EEVC NEWSLETTER

Published by the Eastern Electric Vehicle Club
Peter Cleaveland, Editor **Vol 25 No 1**
Club Address: P.O. Box 134, Valley Forge, PA 19481-0134 **JANUARY, 2005**
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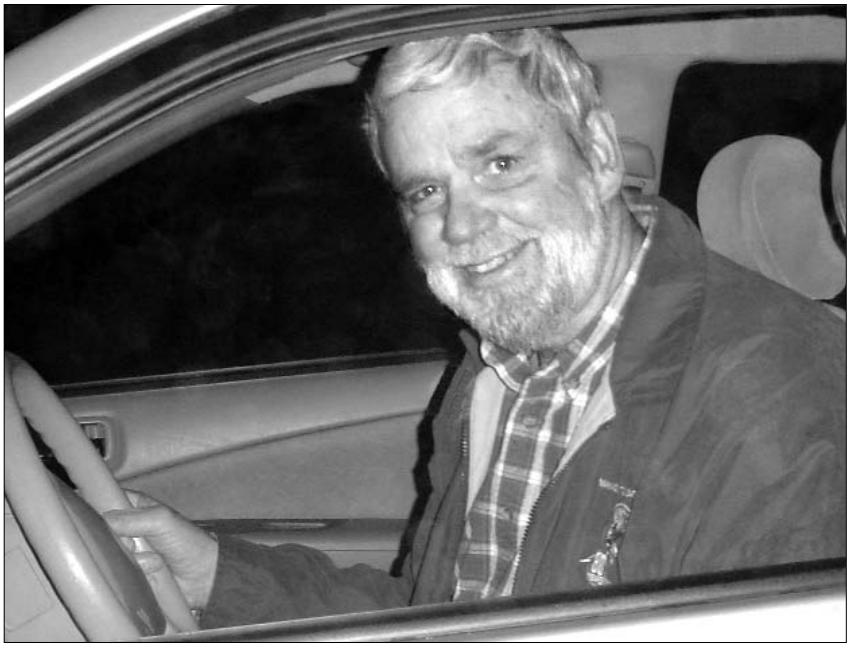
RON GROENING, 2005 EEVC CLUB MEMBER OF THE YEAR
By Oliver Perry



Ron Groening, EEVC 2005 Club Member of the year

Our January issue of the *E E V C Newsletter* traditionally honors the President's Pick or what is currently called our EEVC Club member of the year. The choice usually goes to a member who has demonstrated longevity and many years of outstanding service as well as outstanding contributions in the past year.

Ron's "Unofficial" official duties

Ron Groening has served the Eastern Electric Vehicle Club as our membership coordinator for as long as I can remember. Ron also maintains and services our official mailbox in Valley Forge, picking up all letters addressed to our organization and forwarding them to the proper individuals. Most of these letters contain membership and renewal applications with their corresponding dues. Ron makes sure that the checks are mailed to our treasurer and that the new applicants' names, together with present members' addresses and phone numbers appear on updated EEVC membership lists. Needless to say, Ron's position in the EEVC is a most responsible one and requires diligence and responsibility, two traits characteristic of Ron Groening. We have been very fortunate to have been the beneficiaries of his unselfish service for

such a long term.

The EEVC has been in existence for 25 years. Ron was one of those original founding members. In the early years he served a term as EEVC president. We can't exactly remember how Ron's duties evolved to that of keeping membership lists and tending the mailbox other than he just decided to take them on. Ron has so quietly and faithfully served us over the years that his non-elected position in the EEVC is not included on our yearly officer ballot. Should he disappear I think we would quickly discover that Ron's position deserves "official officer" status.

Above average

Ron, as true of the past Club Member's of the Year, has distinguished himself with service to the EEVC beyond what we call average. Ron has furthered our organization's cause by not only loyally serving one of our organization's needs, but by also becoming involved in hands-on electric vehicle activities. These activities set him apart from those of us who have merely attended meetings. This past year of 2004 Ron has again excelled in EEVC electric vehicle activities.

