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The Hybrid Vehicle and Alternative Fuel Report

June 15, 2014

This report is a summary of articles appearing in popular, business, and technical media referring to the impact of fuel costs and fuel efficiency on vehicle technology, development, and markets. At the end of the report is a list of all articles summarized, with hyperlinks to internet sources where available. Some hyperlinks may require free registration or paid subscriptions to access. ***The Hybrid Vehicle and Alternative Fuel Report*** (**ISSN: 1946-1011**) is compiled, written, and edited by Thomas L. R. Smith, Ph. D., Economic Analysis Branch of the Budget and Financial Analysis Division, Washington State Department of Transportation. Contact ***The Hybrid Vehicle and Alternative Fuel Report's*** editor at smithtm@wsdot.wa.gov or (360) 705-7941. Contributions of news items, original articles, and positive comments about ***The Report*** and cookies are welcome.

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Due to the Editorial Staff's annual pilgrimage to the Oregon Shakespeare Festival, we will not publish an edition of *The Hybrid Report* on June 30.

National Hybrid, Electric, and Plug-in Vehicle Sales: *"The report of my death was an exaggeration:"*[1] In our last issue, we reported that an analyst for Morgan Stanley declared that electric cars are dead. Reader Brian Calkins suggests that they just need to be charged up. Be that as it may, *The Detroit News* (Shepardson, June 3, 2014) reports that the Nissan Leaf had its best ever sales month in May and *HybridCars* also reported that several fully electric and plug-in hybrids set sales records (Cobb, June 4, 2014). Hybrid car sales saw their second-best month ever. Leading the pack, as ever, was the Prius Liftback (the standard model) with 30.53% of hybrid sales. The three Prius models, combined, accounted for 46.2% of hybrid sales; while Toyota hybrids took 68.23% of the hybrid market. Overall, hybrids accounted for 3.26% of the new car market. May was a good month for the new car market, but even better for hybrids.

The Nissan Leaf, with its best sales month on record, dominated the fully electric car market with over half the electric cars sold, at 53.72%. The Tesla Model S took a distant second with just over 24% and the BMW i3 was an even more distant third at 5.8% of the electric car market. Electric cars took 0.36% of the new car market. Like hybrids, electric cars outperformed the market as a whole.

The Prius Plug-in was the top plug-in hybrid with 40.5% of the market. The Chevy Volt took second with 25.3%, followed by the two Fords: the Fusion Energi, with 20.2%, and the C-Max Energi at 11.8%. Plug-in hybrids took 0.42% of the total new car market, and like their high-tech siblings outperformed the rest of the market. The strong Prius Plug-in sales were interesting in light of the fact that many pundits believed sales for the vehicle would drop when California quit issuing HOV stickers for the vehicles in April (Goreham, June 3, 2014). An article in *Torque News*, provided by ***Report***

[1] Mark Twain [Samuel Langhorne Clemens], May 1897.

subscriber Jeff Doyle, showed just the opposite. Sales for the Prius Plug-in went up, not down, as many predicted.

The three sectors, together, took just over 4% of the new car market, which, we believe, is a record. It just may be possible that electric cars, like the Iraqi insurgency of 2005,[2] are in their last throes, but they aren't dead yet.

HYBRIDS

Cookies! Our co-worker and frequent contributor Tonia Buell went off to the Electric Drive Transportation Association Conference in Indianapolis. Ordinarily, we would whine about how it was another conference we couldn't go to, but Tonia brought us back souvenirs: Car Cookies.

The cookies in question were distributed by the Ford Motor Company and feature the C-Max Hybrid on one side of the box and the C-Max Energi Plug-in Hybrid on the other side. While it is our policy not to endorse products, we are always willing to endorse the concept of free cookies. And while we cannot hold forth on the qualities of either of these automobiles, the cookies were yummy. We did not share with our co-workers.

In our travels, many people have expressed concern over the recyclability of hybrid car batteries. There is a belief among some that the batteries cannot be recycled after they are no longer usable to store power for cars. That is not the case, nor is recycling always the way to go. Even though hybrid car batteries may lose strength and become unusable in a car, the batteries still have life in them and can be used for other purposes. Yellowstone Park will acquire 208 Camry Hybrid batteries to store electricity generated from the Park's solar panels and a turbine, *Torque News* (Goreham, June 5, 2014). The Park will power five buildings from the battery system.

PECO, a Philadelphia-based electric company, added 22 hybrid bucket trucks to its fleet, bringing its fleet of alternative fuel vehicles to 788, the company said in the *Fort Mill Times* (PECO, June 4, 2014). The hybrid bucket trucks are also the first of their kind in a United States utility fleet. In addition to power the vehicle, the hybrid system can also power electric tools at the work site.

