



The Hybrid Vehicle and Alternative Fuel Report

January 15, 2015

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, 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

Reading *HybridCars'* (Cobb, January 6, 2015) summation of December sales for hybrids, electrics, and plug-in hybrid vehicles, it is easy to be confused. Sales of these vehicles were all over the place. Plummeting gas prices are important in the sales performance of these vehicles, but not in quite the way some might expect. The first thing to keep in mind is that with lower gas prices light trucks have outperformed passenger cars in the new car market. Since the vast majority of hybrids and electric vehicles are passenger cars, this means that they should perform worse than the market as a whole. After that, the results are perfectly clear.

December was, overall, a very good month for auto sales. Even hybrid sales improved over November, up by 7%. While this would normally be pretty spectacular, the total market was up 15.7%. Toyota, as usual, dominated the market with 64% of hybrid sales, with the three Prius models accounting for 41%. Year-to-year, hybrids did not do as well, dropping 8% from the previous December. December hybrid sales took 2.22% of total sales, which was the lowest take-rate since October 2011. For the full year, Hybrids took 2.75% of sales.

Plug-in hybrids sales also improved in December over November, but fell compared to December 2013. Plug-in hybrids were led by the Chevy Volt, which sold almost double the number of the second-place Ford Fusion. Plug-in hybrids took 0.26% of the new car market.

Fully electric cars performed better than the other two categories, and outperformed the market, as well. Electric car sales were up 20.1% over November,

while the market as a whole was “only” up 15.7%. Nissan Leaf dominated the battery market, selling nearly 42% of the battery cars. At 3,102 vehicles, not only did the Leaf outsell the Tesla, but also out sold the plug-in hybrid Volt’s 1,490 cars. Even with these great numbers, battery vehicles only accounted for 0.50% of car sales in December. To sum up, these three types of vehicles took 2.98% of new car sales in December and 3.48% for the year.

HYBRIDS

Oberlin, Ohio, rebuilt its fleet of refuse trucks with three hydraulic-hybrid garbage trucks, *Crain’s Cleveland Business* (McCafferty, December 13, 2014) said. The trucks store energy produced by braking in hydraulic cylinders, which is then used to propel the vehicles. Hydraulic-hybrids are mostly used in refuse trucks, but manufacturers are exploring other uses such as delivery trucks and buses. Oberlin expects to save up to 50% in fuel costs. The city had to replace its entire fleet of garbage trucks after a fire at its public works garage. Oberlin also bought two standard diesel trucks.

The Massachusetts Bay Transportation Authority’s (MBTA) paratransit service replaced Ford Crown Victorias for 142 Ford Fusion Hybrids, *BostInno* (Boroyan, December 19, 2014) boasts. The hybrid vehicles are part of the “Green Line Extension” study, which defines a specific area around Boston that is subject to special emissions reduction measures. The vehicles are expected to reduce carbon monoxide emissions by 125 kilograms in 2015.

In the United States, governments are shifting subsidies from hybrid cars to electric cars. In other places around the World, that is not the case. Korea just released a list of five hybrids eligible for subsidies of 1 million won (\$900), *The Korea Herald* (Kim, December 21, 2014) heralded. Hyundai’s Sonata 2.0 GDI made in Korea leads the list, followed by Toyota’s Prius and Prius V from Japan. The Lexus CT 200h is on the list as is Ford’s Fusion Hybrid. Buyers of the cars will get the rebate only after they buy and register the car, then apply to the Korea Environment Corp.

During the last days of the 113th Congress, the U. S. Congress extended the Alternative Refueling Tax Credit to cover charging stations installed during 2014, *BMW Blog* (Boeriu, December 22, 2014) blogged. Individuals can get a credit of 30%, up to a maximum of \$1,000, for a charger installed during 2014, while businesses can get up to \$30,000 for chargers.

Boeing and the University of Cambridge are testing a hybrid airplane, *The Green Optimistic* (Luleva, December 24, 2014) says. The Boeing-Cambridge team wants to build a commercial plane that uses 30% less fuel. In the meantime, the team has developed a prototype that uses a Honda 4-stroke piston engine which propels the aircraft and charges the batteries for electric-only flight.

