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The Hybrid Vehicle and Alternative Fuel Report

September 15, 2015

The fine print: 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 articles 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, positive comments about ***The Report,*** and cookies are welcome. Please send cookies. And not the computer kind.

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NATIONAL HYBRID, ELECTRIC, AND PLUG-IN HYBRID VEHICLE SALES FOR AUGUST

Hybrids, plug-in hybrids, and electric car sales continued to plug along in August, according to *Hybrid Cars* (Cobb, September 2, 2015). For the combined sectors, sales were up in August over July, but down from August 2014. One of the reasons for the sales decline from last year is that Labor 2014 sales were included in August 2014 numbers, while this year, those sales will be in September.

Hybrid sales, the lion's share of alternative vehicle sales, were up in August over July. Even though, hybrid sales were down from August 2014. *Hybrid Cars* list a few reasons for the year to year sales slump: sales of cars, in general, is losing ground to trucks; lower fuel prices are making gas-only vehicles more attractive; and, finally, the aging Prius is less desirable. The general rule is the hybrid sector follows the Prius. And, as usual, the three Prii occupied the number 1, 2, and 4 spots. The Camry hybrid was third, while the Ford Fusion squeaked into fifth. Toyota took 69% of the hybrid market. All hybrids combined took 2.4% of the new car market. Hybrids outperformed the total new car market in August.

Plug-in hybrid sales were down slightly from July. Two models of plug-ins have been discontinued in the current model year, the Prius and Chevrolet Volt. Since there are fewer of them available, sales are down. The new Volt is in production, so *Hybrid Cars* expects sales for the Volt and sector to pick up in October. Even with the declining numbers available, the Volt led the sector with 36.45% of all plug-ins sold. The two Ford plug-ins, the Fusion and C-Max, took second and third, so Ford led the sector with 44.2%

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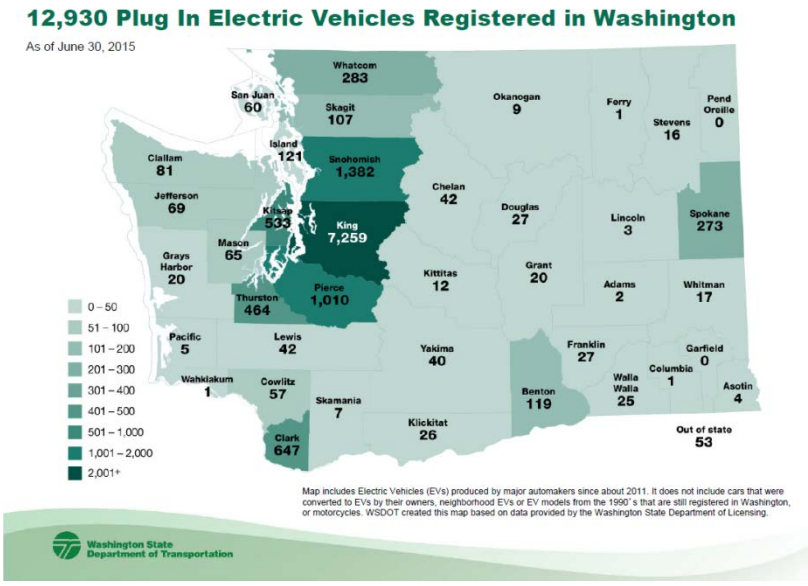
of all plug-ins sold. The Prius plug-in came in fourth and the top five was finished off with the BMW i8. Plug-in hybrids account for a scant 0.24% of new car sales.

The sales story for all-electrics was similar to the hybrid sector: up in August over July, but down from August 2014. And like the hybrid sector, one of the reasons for the decline from last year is that sales for the dominant models, the Leaf and Tesla, are in decline as buyers await the new 2016 releases. The Tesla Model S led battery sales by taking 30.6% of the market, while the Leaf took 26.7%. BMW's i3 took third. While the battery market is a little larger than the plug-in market, it only accounts for 0.33% of new car sales.

While *Hybrid Cars* took these numbers in stride and even put a little positive spin on them, *Autoblog* said, looking at the same numbers "Overall, things looked dim" (King, September 3, 2015). Sales for these months "plunged 22 percent" from August to August, *Autoblog* also said, and called the sales "painful."