[2] Richard B. Cheney, "Larry King Live," *CNN*, May 31, 2005, retrieved: http://transcripts.cnn.com/TRANSCRIPTS/0505/30/lkl.01.html.

Even though hybrids had record sales in May, IHS Automotive believes that hybrid sales have reached their peak and sales will flatten, *Automotive News* (Rechtin, June 9, 2014) says. Some of the reasons that IHS gives for this is that gas prices have remained at levels that drivers have become used to. Sales and gas price data show that when prices spike and are noticeable, hybrid sales spike, but when prices rise gradually, there is little increase in hybrid sales. IHS also explains May's high sales as pent up demand from the winter.

The Ramblin' Wrecks from Georgia Tech and Ford are working on a solar-powered plug-in hybrid car, *Georgia Public Broadcasting* (Olson, June 11, 2014) broadcasted. Professor Bert Bras, a heck of an engineer,[3] says that placing a solar panel on a Ford C-Max hybrid is inadequate to be useful, but by using a Fresnel lens over the solar panel, sunlight is magnified and directed to the panel's "sweet spot." The car can even relocate itself to maximize the solar efficiency. The panel can provide sufficient electricity for twenty miles of travel after eight hours in the sun. The technology may not show up at a Ford dealership near you, but a prototype is making the rounds of car shows.

ELECTRIC VEHICLES

When organizations and governments install new charging stations, there is frequently a lot of fanfare, celebrations, and ribbon-cuttings. A lucky few are even written up in the "Coming to a Location Near You" section of *The Hybrid Report*. But what happens after the party is over? In some cases, like Greenfield, Massachusetts, the chargers fall into a state of disrepair. Some are vandalized. Sometimes, a driver drives off with the car still plugged in to the charger. *The Greenfield Recorder* (Davis, June 3, 2014) records the troubles of that town's charging stations that saw several of its stations go out of service for a litany of problems. In some cases, electric car proponents (well, one) say that part of the problem was lack of planning where the chargers would be installed, in areas that may not be as safe as they could be. Regardless, installing a charger is not sufficient. It has to be maintained, we think, is the point of the story.

Indianapolis will introduce an electric car sharing plan in December, the *Indianapolis Recorder* (Davis, June 5, 2014) recorded. The plan, called BlueIndy and run by the French company Bolloré Group, will feature 125 electric cars at 25 stations around the Hoosier Capital. The plan will eventually grow to more than 500 cars with 1,000 chargers at 200 places around the City. Members of the car sharing plan will have access to the car on an hourly, daily, weekly, monthly, or yearly basis.

In a step that is sure to be placed under a microscope, analyzed, and blogged about, Elon Musk (June 12, 2014), the CEO of Tesla announced in his blog that "Tesla will not initiate patent lawsuits against anyone who, in good faith, wants to use our

[3] Billy Walthall (lyrics), Frank Roman, Michael A. Greenblatt, and Charles Ives (Composers); "(I'm a) Ramblin' Wreck from Georgia Tech," 1919.

technology." Mr. Musk said the patents were originally taken out because the company was concerned they needed protection against large companies that could take Tesla's ideas and, with their economies of scale, mass produce electric cars. After watching little real progress in the electric car business, Mr. Musk feels that, in order to encourage the development of electric cars, he needed to declare, "all our patent are belong to you [*sic*]."[4] Mr. Musk says that his competition is not other electric car makers, but internal combustion engine cars.

ALTERNATIVE FUELS

Back in October 2013, eight States[5] entered into a memorandum of understanding (MOU) that the States would coordinate actions to insure the success of the individual States' Zero Emissions Vehicle (ZEV) programs. In May, the ZEV Program Implementation Task Force, assembled to develop plans for that initiative, issued the *Multi-State ZEV Action Plan*. The action plan lists 11 key actions that the States will take to promote zero emissions vehicles, which include fully electric, plug-in hybrid, and fuel cell vehicles. Some of the actions include providing incentives for vehicles, increasing ZEVs in public fleets, encouraging private fleets to add ZEVs, promote and plan infrastructure, and track progress towards meeting the goal of 3.3 million ZEVs on highways by 2025. We noted that ***Hybrid Report*** subscriber Anne Gobin of the Connecticut Department of Energy and Environmental Protection was a member of the task force that produced the report. We also note that, even though Washington State is not a participant in the MOU, the report cites Washington's RCW 46.08.185 that requires standard EV charging station signage and marking as a "Model Program."

