

# EEVC NEWSLETTER

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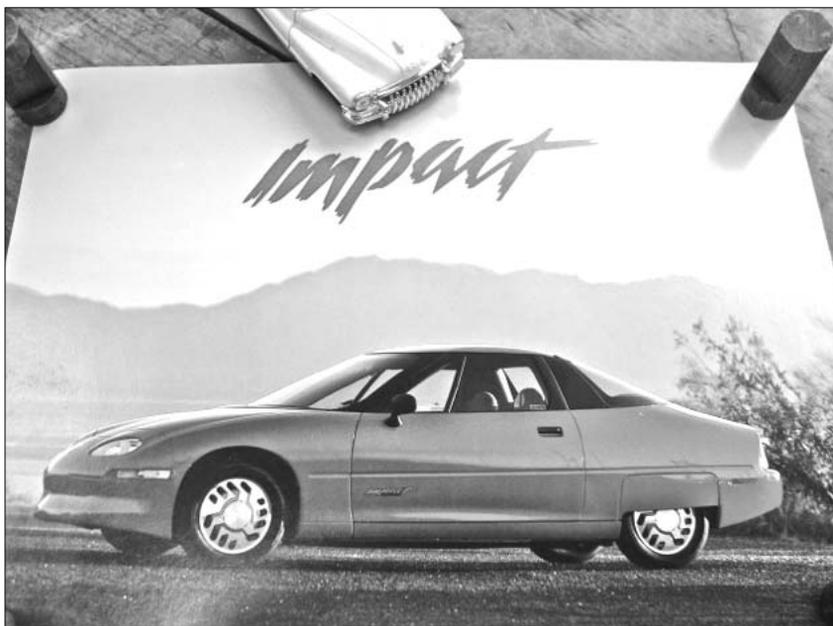


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## THE CAR THAT COULD-PART VI Before the EV-1 Came the Impact A continued book review by Oliver H. Perry

*The Car That Could*, by writer Michael Shnayerson, provides tremendous insight into the difficulties of marketing an electric vehicle in our present economy. As I continue to stress, the purpose of my review is to remind our readers that there are valid reasons for the slow advancement of production EVs.

The previous five parts of my review highlighted four stages of the development of the Impact (which would later become known as The EV-1): The AeroVironment show car, the fast build, the proof-of-concept cars, and the fifty-car limited production fleet. Problems occurred in each stage. Refinements were constantly being made.



*An old advertisement for the GM Impact PrEVies. This is the front.*

In 1993 the California mandate, which required major car companies selling vehicles in California to provide a percentage of low emission or zero emission vehicles by 1998, still loomed over the big car makers' heads. Similar laws were seriously being considered in a number of north-

eastern states like New York and Massachusetts. In 1990 the Massachusetts legislature passed a law requiring emissions standards escalate to 2% zero-emission vehicles by 1999. The car companies fought these laws but at the same time tried to ready vehicles for the market if the mandates could not be postponed or repealed.

At the end of my last review I pointed out

that the Clinton-Gore sponsored "Partnership for a New Generation of Vehicles" offered hope to the car companies that the California mandate (as well as the Northeast adoptions) would be dropped in favor of a future fuel efficient program without mandates. At this particular time the cloud of uncertainty regarding future regulations reduced the big three's enthusiasm for EV development.

On February 1, 1994, the Ozone Transport Commission, representing the Northeast, with backing from the American Lung Association and 100 other organizations, voted to petition the EPA to allow the northeastern states to adapt the California Mandate. Within several weeks federal judges in the States of New York and Massachusetts ruled that both states could require electric vehicles to meet the mandate. The ruling raised the pressure for automakers to increase anti-mandate lobbying and at the same time press forward with electric vehicle R&D.

The cold weather problem was real despite the politicians' denial. Even if electric cars could perform in warm weather climates to consumer expectations, there was no question that performance and range would be drastically reduced in cold weather. In no way did the car companies want to be forced to ready electric vehicles for cold climate driving. They didn't have solutions. Public officials bent on supporting clean air didn't seem to understand that EVs had genuine cold weather limitations that nobody to that point had solved. The big three had every reason to fight the mandate in the cold northeast.

