evs, industrial/commercial type; Trucks, burden carriers, in-plant

Hobart Brothers Company
Power Systems Division
1177 Trade Road East
Troy, Ohio 45373
USA Tel: 513-339-6011
Chargers

Hybrid Vehicles
33/34 Alfred Place
London WC1E 7DP
ENGLAND Tel: 01-253-2420
Buses, 10 or more passengers; Trucks, on-the-road; Vans, passenger/cargo

Hydrocap Corp.
975 NW 95 Street
Miami, Florida 33150
USA Tel: 305-696-2504
Batteries, traction; Components

Hyster Company
P.O. Box 2902
Portland, Oregon 97208
USA Tel: 503-280-7000
Trucks, fork lift

Imatra-Paristo OY
Nuaskatu 13
874000 Kajaani 40
FINLAND Tel: 986-37383
Batteries, traction

Industrias Murrell, S.A.
Av. Los Paraisos #68 Ciudad
Granja
Guadalajara, Jalisco
MEXICO
Golf Cars; Trucks, burden carriers, in-plant; Trucks, fork lift

Japan Storage Battery Co. Ltd.
Kishshoin, Minami-ku
Kyoto
JAPAN
Batteries, traction

Kalamazoo Manufacturing Co.
1827 Reed Street
Kalamazoo, Michigan 49001
USA Tel: 616-349-9723
Trucks, burden carriers, in-plant

Lansing Bagnall (Canada)
1250 Steeles Avenue
Bramlea, Ontario L6T 1A1
CANADA Tel: 416-459-5910
Components; Maintenance Evs, industrial/commercial type; Trucks, burden carriers, in-plant; Trucks, fork lift

Lansing Bagnall, Ltd.
Kingsclere Road
Basingstoke, Hampshire RG21 2XJ
ENGLAND Tel: Basingstoke 3131
Components; Maintenance Evs, industrial/commercial type; Trucks, burden carriers, in-plant; Trucks, fork lift

William David Lawry
15233 Ventura Boulevard
Sherman Oaks, California 91403
USA Tel: 213-990-1514
Engineering, Research & Consultants

Lectra-Matic Automobile Corp.
4770 Biscayne Boulevard
Miami, Florida 33137
USA Tel: 305-326-6716
Cars, passenger

Lester Electrical of Nebraska
625 West A Street
Lincoln, Nebraska 68522
USA Tel: 402-477-8988
Chargers

Lucas Chloride EV Systems Ltd.
Evelyn Road
Birmingham B11 3JR
ENGLAND Tel: 021-772-2277
Batteries, traction; Components

Lyman Electric Products
15 Meadow
So. Norwalk, Connecticut 06856
USA Tel: 203-838-8491
Bikes, 2 and/or 3-wheel, scooters; Cars, passenger; Components; Trucks, burden carriers, in-plants

Mawdsley's Ltd.
Dursley
Gloucestershire GL11 5AE
ENGLAND Tel: Dursley (0453) 4131
Motors, traction

Mercury Electric Ltd.
P.O. Box 135
Goodwood 7460
Moody Avenue
Epping Industria
SOUTH AFRICA Tel: 53-3138
Cars, passenger; Components; Golf Cars

Mercury Products

Division of Dyneer Corp.
1201 Camden Avenue, SW
Canton, Ohio 44706
USA Tel: 216-456-3453
Components

Mini "T" Electric Motor Car Co., Inc.

1140 Highland Avenue
Glendale, California 91202
USA Tel: 213-242-0414
Cars, passenger

NDC Netzier & Dahlgren Co. AB

Munkekullen
430 40 SARO
SWEDEN Tel: 031/70 60 20
Components

National-Standard Company

Woven Products Division
Industrial Boulevard
Corbin, Kentucky 40701
USA Tel: 606-528-2141
Battery Separators

Nissan Motor Company Ltd.

