

EEVC NEWSLETTER

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Now affiliated with EAA

DRIVING TWO RAV4-EVS IN FLORIDA Charles Whalen

Charles Whalen of the Florida chapter of EAA has sent us some information on his EV activities. Here's an edited version of his story as he e-mailed to EEVC president Oliver Perry. — ed.

As a relative newcomer to EVs, I have sort of jumped in with both feet, as it were, to try to make up for lost time and my belated epiphany (better late than never, right?). In mid-2005 I bought two 2002 Toyota RAV4-EVs as lease buy-outs from two different retail lessees in Northern California and shipped the cars to South Florida. My wife and I use these two RAV4-EVs as our daily drivers for over 98% of our total driving needs. We also use them to showcase to the public here in Florida at numerous public EV events what a fine example (and living proof that wasn't crushed, one of the few that got away) this car is of an extremely well engineered, high quality, OEM production EV that the automakers



Charles Whalen shows off his two Toyota RAV4-EVs

are capable of manufacturing when they make an effort to do so.

The Florida EAA has had a busy year with seven such EV events in 2006, and we have a similarly active year planned for 2007, starting off with the 6th Annual

National EV Conference we are hosting in West Palm Beach on the weekend of January 27-28, which will bring together all the EAA chapters in the US and Canada together with the national leadership. The 6th EV Conference will be held in conjunction with Florida EAA's 2nd Annual "Battery Beach Burnout" electric vehicle competition on the same weekend, encompassing electric drag racing, autocross, scooter-cross, distance/range competition, and Show 'n Shine static display. We are expecting some of the fastest electric cars and top electric drag racers to come from all over the country for this mid-winter EV event.

Part of my job as the Public Relations

Director for the Florida EAA is to liaise with local media to publicize all of these EVents as well as to get the word out to all potentially interested parties by email and over the various Internet discussion lists. I join my colleagues and fellow members of the Florida EAA at all of these EVents in working the crowds to educate the public about BEVs and especially now significantly also about PHEVs, as Toyota has already announced that their next model change to the Prius will be a plug-in hybrid, expected out in the 2008 or 2009 model year, and GM's Saab division is close on their heels, showing a PHEV convertible at recent auto shows that sources inside GM indicate they plan to put into production.

In this role as PR Director, I also try to promote awareness of the three companies in South Florida that build EVs, all of which are experiencing robust growth in demand and are expanding their operations accordingly, one of which, in fact, just moved into a new 5,500 sq. ft. facility this month and now has 11 employees. I also work with these Florida EV companies in evaluating and bench- and road-testing lithium-ion batteries in EVs, which is one of my areas of special interest, to try to push the technological envelope and achieve longer range BEVs. The Discovery Channel is sending a camera crew and production team down here in two weeks to begin shooting a new pilot series on EV construction, which we are all very excited about.

Another aspect of my relationship with the three Florida EV producers ties in with the other hat I wear on the Florida EAA board as the Director of Public Charging Infrastructure. We are in the process of building a Florida "Electric Highway" network of public charging stations throughout South and Central Florida that will enable continuous travel from Miami through Ft. Lauderdale, West Palm Beach, Ft. Pierce, Vero Beach, and Melbourne, all the way up to Cocoa Beach, with charging stations spaced every 15-25 miles. We have already accumulated most of the charging equipment needed to build out this network (including EVI ICS-200B conductive powerpacks as well as small-paddle inductive chargers) and are now engaged in site selection processes with public officials and commercial property owners.

The synergistic way in which this ties in

with the three Florida EV producers, as you might imagine, quite naturally, is one of those age-old "chicken & egg" problems where the Florida EV companies are now pressuring me to accelerate the pace of getting these public charging stations installed and up and running because some of their customers, and prospective customers, are asking for them for their specific routine driving missions of needing to charge at Point B in order to be able to make the return trip back to Point A and the like, which is holding up and delaying some EV sales to a certain extent and generally putting an upper limit on demand growth until we can get more of this public charging infrastructure in place. So we are finding that indeed you really do have to produce the chickens AND the eggs together simultaneously in a coordinated fashion in order for this market to grow and flourish.