### **Cold Weather Performance**

The Impact had a heat pump that provided heat as long as the outside temperature was above 20 degrees Fahrenheit. Below that they had no solution for cabin heating. The first proof-of-concept Impact cars (with the improved twenty-four, 12 volt recombinant lead acid batteries) could travel 70 miles without a charge in warm weather. However when the temperatures dropped to 40 degrees Fahrenheit the range fell off precipitously. The battery chemistry was obviously affected but increased aerodynamic drag due to colder and denser air was also significant, as was the thicker motor lubricant. GM eventually came up with a better motor lubricant but a real sur-

prise came from the low rolling resistant tires. The test engineers at Milford found the tires to be a real range robber in cold weather

### **Michelin's unusual rubber compound**

For a 25% reduction in rolling resistance Michelin used a compound that added a lot of silicone to produce a springier tread. Unfortunately when the temperature dropped to as high as 50 degrees Fahrenheit, the tires began to experience an effect known as glass transition. The rubber compound's molecular structure began to change into a crystalline state. As the temperature dropped the glass transition effect proved to be exponential.

### **Reminder: The GM Impact Program in 1993 consisted of only 50 cars for consumer testing**

Jean Mc-Namara, a GM employee, was assigned the job of selecting customers in the New York City and Los Angeles areas to participate in its PrEView test drive program. From mid October 1993 until the turn of the year McNamara logged 10,000 calls to people just in L.A. who wanted to drive the Impact for one or two weeks and were willing to keep a daily record of every distance driven, problem encountered, impression remembered. McNamara had to shut his phone lines down a month ahead of time in New York City after 14,000 calls. The raving reviews of the Impact from Motor Trend and similar magazine writers who declared that GM had made unparalleled breakthroughs on the "highway to the future" with the Impact, seduced the public into clamoring to be selected for a free one or two-week test drive trial.

A *New York Times* reporter in a front-page story suggested that despite the great interest expressed in its PrEView test drive, GM expected the program to fail as drivers came to resent the range limitation and the cost of the car. In fact consumer reports on their road tests might convince CARB to drop the mandate.

Mc-Namara was furious when he read the review, exclaiming, "Thirty-two million dollars sunk into this test-drive program and all we're trying to do is prove these things don't work?"

By the winter of 1993-94 the Oil companies had finally begun to see that the electric car presented a small growing threat to their con-

trol of highway energy. The “Olies” began to push for the mandate to be set aside using questionable lobbying tactics. As for GM executives, according to the writer Shnayer-son, they felt they should try to get rid of the mandate while at the same time push for dominance in electric car technology. The dual approach led to top secrecy in the GM electric vehicle Impact program. GM didn’t want any information to leak out of their EV program that might cause the CARB board to suspect that GM had an electric car that could actually meet their standards, if they did succeed.

With secrecy and a little luck GM felt that they might take the lead in the EV competition and still not have to meet the mandate requirements. Robert Stempel, the former head of GM (devoted to the advancement of electric vehicles and recently pushed out of the GM chairmanship during rough financial times) “the right man in the wrong job at the wrong time,” amazingly held no grudges toward those who replaced him. He began to advise his successors and passed on the following suggestion. “The Mandate is bad, but that shouldn’t mean we abandon EVs, especially when GM has so many patents for them. Fight the mandate, but push ahead with the cars.” (page 177. *The Car That Could*)

### **A Battery That Became a Game Changer**

Stanford Ovshinsky, the middle child of a Lithuanian immigrant who sold scrap metal in Akron, Ohio, an avid reader, very intelligent in spite of his poor background, was able to patent a design for an automated lathe while in his twenties. Too poor to attend college, Ovshinsky continued to develop his mind and hone his skills in the machine shop environment. His early use of robotics in his patented lathe had instilled in him a fascination with electricity, how it was formed, how it traveled, and how it could be harnessed.

Ovshinsky, delving into biology on his own, learned that neurons communicate with each other by sending electrical signals across a cell membrane composed of amorphous materials. Crystal structure has an orderly array of atoms that bond together in specific patterns to form the solid. Amorphous materials, in contrast, have no such orderly atomic arrays. While some amorphous metals might conduct electricity they do so in a more random way.

Titanium and vanadium are examples of amorphous metals.