1, Natsushima-Cho
Yokosuka
JAPAN
Cars, passenger; Trucks, on-the-road

Nordco Electric Vehicle

Division of Nordco Products
26701 Redlands Boulevard
Redlands, California 92373
USA Tel: 714-793-2891
Golf Cars; Maintenance EVs, industrial/commercial type; Trucks, burden carriers, in-plant

Oldham Batteries Limited

Hyde Road
Denton, Manchester M34 3AT
ENGLAND Tel: 061-336-2431
Batteries, traction; Battery Separators

Curtis/PMC

6591 Sierra Ln. "E"
Dublin, CA 94568
USA Tel: (415) 828-5001
Components

Palmer Industries

P.O. Box 707, Union Station
Endicott, New York 13760
USA Tel: 607-754-1954
Bikes, 2 and/or 3-wheel scooters

Palmer Sales & Service, Inc.

3043 West Colter Street
Phoenix, Arizona 85017
USA Tel: 602-242-0873
Golf Cars

Pandora Electric Cycles

45 Formans Road
Sparkhill, Birmingham
West Midlands B11 4201
ENGLAND Tel: (021) 778-4201
Bikes, 2 and 3-wheel, scooters

Pedalpower

Division of General Engines, Inc.
591 Mantua Boulevard
Sewell, New Jersey 08080
USA Tel: 800-257-7955;
or 609-468-0270
Bikes, 2 and/or 3-wheel, scooters

Penta Engineering Co.

625 W. Covina Boulevard
San Dimas, California 91773
USA Tel: 714-599-6085
Components; Engineering, Research & Consultants

Polaris E-Z-GO

Division of Textron Inc.
P.O. Box 388
Augusta, Georgia 30913
USA Tel: 404-798-4311
Golf Cars

Power Functions Engineering, Inc.

3831 Cavalier Drive
Garland, Texas 75042
USA Tel: 214-278-0996
Components

Prestolite

(see Allied Electric Vehicle Group)

Progetti Gestioni Ecologiche

Via Rosellini 1
20124 Milano
ITALY Tel: 02-6884085
Cars, passenger; Components; Trucks, on-the-road

Propel, Inc.

210 New Market Avenue
South Plainfield, New Jersey 07080
USA Tel: 201-753-2400
Components; Engineering, Research & Consultants; Equipment (test, R&D, etc.); Gauges/Meters

Ragonot

15 Bld Gabriel Peri
Malakoff 92240
FRANCE Tel: 253-53-60
Bikes, 2 and/or 3-wheel, scooters; Cars, passenger; Components

Ransomes Sims & Jefferies Ltd.

Ipswich IP3 90G
ENGLAND
Trucks, burden carriers, in-plant

Reliance Electric

24701 Euclid Avenue
Cleveland, Ohio 44117
USA Tel: 216-266-7000
Components

Rocabay-Kirchner

L'A.A.R.
149 Rue de Crimée
75019 Paris
FRANCE Tel: 208-90-11
Trucks, on-the-road; Vans, passenger/cargo

Rolls Battery Engineering

8 Proctor Street
Salem, Massachusetts 01970
USA Tel: 617-745-3333
Batteries, traction; Chargers

S.A.F.T.

Société des Accumulateurs Fixes et de Traction
119 Avenue du Président Wilson
Levallois-Perret 92300
FRANCE Tel: 737-41-25
Batteries, traction; Components

S.I.T.A.

7 Rue de Logelbach
75821 Paris, Cedex 17
FRANCE Tel: 227-65-60
Maintenance EVs, industrial/commercial type

Sevcon

Division of Technical Operations, Inc.
Kingsway
Team Valley Trading Estate
Gateshead NE11 0QA
ENGLAND Tel: 0632 8785 16
Components

Sevcon

Division of Technical Operations, Inc.
40 North Avenue
Burlington, Massachusetts 01803
USA Tel: 617-272-2000
Components

Siemens AG

Dep E 41
Werner-von-Siemens-Strabe 50
Erlangen D 8520, Bayern
WEST GERMANY Tel: 09131 7 3480
Components

Simon Battery & Research Corp.

3040 Bigelow Boulevard
Pittsburgh, Pennsylvania 15219
USA Tel: 412-621-1810
Batteries, traction

Smith's Electric Vehicle Limited

Marquissway, Team Valley Trading Estate
Gateshead, Tyne & Wear NE8 1YT
ENGLAND
Tel: Newcastle (0632) 871311
Maintenance EVs, industrial/commercial type; Trucks, burden carriers, in-plant; Trucks, on-the-road

Sociedad Espanola del Acumulador

Tudor, S.A.
Gaztambide, 49
Madrid, 15
SPAIN Tel: 449-2909
Batteries, traction; Components

Surrette Storage Battery Co., Inc.