Putting EVs to the test

Where the "rubber meets the road" Ron has taken seriously our club motto, "Independent Motoring."

Several years ago Ron purchased a Toyota Prius and began a serious comparative study between his newly acquired Hybrid and his Volkswagen Jetta. Readers benefited from Ron's in-depth report published in one of our recent EEVC Newsletters. If we truly believe that electric cars ought to be incorporated in our transportation system then we must salute Ron for putting his convictions into practice by owning and driving a Prius. Ron is actually putting into practice what many of us work for, hope for, and dream about but never actually do.

The Prius is not just a recent singular attempt on Ron's behalf to drive a car utilizing energy efficient electric principles. In the "birth" days of the EEVC Ron also owned and operated an electrified Volkswagen. He experimented with this electric conversion for several years. The 36 volt, relay controlled, experiment was later passed on to a technical school to be further utilized in education. I recently discovered that Ron delivered a paper featuring his electric VW research to the Electric Vehicle Symposium in St Louis in the early 80s.

Ron Groening, a distinguished EEVC representative

For the past dozen or so years the EEVC has assisted the Philadelphia Solar Energy Association's (PSEA) annual Jr. Solar Sprint competition held in May at the Franklin Institute. Ron has been a frequent EEVC participant helping the EEVC and PESEA volunteers pick the top three cars in terms of their engineering, craftsmanship, and artistic characteristics. These solar paneled racers are built by the participating Junior High School students. They not only earn racing times but they are rated in ten categories. PSEA counts on the EEVC to supervise this difficult judging. Ron Groening has been an important part of that process, and even though he had "just cause" to skip out on the event this year, he nonetheless put in a full morning of critical judging to enable the Jr. Sprint event to come to a successful conclusion. Ron also has aided in choosing and presenting the EEVC's annual award for the best over-all Junior Solar Sprint car.

Investment in public education

The EEVC takes advantage of another similar educational opportunity when it presents an award for the most outstanding electric car at the annual Southeastern Pennsylvania Physics Olympic League's (SEPPOL) final seasonal meet. Six to eight high schools in the Delaware Valley compete three Saturday mornings yearly in various physics related events in what is known as "Physics Olympics." One of the events held at the last meet features model electric car competition. The EEVC plaque honoring the best car is one of the many awards presented at the termination of the meet. Ron has often been involved in determining who gets the EEVC award. But in addition to involvement in the yearly electric car Olympic event, Ron for many years assisted Phoenixville High School's Physics Olympics team in preparing for other competitive events as well as the electric car event. Ron has often served as an

assistant to the Phoenixville physics teacher and as an assistant team advisor. Programs like the Physics Olympics require adult supervision. Without adult involvement such programs cannot operate. The EEVC can be proud of Ron Groening's participation in the SEPPOL for the past dozen years.

A Noble Choice for Our 25th Year Selection

Please join me in saluting Ron Groening, as our pick for the EEVC 2005 Club Member of the Year. Ron Groening is a most fitting member to honor in this our 25th year. He has passed the test of time and is still unselfishly and quietly "charging on."

THE EEVC REMEMBERS PAUL HAFER
A Man Who Made a Difference In Boyertown and Elsewhere
By Oliver Perry

As reported in our last issue of the *EEVC Newsletter*, we sadly acknowledge the death of Paul Hafer of Boyertown, PA, October 24, 2004. All of us associate him with the Boyertown Museum of Historic Vehicles. He will be greatly missed, not only by his immediate family but especially by his surviving wife Erminie Shaeffer Hafer. Paul Hafer founded the Boyertown Museum of Historic Vehicles in 1963 and was actively involved in its welfare until the day he died.