In the electrical world amorphous materials (like glass and most liquids) were not considered to be useful in electrical applications. Silicon crystal, doped with impurities in proper amounts, made semiconductors with specific electrical characteristics that could control electron flow. Amorphous materials could not. Ovshinsky thought that amorphous materials, because they were so inexpensive and easy to manipulate, should be given further investigation. He set about to use the chalcogenide elements in column six of the periodic table: sulfur, selenium, tellurium, and others to make amorphous electronic switches.

The ways in which the atoms of amorphous solids bonded might be very random but Ovshinsky discovered that if one used specific proportions of elements in making amorphous alloys one could produce a glass like mix that could be used like silicon as a toll-gate for electricity. As a lone inventor, Ovshinsky thought he had hit upon something big but didn’t quite know what to do about it.

In the mid 50s Ovshinsky landed a research job at Wayne State University in Detroit, even though he didn’t have a college degree. Here he met up with an attractive biology Ph.D candidate. After divorcing their spouses in 1959 the couple began a new marriage. In 1960 the duo formed a company called Energy Conversion Devices (ECD). Their plan was to turn Ovshinsky’s amorphous silicon materials into commercial products. With a growing number of patents, but no profits, the Ovshinskys went public with ECD in 1964. His patents were used by Matsushita, Sony, Hitachi, Canon, Sharpe, and others to produce solar cells, magnets, optical memories, and flat-panel displays.

ECD failed to move to manufacturing and the company posted losses year after year. These losses did not please the investors. (The lifestyle of the Ovshinsky family was pretty high... so even though ECD was poor, evidently the owners received very good salaries.)

In his early years the academic world viewed Ovshinsky as an unschooled rube. Physicists claimed that his findings were simply the result of heat produced by high voltage imposed across his materials and predicted that his amorphous switch would eventually

burn out. Twenty-five years later, with his amorphous switch still working, Ovshinsky's theories were grudgingly accepted.

Meanwhile Ovshinsky continued his research, thinking that maybe amorphous materials could be used in batteries. On February 9, 1982, Ovshinsky called his senior engineers into a conference room and showed them a beaker with an electrolyte, a thin-film negative electrode, and a positive nickel electrode taken from a Kmart nickel cadmium battery. "This is going to be the basis of a new industry," Ovshinsky told his staff. This battery is not only going to be in every battery-driven consumer product someday, but it will drive your car." (page 174, *The Car That Could*)

(to be continued...)

## HISTORY DOES SEEM TO REPEAT ITSELF Oliver Perry

Writing the multipart review of the book *The Car That Could* has caused me to glance through some 1992-95 *Popular Science* magazines that I recently discovered in my garage. In looking for some information relative to my review I discovered a number of very supportive articles in P.S. magazine. This one especially surprised me.

"It's the Battery Stupid," *Popular Science* February, 1995, page 78.

"Much of the original excitement about electric vehicles was sparked by energy-efficient engineering specialists like Paul MacCready of AeroVironment Inc., who headed the team that developed the GM Sunraycer and the brisk-performing GM Impact prototype."

"It's ironic that MacCready argues against battery EVs as a marketable alternative for today's family car. He offers an illuminating perspective on the usefulness of chemical fuels. A rubber band, he notes, can store sufficient mechanical energy to lift its own weight one-half mile. A lead acid battery stores enough energy to lift itself ten miles. A quantity of gasoline, however can lift its weight 1,000 miles."

"MacCready observes that even a threefold increase in the energy density of lead-acid batteries, which nobody is promising, would still

make them only 1/33rd as good as an energy storage medium, pound for pound as gasoline."

"MacCready and many other engineers view high-energy-density liquid chemicals such as gasoline and diesel fuel as the most practical propellants for a cleaner future. Burned at a miserly rate by hybrid vehicles with small constant-speed piston or turbine engines powering electric drivetrains, these chemicals may make better sense than a symbolic fleet of underachieving battery-powered cars."

The number one question asked by a methodical engineer is what is the most practical energy source for clean vehicles? One environmentally Unfashionable, but inevitable, answer: Don't overlook petrochemicals.

And, in support of the comment attributed to former GM chairman Robert Stempel by author Shnayerson in my book review, "Even Stempel, whose background includes involvement in the GM solar powered Sunraycer and the GM Impact EV projects, is leery of CARB's ZEV policy. He says, "While I believe in electric vehicles, the California sales mandate dictates electric vehicle technology and eliminates other possible solutions."