Springhill, N.S.
CANADA Tel: 902-597-3767
Batteries, traction

Surrette Storage Battery Co., Inc.

P.O. Box 3027
Salem, Massachusetts 01970
USA Tel: 617-745-4444
Batteries, traction

Talbot Motor Co. Ltd.

Boscombe Road, Dunstable
Bedfordshire
ENGLAND
Buses, 10 or more passengers; Trucks, on-the-road; Vans, passenger/cargo

Taylor-Dunn

2114 West Ball Road
Anaheim, California 92804
USA Tel: 714-956-4040
Golf Cars; Trucks, burden carriers, in-plant

Texon, Inc.

Canal Street
South Hadley, Massachusetts 01075
USA Tel: 413-536-1610
Battery Separators

Toyo Kogyo Company, Ltd.

3-1 Shinchi, Fuchu-cho
Aki-gun, Hiroshima 730-91
JAPAN Tel: 0822-82-1111
Cars, passenger; Golf Cars; Trucks, burden carriers, in-plant; Trucks, on-the-road

Trojan Battery Company

12380 Clark Street
Santa Fe Springs, California 90670
USA Tel: 800-423-6569; or
213-946-8381
Batteries, traction

Unique Mobility, Inc.

3700 South Jason Street
Englewood, Colorado 80110
USA Tel: 303-761-2137
Cars, passenger; Vans, passenger/cargo

VARTA Batterie AG

Am Leineufer 51, Postfach 210540
D3000 Hannover 21
WEST GERMANY Tel: 0511-79031
Batteries, traction

Viniegra Vehiculos Electricos, S.A.

Av. Sor Juana Ines De La Cruz
331 Tlalnepantla
Edo. De Mexico
MEXICO Tel: 565-4151
Cars, passenger

W & E. Vehicles

Harlescott
Shrewsbury SY1 3AE
ENGLAND Tel: Shrewsbury 52288
Maintenance EVs, industrial/commercial type; Trucks, burden carriers, in-plant; Trucks, on-the-road

Ward Leonard Electric Co., Inc.

31 South Street
Mount Vernon, New York 10550
USA Tel: 914-664-1000
Components

Westinghouse Electric Corporation

Westinghouse Building, Gateway Center
Pittsburgh, Pennsylvania 15222
USA Tel: 412-255-3800
Components

Whisper Electric Car

208 Skodsborg Strandvej
DK 2942 Skodsborg
DENMARK Tel: 02-804096
Cars, passenger

Victor Wouk Associates

853 Broadway, Rm. 1104
New York, NY 10003
USA Tel: (212) 473-1010
Engineering, Research & Consultants

Associations, Clubs, Societies, Etc.

8

A.V.E.R.E.

(see European Electric Road Vehicle Association)

The breath you save
may be your own

American Gas Association

1515 Wilson Boulevard
Arlington, Virginia 22209
USA Tel: 703-841-8574

American Public Power Association

2301 M Street, N.W.
Washington, D.C. 20037
USA Tel: 202-775-8300

Asociacion para el Desarrollo de Vehiculos Electricos (ADVE)

Edificio Albia 11-7 A c/
San Vincente s/n
Bilbao 1, Vizcaya
SPAIN Tel: 94/4242301

Australian Lead Development Association

95 Collins Street
Melbourne, Victoria 3000
AUSTRALIA

Battery Council International

111 East Wacker Drive
Chicago, Illinois 60601
USA Tel: 312-644-6610

Copper Development Association Inc.

Greenwich Office Park 2, 1840
Greenwich, Connecticut 06836
USA Tel: 203-625-8210

Denver Electric Vehicle Council (DEVCC)

2940 13th Street
Boulder, Colorado 80302
USA Tel: 303-442-6566

Eastern Electric Vehicle Club

P.O. Box 717
Valley Forge, Pennsylvania 19482
USA Tel: 215-696-5615

Edison Electric Institute

1111 19th Street N.W.
Washington, D.C. 20036
USA Tel: 202-828-7422

Electric Auto Association

1249 Lane Street
Belmont, California 94002
USA Tel: 415-591-6698

Electric Vehicle Association of Canada

P.O. Box 4044, Station E
Ottawa, Ontario, K1S 5B1
CANADA Tel: 613-236-2497

Electric Vehicle Association of Great Britain Ltd.