Last but not least of my various EV activities, I am a venture-stage investor in Vectrix (www.vectrixusa.com), the Newport, Rhode Island based company, with a 30,000 sq. ft. factory in New Bedford, Massachusetts, which is (finally!, hopefully!) going into production next year with its high-performance, highway-capable, Ni-MH-powered Vectrix maxi-scooter that has been in development for ten years now. I have been working closely with senior management to assist in setting up Vectrix's east coast dealer network, a process that is well under way and still ongoing. I also happen to be the first person of now more than 4000 customers who have signed up on Vectrix's pre-production order list on its web site, which puts me first in line to get one of the first bikes off the production line. (Over in Europe there are more than 12,000 orders, where Vectrix has another 30,000 sq. ft. factory, in Poland, that will manufacture bikes for the European market, while the Massachusetts factory will produce bikes for the North American market.) Management has told me that my bike SHOULD be ready sometime in the next 6 months; not sure of the exact date yet. I plan to drive up to the factory in Massachusetts to pick up the bike myself, before Vectrix even finalizes its North American delivery logistics, and will trailer it home to Florida, stopping along the way to visit a number of friends, colleagues, and EAA chapters up and down the East

Coast that have expressed interest in seeing and trying out the bike, including in New England, New York City, Washington DC, and Atlanta. I expect to hand the bike over and lend it out for a lot of extended demo rides on my trip down the east coast. I'd be glad to make an additional stop in the Philadelphia area if any members of your Eastern Electric Vehicle Club would be interested. Just let me know.

One last thing I would like to mention, as should be clear from the context of what I have written above, is that I don't undertake any of these activities alone, by myself, in a vacuum. I would be remiss if I did not mention the great team that I work with on the board of the Florida EAA, who are the ones that really make all of this possible, most of whom have been at this much longer than I and thus have made it easy for someone like me to come along and follow in their footsteps in the trails that they have blazed, specifically: Shawn Waggoner, our President; Steve Clunn, our Vice President; Matt Graham, our Treasurer; and then Bob Fuerstenaun, our Secretary, who is also a relative newcomer like myself. These are all great guys who are a real pleasure to work with, and I should emphasize that I am only one member of this team.

I look forward to meeting you and your colleagues in the EEVC one way or another at some point in the next several months, either at the 6th EVer Conference here in Florida in January, or maybe during a stop in the Philadelphia area with my Vectrix maxi-scooter on the way down the east coast.

HOMEBUILT EV PROGRESSES IN CANADA



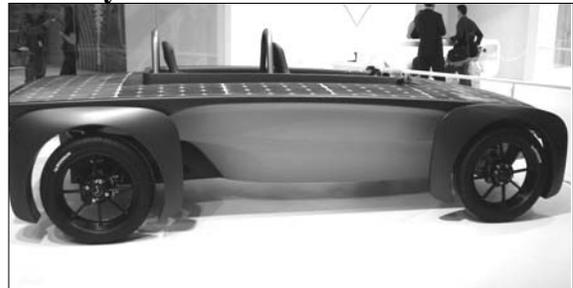
Long-time EEVC member Alvin Scoular has sent us some information on his current project. It's a 1986 Ranger, he says, but he is slowly changing its style. He's added additional support for 4000 lb of batteries: ten 12 volt deep cycle batteries along with a 16 hp twin-cylinder Briggs and Stratton engine driving a 10,000 watt generator, a heavy duty 110 volt charger, a heavy duty transformer to change the 220 Vac from the generator input to 110 V output to the charger, which delivers 70 amperes to the battery pack.

"I can cruise on the highway," he says, "using 50 to 60 amps. Therefore I can actually keep going forever."

EVS AT THE PARIS AUTO SHOW

This year's Paris Motor Show, held Sept. 30 to Oct. 15, has, as usual, a good selection of concept vehicles from all over, including quite a few EVs, hybrids and other "green" vehicles. Our thanks to Autoblog Green for much of this (if only for showing us where to look for more information).

Solar hybrid from Monaco



Astrolab. (Photo: Eric Bryant, AutoblogGreen).

One of the odder vehicles on display was something called the Astrolab, from Monaco-based Venturi, whose Fetish electric sports car was mentioned in our Dec. 2004 and Sept. 2005 issues. This somewhat-home-made looking vehicle claims to be carbon neutral in all ways, the idea being that the carbon emissions prevented by driving it compensate for those created during its manufacture.

The car carries 3.6 m² of photovoltaic cells claiming an energy conversion efficiency of 21% and 600 W output and a 72V 100 Ah liquid-cooled Ni-MH battery pack claiming to store 7 kWh and weighing 108 kg (238 lb).