This statement brings me to the next article I discovered.

**CNG Gets the Nod**, page 33 *Popular Science*, June 1993 (about 18 years ago):

"Compressed natural gas (CNG) gains momentum as the alternative fuel of choice with the announcement by both Ford and Chrysler that they are going into production with dedicated CNG-fueled vehicles as early as 1994."

"Natural gas proponents claim that the reduction in certain emissions makes natural gas vehicles nearly as clean as electrics, when the standard sources of electricity are taken into account. A paper presented at the recent annual meeting of the Society of Automotive Engineers indicated however, that natural gas produces excessive hydrocarbons during the warmup period."

A few years ago Paul Kydd (who has been operating his hybrid research projects out of Burlington County Institute of Technology) tried out his first hybrid truck experiment a

few years ago on an old donated Chevy S-10 truck that had been converted to run on both gasoline and natural gas. Paul was impressed with the performance of the natural gas side of the equation. But because natural gas transportation technology had died and nobody seemed interested in maintaining it, Paul took out the natural gas tank and ran the truck as a gasoline electric hybrid. Although the CNG stimulus in 1994 didn't grow, maybe it will be revived now that natural gas is so plentiful.

I just heard on a radio news report today that there are now political advocates clamoring for state and federal government to pour money into building a natural gas infrastructure to fuel transportation. Natural gas seems to be making front-page news around the world with recent discoveries of its abundance.

If the goal is to get the most cargo per mile per energy unit, or per cost of the energy, how will battery powered vehicles compare to fossil fueled vehicles in the years to come? The great debate continues.

Meanwhile I asked my wife to check out how the three companies I invested her father's inheritance in twenty years ago have made out. I invested in a fuel cell company, a battery company, and an electric car company. She simply said that I should consider going back to work and stop ruining her day. I think she told me to go see Mike Manning and develop a better battery.

Electric vehicles have their place. (And no, it is not in a museum.) Keep the faith.

## **WALL STREET JOURNAL REVIEW** **Oliver Perry**

### **Nature still surprises us.**

*Wall Street Journal*, Thursday, October 6th, 2011

Israeli scientist Daniel Shechtman won the Nobel Prize in Chemistry this past week (Oct 5th) for his discovery of a unique mosaic of atoms called quasicrystals, which form regular mathematical patterns that never repeat themselves, a structure that broke all of the accepted rules as to how crystals ought to behave.

Dr. Shechtman made his discovery in 1982 while he was working at the National Bureau of Standards. Scientists were initially so skept-

tical about his finding that Shechtman was handed a chemistry textbook on crystallography and told that he ought to reread it. When he persisted in claiming he was correct he was asked to leave his research group. His research paper describing the discovery was at first rejected by the *Journal of Applied Physics* before being published two years later in the journal *Physical Review Letters*. Nobel laureate chemist Linus Pauling routinely denounced the discovery. Together with NIST physicist John Cahn and French crystallographer Denis Gratias, Shechtman confirmed a finding that went against all they had been taught about the crystal behavior of matter. Indeed Dr. Shechtman himself was surprised by his own findings and initially expressed that it couldn't be true.

Before his discovery it was thought that all crystals were made up with atoms packed in symmetrical patterns that were repeated over and over again in periodic fashion. By studying the atomic structure of a mix of aluminum and manganese through an electron microscope Shechtman found an odd arrangement of electrons never before documented. The pattern appeared to change depending upon the angle from which the structure was viewed. This again was considered unbelievable.

It is interesting to note that Stan Ovshinsky, the inventor of the nickel metal hydride Ovonic battery, confounded the physicists of his day by using amorphous materials that up to that time were considered to be useless when it came to controlling the flow of electricity. Although it is true that many scientists are wrong when they challenge the accepted beliefs and theories of the day it is good to keep in mind that now and again some have been proven to be correct. We should be slow to throw stones at scientists and inventors who break with tradition. Consensus among scientists does not always ensure truth.

### **Five Truths About Climate Change**

*Wall Street Journal*, Oct 6th, 2011, page A19; by Robert Bryce

1. During the same decade that Al Gore dominated the environmental debate, global carbon dioxide emissions rose by 28.5%, demand for electricity was up by 36%, which in turn fostered a 47% increase in coal consumption.

