EEVC NEWSLETTER

Published by the Eastern Electric Vehicle Club

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Vol 33 No 5
MAY, 2013

Affiliated with EAA

WHAT THE HECK IS A PRUCK?
Jerry Asher

The PRUCK (Prius + Truck) was re-designed by Mother Nature when a tree fell on this 2005 Prius. Steve and Jenny Woodruff at AutoBeYours (www.AutoBeYours.com) in Scottsburg, IN, first turned the salvaged Prius into a Prius convertible of sorts (without top) back in 2008, possibly early.

Jerry Asher admires the PRUCK, a 2005 Prius that has been converted into a plug-in hybrid pickup truck.

When I came PHEV'ing along to AutoBeYours in the now All American "Spirit of DC" — a PluginSupply conversion with 20 x PbA cell batteries on its PHEV All Around America EVducational Trip — I noticed the red salsa Prius and was impressed.

Around April of 2010 Todd Barlow of Green Motors Inc in Phoenix and I went to Scottsburg in order to fetch the chopped Prius. The idea was to let it recycle show and shine in Arizona's sunny and bright, showing and shining ultimately as a Plug-in Hybrid Electric Vehicle.

In October of 2010 Robb Protheroe of PluginSupply (www.PluginSupply.com) took the Prius convertible and converted it into a PHEV with a 10 kWh Li-ion battery pack. Later on and back in Phoenix, that 10 kWh Li-ion pack went into the "Spirit of DC" thanks to Todd Barlow at Green Motors Inc.

In 2012 the PRUCK was re-structured materially from a Prius convertible into the first EVer-in-the-word Prius Truck by Green Motors Inc. In the Fall, it was re-PHEV'ized by Robb in San Rafael, CA with a 4 kWh Li-ion pack (now in two separate portable 48 lb battery packs...see again www.PluginSupply.com).

AGENDA FOR THE 2013 21st CENTURY AUTOMOTIVE CHALLENGE

What's new for the 21st CAC in 2013

• Technical Testing May 16 and 17 to be held at Central Pennsylvania Institute of Technology
• Saturday Charging/Display at the MorningStar Solar Home open to public 10 am-4 pm
• Press Display Event and Preliminary Awards Sunday 1 pm - 3 pm
• (Tentative) EEVC Awards Ceremony at their June 12 regular meeting

Agenda

THURSDAY, MAY 16 - 21ST CAC TECH/DYNAMIC EVENTS AT CPI
8:00-Sunset Arrival at CPI Auto Technology Facility, Tech Inspection, Dynamic Events
12:00-1:00 Lunch at CPI
4:00-6:00 Dinner On Your Own
8:30-10:00 Pit work and charging setup at CPI

FRIDAY, MAY 17 - 21ST CAC TECH/DYNAMIC EVENTS AT CPI, TEST TRACK RANGE EVENT
8:00-12:00 Arrival at CPI Auto Technology Facility, Tech Inspection, Dynamic Events continue
12:00-1:00 Lunch - 21st CAC Orientation at CPI
2:00-3:30 21st CAC Tech Inspection and Dynamic Events completed
4:30-6:00 Rally to LTI Test Track and First Hour of Laps on Track
6:00-6:30 Pause Range Event for Clems BBQ Dinner
6:30~10:00 Complete on Track Local Range Event
8:30-10:00 Pit work and charging setup at LTI Test Track

SATURDAY, MAY 18 - 21ST CAC LIFESTYLE EFFICIENCY EVENT
6:00 a.m. Sunrise - Charger Readings and Liquid Fueling
7:00 Rally to MorningStar
7:00-8:00 Breakfast -Drivers Meeting and MorningStar Orientation
8:00-12:00 Morning Local route around Penn State, laps at LTI Test Track, Display, Charging, Cargo, and V2G Events at MorningStar Solar Home
10:00-2:00 Public Display at MorningStar Home
10:00-2:00 Tailgating Competition and Lunch at MorningStar Home
2:00-7:00 Afternoon Local route around campus or Highway route on Local Highways
2:00-7:00 Tour de Thor Highway Range Event
7:00-8:00 Dinner on your own or Group Walk to Visit Penn State Creamery
8:00-9:00 Seminar at MorningStar Solar Home
9:00 Return to LTI Test Track, pit work and charging