With low gas prices, we hear once again, that hybrids are not cost effective. A *Minnesota Public Radio* (Collins, January 12, 2015) report compares the payback period of two “hybrid” vehicles based on July’s gas prices and current prices. For the Toyota Prius, with a price premium of \$4,300, the payback period was 8.1 years, based on July’s gas prices. The payback period increases to 13.7 years at today’s gas prices. The other “hybrid” the article looked at was the Nissan Leaf. The premium for the Leaf was \$7,300 and the July gas price payback was 9.2 years. The current payback was 25.8 years. Now to pick apart the analysis. First, the Leaf is not a hybrid, but a fully electric vehicle. Second, the article does not tell us how they derived the price premium. There is no internal combustion engine equivalent to either of these cars. We have discussed, many times the myth of the hybrid premium and that without a direct comparison, one must use vehicles that buyers would consider instead of the hybrid (or in the Leaf’s case, the electric vehicle). In most cases, buyers traded down to the hybrid or electric, so there is no premium. Third, and finally, saving money on gas is just one reason to consider in purchasing an electric or hybrid car. Early adopters of both of these vehicles considered reducing their own environmental footprint a prime motivator.

ELECTRIC VEHICLES

In Waynesville, North Carolina, near Asheville, Kent and David Barnes convert internal combustion engine cars to electric, *The Asheville Citizen-Times* (Byrd, December 13, 2014) ticks. Mr. Barnes has been converting gas cars to electric for five years. He converts about four cars a year. It costs about \$17,000 to \$20,000 to convert to electric. Mr. Barnes drives a Chevrolet Volt.

Washington State Senator for the 5th District Mark Mullet (D) started the Electric Vehicle Caucus in the state Legislature, the *SnoValley Star* (Staff, December 14, 2014) says. Senator Mullet plans for a bi-partisan effort to use electric cars to “strengthen Washington’s economy.” The caucus aims “to promote the expansion of electric vehicles.” There is no word, yet, on who else is a member of this bi-partisan caucus, although *The Hybrid Report* knows that there is at least one Republican legislator who owns an electric car.

It’s One or the Other: Electric Vehicles are good for the environment! Electric Vehicles are bad for the environment! Those are the dueling headlines created by the release of a single report by University of Minnesota scientists in the *Proceedings of the National Academy of Sciences* (Tessum, Hill, & Marshall, December 10, 2014). The thing is, even though various news outlets are spinning this report to fit their views, both headlines are true. The study looks at various types of vehicle propulsion systems including gas, electric, natural gas, ethanol, and hybrid and examines the results from fuel production to tailpipe emissions. The bottom line is this, directly from the scientists:

Our assessment of the life cycle air quality impacts on human health of 10 alternatives to conventional gasoline vehicles finds that electric vehicles

(EVs) powered by electricity from natural gas or wind, water, or solar power are best for improving air quality, whereas vehicles powered by corn ethanol and EVs powered by coal are the worst (Tessum, Hill, & Marshall, p. 1).

Pitkin County in Colorado will add three electric vehicles to the Public Works Department fleet, the *Aspen Daily News* (Szewczyk, December 16, 2014) reports. The county commissioners authorized \$165,580 of state air quality grant money to buy the vehicles.

Water meter readers in Santa Fe, New Mexico, will travel from meter to meter in electric cars, the *Albuquerque Journal* (Oswald, December 16, 2014) journaled. Santa Fe bought two Nissan Leaves. The meter readers will charge their cars with city-owned solar powered charging stations.

Santa Cruz, California, is ending free parking for electric vehicles, the *Santa Cruz Sentinel* (York, December 16, 2014) said. The city allowed electric cars to park for free at metered spaces and city-owned parking garages. That ended January 1, 2015. City charging stations are still free.

Brown gets greener: UPS operates 18 electric delivery vehicles in the Houston Area, *Fleets & Fuels* (Piellisch, December 12, 2014) figures. It appears that the Houston-Galveston Area Council (H-GAC) and the Center for Transportation and the Environment (CTE) actually own the trucks, and that UPS will operate them. Funding for the program came through the U. S. Department of Energy's National Energy Technology Laboratory. H-GAC wants to place another 12 vehicles in a good home in the Houston area.