2. Regardless of whether it is getting hotter or colder we are going to continue to produce a lot more energy to remain comfortable.

3. Africa's carbon dioxide emission increased by 30%, Asia's by 44%, the Middle East by 57% and China's by 123% over the last decade. Meanwhile the U.S. production of carbon dioxide fell by 1.7%, faster than Europe's, due to the use of more natural gas replacing coal.

4. Thomas Edison's first power plant converted coal into energy at a 3% rate. Today's natural gas fired turbines have thermal efficiencies of 60%. We are getting better and must continue to do so. Our devices that use electricity are also becoming more efficient, but most also continue to improve.

5. Last month scientist at CERN reported that neutrinos might travel faster than the speed of light. If accepted and reasonable scientists can question Einstein's theory of relativity then there is also room for the equally reasonable and accepted scientists who question the complexities of the earth's atmosphere. Will Happer, a professor of physics at Princeton, and a skeptic about global climate change, recently wrote that the contemporary climate crusade has much in common with the medieval crusades. Those who are not in step with the accepted theories risk banishment from publishing their findings. Carbon dioxide may not be the only problem and the reduction of it may not solve the problem. Those who question the science surrounding manmade climate change should not be shut out of the discussion. For example, reducing the particles put into the air from coal fired energy plants may reduce cloud formation and raise global temperatures as we reduce the amount of carbon dioxide put into the atmosphere by using natural gas. Conclusion: The science of global warming is not settled.

### **Eyes on the Road**

*Wall Street Journal*, Oct 6, 2011, page D3

The following facts were presented in Joseph White's review of the 2012 Camry Hybrid:

Over-all demand for hybrids has fallen to less than 2% of the total market this year, according to figures compiled by Autodata Inc. The reality is that hybrids have never gotten over 3% of the market.

General Motors will offer battery boosted versions of its Regal and Lacrosse sedans marketing them as "eAssist" vehicles after hearing that consumers feel there are unwelcome tradeoffs in performance in hybrid vehicles.

The new generation 2012 Camry Hybrid performs better than the previous 2010 hybrid and gets better mileage but costs nearly \$2700 more.

### **REVENGE OF THE ELECTRIC CAR**

Brandon Hollinger reports that Chris Paine's sequel to WHO KILLED THE ELECTRIC CAR, will be at the Allen Theatre in Annville, PA between Harrisburg and Reading (5 miles from Lebanon) Monday, November 7th, 2011 at 6:00 pm. For information and directions go to [www.allentheatre.com](http://www.allentheatre.com).

### **TULLIO FALINI'S IMPRESSION OF THE VOLT**

From EEVC treasurer Tullio Falini on September 22:

"I looked at the Chevy Volt today. As you may know, they have been shipped to all the Delaware Valley Chevy Dealers. It would really be a neat car to drive, but it would not make sense to me to trade in my Prius, which gets 45 mpg highway, for the Volt, whose sticker MPG in gas mode is 37. Also the Volt sticker does not give us MPG Highway and MPG City for a direct comparison to other cars. It just says 94 MPG electric and 37 MPG gas. Something does not add up here. I would like to see a Volt sticker that shows the MPG city and highway. It would be really be neat to go 40 miles in electric mode, but I think I will hold out for the plug-in Prius and be satisfied with 10 miles in electric mode and not have to sacrifice my fuel efficiency when doing highway driving. Pete's article in the last newsletter is a confirmation of this in his interview of a commercial outfit that used both cars and found that the Volt's highway mileage was inferior to the Prius. Also, the 43,000 sticker price is a deal-breaker for me and my budget. It is exciting to see the car and I do hope others find it useful for them as I would love to see Volts driving around."

## PRIUS ON DISPLAY



Jesse Rudavsky, representing the EEVC, displays his Prius at a one-day environmental event in Moorestown, New Jersey, held Sunday October 2nd. Jesse drove down to Moorestown from western Massachusetts to provide a hybrid car for the event. Jesse's used Prius has over 280,000 miles on it. Jesse purchased his second Prius several years ago after his first one (with over 300,000 miles on it) was totaled in an accident. According to Jesse, even with the high mileage on it the car runs like new. A firm believer in the Prius, Jesse said that if he was able to convince just one person to buy a Prius at the ecology event, it will be worth the six hour one way trip to Southern New Jersey.