13 Golden Square Piccadilly
London W1R 3AG
ENGLAND Tel: 01-734-7873

Electric Vehicle Development Group

59 Colebrooke Row
London N1 8AF
ENGLAND Tel: 01-359-7352

Elfordoncentrum i Trollhattan

S-461 83 Trollhattan
SWEDEN Tel: 0520-300

European Electric Road Vehicle Association

Place du Trone 1
B-1000 Brussels
BELGIUM Tel: 02/513 91 15

Independent Battery Manufacturers Association, Inc.

100 Larchwood Drive
Largo, Florida 33540
USA Tel: 813-586-1408

FOSSIL FUEL WILL NOT
LAST FOREVER

International Lead Zinc Research Organization, Inc.

292 Madison Avenue
New York, New York 10017
USA Tel: 212-532-2373

Japan Electric Vehicle Association

2-5-5 Toranomon, Minato-ku
Tokyo, 105
JAPAN

Lead Development Association

34 Berkeley Square
London W1X 6AJ
ENGLAND Tel: 01-499 8422

Lead Industries Association, Inc.

292 Madison Avenue
New York, New York 10017
USA Tel: 212-578-4750

The quality of the
air we breath has
deteriorated to a
dangerous state

Motor Vehicle Manufacturers Association of U.S.

320 New Center Building
Detroit, Michigan 48202
USA Tel: 313-872-4311

National Association of Fleet Administrators

295 Madison Avenue
New York, New York 10002
USA Tel: 212-689-3200

Join a group listed
here or start your

OWN 0

National Rural Electrification Cooperative Association

2000 Florida Avenue, N.W.
Washington, D.C. 20009
USA Tel: 202-857-9500

New Zealand Battery Electric Vehicle Club

14 Hospital Road
Kawakawa
NEW ZEALAND
Tel: 482 Kawakawa

Scandinavian Lead Zinc Association

22 Sturegatan
Stockholm
SWEDEN

Society of Automotive Engineers, Inc.

400 Commonwealth Drive
Warrendale, Pennsylvania 15096
USA Tel: 412-776-4841

U.S. Department of Energy Electric and Hybrid Vehicle Systems

Transportation Energy
Conservation
Washington, D.C. 20585
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Vancouver Electric Vehicle Association

543 Powell St.
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V6A 1G8 CANADA

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6/81

Electric Auto Association

BY - LAWS

ARTICLE I - GENERAL

1. The Corporation name of this organization is Electric Auto Association.
2. The principal office is in the city of Belmont, County of San Mateo, California.
3. The Association is a non-profit, public benefit corporation.
4. The fiscal year shall begin January of each calendar year.

ARTICLE II - OBJECT AND PURPOSES

1. The objects and purposes of the Association shall be:
 - a. to act as a clearing house of information for the members.
 - b. to encourage experimentation in building of electric autos.
 - c. to promote and organize public exhibits of such vehicles for the purpose of informing the general public about the progress on electric autos.
 - d. to publish technical material helpful in the construction of electric autos.

ARTICLE III - MEMBERSHIP

1. Regular membership is open to all persons interested in participating in the activities of the Association.
2. Associate membership is open to persons who cannot participate in the activities but wish to contribute in other ways. Associate members shall be entitled to the privileges of the Association but shall not have the rights to vote and hold office in the Association.
3. All members shall pay dues to the Association annually. The amount of membership dues shall be established by the Board of Directors.
4. Any member whose dues are not paid shall be dropped from the Association.
5. No individual member of the Association shall be liable for Association obligations.

ARTICLE IV - BOARD OF DIRECTORS

1. The Board of Directors shall consist of the Chairman and five (5) Directors elected by the membership at large, annually.
2. The Board of Directors shall be the governing body of this Association responsible to the membership for the policy making, planning and directing.
3. Regular meetings of the Board of Directors shall be held each month or when requested by the Chairman. A majority of the members shall constitute a quorum at the meeting. Association officers will be elected annually by the Board.

