

THE AMERICAN

The Journal of the American Enterprise Institute

Far from Electrifying

By Vaclav Smil

Monday, November 26, 2012

Filed under: Science & Technology

Electric car hopes never die — but electric realities keep intervening.



Exactly two years ago, in November 2010, the Renault-Nissan CEO Carlos Ghosn assured reporters that his auto alliance would sell half a million electric vehicles a year by the end of 2013. In 2011, it sold just short of 10,000 electrics, but in April 2012 Ghosn still claimed that the 2012 sales would double to 20,000. On November 15, he had to give up and admit that, after selling less than 7,000 vehicles, the 2012 target cannot be reached. That is just the latest in a less than electrifying saga of modern electric vehicles (this qualification is needed because more than a century

ago, before the 1908 Model T, there was a similarly misplaced euphoria).

In contrast, General Motor's (GM) Volt had a record month this October, with 2,961 vehicles sold, but that is only relatively good news. Chevrolet's plan was to build 10,000 Volts in 2011, but actual sales that year were 7,671; in March 2012, poor sales forced the company to idle Volt production for five weeks. Sales then picked up and reached a record of 2,500 units in August (a strong month for all car sales), but by September 17 weak sales forced the company to shut down its Volt assembly plant in Detroit-Hamtramck for the second time in 2012 (for four weeks). After a strong October, the total for 2012 will surpass 20,000 vehicles — less than half of the targeted total of 45,000 cars set by GM and still only about 0.15 percent of the total estimated 12.8 million vehicles sold in 2012.

And it is all rather expensive — energy consultants estimate that GM's costs for designing, tooling, and production (but excluding all marketing) are about \$80,000 for a vehicle that sells, after a rebate of \$7,500, for about \$32,000. Costs per vehicle will fall as the production volume goes up, but GM may face years of losses before it starts making any money on a car that was to be a game-changer. And, of course, Volt is not a true electric car; it is merely an extended-range electric vehicle with a standard gasoline engine.

And another extended-range electric vehicle, the high-end Fisker Karma, has fared much worse.

Consumer Reports found the \$107,000 car, developed with a \$529 million loan from the U.S. government and built in Finland, is full of design flaws and did not recommend its purchase. The car's battery failed during the Consumer Reports test drive and Fisker subsequently replaced all of its 2012 Karma batteries. Then, on October 16, the manufacturer of the substandard lithium-ion battery used in the Karma, A123 Systems, (recipient of a U.S. federal grant worth \$249 million in 2009) filed for bankruptcy. And another American true electric car has not done any better: Tesla's deliveries for 2012 were cut from 5,000 to 2,700–3,250, due to production problems.

Perhaps most tellingly, in September, just a few days before Toyota's mini-electric eQ city car was to make its debut at the Paris Motor Show, the company announced that it was cancelling its plans to mass produce the vehicle. According to Takeshi Uchiyamada, the company's vice-chairman, "The current capabilities of electric vehicles do not meet society's needs, whether it may be the distance the cars can run, or the costs, or how it takes a long time to charge." If a company that has been in the forefront of innovative design, high-quality production, and consumer satisfaction and that in 2012 reclaimed its title as the world's largest carmaker (lost in the wake of the March 2011 Tohoku earthquake) comes to such a conclusion, I do not see how other major competitors can succeed where Toyota refuses to even tread. Toyota said it will concentrate instead on hybrid models, but even that has not been going well: Toyota planned to sell 40,000 plug-in hybrids in Japan this year, but fewer than 9,000 were sold by October.

Technical success of electrics comes down, most fundamentally, to batteries. The lithium-ion battery, with its many flaws, is still the only relatively lightweight commercial option and Edison's dream of a perfect car battery is now more than a century old. Bold plans come and go: a 1980 report on the introduction of electric vehicles in the United States predicted 1–2 million units in sales by 1985 and as many 11–13 million fully electric cars by the year 2000. But by the end of 2012, the United States had about 50,000 electrics on the road, no more than 0.03 percent of all light-duty vehicles licensed to operate in the country. Undaunted, a campaigning President Obama did not repeal his 2011 State of the Union goal of putting 1 million electric cars on the road by 2015.

Clearly, electric hopes never die — but electric realities keep intervening. Motor Trend's 2013 car of the year is the Tesla Model S, which sells (depending on performance options and after a \$7,500 rebate) for between \$49,900 and \$97,900. Ready to forecast sales of 50,000 units for next year?

Vaclav Smil does interdisciplinary research in the fields of energy, environmental and population change, food production and nutrition, technical innovation, risk assessment, and public policy.

FURTHER READING: Smil also writes "A Son of Europe Reflects on the EU's Nobel Prize," "Anticipating the World's Most Expensive Natural Disaster," and "Placing the American Gas Boom in Perspective." Kenneth P. Green discusses "Subsidy-Powered Vehicles" and says "Put the Pedal to the Metal!" Mark J. Perry argues "Unplug Electric Car Subsidies."

Image by Darren Wamboldt / Bergman Group