## NEWS UPDATE

### GM to build city EV in 2013

General Motors has announced that it will bring out an electric version of its Spark minicar in 2013 for sale overseas and in select

U.S. markets. "The Spark EV offers customers living in urban areas who have predictable driving patterns or short commutes an all-electric option," said Jim Federico, global vehicle chief engineer for electric vehicles at Chevrolet." This implies that the car will have fairly short range.



A123 Systems will supply the advanced nanophosphate lithium-ion battery packs that will power the Spark EV. Details on specific markets, range, quantities and pricing will be announced later.

### Will China set the EV standard?

A recent article in *Inderscience* asked the question, "Can the rapidly expanding automobile industry in China leapfrog to electric vehicles and so avoid the environmental harm that further decades of internal combustion engine use could cause? In a paper published in this month's *International Journal of Automotive Technology and Management*, management researchers Hua Wang and Chris Kimble of Euromed Management École de Marseille explain how China could make such a leap by setting standards."

The idea is that, as a newly industrializing country, China may jump directly to more advanced technology without passing through all the stages that other countries have taken as the technology developed (which is why so many third-world countries have widespread cell phone networks but few land lines).

The researchers describe three scenarios that China might follow, but the third one is worrisome: China may, "through its sheer economic power and prowess in mass production, take the lead in setting the standards for the world market. In doing so China would take the high ground before the other nations were able to catch up and create their own standards."

This situation is made more grim by news that the Chinese government is pressuring General Motors to hand over proprietary EV technology as the price for not withholding new energy vehicle subsidies, according to a recent AP story. All this came about, says AP, “as GM and state-owned partner Shanghai Automotive Industrial Corp. signed an agreement on developing a next-generation electric vehicle platform.”

Just what we need to do: cede another industry to them.

### **1 GW solar power in a year**

*Greentech Media* reported on October 7 that this year the United States has for the first time installed 1 GW of photovoltaic panels, with a total of 1.8 GW forecast by the end of the year. Now if only these were made here, instead of in China.

### **GE and Nissan sign EV R&D pact**

Bill Koenig of *Bloomberg News* reported on September 30 that “Nissan Motor Co. said they signed a two-year research and development agreement to speed infrastructure development to support widespread use of electric cars.”

### **GM cuts shift in Volt plant**

In other GM news, an Oct 10 story by AP auto writer Tom Krisher reports that the company has announced that production at its Detroit-Hamtramck plant, where the Volt is made, will be cut from two shifts to one. GM insists that improved production efficiencies allow it to make the same number of cars in one shift, but doesn’t dispute that sales of the Volt have been less than forecast: 3895 instead of the predicted 10,000, although dealer demand remains strong and the car should be available nation-wide by the end of the year.

### **Plug-in Prius intro set**

On September 16 Bob Carter, Toyota Division Group Vice President and General Manager, gave the media a preview of the 2012 Toyota Prius PHV.

Noting that the location of his talk was the Craneway Pavilion in Richmond, CA (in the East Bay), which opened in 1932 as a Ford assembly plant, he pointed out that when the Prius was introduced to the U.S. one in three

of the cars was sold in California, and that one in four still are, constituting Toyota’s best selling model in Northern California.

Toyota, he says, plans to make the Prius line into a four-member family over the next few quarters, including “the Prius Liftback, Prius v, Prius Plug-in and the Prius c.”

The Prius v will be a midsize car with 58-percent more cargo space than the Liftback. This will be followed in March by the Prius Plug-in, with the Prius c following in the Spring. The Prius c, previously shown as a concept, will be a smaller city-type car that the company expects to be “the most fuel efficient hybrid without a plug in the U.S.”

The plug-in Prius isn’t all that exciting, however: 15 miles of all-electric range, with recharging in in three hours on 120 volts and about half that time on 240 volts.

Next year we should see the new version of the RAV4 EV.

### **Toyota plans mini-car**

Toyota has also announced plans to manufacture a minicar for sale in the domestic market. Japanese regulations, according to a recent AP story, define a minicar (kei, in Japanese) “as having maximum length of 3.4 meters (11.15 feet), width of 1.48 meters (4.86 feet), height of 2 meters (6.56 feet) and engine displacement of less than 660 cc.” Toyota’s entry, to be called the Pixis Space, will be built by subsidiary Daihatsu, and will sell for ¥1.12 million (\$14,700). Two more models are planned, according to the article.