ARTICLE V - ASSOCIATION CHAPTERS

1. Chapters shall be established as the need arises in the various areas upon review and approval of the Board of Directors.
2. Members of the Chapter shall elect their officers to conduct their Chapter affairs.
3. The officers of the Chapter shall include a President, Vice-President and Secretary-Treasurer. The officers shall be elected by a majority of those present at the annual election meeting. The normal term of office shall be one (1) year.
4. Chapter shall contribute to Association Treasury 60 percent of the annual dues.

ARTICLE VI - AMENDMENT OF BY-LAWS

By-Laws of this Association may be amended and new articles added thereto only by an affirmative vote of not less than two thirds of the membership combined at the Chapter meetings, and then only provided that such proposed amendments or additions shall have been presented in writing to the Board of Directors not less than fifteen (15) days prior to the meeting at which the amendment or addition shall be acted upon.

CALENDAR

APRIL 2-6: INTERNATIONAL SOLAR ENERGY
CONFERENCE
HOLIDAY INN, SAN DIEGO, CALIFORNIA

APRIL 11-13: IEEE ELECTRO 89,
JACOB JAVITS CON. CENTER, NY CITY

APRIL 25-26: EL-TECH 89-TECHNICAL
SYMPOSIUM & EXHIBITS, RALEIGH CIVIC CTR.,
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CONFERENCE,
SIR FRANCIS DRAKE HOTEL, SAN FRANCISCO,
CONTACT: WREX BEAMAN (415)328-3825

EV Marketplace

ADS must be received with payment by the
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to EAA 1249 Lane St., Belmont, CA 94002

EAA Chapters

ARIZONA: Phoenix
Lee Clouse 602 943-7950
P.O. Box 11371
Phoenix, AZ 85061

CALIFORNIA:
Burbank
Irv Weiss 818 841-5994
2034 N. Brighton, #C
Burbank, CA 91504

East Bay
Scott Cornell 415 798-0909
60 Alan Dr.
Pleasant Hill, CA 94523

North Bay
Gordon Schaeffer 415 456-9653
211 Bellan Blvd.
San Rafael, CA 94901

Peninsula
Jean Bardon 415 355-3060
540 Moana Way
Pacifica, CA 94044

Sacramento
Max Higley 916 783-4012
2103 Lee Way
Roseville, CA 95661

San Jose
Don Gillis 408 225-5446
5820 Herma St #3410
San Jose, CA 95123

Santa Clara
Lee Hemstreet
787 Flores Dr.
Palo Alto, CA 94306

OREGON: Willamette
Leslie Brundidge 503 390-3871
4040 Gary St. NE
Salem, OR 97303

TEXAS: Houston
Ken Brancroft 713 729-8668
4301 Kingfisher
Houston, TX 77035

WASHINGTON: Seattle
Bryan Lowe 206 632-4496
5011 9th NE
Seattle, WA 98105

WISCONSIN: Milwaukee
Dave Pares 414 481-9655
3251 S. Illinois
Milwaukee, WI 53207

NEW JERSEY Hackensack
Kasimir Wysocki 201 342-3684
293 Hudson St.
Hackensack, NJ 07601

VANCOUVER, BC:
VEVA 604 987-6188
543 Powell St.
Vancouver, B.C. V6A 1G8

NON-AFFILIATED GROUPS

CANADA: Ottawa, Ontario
Fred Green
Box 4044 Sta. *E*K1S 581
Ottawa, Ontario, Canada

NEW MEXICO: Albuquerque
Mike Lechner 505 848-2331
PNM Alarado Square
Albuquerque, NM 87158

Southern Cal-EVA of SC
Ken Koch 714 639-9799
12531 Breezy Wy.
Orange, CA 92669

Denver, CO DEVC
Genny Clark 303-451-5051

Fox Valley, IL 312 879-0207
John Stockberger
2S 643 Nelson Lake Rd.
Batavia, IL 60510

Eastern-EEVC 215 696-5615
P.O. Box 717
Valley Forge, PA 19482

For information on forming a chapter in your area write to
the address below or phone between 10AM-5PM Pacific
Time (415) 591-6698

EDITORS:-E. W. AMES-JOHN NEWELL-BILL PALMER-PAUL BRASCH
Send your chapter news, coming events, articles to the address below

Electric
Auto



NEWS

April 1989

Association

1249 Lane Street
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Address Correction
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