What will the effect of Paul's passing have on the present and future of the museum? I was informed by Ken Wells, the present director of the museum, that, "In one sense nothing has changed; in another sense everything has changed." "Paul made provision for his eventual departure. There is no immediate financial crisis threatening the museum, but the loss of Paul Hafer's leadership, vision, inspiration and creative genius can never be replaced." Ken Wells continued, "As one who built commercial electric vehicles in the Boyertown Body Works, Paul knew and understood the importance preserving their history. For that reason he went to considerable extent to include electric vehicles in the collection of unique and antique vehicles in the Boyertown Museum of Historic Vehicles."

Background history of the Hafer Name and the Boyertown Auto Body Works

Paul Hafer was born in 1910 in Reading, Pa. He graduated from Boyertown High School in 1929. Paul worked for the Boyertown Auto Body Works for 58 years and served as president, chief executive officer, and even an owner of the company.

Paul's career began in 1926 when his father, Frank, together with two other enterprising young men purchased the highly successful Boyertown Carriage Works. It was a time when the carriage and wagon business was being motorized out of existence. The original owners sensed that without changing direction the Carriage Works had seen its best days. The new owners were Reading men who had become acquainted in St. John's Reformed Church where Frank Hafer was a teacher. The first order of business after the purchase was to change the name of their newly acquired company to The Boyertown Auto Body Works and appoint Frank Hafer president.

President at that young age?

Frank Hafer felt strongly that the future of the company, which had been purchased at a time when both change and depression spelled economic disaster for the region, lay in truck body building. One of the three partners who was primarily interested in automotive repair left the firm in May 1933, selling his third of the business to Frank Hafer and his son Paul. A reorganization of the company took place with Paul assuming the vice-president's position. Paul was only 23 years of age at the time. One year later the third partner, discouraged by the lasting depression, sold his share of the company to the Hafers. Now Boyertown Auto Body Works belong solely to the Hafer family. Paul's father stepped down as president, placed his son Paul at the head, and assumed the position of secretary treasurer. A board of directors consisting of the Hafer wives and Paul's two brothers (one a doctor, the other a reverend) were added.

So at the young age of 24, hard working, energetic, enthusiastic Paul Hafer became president of the Boyertown Auto Body Works.

Learning on the job

According to the book *A Century of Vehicle Craftsmanship*, written for the 100 year celebration of the Boyertown Auto Body Works (and the original Carriage Works) by Paul's wife Erminie, Paul was a veteran in the truck body building trade at 24 years of age. He began working in the company shop on his days off when he was in high school. A quick learner and with a talent for design Paul became an apprentice, learning the skills mastered by the old carriage craftsmen. Pages 100-102 in *A Century of Vehicle Craftsmanship* detail some of the changes in truck body design that young Paul advocated and actually made as a result of his careful observations at the Works.

Innovation and quality

Shortly after Frank Hafer and his partners began the Boyertown Auto Body Works an order came across the desk from Bethlehem Pa. for a truck body shaped like a large milk bottle. With some training in design and draftsmanship from Reading High School, before the Hafer's moved to Boyertown, young Paul offered to draw up a design for such a body. Even though the workers felt it was impossible to construct something that shape, the young Paul Hafer presented them with the scale drawings and eventually convinced them they could build it. The unusual milk truck was an instant success. The Boyertown workmen soon became used to the idea of unconventional body designs. Paul's imagination and his customer's desires resulted in truck bodies shaped not only like milk bottles but like loaves of bread and other similar replicas on wheels. Paul soon became the designer of what they coined "Better Built" company products.

By 1942 the Boyertown Auto Body Works had prospered greatly under the Hafers and father and son showed their appreciation to the Boyertown community by presenting them with an ambulance. Community participation would always be an important preoccupation of the Hafer family.