### **IEA: Stop subsidizing fossil fuels**

On October 4 the International Energy Agency urged governments around the world to end subsidies for fossil fuels, according to AP. “The Paris-based organization of developed and heavy oil-consuming nations estimates that more than \$409 billion in state subsidies were paid out last year — a striking 33 percent increase from the year before.

“IEA chief Maria van der Hoeven acknowledged to reporters Tuesday that removing subsidies ‘is not easy’ in part because of political opposition and short-term pain for beneficiaries.”

### **Electric plane wins \$1.35 million prize**

On October 4 CNN reported that Pipistrel-

USA.com of State College, PA had “won a \$1.35 million prize from NASA for developing a highly efficient airplane power by electricity.

“The plane developed by Pipistrel doubled the fuel efficiency requirement for the competition – flying 200 miles in less than two hours while using less than a gallon of fuel per occupant or the equivalent in electricity. The winning plane used a little more than a half-gallon of fuel per passenger for the 200-mile flight.

“Team Pipistrel-USA.com was one of 14 entrants in the competition, which began two years ago. In total, the 14 teams invested \$4 million in the competition, according to NASA.

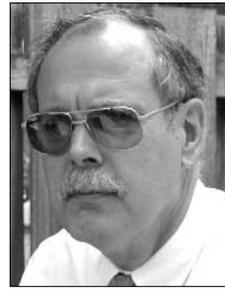
“The winning aircraft, the Pipistrel Taurus G4, is a four-seat, twin-fuselage aircraft powered by a 145-kilowatt brushless electric motor driving a two-blade propeller mounted on a spar between the fuselages. The plane’s wingspan is about 75 feet.

“The planes flew ... out of Charles M. Schulz-Sonoma County Airport in California. Only three of the 14 entrants made it into the air, according to *The Santa Rosa Press-Democrat*. The airport is home to the Comparative Aircraft Flight Efficiency Foundation, which organized the competition with NASA.”

### **West Philly High EV program wins again**

The November issue of *Popular Mechanics* lists the West Philadelphia High School Hybrid X team, semifinalists in the Progressive Insurance Automotive X Prize competition and winner of the Green Grand Prix in Watkins Glen, NY, as a Breakthrough Innovator. The team, consisting of Jeffrey Johnson, Stefon Gonzales, Brandon Ford, Shamere Palmer, Adan Mitchell, Sydney Dickerson, Azeem Hill, Morris Bailey and Ciera Williams, with advisor/teacher Simon Hauger, has also been chosen by X Prize champion Oliver Kuttner “to build an electric version of his Very Light Car,” says the article. Students plan to start an after-school non-profit to make and sell the EVLC kit car, the article goes on. Kudos to the the team!

## **EVS DON'T ALWAYS WORK** **By California Pete**



Some EV programs don’t work out, as we all know. The latest example from here was a Chinese-made electric bus that went to the San Francisco Transit agency (Muni) for a trial run. According to the *San Francisco Chronicle* it sounded pretty good, with expected battery life of more than 3 hours. Then they discovered that it couldn’t make it up San Francisco’s hills, and off it went to Chicago. Better luck next time.

### **Solar energy for oil recovery**

Oil companies don’t have any theological aversion to solar energy, it seems, when it suits their purposes. On October 4 a *Bloomberg News* story by Ehren Goossens reported that California-based Chevron Corp has worked with BrightSource Energy to install a 29 MW solar thermal plant in Coalinga in Fresno County with 3822 heliostats and a 327-foot solar tower to generate steam. But it doesn’t use the steam to produce electric power; instead the company sends it down into an oil reservoir, where the heat thins the oil and makes it easier to get out of the ground.

The solar unit costs \$3 per million BTUs, compared to \$4 for using natural gas.

### **Loss of an icon**

Clearly the most traumatic event, at least for Northern California and Silicon Valley, was the death of Steve Jobs, whose stature can hardly be exaggerated. Jobs was the quintessential Silicon Valley guy — who dropped out of college to pursue his dream, worked in a garage (or the equivalent) with his buddies, and founded an entire industry, becoming fabulously wealthy in the process, and who continued until the end of his life to create products that people didn’t know they wanted until he produced them. Let’s hope that Apple can continue in his absence. While Steve had plenty of time to pick and groom his successor, the company nearly went under then last time he was away.