SUNDAY, MAY 19 - 21ST CAC RANGE EVENTS
7:00-9:00 Breakfast
8:00-10:00 Autocross Tech Inspection
10:00-1:00 Drivers Meeting and Autocross Event
1:00-3:00 Lunch and Preliminary Awards Event at MorningStar Home

WEDNESDAY, JUNE 12TH, 7 PM - EEVC FINAL AWARDS AT PLYMOUTH WHITEMARSH HS

THE LOST MESSAGE OF THE AMERICAN TOUR DE SOL

Oliver Perry

Once upon a time there was the American Tour de Sol electric and hybrid vehicle competition in the Northeastern United States. The week-long traveling venue attracted the public in small towns and in major cities. Scores of college students and a selected few high school students participated with a contagious green enthusiasm that infected their local newspapers. It was a great example of the use of trickle down information peppered with an incentive to action.

The message was simple. There is a better way to travel from A to B with less impact on our environment than our continued use of gasoline. If we can do it, so can you.

As I am typing this article I am sitting at a

small table at a Panera eating place on the edge of a large shopping area in the suburbs of Philadelphia, Jersey side. It is a beautiful day, sun shining, with crowds of people enjoying both the weather and shopping. A perfect day and location for a former Tour de Sol stop over.

I look across the parking lot for a line of electric and hybrid cars, with poster and display boards surrounded by excited students and bystanders. It feels good to rest a minute, get a snack, and prepare for my next session of meeting and greeting the crowd surrounding the electric vehicle team I am associated with. But wait a minute. There is no real line of electric cars waiting for me to return to. It is a figment of my imagination. But if there was a real line of electric cars, would this crowd around me take notice, even if Ken Barbour was shouting "The Future is Electric!" over a megaphone?

I am not sure that even the best of our former tour electric car lines could attract as many people today, right here and now, as in the past.

In the mid 2000 era the atmosphere surrounding the Tour de Sol began to change. Although the auto industry seemed to become more open to the implementation of electric drive systems in their products, the public at large, as well as the educational systems in general, seemed to lose enthusiasm. A change in leadership in the federal administration resulted in a loss of major funding from the DOE for the Tour de Sol program. At the same time gold and silver sponsors Toyota and Honda withdrew their support, as well as GM. With a funding challenge the driving force and primary sponsor of the American Tour de Sol, The Northeast Sustainable Energy Association (NESEA), decided to drop the transportation side of their energy conservation thrust. The NESEA board felt that efforts to focus completely on green building technology would make better use of their resources and result in a larger environmental impact.

From my perspective I have to agree with NESEA's observation. A fellow participant in joint Tour de Sol electric car competition teams, a college physics professor, after failing to receive a government grant at the same time the Tour de Sol began to fold, dropped his electric car program. He switched his interest from green cars to green buildings. The instructors in the local vocational tech school, that both of us worked with, also lost interest in involving themselves and their students in our electric and hybrid car projects.

A few weeks ago one of these automotive instructors actually showed me the basic objectives of high school level automotive curriculum certified by the national automotive certification board, the organization that certifies the automotive courses taught in vocation schools across the nation. It is clear from the objectives that I read that the powers at large are leaving the training of electric and hybrid automotive technicians in the hands of the automotive companies. Local representatives of several Japanese car dealerships concurred with our local vocational school administrators and automotive instructors that they are not interested in having our school systems certify their students in electric and hybrid car technology. Simple awareness of electric car technology and understanding the meaning of the related definitions, is about all that is required at the most advanced level.

Although we are now reading more about electric and hybrid car technology in the press, and the Prius is currently commonplace on the highway, as far as the public at large is concerned, not many people are overly enthused in aiding the progress of electrically driven vehicles. The message of the Tour de Sol seems to have been reduced to an echo, even as electric and hybrid cars become more available to the public. It is sort of an irony.

21st CAC at Penn State

Meanwhile, the 21st Century Automotive Challenge, an off-shoot of the American Tour de Sol, continues this May at Penn State, May 16th-19th.The Spirit of the American Tour de Sol is not dead. A spark of interest in sustaining that adventure still exists. As long as there is a spark, there is the possibility of rekindling a forest fire.