Much could be said about the many innovations that occurred in the truck body business and the Boyertown Auto Body Works frequently maintained a cutting edge in the business for a number of decades. For our purposes I would like to fast forward to the sixties. Unique and new designs for truck bodies continued to come out of Boyertown. Specialty rescue trucks, bookmobiles, and "one of a kind" tour wagons continued to roll of the assembly lines. Even the board and leadership positions within the company expanded, adding prominent last names (in addition to Hafer) to the company.

Enter the electric truck

The sixties was a time when "ecology" became a buzz word. So on January 10, 1963, Boyertown Auto Body Works began the promotion of a battery powered truck. A joint effort between the Boyertown Auto Body Works, Smith Delivery Vehicles (England), and Exide Division of the Electric Storage Battery Company resulted in the formation of The Battronic Truck Corporation. BATtery-powered, elecTRONICally controlled delivery TRUCKs.

Over 14,000 electric delivery trucks had been placed on the roads in England by the Smith Company. However the bodies and batteries of the Smith trucks were not up to the standards of the US economy, therefore the merger. A Boyertown truck body was mounted on a Smith chassis and installed with Exide heavy duty industrial batteries.

From three to two

A gentleman by the name of Heyman, from the Smith Company, made many trips to Boyertown to oversee the work. When he left the company and the added difficulties of the importation of chassis and electronic components from England occurred, the Smith Company withdrew May 24th, 1966. For the next three years the Battronic Company was jointly owned by the Electric Storage Battery Company and the Boyertown Body Works.

Early Battronic vehicles were delivered to the Potomac Edison Company, Pearce Milk of State College, PA, Holyoke (Mass) Gas and Electric Company, and the Memphis (Tenn) Light, Gas, and Water Division. The trucks were capable of 25 mph and a range of 62 miles with a payload of 2500 pounds. Newer models expanded both speed and range.

Reaching the limelight

A Battronic Van was one of eight vehicles featured on the *Today* show as part of the public hearings before the Senate Committee on Commerce and Public Works held in Washington, DC in March of 1967. A parade of nine miles through Washington was then staged by all of the electric vehicles. Further publicity was given to the electric truck on a television documentary relating to air pollution. The NBC documentary found Paul Hafer driving the truck and explaining its advantages and money saving features to his NBC news correspondent. On March 15th of 67, at a public hearing in Washington, Paul endorsed in testimony the proposed Senate Bills that provided Federal funds to assist in the development and use of electric vehicles. He cited the readily available and successful performance of the Battronic Truck, currently in production. Paul made a pitch for municipal service vehicles to help curb the growing air pollution in the congested metropolitan areas of the United States.

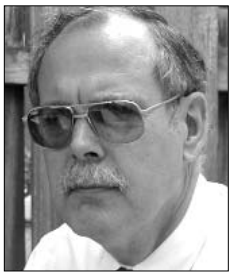
Sole Owner of the Battronic

Within a few years the Boyertown Auto Body Works became the sole owner and manufacturer of the Battronic Truck. Their customer list grew to include electric power companies in Philadelphia, Reading, Toledo, Los Angeles, Seattle, New York, and Allentown. (List not complete) As mentioned in our newsletter many years ago I had the experience of converting a Battronic Van (donated to Cinnaminson High School by Philadelphia Gas and Electric Company and now on display in the Boyertown Museum) to a first aid rescue vehicle for the athletic department. My physics students drove the vehicle to and from various business sponsors of our ongoing electric vehicle projects. It was a great vehicle which ran at normal highway speeds and had a range of over thirty miles. The Battronic Van was solid and well made. It ran on two heavy duty fork lift batteries which could be removed for servicing with a fork lift.

To be continued

Paul Hafer was a man who actually did something to advance the electric delivery truck business. He was one of a few who produced a production electric vehicle that serviced customers. The more one surveys his life and his contributions, the more one realizes that Paul was truly a remarkable person. The conclusion to this tribute to Paul Hafer will appear in our next edition.