An on-board charger is also fitted. The motor is rated at 16 kWc.

Seating is fore-and-aft; the body is made of carbon fiber and the chassis is the same with aluminum at both ends. Length is 3.8 m, width is 1.84 m, and empty weight is 280 kg (616 lb). Claimed top speed is 120 km/hr (75 mph) and range on battery is quoted as 100 km (69 mi).



Also from Venturi was the Eclectic, which the company bills as the first energy-autonomous vehicle in history. The

driver sits in the center, under a translucent roof covered with 330 W of solar cells, with room for two passengers. Aside from the solar panel, the car can also be charged by plugging it in or with a roof- or ground-mounted windmill that puts out 400 or 800 W (no, it doesn't claim to recharge the batteries that way while moving). The solar roof is supposed to supply enough energy in a day to drive 7 km, and the wind turbine enough to drive 15 km.

The motor and battery are apparently the same as those in the Astrolab. Claimed range is 50 km (40 mi) at 50 km/h (40 mph).

GASOLINE PRICE: UP OR DOWN? Oliver Perry

Much has been said lately concerning the unexpectedly diving price of gasoline. Some argue that it will remain low until after the election and accuse Bush of the evil manipulation of prices. Bush was blamed when the gas prices went up last spring and Bush is now being blamed when they are going down. If we lived in a dictatorship, a single man might be blamed (or praised) for gas prices.

In the Middle Ages it was commonly thought that spiritual demons were the cause of lightning and thunder. We consider such thinking today simplistic. Blaming Bush for our current gas prices is equally simplistic. If anything, Bush should be praised by the SUV crowd, but the fact that lower gas prices are now seen by many as a ploy for votes (and

therefore evil) seems unfair and very unscientific. Might there be other factors that offer a twenty-first century explanation?

It is interesting that Ford, GM, and Chrysler suffered tremendous losses in sales of gas-eating trucks and SUVs as a result of high fuel prices. But haven't "The Big Three" been accused of being a part of the Bush agenda to make oil companies rich? If that be so, why were the U.S. auto companies seemingly taken by surprise as the gasoline prices rose? They are going under fast, unless losing money and their stock value is also part of a larger conspiracy to fool everybody but an inside group into unloading their shares.

It appears to me that if the major auto companies were a part of a conspiracy, political or economic, they must have missed some hidden signals. The more thoughtful town criers claiming that Bush manipulated gasoline prices for political reasons are presently keeping silent. I don't know of anyone who really knows for sure why the gasoline prices are suddenly falling. And falling gas prices are not good for investments in alternative fueled vehicles.

Yes, we believe that leaders and lobbyists in government have provided helpful legislation, tax breaks and incentives, which have favored large auto companies and fossil fuel providers. Yes, we believe that government can change the way we drive and the price of gasoline. But since we have a democratic form of government (and supposedly a free market) I am not sure that our elected officials (and especially our presidents) are solely to blame for the prices we pay at the pump.

We, the environmentalists and advocates of alternative fuels, were all shouting, "I told you so!" when the prices of fuel soared last spring and early summer. We may erroneously think that soon we are going to run out of cheap oil.

However, as I have repeatedly stated in my column, the oil barons have never claimed that the end of the oil era has arrived.

Tuesday, September 19, 2006, *Wall Street Journal*, section C1, "Gulf of Mexico Discovery Fuels Prospects of Finding New Supplies:" "The development could herald a vast energy producing region in the U.S.'s backyard. Similar cutting edge technology could be used to find oil in a number other regions around the world, including Mexico, Mauri-

tania and Malaysia.”...“Until recently, oil prices have been rising, lifted by geopolitical tensions in oil-producing countries like Iran and broader concerns that world oil production won’t be able to keep up with increasing world demand. The successful Jack test underscores what a group of economists and oil-industry executives have been arguing for a while: High prices will encourage energy companies to find and pump oil in deep, dark places around the world that otherwise would have been uneconomical.”

Oil executives advocate that the price of obtaining oil has risen (and will continue to rise) but it will never-the-less continue to be cheaper than alternative fuels for many years to come. That being said, what forces really control the price of fuel at the pump?

Is it supply and demand? Is it political price setting? Is it controlled by OPEC? Or, is it purely controlled in the marketplace?

