

America's Sad Love Affair With The Electric Car

Alex Planes



Electric cars started 2011 with a lot of hype and ended the year with a big face-plant. Combined sales for the plug-in electric movement's marquee names, General Motors' ([GM -1.54 percent](#) [1]) Chevy Volt and the Nissan Leaf, clocked in at [fewer than 20,000 units](#) [2]. IDC Energy Insights predicted that half a million plug-ins would sell in 2011, which now seems downright silly.

Don't worry, IDC. You're far from the first to get burned by your love of the electric car.

Most Have Been Wrong

Modern history is littered with lofty technological predictions that turned out to be ludicrously off-base, and the electric car has been a serial offender. In "Power Hungry," Robert Bryce uncovered a long list of false optimism:

- The New York Times declares that the electric car "has long been recognized as the ideal solution" because it "is cleaner and quieter" and "much more economical." - 1911
- The Washington Post writes that "prices on electric cars will continue to drop until they are within reach of the average family." - 1915
- The New York Times reports that the "old electric may be the car of tomorrow." The story said that electric cars were making a comeback because "gasoline is expensive today, principally because it is so heavily taxed, while electricity is far cheaper" than it was back in the 1920s. - 1959
- The Los Angeles Times says that American Motors Corp. is on the verge of producing an electric car, the Amitron, to be powered by lithium batteries capable of holding 330 watt-hours per kilogram. (That's more than two times the energy density of modern lithium-ion batteries). Backers of the Amitron

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said, “We don't see a major obstacle in technology. It's just a matter of time.” – 1967

- The Washington Post reports that General Motors has found “a breakthrough in batteries” that “now makes electric cars commercially practical.” The new zinc-nickel oxide batteries will provide the “100-mile range that General Motors executives believe is necessary to successfully sell electric vehicles to the public.” – 1979
- In an opinion piece, The Washington Post avers that “practical electric cars can be built in the near future.” By 2000, the average family would own cars, predicted the *Post*, “tailored for the purpose for which they are most often used.” It went on to say that “in this new kind of car fleet, the electric vehicle could play a big role—especially as delivery trucks and two-passenger urban commuter cars. With an aggressive production effort, they might save 1 million barrels of oil a day by the turn of the century.” – 1980

Who Holds Back The Electric Car?

Hype will continue despite this long history of dashed electric hopes. The 2006 documentary “Who Killed the Electric Car?” places blame for the “murder” on the shoulders of oil companies and automakers, absolving plug-in electric's key technology: the batteries. But battery technology, though far from blameless, is merely one of three huge hurdles the electric car must leap past to attain widespread support.

Computer chips keep improving, and solar panels get more efficient, but electric car batteries seem stuck in a rut. The new Ford ([F -0.82 percent](#) [3]) Focus electric's range? About 100 miles. GM's groundbreaking EV1 from 1999, featured in the film, maxed out at 160 miles—but it took eight hours to fully charge.

One nano-engineered solution to both capacity and charging-time issues could make both 10 times more efficient, and might reach the market in three to five years. That would be a major leap toward popular adoption, but as you can see by the LA Times quote above, advanced battery technology has been around the corner for decades. If that long-standing hurdle is finally passed this time, the possibly maybe-inevitable electric car boom still finds itself (for now) beholden to China and its hoard of rare-earth elements.

Renewable Crutch

A Prius' battery contains more than 20 pounds of lanthanum. China is the world's source for nearly all of this and most other rare-earth elements. Electric cars of many stripes make copious use of rare earths, and China—through low export quotas—has made it clear that it would rather use them in-house.

That works well for Tesla Motors ([TSLA -19.33 percent](#) [4]), but poorly for Molycorp ([MCP -3.56 percent](#) [5]). Tesla's vehicle design uses no rare-earth elements, leaving it free to push forward while other companies worry. Tesla's also providing Toyota a rare-earth-free motor for the electric RAV4, and tight supplies may well boost its partner list. On the other hand, Colorado-based Molycorp may never gain more than 15 percent of the rare-earth market, leaving it highly susceptible to price wars in the best of times. If you don't think China's willing to engage in price wars to gain

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market dominance in any industry, you haven't been paying attention.

Many Rivers To Cross

Let's say we're over those hurdles. Batteries have become good enough to support most American driving habits and the rare-earth supply crunch is out of the picture. The last obstacle is convenience. The most recent economic census found more than 118,000 gas stations in the United States, and at any given location you'll be able to fill your car up in less than five minutes. By comparison, Nissan's Leaf requires half an hour with so-called "fast" charging stations, and eight hours under normal conditions.

Of course, the electric car offers the advantage of charging at home, so every Leaf (all 9,300 of them) could have its own charging station in the garage. What about people without a place for a charging station, or people who drive often, or college kids on a road trip? There are currently 1,894 publicly accessible electric charging stations in the country, with most (as you might expect) in California. That's not going to cut it.

To reach a broad audience, electric cars need a refueling infrastructure that takes into account the diverse living, working, and driving situations of the populace. Not only that, they need it to be efficient—spending half an hour waiting for the car to charge while heading from Point A to Point B is not any driver's idea of a quick fill-up.

Charged-Up Final Thoughts

Anyone proposing a glorious plug-in future needs to understand both the troubled past and fitful present of the electric car. Moving the world toward a new technology is never easy, especially when so many diverse components are needed to make it a part of people's lives. Battery technology must improve, and it must be met with manufacturing that avoids reliance on scarce elements and a robust and rapid infrastructure. Only then can America's love affair with the electric car have—after a century of waiting—a happy ending.

Fool contributor [Alex Planes](#) [6] holds no financial position in any company mentioned here. The Motley Fool owns shares of Ford Motor. [Motley Fool newsletter services](#) [7] have recommended buying shares of Ford Motor, General Motors, AeroVironment, and Tesla Motors. Find the original article [here](#) [8].

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