ELECTRIC SHUTTLE BUSES IN ANAHEIM
By California Pete



On a recent trip to Anaheim, CA I ran across something called an Anaheim Resort Transit Bus—a trolley-style electric bus, one of a fleet of ten that have been running since 2001 and providing transportation between local hotels and Disneyland.

The buses are 22 feet long and powered by parallel 288 Volt, 140 Ahr Ni-Cd battery packs and claim a range of up to 100 miles (although the driver told me they get 65 to 70 miles on a 4 to 5-hour shift, depending on the driver) and a top speed of 40 mph.

The ammeter goes into the red at 130 A, although the scale extends up to 200 A. Removable windows can provide an open-air ride for up to 32 passengers.

Propulsion comes from a totally-enclosed, blower cooled Reliance AC induction motor connected to a silent chain drive gear reduction. Control comes from a vector drive that gives "soft" acceleration over a range of 0 to 4700 rpm.

The vehicles are built by E-bus, of Downey, CA, which builds 22-foot transit buses, shuttle buses and vintage trolley replicas. E-bus also makes hybrids that use the Capstone Microturbine that can be set to run on propane, natural gas or diesel. The company has built buses for the Los Angeles

Department of Water and Power, the city of Santa Barbara, Georgia Power in Atlanta and New Haven, CT. Other users are in Gulfport/ Biloxi, MS; Indianapolis; Las Vegas; Mobile; Monrovia, CA and Visalia, CA.

Company headquarters are at 9250 Washburn Rd, Downey, CA 90242 562-904-3474.

NEWS UPDATE

Ford relents—a little—on electric pickups

On January 18 the *Sacramento Bee* reported that David Bernikoff-Raboy, a Sacamento businessman who holds a lease for an electric Ford F-150 pickup, did not want to give up his truck when the lease ended in April and Ford wanted the vehicle back to destroy it. He continued to pay $490 a month to Ford, and wouldn't return the truck, insisting that he wanted to buy it. Ford threatened to repossess it. On January 15 he, fellow leaseholder William Korthof, and several supporters from the Rainforest Action Network and human rights group Global Exchange began camping out in front of the Downtown Ford Sacramento dealership in protest.

And then a miracle happened. On Sept 21, the Associated Press reports, Ford agreed to sell the trucks to the leaseholders—for a dollar, calling it a limited "customer satisfaction issue."

There are 88 electric F-250s remaining out of the original 1500, most of them on soon-to-expire leases to utilities and other fleet operators, so it's doubtful that Ford will sell any more. But it might be worthwhile to send Ford chairman and CEO Bill Ford a letter of congratulations on overcoming at least a little of his hypocrisy.

Ford says it's a friend of the environment

On Jan 9 Ford Motor Co. announced plans for an expansion of its hybrid vehicle offerings, including four more hybrid-electric vehicles in the next three calendar years.

The expanded hybrid lineup includes the Mercury Mariner Hybrid, with production pulled ahead for sale later this year; the Fusion Hybrid, which will be on the road in the 2008 calendar year; the Mercury Milan Hybrid, which will be on the road in the 2008 calendar year, and a test fleet of Mazda Tribute Hybrids this year and full-scale production in two years. All five will be full hybrids, which means at low speeds and when stopped the gasoline engine automatically shuts off and the vehicle operates in electric-only mode.

Ford is still annoyed that its hybrid Escape SUV, which was named North American Truck of the Year at the 2005 North American International Auto Show in Detroit, won't be allowed to use carpool lanes in California with only one person, but that plan is on hold anyway, because California didn't clear it with the Feds ahead of time.

The company also announced that the State of Florida is the first customer for its E-450 hydrogen internal combustion engine (ICE) buses next year, and discussions are under way with the Dallas Fort Worth International Airport. The buses seat 12 passengers and their luggage, including the driver, and have a 26-gallon equivalent, 5000-psi hydrogen fuel tank with an expected range of 150 miles.