How can we seriously invest in alternative forms of energy if we cannot accurately predict the basic price of fossil fuel down the road? We can lose our financial shirts if we guess wrong, invest heavily in alternative fuel and the price of gasoline tumbles. Trusting an elected political candidate can be equally devastating if gasoline price controls are not within that candidate’s domain.

An Energy Investor Who Bet Wrong

(Some Basics in Wall Street Energy Futures)

According to a booklet by Merle E. Dowd, *Wall Street Made Simple*, the New York Mercantile Exchange (NYMEX), founded in 1872 primarily to market agricultural products, moved into oil and oil products, offering its first futures in crude oil, gasoline, heating oil, propane, residential fuel oil, and natural gas in 1978. NYMEX also trades options on crude oil, heating oil and gasoline.

I am far from being an expert in how commodities trading works. (Please correct any misperceptions or erroneous illustrations that I may present here.) According to my limited understanding, commodities trading prospers because it serves the interests of both producers and consumers. Supposedly commodities trading is all based upon perceived supply and demand. When supply is short the price is high. When supply is high the price is low.

The trading of the basic raw materials such as petroleum that we use in everyday life is a fast pace, active part of Wall Street carried on mainly by professionals. Individuals play but only a few survive. According to *Wall Street Made Simple*, page 83, “The world price for oil determines how much we pay at the pump.” But who and or what determines the world price for oil?

Most say it is a simple supply and demand issue which is affected by world events, both natural and political. Yes, political parties do affect our economics. But so does supply and demand. So does the marketplace.

Enter the trader.

Somebody has to deliver the raw crude and even the refined gasoline to a buyer. The trader who buys the raw crude to sell to refiners (buyers and eventually the consumer) may know the price of a barrel today, but he does not know the price three months away. Neither does the refiner. So the commodities market provides a means for both to buy and sell in a way that each may mutually profit. Rather than risk sudden fluctuations in price and to keep a type of stability, the trader and buyer become involved in what is called hedging. These hedge contracts between the trader and retailer can be arranged to guarantee future fixed prices to the buyer, regardless of what the supply of crude may be in the future. If the base price of crude goes up after the contract is signed by both parties, the buyer makes out well, the seller loses chances at greater profits. But if the base price goes down due to a larger than anticipated supply of crude, the seller makes out better than the buyer who is now locked into the higher price. It is more complicated than I have explained but I think I have presented the general idea. What happens in the commodities trading arena both affects and reflects supply and demand prices? What happens in hedge funding deals may be influenced by a particular political party’s control or they may be totally outside that party’s control. Before we accuse someone of political manipulation, we better understand how the system really works. Do you know of any commodity deals affecting consumer prices that were directed by the president of the U.S.?

Enter a 32 year old Canadian named Brian Hunter

The Wall Street Journal, Tuesday September 19, 2006. "Up in August, Brian Hunter Lost \$5 Billion in a Week As Market Turned on Him."

"Calgary, Alberta. Of all the traders gambling big sums on energy, a 32 year-old Canadian named Brian Hunter made some of the brashest bets and fastest money. Last week, he fell hard, proof of how quickly fortunes can reverse in gyrating commodities markets.

"Here in this bustling new energy frontier, Mr. Hunter headed the energy desk for Connecticut hedge fund Amaranth Advisors. He was up an enviable \$2 billion at the end of August by trading natural gas. Then he lost \$5 billion — in roughly a week. His net loss for the year, about \$2.5 billion, stands as one of the largest energy-trading debacles in history!"

Where did he go wrong? Natural Gas prices took a wicked dive, particularly in futures contracts for delivery of gas later in 2006 and 2007 winter months. His purchases were at higher prices which he expected would remain high.

"The cycles that play out on the oil market can take several years, whereas in natural gas, cycles take several months." Last summer a heat wave caused natural gas prices to haywire before spiking. According to *WSJ* many traders took hits and Mother Rock L.P. in New York imploded and decided to close shop. Mr. Hunter, however, in August came out very well and continued buying contracts some other traders had considered too risky. But he overextended himself and bet wrong on the sudden drop in natural gas futures.

The lengthy *WSJ* article on Mr. Hunter's sudden turn of bad luck describes his earlier successes as Hunter quickly climbed the ladder of wealth. He had a keen understanding of the gas business and was able to predict the ups and downs better than most. He was top dog when it came to knowing which way the swings in price would go. Apparently the lack of hurricanes in the Gulf region this past summer (to interrupt supply) and a prediction of a warmer than expected winter to follow caused the gas futures market to suddenly tumble. (NOT PRESIDENT BUSH.)