E-Car Maker Coda Fails

The *Wall Street Journal*, section B page 2, May 2, 2013: "Electric-car maker Coda Holdings Inc. filed for Chapter 11 protection from creditors after pronouncing its $38,000 sedan a commercial disappointment and failing to sell its assets outside of bankruptcy."

"The company's lone passenger car, the CODA sedan, was plagued by delays. Its eventual market debut in March 2012 went poorly; fewer than 100 units were sold, falling well short of the company's expectations, according to the Los Angeles company's bankruptcy filings."

A group of lenders is providing the company with a $5 million loan intended to keep Coda afloat as it navigates Chapter 11.

"Coda, which planned to use Chinese manufacturing and battery technology to make inroads in the tough U.S. electric-vehicle market, said it had received equity investments totaling some $344 million since its founding in 2009."

"The company's mission has been to make (electric vehicles) compelling and accessible to the mass market and to leverage its battery expertise to commercialize stationary energy storage systems, Chief Restructuring Officer John Madden said."

"The company blamed the car's flop on a variety of factors, including stunted demand for electric vehicles, adverse macroeconomic conditions and the insufficient capital to effectively market the car."

As I have stated many times from reading historical accounts of car companies that failed, few of us can comprehend the huge amount of money it takes to introduce a new car into the marketplace and sustain it until it makes a profit. Companies fail because they can't get enough money to overcome the forces against them.

COLLISION WITH A LEAF
Richard and Carol Murphy

[*Editor's note: The Murphies live in a different region*]

The night of April 29th a sheriff's deputy driving a Crown Victoria patrol car became distracted by his monitor and ran a stop sign, crossing four lanes of traffic on Ruthrauff Road in Tucson without leaving enough space.

Richard, who was driving on the cross street at the 45 mph limit, did not have enough time to brake or turn our 2011 Nissan Leaf so he T-boned the police car on the passenger side. The seat belts tightened and the air bags deployed and Richard walked away with cuts and bruises. The Leaf's front end totally collapsed but the passenger compartment was intact. We think the Leaf performed great! The deputy was OK, since he was T-boned on the passenger side, but his car had to be towed to the salvage yard along with the Leaf.

One of the responding sheriffs was very impressed with how well the Leaf took the impact and that Richard could walk away without going to the hospital.

Carol arrived 15 minutes after the accident. The Leaf was spun 180 degrees and there were pieces of the front part of the Leaf everywhere. The passenger compartment was just fine, we were able to retrieve everything. The inside lights still worked and all the doors were able to be opened and closed.

Richard has a sore hip where his cell phone was pressed against him and a cut over his left eye and his back is a little sore, but nothing major. He did not go to the hospital or even ask for paramedics, but we will get him checked out with his doctor .

We think the way the seat belts tightened even prevented him from keeping whapped too hard in the face. And the side air bags surely kept him from hitting his head against the door post when he was spun.

The responding deputy said that this was his first accident with a Leaf and he was impressed with how well it performed, he said he had had doubts about the electric cars, but this accident convinced him that they survived a collision well.

In any case, the truly wonderful thing as far as the Leaf goes is that although the whole front of the Leaf was completely crushed, the windshield did not shatter (it was not even cracked) and there was no collapsing of the drivers' compartment at all. It was an incredible zone of protection for me.

As you can tell, I am truly thankful for the safety features of the Leaf and think that this aspect about this innovative electric vehicle should get out.

GOOD NEWS FOR TESLA

Things seem to be going pretty well for Tesla. *Consumer Reports* has named the Tesla Model S the best car they have ever tested, giving it an unmatched score of 99 out of 100, praising its low center of gravity, handling, speed, 200-mile range, comfortable ride and interior room. They even liked the futuristic look of the interior, calling it "like something Marty McFly might have brought 'back from the future' in place of his iconic fusion-powered DeLorean."