Ford is also road-testing its Focus fuel cell vehicles, which it showed off at the Auto Show (left).

So does Ford get it? Well, the company certainly gets the value of appearing to be environmentally sensitive. Now if they would resume production on those pickups...

Other news from the Detroit show

Ford was not the only vehicle maker showing off environmental concept vehicles at the Detroit show. General Motors showed its Sequel (above), Lexus had the 400h hybrid, Opel showed its Astra diesel hybrid, and Volvo had a spiffy electric called the 3CC.

The GM Sequel is powered by fuel cells running on hydrogen. GM claims a range of

up to 300 miles, with three tanks holding 17.6 lb (8 kg) of hydrogen at 10,000 psi tucked into the sandwich chassis. Claimed acceleration is 0 to 60 in less than 10 seconds, with top speed of 90 mph (145 kph), powered a trio of motors: a transverse-mounted, three-phase, 60-kW motor driving the front wheels and two, three-phase 25-kW wheel hub motors driving the rear wheels for a total power of 110 kW. Acceleration is boosted by a li-ion battery pack that can deliver 65 kW in addition to the fuel cell module's 73 kW.

A story in *The New York Times* says that the fuel cells operate at about 180 degrees Fahrenheit, and "require more cooling and thus about twice the radiator space of a conventional car, so honeycombed radiator surfaces are nestled around the front tail lights, in the back and on the sides."

The Volvo 3CC (left) boasts a governed top speed of more than 135 kph (85 mph) and delivers zero to 100 kph (62 mph) acceleration in approximately ten seconds. The car is 3899 mm long (153.5 inches), 1624 mm wide (63.93 inches) and 1321 mm high (52.0 inches), with seating in a two-plus-one configuration, providing seating for two adults in the front and a rear seat for an additional adult or two children.

The car has a high strength steel space frame and composite sandwich floor panels; the outer body is a bonded one piece carbon fibre shell. A double floor houses the batteries, and can be adapted to any powertrain: gasoline, diesel, biogas, or hybrid electric, according to Ichiro Sugioka, Science Officer at VMCC in California.

The battery consists of 3000 lithium-ion cells of the type used in laptop computers, wired to provide between 330 and 420 volts at up to 250 amps.

An 80 kW AC induction motor provides 220 Nm of torque continuously at lower revs. The maximum power of 107 hp is delivered up to 12,000 rpm. The motor also provides 110 Nm of regenerative braking to recover up to 20 percent of braking energy. The motor weighs 50 kg and the power electronics unit weighs 30 kg. Both units are cooled with blower fans.

Aerodynamic efficiency is 30 per cent better than the new S40 sedan, and potential driving range is more than 300 km (180 miles) "under certain driving conditions." The torque-to-weight ratio is roughly comparable to the T5 model, but available over 0–3500 rpm.

The 3CC has front wheel drive with double wishbone front and rear suspension. The front suspension includes horizontally mounted adjustable coil over shocks that give a low hood line. The rear suspension includes vertically mounted adjustable coil-over shocks. Due to the vehicle's light weight and the power of the regenerative electric braking, unassisted brakes provide good stopping power. Tires are Michelin Pilot Sport 215/45 ZR18s that are normally found on supercars.

The interior is full of fancy touches, including replacing instrument panel toggles with proximity sensors that are activated by a finger as it gets to within 5 mm to adjust lights, climate, and audio system.

NEV or super golf car?

A story by Todd Lewan Associated Press dated January 9 reports that Neighborhood Electric Vehicles (NEVs), which are basically street-legal golf cars with speeds up to 24 mph, like DaimlerChrysler's GEM, are not necessarily the most popular EVs around many retirement communities. Instead users are opting for fancy customized "luxury" golf cars. Not street legal, but with fancy touches like custom bodywork (complete with painted-on flames, or mimicking 34 Fords, Mercedes Benzs, Lincoln Navigators, Hummers or Lamborghinis), built-in drink coolers, AM/FM radio, CD player, television on the dash, a global positioning system and who knows what else.