Evidently most speculators feel that there

will be a world surplus of natural gas this coming winter. These men are not total fools. They have access to information that most of us do not. They are not spending high on gas futures. Mr. Hunter has agreed to pay a lot more for his gas than the market price will be when he is contractually obligated to deliver it. Apparently Mr. Hunter will have to then sell at considerable losses, if I correctly understand how hedge fund agreements work.

"Mr. Hunter's swift reversal calls into question how well some hedge funds grasp the risk they are taking in the now popular energy markets. Vince Kaminski, a risk management expert who protested chancy trades while at Enron Corp. and until recently was at Citigroup Inc.'s commodities desk says that taking giant positions in relatively shallow markets is extremely dangerous." "The markets are very cruel." NOTICE HE STATED THE MARKETS ARE VERY CRUEL, NOT PRESIDENT BUSH!

Traders in energy like Mr. Hunter closely watch all of the factors in creating supply and demand of the particular commodity with which they deal. They make complex wagers of prices of oil at various points in the future, betting that it will be cheap in the summer and expensive in the winter. They keep close track of how much will be available in storage and how much will be withdrawn by retailers. Based upon their predictions they set up contracts they hope will make them a profit.

The summer of 2005, I held off buying our home heating oil. I expected the price to eventually go down. Instead it went soaring upward. We paid a lot more in November for waiting. This year I ordered oil a few weeks ago thinking it would not go any lower. However, the price is still going down. Again I guessed wrong. And, as best I can understand it, the hedge funds that purchase futures in energy operate in similar manner as I do, only in much greater quantities, and with much more knowledge and understanding of the market.

So if thousands of investors in Wall Street (who know a whole lot more about the market than you and I) cannot predict the price of crude oil and lose their shirts from time to time, how can anyone think that a U.S. president and the oil companies are solely responsible for unpredicted changes in price?

The only solution to keep our U.S. gasoline prices stable would be for more government regulation of Wall Street trading policies and to introduce more socialistic price control policies. This is not why our country fought the American Revolution. Apart from unwanted government interference and regulation, it seems to me that we are never going to be certain of the prices of gasoline in the future. Even if there are a few individuals somewhere in the world who wish to dictate and control the price of our gasoline, will free trade, and supply and demand allow them to completely do so?

We as a democracy have chosen to allow the majority to rule. The majority of Americans (until further education changes more attitudes) seem to favor fossil fuel and our present free market economy. Just as in China, our economy has rulers and power brokers of its own who seem at times to outrun the government. Who controls who? Perhaps Wall Street has as much power as our government as to what you and I pay at the pump. And now in a global economy it is even more difficult to predict and control energy prices.

To predict future fuel prices I think we have to broaden our understanding of world economics, world politics, and world resources. But even if we master these disciplines, in a free market place changes can suddenly come like the death of the typewriter. And like Brian Hunter, the best of us could suddenly be surprised and go broke with our major alternative fuel investment unless we had some government protection. But to receive government protection in a democracy we need have the favorable vote of the majority. Until the majority of Americans want green transportation instead of cheap gasoline, the number of alternative fueled vehicles on our highways will go up and down with the gas prices. That is how the market works in capitalistic economies.

To succeed in advancing alternative fuel transportation investors need stabilization of gas prices, not wild fluctuations. For that we need more regulation; more government interference. Are we willing to vote in a more socialistic form of government to obtain regulation? Our slogan is "Independent Motoring." Sometimes I think it is impossible for

us to become independent from how most Americans are driving. Should we become Independent Socialists? Even the CEO of GM recently complained that Sweden's more socialistic government made ethanol widely available throughout Sweden (GM's Swedish investment is very profitable) and the US only has ethanol in a few states. But do we want our government to pass regulations that keep GM in business rather than allow the free market let Toyota dominate? It is possible for a government to subsidize cheap gasoline, pollution, and GM.

Yet, the good news is that in our ever changing global economy those in the know are saying that within the next 10 years there will be major changes in automotive transportation for the better. The fluctuation gas prices are like tremors of an earthquake. Change is coming even if we are discovering more oil.