### **Tesla sedan slated for 2012**

Tesla Motors has announced that it will begin production of its Model S sedan in the refurbished NUMMI plant in Fremont at the end of this year, and plans to make deliveries by mid-year of the first of 5000 cars it plans to build in 2012.

Tesla has reportedly received more than 6000 orders for the Model S.

### **San Francisco silliness**

In an example of either trying to battle cliches or an excess of political correctness, a high school teacher in the North Bay town of Vacaville penalized his students for saying “God bless you” when someone sneezed. The teacher insisted it had nothing to do with religion but was motivated by a desire to get students to stop disrupting classes — there were reports that when one student sneezed, the others would all say “God bless you” in turn, which seems to me like a clever way to interrupt classroom progress. Wish I’d thought of it when I was in high school

A political kerfuffle has begun in The People’s Republic of Berkeley: a city councilman has introduced a bill that would repeal parts of the Nuclear Free Berkeley Act. The law, it seems, not only forbids the possession of nuclear weapons within city limits, but “bans the city from investing in U.S. Treasury bonds, notes and bills,” according to *The Chronicle*, which makes it difficult for the city to find safe places to put its money in these stressful times. And under the law, the *Chronicle* goes on, “city employees need special City Council permission — which isn’t always granted — to buy police radios, library scanners, computer software and other items manufactured by companies with ties to the nuclear industry.” And finally, it acts as an impediment to new business ventures. It’s sort of sad to see Berkeley allow Mammon to dictate what it should do, but we should remember the old saying, “Hypocrisy is the tribute vice pays to virtue.”

### **COMING EVENTS**

#### **World Solar Challenge**

Oct 16-23, from Darwin to Adelaide, Australia. Go to [www.worldsolarchallenge.org/](http://www.worldsolarchallenge.org/)

#### **The Networked EV: Smart Grids and Electric Vehicles**

Oct 20, San Francisco. [www.greentechmedia.com/events/live/the-networked-ev-2011/](http://www.greentechmedia.com/events/live/the-networked-ev-2011/)

#### **U.S. National Electric Vehicles Safety Standards Summit**

Oct 21-22, Detroit. Go to [www.nfpa.org/newsReleaseDetails.asp?categoryid=488&itemId=46997](http://www.nfpa.org/newsReleaseDetails.asp?categoryid=488&itemId=46997)

#### **EV Fest**

Oct 23, Toronto, Ontario; [www.evfest.ca](http://www.evfest.ca)

#### **The Battery Show**

Oct 25-27, Detroit [www.thebatteryshow.com/](http://www.thebatteryshow.com/)

#### **European Electric Vehicle Congress**

Oct 26-28, Brussels. [www.eevc.eu](http://www.eevc.eu)

#### **SAE International 2011 Vehicle Battery Summit**

Nov 14-15, Shanghai. Go to [www.sae.org/events/battery/?&PC=11VBSSDEML&PCN=6125556048](http://www.sae.org/events/battery/?&PC=11VBSSDEML&PCN=6125556048)

#### **SAE 2011 Powertrain Electric Motors Symposium for Electric and Hybrid Electric Vehicles**

Nov 16, Shanghai. Go to [www.sae.org/events/training/symposia/emotor/?&PC=11EMOTSDEM&PCN=6125556048](http://www.sae.org/events/training/symposia/emotor/?&PC=11EMOTSDEM&PCN=6125556048)

#### **Community EcoExpo**

Jan 22, Maple Glen, PA. For info call Lisa Brown at 215-628-9970

#### **Solar POWER-GEN Conf & Exhibition**

Feb 14-16, Long Beach, CA. Go to [www.solar-powergen.com/index.html](http://www.solar-powergen.com/index.html)

#### **EVS26**

May 6-9, Los Angeles. [www.evs26.org/](http://www.evs26.org/)

#### **2012 Drag Racing Expo Event**

May 18, Lebanon Valley Dragway, West Lebanon, NY. For info go to [www.ecedra.com/2012evdragracingexpo.html](http://www.ecedra.com/2012evdragracingexpo.html)

### **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 9

December 14

January 11

February 8

March 14