Some of these vehicles go for $20,0000—and by law can't go on the street and must be unable to hit 20 mph. One distributor has sales of $1 million. We may all be driving EVs when we retire, but why wait?

New Jersey allocates $745M for efficiency, renewable energy

The New Jersey Board of Public Utilities (NJBPU) approved $745 million in funding in late December to support the state's Clean Energy Program. The funds will be allocated over the next four years, increasing from $140 million in 2005 to $235 million in 2008, an 89 percent increase above the 2004 funding level of $124 million.

Funding for energy efficiency programs will grow 42 percent, from $93 million in 2004 to $133 million in 2008, while renewable energy funding will more than triple, from $31 million in 2004 to $102 million in 2008. The funds will help the state achieve its goal of drawing on 300 megawatts of renewable electric generation capacity by the end of 2008, with 90 megawatts consisting of solar photovoltaic power systems. Funding for the Clean Energy Program comes from electric and gas customers through a charge added to their utility bills.

Nissan to begin producing Altima hybrid model in U.S. from 2006+

Kyodo News Service reports that Nissan Motor Co. has announced plans to produce the hybrid version of its midsize Altima sedan in the United States in 2006, with a maximum production at its Smyrna, TN factory of 50,000 units per year. The hybrid power plant will be provided by Toyota.

Solar power in Germany

A story by Robert Collier in the *San Francisco Chronicle* for December 20 reports that a new solar facility has gone on line in Germany. The 30-acre Muhlhausen solar farm, in Bavaria, is now the world's biggest solar energy plant. The solar parks, consisting of 57,600 silicon and aluminum panels, will generate 10 megawatts of electricity, and the company that built them—PowerLight Corp. of Berkeley, CA, has a guarantee from the German government that it can sell its electricity at 46 euro cents (about 62 U.S. cents) per kilowatt hour for the next 20 years. The story quotes PowerLight CEO Thomas Dinwoodie that it was the ability to turn a profit that made such a large installation possible.

COMING EVENTS

SAE seminar: Hybrid Vehicle Technologies—Today & Tomorrow
February 9-10, 2005, Costa Mesa, CA. Contact Nancy Eiben, 724-772-8525.

2005 Clean Heavy Duty Conference
Feb 22-24, Palms Springs, CA. Contact Susan Romeo, 626-744-5686 or visit www.weststart.org

NHA Hydrogen Conference 2005
March 29-April 1, Washington, DC. Contact the National Hydrogen Association, 202-223-5547, or e-mail info@hydrogenassociation.org

POWER-GEN Renewable Energy
March 1-3, 2005, Las Vegas, NV. Contact Donna Welch, 918-835-3161, http://pgre05.events.pennnet.com.

EVS-21: The 21st Worldwide Battery, Hybrid and Fuel Cell Electric Vehicle Symposium & Exhibition
April 2-6, 2005, Monte Carlo, Monaco. Contact the EVS-21 Monaco Organization, +377 97 77 54 21/+377 97 77 54 22.

2005 SAE World Congress
April 11-14, Detroit. Contact Tim Mellon, 724-772-7162, tim@sae.org.

11th National Clean Cities Conference
May 1-4, 2005, Palm Springs, CA. Contact Annalloyd Thomason, 702-254-4180 x23 or 702-294-2333, or e-mail Info@afvi.org

5th International Advanced Automotive Battery (& Ultracapacitor) Conference (AABC-05)
June 13-17, Honolulu. Contact Advanced Automotive Batteries, 530-692-0140, info@advancedautobat.com.

MEETING SCHEDULE

Meetings are held in Room 35, Plymouth-Whitemarsh High School, 201 East Germantown Pike in Plymouth Meeting, PA, and begin at 7:00 p.m.

February 9

March 9

April 13

May 11