MEETING ROOM RENUMBERED

The room we have been using at Plymouth Whitmarsh High School has been renumbered from 35 to 49. Same room, new number. Please make a note.

NEWS UPDATE

Miracle energy storage device?

An item in *Business 2.0* cited on *CNN Money* for September 20 discusses a ceramic "energy storage" device that a Texas-based company called EESstor claims will revolutionize transportation. We did some sniffing around and found a few things, but the company itself is very secretive. Apparently the device in question is an ultracapacitor. According to the Sept. 3, 2005 issue of *Business Week* it's run by Richard D. Weir, Carl Nelson, and Richard S. Weir, previously managers in disk-storage technology. *Business Week* says that the May 2004 issue of *Utility Federal Technology Opportunities*, "an obscure trade newsletter," reported a claim by EESstor that it would "make a battery at half the cost per kilowatt-hour and one-tenth the weight of lead-acid batteries. Specifically, the product weighs 400 pounds and delivers 52 kilowatt-hours. (For battery geeks: "The technology is basically a parallel

plate capacitor with barium titanate as the dielectric," UFTO says.)”

There's a fair amount of speculation out there, but the claims seem pretty outlandish. We'll keep watch and let you know if anything actually happens.

DOE to fund nuclear hydrogen research

The September issue of *Industrial Maintenance & Plant Operation* reports that the U.S. Department of Energy will fund approximately \$1.4 million for two projects to study the economic feasibility of producing hydrogen at existing commercial nuclear power plants. Industry partners include GE Global Research, which has proposed studying hydrogen production using alkaline electrolysis powered by nuclear power. It is based on alkaline electrolyzer technology developed by GE.

Startech converter to produce hydrogen in Panama plant

An article by Amy Radishofski, of *Manufacturing.net*, reported on Oct 3 that Startech Environmental Corp. has announced that it will include its Plasma Converter system to produce hydrogen from Municipal Solid Waste (MSW) in the 200 ton-per-day Las Tablas facility in the Republic of Panama. The Plasma Converter destroys MSW and in the process, provides a clean synthesis gas rich in hydrogen.

COMING EVENTS

National AFV Day Odyssey

Oct 12, multiple location in the U.S., Canada and Germany. The closest to EEVC territory will be at the Catonsville Campus of the Community College of Baltimore County, 800 South Rolling Road, Baltimore, MD (contact Terry Wolfe, twolfe@ccbcmd.edu, www.cbcmd.edu) and at the U.S. General Services Administration, 490 L'Enfant Plaza, S.W., Suite 8214, Washington, DC (contact Sylvia McMillan, Sylvia.mcmillan@gsa.gov, www.gsa.gov)

Convergence 2006

October 16-18, 20, Detroit, MI. Check www.sae.org.

The Solar Power Conference and Expo

Oct. 16-19, San Jose, CA. Contact Michelle Brownstein, 202-682-0556, www.solarpow-

erconference.com

Conference on Clean Energy: Financing and Partnering for Emerging Businesses

Nov 2, Boston, MA. For information go to www.mattcenter.org/CEConf06/CE-Conference.htm.

Vehicle Energy short course training program

Dec 6-8, University of Michigan, College of Engineering, Center for Professional Development, Ann Arbor, MI. For information go to <http://cpd.engin.umich.edu/fmi/xsl/programs/details-short.xsl?-db=offering&-lay=web&-recid=2462&-find=>

6th EVer Electric Auto Association Chapters Conference, in conjunction with 2007 Battery Beach Burnout.

Weekend of Jan 26-28, 2007, West Palm Beach, FL. Go to www.eaaev.org and www.FloridaEAA.org

Hybrid Vehicle Technologies Symposium — 2007

February 7-8, 2007, San Diego. Check SAE at www.sae.org.

Battery Council International 119th Convention and Power Mart

April 22-25, 2007, Myrtle Beach, SC. Phone: 312/644-6610, Fax: 312/527-6640, info@batteryCouncil.org.

Fuel Cell 2007

June 14th - 15th, Rochester NY. Contact Marsha Hanrahan, marshah@infoweb.com or go to www.fuelcell-magazine.com/fc_2007_conf_index.htm

MEETING SCHEDULE

Meetings are held in Room 49, Plymouth-Whitmarsh High School, 201 East Germantown Pike in Plymouth Meeting, PA, and begin at 7:00 p.m.

November 8

December 13

January 10

February 14

March 7