Tesla stock (NASDAQ: TSLA) jumped from around $57 to above $76 in two days after the company reported a profit at $0.12 per share in the quarter compared to -$0.76 per share in the year-earlier quarter, beating the mean analyst estimate of$0.04; and a 1763% increase in revenue, to $562 million from the year-earlier quarter, beating the mean analyst estimate of $492 million. The *Wall Street Cheat Sheet* said that the car is setting anew paradigm for American luxury cars, and Lincoln and Cadillac will have to pay attention.

And on April Tesla 26 announced that it will cover the cost of repairing the batteries on its Model S sedan "in every situation other than a collision or owner tampering," according to the *San Francisco Chronicle*.

Not bad for a car company that didn't exist a few years ago.

TESLA'S WARDENCLYFFE LABORATORY PURCHASED FOR MUSEUM

[Note: This story has nothing to do with the electric car]

Friends of Science East, Inc., dba Tesla Science Center at Wardenclyffe, has completed the purchase of the last remaining laboratory of scientist, visionary, and inventor Nikola Tesla in Shoreham, NY. The site was sold by Agfa Corporation, with headquarters in New Jersey.

The 15.69-acre laboratory site, known as Wardenclyffe, is where Tesla planned his wireless communications and energy transmission tower, in the early 1900s. He was never able to complete the construction of the tower due to lack of funds.

At the end of August 2012, Friends of Science East, Inc. partnered with online comic Matthew Inman (TheOatmeal.com) to hold an online crowd funding campaign on Indiegogo.com in which they were able to raise $1.37 million towards saving the Wardenclyffe site. Over 33,000 people from 108 countries contributed to the success of the campaign, which reached the $1 million mark in just over a week.

"This is a major milestone in our almost two-decade effort to save this historically and scientifically significant site. We have been pursuing this dream with confidence that we would eventually succeed," said Gene Genova, Vice President of the organization. "We are very excited to be able to finally set foot on the grounds where Tesla walked and worked."

"Now begin the next important steps in raising the money needed to restore the historic laboratory," said Mary Daum, treasurer. "We estimate that we will need to raise about $10 million to create a science learning center and museum worthy of Tesla and his legacy. We invite everyone who believes in science education and in recognizing Tesla for his many contributions to society to join in helping to make this dream a reality."

The organization plans several fundraising events in the future. More information can be

found on the website (www.TeslaScience-Center.org), at the Facebook page (Tesla Science Center at Wardenclyffe), and via Twitter (@teslascience).

AN EV FOR THE WHEELCHAIR-BOUND

A company called Community Cars has come up with a neighborhood electric vehicle designed specifically for people in wheel chairs. Called the KENGURU, the car opens in the back to reveal a ramp onto which the user rolls a wheelchair, there to sit and control the car using motorcycle handlebars.

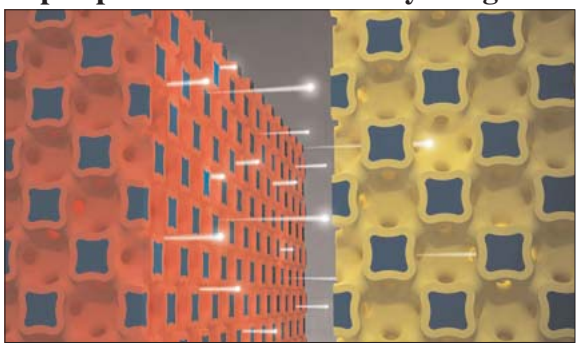
As an NEV it's not super-fast, at 25 mph, but it should provide needed mobility and independence. Information is available at http://www.kenguru.com.

NEWS UPDATE

PA Turnpike to get EV charging stations

Pennlive reports that the Pennsylvania Turnpike will be installing four EV charging stations in service areas this month — but they will be so far apart most EVs won't be able to use them. Two will be westbound, at New Stanton and King of Prussia, which are 250.8 miles apart, while the eastbound ones will be at and Bowmansville, 240.6 miles apart. While too far apart to allow portal-to-portal driving in an EV, they will serve the most heavily populated areas, so may draw some use. The first four will be Level II chargers, which take up to four hours for a full charge, but later ones may be Level III. In any case, most people probably wouldn't need a full charge under these conditions, just enough to complete a trip.