HYBRIDS



Washington State Department of Licensing does a scrub of its records twice a year to find out how many plug in hybrids and electric vehicles are in registered in Washington. The results are posted on the Washington State Department of Transportation's West Coast Green Highway website. There are total of 12,930 plug in hybrids and electric vehicles in Washington. You can see where they are registered in this map, or check out a better version online. You can find more detail about how the vehicles break out from a couple of tables, also online. For instance, we learn that of the 12,930 vehicles, 9,216 are Battery Electric vehicles, 6,581 of them are Nissan Leaves, and 3,797 of those cars live in King County. We also learn that there are 3,714 plug in hybrids, and of those vehicles, 1,909 are Chevrolet Volts. The links to this data was provided by Tonia Buell, the Interim Director of Washington State Transportation's Innovative partnerships.

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Bosch, the German electronics company, has developed a low-voltage hybrid powertrain for smaller vehicles, the company (September 4, 2015) said in a press release. The system uses 48 volts instead of the 400 volts most hybrid drives use and smaller and lighter components. The system does not use a separate electric motor, but uses the generator, instead. The system, which is not vehicle-specific, can improve a vehicle's mileage by 15%. The hybrid system is series hybrid, where the electric motor/generator assists the gas engine, rather than provides power to the drive train. Even though this system is still in development, Bosch is also in work on the second generation of this system. The second generation Bosch system is a parallel hybrid, where the generator/motor provides power directly to the wheels. The other feature in the second generation is a cell phone app that allows the driver to park the car from outside the vehicle. The Bosch system should be available in 2017.

Both Toyota and Chevrolet halted production of their best-selling hybrids while they finished their redesigns for new models. News is coming out about both new cars. For the Volt, *The Detroit News* (Burden, September 8, 2015) reports that the 2016 model, to be released this fall, will only be available in 11 States. Washington is not among them. The 2016 model year will be short and the 2017 models will go into production for release in the spring. These will have a wider distribution. The new Volt will get about 53 miles on electricity-only. The current Volt only gets 38 miles.

Toyota put its newly redesigned Prius on display in Las Vegas on September 8, the Associated Press (September 9, 2015) pressed. In addition to getting 55 miles per gallon instead of the current 50, the new Prius is longer and wider than the previous Prius. It also has a lower center of gravity and better suspension. The outside has also had changes, with what Toyota says is a "sportier" look, to appeal to a broader market.

ELECTRIC VEHICLES

It is National Drive Electric Week. It has been since Saturday, September 12 and will continue until Sunday, September 20.[1] Plug In America, the organization that organizes the event says that there are a record number of cities taking part in the events (Dubin-Scott, September 2, 2015). Not only that; but the events have spilled over the borders of the United States, with events taking place in Canada and Hong Kong. This is the fifth year for the event. Unfortunately, the event scheduled for these parts, in Steilacoom, Washington, has already been held, but there are still events scheduled for Issaquah, Liberty Lake, Richland, and Wenatchee. For other events near you, check the National Drive Electric Week Events page.

Norway is running out of electric vehicle license plates, *News in English* (Berglund, August 28, 2015) says. Norway has added 17,000 electric vehicles in the first 8 months of 2015 and 8,000 more expected by the end of the year, for a total of 25,000 in

[1] Yes, we know that's longer than one week. We don't schedule 'em, we just report 'em.

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2015. This would bring the total electric population to 70,000. Norway will issue new plates when the current batch runs out. The existing plate numbers begin with the letters "EL." There is a great deal of discussion on what should appear on the next set of plates. One electric car group wants "EV" for electric vehicle, however the agency responsible for the plates will probably go with "EK," to stand for *elektrisk kjøretøy*, or electric vehicle in Norsk.

A study of federal income tax credits by the University of California, Berkeley (Borenstein & Davis, July 2015) for various "clean energy" purchases shows that 60% of the credits go to the top 20% of tax payers by income. For electric vehicles, the top 20% get 90% of all the credits. The study looked at tax returns since 2006.

Hybrid Report subscriber Representative Dick Muri (R) along with fellow member of the Washington House of Representatives Electric Vehicle Caucus, Representative Jake Fey (D), will be the keynote speaker at Plugging into the Future, a Vision2Action Symposium of the Northwest EcoBuilding Guild. The Symposium is Thursday, September 17, from 8:00 am to 1:00 pm at the Star Center at the University of Washington, Tacoma. Representatives Muri and Fey will join a panel consisting of people from builders, utilities, and charging networks. The keynote will address the challenge of enlarging the charging infrastructure in residential construction. For more information, go to Northwest EcoBuilding Guild's website.