COMING TO A LOCATION NEAR YOU: The latest news on new charging stations which may or may not be somewhere close to you.

United States: The Pennsylvania Turnpike received two new chargers at a service plaza in New Stanton, the *Herald-Standard* (Goudy, May 30, 2014) heralded. The level 2 chargers will cost $2 per hour to charge, however, members of the Blink network get a 50% discount.

Tullahoma, half way between Nashville and Chattanooga, got two new charging stations when the Tullahoma Utilities Board (TUB) installed them in their parking lot, *The Tullahoma News* (Lapczynski, May 31, 2014) said. One charger was installed in the TUB fleet lot to charge the organization's Volt, while the other was installed in the public parking area for the public's use.

[4] Mr. Musk is making a play on the phrase "all your base are belong to us," from the Sega Mega Drive video game *Zero Wing* created by Toaplan Co., Ltd. in 1991.
[5] California, Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island, and Vermont.

Midtown Manhattan will have a new quick charger at the Edison ParkFast Hippodrome location, a press release in the *Fort Mill Times* (Edison Properties, June 3, 2014) tells. The charger is on the ChargePoint network.

Simon Property Group and NRG eVgo (June 3, 2014) are assembling Orange County, California's largest charging network, a joint press release in *The Wall Street Journal's Market Watch* observed. NRG will install charging stations at four malls operated by Simon.

Next time you drive your electric car on Maui, there are two new charging stations at Whalers Village in Lahaina, *Hawaii News Now* (Pang Communications, June 5, 2014) says. The stations were installed by Volta Industries. The chargers are free.

The University of Wisconsin-Milwaukee (UWM) installed two fast chargers on campus, *Environmental Protection* (June 9, 2014) says. The chargers are in parking garages at the Engineering Math Sciences Building and the Klotsche Center & Pavilion. Charging is free, parking is not.

Around the World: England's Essex County will receive grants to pay for four electric car chargers, the *Saffron Walden Weekly News* (Busby, June 5, 2014) reported. The town of Saffron Walden will get one charger at the Swan Meadow Car Park. The nearby towns of Braintree, Colchester, and Chelmsford will get chargers as well.

OTHER TECHNOLOGY

Subscriber Doug McClanahan was going through his stack of back issues of *New Scientist* and found an interesting bit on changes in Formula 1 (F1) racing. Many automakers dropped out of F1 racing because the circuit had developed into an effort to build bigger and faster engines. F1 was originally developed as a proving ground to test automotive ideas that would find their way into the cars we drive on our highways. To regain that relevance, for 2014, F1 cars have to be able to go as fast and as far as they did last year, but they are limited to 1.6 liter engines, down from last year's 2.4 liter engines, and the 3 liter engines used before that (Marks, March 12, 2014). The race cars also have a fuel cap. The cars have a maximum fuel flow rate and cars can only use 100 kilograms of fuel the entire 305 kilometer race. To do all of this, the makers of these speedsters have incorporated several ways to develop greater fuel efficiency. Among them, the car's exhaust is channeled to a turbine connected to the air intake, which drives a compressor that increases air pressure. Energy from braking is converted to electricity and stored in the vehicle's battery. Heat from exhaust is converted into electricity and stored in the battery. Turbochargers are powered through these sources and also provide power directly to the rear axle. The organizers of F1 racing hopes that these changes will make racing relevant to research and development, while keeping the sport exciting.

Platooning tractor-trailers and driving them just 20 to 75 feet apart can save from 4.5 to 10% on fuel *ABC News* (Farnham, June 3, 2014) reports. And it is safer than current driving practices. Of course the program depends on vehicle-to-vehicle communications that coordinates speed and braking between the trucks traveling together. Drivers reduce wind resistance by driving close to other vehicles. Even the lead vehicle experience reduced wind resistance. The vehicle-to-vehicle communications reduces driver reaction time to lead breaking and adjusts speeds to maintain the distance between trucks. A system developed by Peloton Technology of California was tested on Nevada's I-80 last month.

Anticipation:[6] The slow ketchup may make cars faster, lighter, and more fuel efficient. Ford and Heinz have been working together since 2012 in a cooperative to develop plastics and fibers from plant based material the *Pittsburgh Post-Gazette* (Lindeman, June 11, 2014) posted. Ford recently announced that the development is far enough along that material made from Heinz's cast of tomato skins could soon find its way into Ford vehicles. The plastics developed from plant material are lighter than regular plastic. Tomato-based plastics also produce less (or fewer) greenhouse gas emissions than other plastic. There is actually some concern that a tomato aroma could end up in a new Ford, but ford has a group of people who ensures no odd smells end up in a new car.

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That is all.