Super-powerful LI-ion battery design



Researchers at the University of Illinois have developed a new design for small lithium-ion batteries that manage to escape the traditional trade-off when selecting a battery: high power density for heavy current draws or high energy density for long operation between charges. The new battery design uses nanoporous electrodes (above) to vastly increase surface area with no loss of active materials, giving power density greater than a supercapacitor and energy density comparable to today/Li-ion and Ni-Zn. They're still tiny, but given a few years for development, who knows. You can read about them at http://news.illinois.edu/news/13/0416microbatteries_WilliamKing.html or see the full article in *Nature Communications*.

Washington state, EVs, and Money

The state of Washington seems to have mixed feelings about electric vehicles and their economic impact. An April 12 AP story reported that the state has passed, and the governor signed, a bill to impose a $124 fine on ICE drivers who park in spots reserved for EVs. Just to be fair, the act also contains a provision that an EV driver who uses an EV-only spot and doesn't plug into the charger would also pay a fine.

This sounds nice for Washington EVers, but will it make up for the special tax the state has slapped on them? A May 9 article by Damon Lavrinc in *Wired* magazine reported that the state is assessing drivers of BEVs an annual fee of $100 to make up for the gasoline taxes they don't pay — and mentions that Virginia and New Jersey are also considering similar actions. There's no mention of the fact the Pennsylvania has had such a law for decades.

IT'S FIRE SEASON AGAIN
By California Pete

The paucity of this year's rainy season (the driest on record) has caused fire season to start early. Between January 1 and May 4 there were 1184 wildfires that had burned 37,729 acres, compared to 757 fires burning 1260 acres in the same period of 2012. Wish us luck.

Don't breathe the air

If fires weren't enough, there is increasing evidence that the air in large parts of the state is not safe to breathe — and not because of man-made pollution. The incidence of valley fever, a fungus-caused disease that can have devastating results, is increasing at a frightening rate in the San Joaquin Valley, and as more and more people decide to settle there (for reasons that are beyond my ken) and while the dry weather that spreads the disease becomes worse, the number of cases of the potentially-lethal disease increase. The CDC reports that cases increased from about 700 in 1998 to more than 5500.

According to a May 6 AP story, "The fever often causes mild to severe flu-like symptoms, and in about half the infections, the fungus — called Coccidioides — results in no symptoms. But in a small percent of cases, the infection can spread from the lungs to the brain, bones, skin, even eyes, leading to blindness, skin abscesses, lung failure, even death." Diagnosis can be difficult, and nationwide, the CDC estimates, 150,000 go undiagnosed each year.

I'm not sure that we should take comfort from knowing that Arizona has it worse, with 16,400 cases reported in 2011.

Of course California maintains its reputation for man-made pollution as well; Bakersfield, in the southern edge of the San Joaquin Valley, was recently declared the most polluted city in the nation overall by the American Lung Association, and third in the country for ozone pollution. It was followed by Merced, Fresno, Los Angeles, Hanford, Modesto and Visalia. The first non-California city on the list was number 8, Pittsburgh.

Oakland is exciting

Movoto.com, a real estate blog, recently came up with a list of what it considers the ten most exciting cities in the country. Philadelphia came in ninth, New York City sixth, San francisco third, and — wait for it — Oakland was number 1.

How can that be?

The survey ranked cites using ten criteria:

- Park acreage per person
- Percent of population between 20 and 34 years old
- Fast food restaurants per square mile (the fewer the better)
- Bars per square mile
- Big box stores per square mile (the fewer the better)
- Population diversity
- Movie theaters per square mile
- Museums per square mile
- Theater companies per square mile
- Music venues per square mile

Under those rules Oakland came in first. Of course Oakland also has some other things that make it exciting, like the highest robbery rate in the nation, the fact that the police department has had three chiefs in a week, and that it recently came out that the police department has one guy assigned part time to investigate burglaries; the police will only respond to a burglary if it is reported to them "in progress." Otherwise forget it; that one guy may or may not get around to you while you're still alive.

So why the difference? It seems that there are two Oaklands. One part has fairly low crime rates. It's hilly and fairly well off economically — and housing prices reflect that, with million dollar prices fairly common. The other Oakland is crime-ridden, flat and poor, with high unemployment, gangs, and all the rest, with low housing prices.