The Deutshes Zentrum fur Luft- und Raumfarhrt (DLR), also known as the German Aerospace Center, as developed an online tool fleet operators can use to help decide if and when they should transition to alternative fuel vehicles and what mix of vehicles would work best (DLR, September 4, 2015). The tool has baseline data for seven European countries, but users can perform calculations with their own data. The intent of the tool is to assist European countries meet the goal of replacing 1000 internal combustion engine vehicles. You can look at the online tool at the Incentives for Cleaner Vehicles in Urban Europe website.

California's Public Utilities Commission (PUC) has pulled the plug on PG&E's plan to build a charging network in the central and northern part of the State, the *San Jose Mercury News* (Avalos, September 8, 2015) notes. PG&E planned to build the network and add 70 cents per month to the bills of residential customers. Among the PUC's problems with the plan was that given PG&E's size that they would have an unfair advantage against anyone else that wanted to build charging networks.

The British Government had planned to reevaluate their plug-in car grant of £5,000 ($7,800) as soon as 50,000 plug-in cars were sold, which is expected to be this November. However, Britain's Transport Minister went ahead and extended the grant until February 2016 and, maybe, beyond, Green Car Congress (September 10, 2015) said. The Government released another £200 million ($311 million) for the grant program.

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The average electric car in the western United States provides about $425 in greenhouse gas benefits, a group of University of California, Davis (Archsmith, Kendall, & Rapson, September 1, 2015) economists and engineers have determined in a University of California, Berkeley publication. As electric cars develop and the electric grid shifts to cleaner energy, the benefit will rise to $2,400 by 2040. The benefit in the rest of the country is mostly positive, but in some parts of the country, particularly the Upper Midwest and the Corn Belt, the benefit is negative because of reliance on coal for electric generation.

ALTERNATIVE FUELS

There are no alternatives.

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: Ohio University in Athens, Ohio, installed 10 charging stations around campus, *The Post* (Warren, September 2, 2015) posted. The stations cost $125,000 and are at five places around the school. Two of the chargers are reserved for an electric car sharing service. The school issues permits for prospective chargers.

Beautiful downtown Burbank has eight new public charging stations at curbside parking spaces around the city, the *Burbank Leader* (Garland, September 1, 2015) led. Each station will charge two cars. Chargers will pay 17 cents per kilowatt-hour for off-peak charging. Peak hour charging costs 30 cents. There is a two hour limit at each charger.

The Essex Outlets near Burlington, Vermont, opened an NRG EVgo Freedom Station, Green Mountain Power (August 31, 2015) said in a news release. The Station includes a DC fast-charging station and level 2 charging.

Saint Peter's University Hospital in New Brunswick, New Jersey, opened five charging stations *Electric Light & Power* (September 10, 2015) illuminate. The chargers are in one of the hospital's parking garage and were installed by Public Service Electric and Gas as part of that utilities pilot charger network.

Lake Elsinore, between San Diego and Los Angeles, installed charging stations at three locations around the city, *The Press-Enterprise* (Williams, September 12, 2015) entertained. The stations are located at the city's minor league baseball stadium, City Hall and the Public Works yard. Charging is free to the public at the level 2 chargers until December 5th.

Around the World: Electric charging stations will be coming to every gas station in Russia, *The Moscow Times* (Bazenkova, September 6, 2015) tells. Prime Minister

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Dmitry Medvedev issued an order that requires all gas stations to have electric chargers no later than November 1, 2016. There are 500 electric cars in Russia.

Cheltenham, in or near the Cotswolds region of England, installed charging stations in the town's parking garages, the *Gloucestershire Echo* (September 9, 2015) repeated. There are spaces for two cars at the Regent Arcade and the Town Centre East garages, which are free for parkers who pay for parking.

Niagara on the Lake, a Canadian town presumably on the lake, opened its first charging station behind the Court House, conveniently located next to the public washrooms, *Newstalk 610 CKTB* (September 11, 2015) said.

OTHER TECHNOLOGY

Air conditioning reduces the efficiency of internal combustion engines by 20%. On an electric vehicle, air conditioning can reduce range by 40%. Jaguar Land Rover is working on a fix for that, *Alphr* (Moldrich, September 9, 2015) alleges. The company's Air Bubble and Warm Air Cushion techniques should cut the A/C power draw by 50%.

In a similar development, Fraunhofer Institute for Manufacturing Engineering and Automation [sic](September 1, 2015) in Germany has developed a heater for electric cars that should make electric cars more efficient and increase winter driving range. Internal combustion engine cars use excess engine heat to warm the interior of cars. Electric motors produce little heat, so all the heat has to be generated, creating a drain on the battery system. Fraunhofer's development uses conductive carbon nanotubes that is installed in the door trim and armrests. Apply a little electricity to the nanotubes, and they generate heat.

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That is all.

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