Cha-Ching! The city of Raleigh, North Carolina is making money off of its electric car charging stations, and the money is not coming from people charging their electric cars. Raleigh collected \$27,000 in parking fines from one charging spot, *Green Car Reports* (Voelcker, December 25, 2014) reported. Only electric cars can park at the spot, however, the City has issued 540 tickets to gasoline vehicles parked in a single electric vehicle charging spot.

European electric car drivers may drive twice as much as internal combustion engine drivers, *The Telegraph* (Tovey, January 8, 2015) sent. Specifically, English drivers who drive Nissan Leaves drive about 10,500 miles per year, while other Brits drive about 5,200 miles. Nissan used on-board data to develop these estimates. According to Nissan, Spanish drivers drive almost 12,000 miles in their Leaves while a Swedish driver will drive about 11,000 miles in a Leaf.

ALTERNATIVE FUELS

Perhaps, someday, U. S. Navy¹ aircraft carriers will produce jet fuel from seawater, the *Smithsonian Magazine* (Willmott, December 16, 2014) says. The Naval Research Laboratory is working on a process that can do that and has flown a radio-controlled P-51 Mustang model on the fuel. It could be a while though for the process to show up on the Nation's warships. There are a few wrinkles that still need to be ironed out. It takes 9 million cubic meters of water to make 100,000 gallons of jet fuel. That requires a lot of water and more energy to make the fuel than the fuel produces. Then there is the problem of the amount of marine life that will die in the process of processing water. Finally, the process also produces a lot of environmentally unfriendly methane.

With the recent plummeting of oil prices, leading to gas prices that haven't been seen in years, many speculated that this could seriously hamper development of alternative fuels. That may not be the case with natural gas in the commercial vehicle sector. Erik Neandross, the head of Gladstein, Neandross & Associates (Cullen, December 18, 2014) told a *Fleet Owner* webinar that diesel fuel prices have not dropped as rapidly and are "by no means a bargain." Mr. Neandross told his audience that diesel prices will go back up, and that natural gas prices have remained steady and still cheaper than diesel.

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 power company that serves Nebraska's capital city installed the first two public charging stations in Lincoln, the *Omaha World-Herald* (Hubbard, December 11, 2014) heralded. Lincoln Electric System installed the stations in a parking garage on P Street. The level 2 chargers will cost \$2 for a charge.

A car charging network is coming to New York's Long Island Expressway, *Newsday* (Eidler, December 15, 2014) knows. The New York State Energy Research and Development Authority provided \$625,000 to install charging stations in eight towns on the Long Island Expressway. Before the chargers are actually installed, the towns on the route must do a feasibility study.

San Diego County in California opened several chargers at the Waterfront Park garage at the County Administration Center, *KPBS* (City News Service, December 19, 2014) publicly broadcasted. In 2015, San Diego County will install chargers at 10 other locations.

Tesla put in charging stations at the Price Changer in Brattleboro, Vermont, *The Barre Montpelier Times Argus* (January 3, 2015) argued. The stations are the farthest

¹ The Editor's former employer, 2/2/1976 to 8/31/1980.

(furthest?) north in the Tesla system. While the stations are built, they are not operational. Tesla has not received permission to connect to the grid. Tesla installed 12 charging stations at the Hooksett, New Hampshire, welcome center on I-93, the *Concord Monitor* (Wilson, January 10, 2015) monitored. The stations are there, but have not been activated yet. There will be six stations on both the north- and southbound rest areas. The rest areas will also have six chargers for other electric cars.

Around the World: In the not too distant future, French electric car drivers will be no more than 25 miles from a charging station, *The Auto Future* (Newcombe, December 23, 2014) forecasted. Over the next four years, Boille plans to install 16,000 chargers across France.

Across the border in Germany, Berlin plans to install 400 charging spot by 2017 along German highways, *Reuters* (Severin & Cremer, December 27, 2014) reports. The chargers will be quick chargers.

You will be able to charge your car every 50 kilometers when you travel between Beijing and Shanghai, *CRI English* (Huang, January 11, 2015) said. It would cost drivers 400 yuan (\$65) to make the trip, which is less than a ticket on a high-speed train. Unlike charging stations in the U. S., these stations come with attendants. We wonder if Oregon will take up that practice.

OTHER TECHNOLOGY

Once again, we've drawn a blank.

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That is all.