So it all comes down to location, location, location. But I'm not moving there.

Messy potheads

Every April 20 there's an event in San Francisco called simply 420 that consists of thousand of people converging on a spot in Golden Gate Park known in these parts as "Hippie Hill" to smoke pot and basically hang out. This year April 20 fell on a Saturday, so crowds were larger than usual; estimates were that between 10,000 and 15,000 showed up. You can imagine what happens when 10,000 people get the munchies all at the same time: they left behind an estimated 10,000 pounds of "empty bags of chips, candy wrappers, snack containers, plastic cups, bottles and other debris," according to the *San Francisco Chronicle*, which cost about $10,000 for city crews to clean up.

Taking responsibility

A few years ago the city of San Francisco, pinched for cash, decided that it could no longer afford to maintain its street trees, and

began informing homeowners that the city trees in front of their housed were their responsibility to maintain, including pruning and the like.

But you know what they say about good intentions. *Chronicle* columnist C.W. Nevius reported on April 27 that one resident, upset that the ficus trees in front of his house were tearing up the sidewalk, threatening the gas and sewer lines and beginning to lift up his front stairs, hired someone to prune the trees. The city promptly fined him $1715 per tree — $3430 altogether, because they didn't like the way it was done.

Oil companies abandoning biofuels?

Chevron, the oil company that Bay Area folks love to hate, used to be behind the biofuels initiative. "Its biofuels chief spoke at the ceremony where Gov. Arnold Schwarzenegger signed the executive order in 2007, the same year the oil company pledged to develop a gasoline replacement from wood," according to an April 22 AP story by Paul Sakuma.

That was then. "Now Chevron is leading a lobbying and public relations campaign to undercut the California mandate directed at curbing global warming, two years after the state started phasing it in. Research on commercially viable climate-friendly products has come to naught, stymied by the poor economics of coaxing hydrocarbons from plants' stubborn cell walls, according to Chevron officials." It seems Chevron doesn't feel it can make any money with biofuels.

Not to worry, however, there are plenty of people willing to pick up the fallen torch people whose business won't be threatened by widespread adoption of non-fossil fuels. "On [April 22], the Department of Energy announced a preliminary grant of $18 million to four biofuel firms, including Mountain View's Cobalt Technologies, to keep working on the less-polluting energy source," according to an APril 23 story by *Chronicle* business Writer Andrew Ross.

COMING EVENTS

21st Century Automotive Challenge

May 17-19, Penn State University, State College, PA. For information contact Joel Anstrom, janstrom@engr.psu.edu.

2013 EDTA (Electric Drive Transportation Association) Conference

June 1-12, Washington, DC. Go to http://electricdrive.org/edtaconferenceorg/

ITEC2013, IEEE- Transportation Electrification Conference and Expo

June 16, Dearborn, MI. Go to www.cvent.com/events/2013-ieee-itec/event-summary-7b49d949e898445cb6722 eea0873805f.aspx/

Alternative Clean Transportation (ACT) Expo

June 24-27, Washington, DC. For info go to www.actexpo.com.

15th Asian Battery Conference

Sept 1-13, Shangahi, China. Go to www.biztradeshows.com/conferences/abc/

Charging Infrastructure Expo

Sept 17-19, Detroit. Go to www.charging-expo.com

Electric & Hybrid Vehicle Technology Expo

Sept 17-19, Novi, MI. Go to www.evtech-expo.com, collocated with The Battery Show (www.thebatteryshow.com) and Charging Infrastructure Expo (www.chargingexpo.com)

Plug-In 2013

Sept 30-Oct 3, San Diego. Go to plug-in2013.com

World Solar Challenge

Oct 6-13, Darwin, to Adelaide, Australia. For information go to www.worldsolar challenge.org/

EVS27

November 17-20, Barcelona. Go to www.evs27.org/

MEETING SCHEDULE

Meetings are held in Room 49, Plymouth-Whitemarsh High School, 201 East Germantown Pike in Plymouth Meeting, PA, and begin at 7:00 p.m. There will be no meetings in July or August.

June 12

September 11

October 9

November 13