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We Need to Pave the Road for 21st Century Vehicles

Continued Investment Is Key to Cleaner Skies and Highways

SOURCE: AP/Thomas Kienzle

The plug to charge the batteries is plugged in to a Toyota Prius Plug-In Hybrid on the first press day of the Frankfurt Auto Show in 2009.

By Daniel J. Weiss, Jackie Weidman |December 16, 2011

Our story begins on December 7, when *The Washington Post* published a skeptical assessment of government investments in advanced, efficient vehicles and related technologies under the Advanced Technology Vehicle Manufacturing program and grants from the American Recovery and Reinvestment Act. *The Post* questioned whether and when taxpayers would see a return on their money, and it noted that some analysts "warn that some federally subsidized companies could be forced to shut down in coming months."

In this piece we will respond to *The Post*'s criticisms while clarifying why we need to maintain investments in this program to stay globally competitive in the thriving advanced vehicles industry and build a market for clean cars that reduces our dependence on costly oil imports. *The Post* piece also ignores the Obama administration's recent rules to double car fuel economy standards between now and 2025, which will increase demand for advanced, efficient vehicles.

Why the program matters

Let's start with clarifying what the program is.

The Advanced Technology Vehicle Manufacturing program provides direct loans to support production of advanced, efficient vehicles and associated components such as advanced batteries. President George W. Bush originally signed it into law.

The program was created to help domestic auto manufacturing facilities retool to build significantly cleaner cars. So far, $5.4 billion in direct loans from the Department of Energy have been granted to six companies under the program. The loans will result in almost 42,000 jobs in 11 states, primarily around manufacturing facilities.

These loans will leverage private capital to help produce energy-efficient vehicles. Case in point: Tesla, one of the loan recipients, used its $465 million loan to raise an additional $620 million in private investment, leveraging about $1.40 for each dollar it was loaned.

The Post's veiled disparagement of the program—they imply it is a poor use of taxpayer dollars—ignores the job creation just cited as well as the Obama administration's efforts to help build a market for super-efficient vehicles by doubling fuel efficiency standards from 2012 to 2025. The new fuel economy standards will create a market for these cars by increasing demand for both efficient vehicles and their components.

The National Highway Traffic Safety Administration notes that "the standards should also spur manufacturers to increasingly explore electric technologies such as start/stop hybrids, plug-in hybrids, and electric vehicles."

The growing demand for cars that vastly exceed these standards should help these companies succeed after receiving federal loans. To meet these new standards, automakers will have to make cars and light trucks significantly more efficient, as well as produce and sell ultra-fuel-efficient cars, including plug-in hybrid vehicles and completely electric vehicles. The fuel economy proposal includes incentives that encourage companies to innovate by developing ultra-fuel-efficient technologies, such as the Alternative Fuel Infrastructure Tax Credit program that provides tax credits for installation of equipment for alternative fuels.

The Obama administration has a worthy goal to put 1 million electric cars on U.S. roads by 2015, up from 16,000 today. Achieving the 2015 goal will be a huge challenge that requires ongoing support, including investments in vehicle manufacturing, battery production, and recharging infrastructure.

We need these investments to stay competitive

Another reason to continue this program is that worldwide competition is heating up over the development of advanced batteries. Both electric vehicles and plug-in hybrids require these batteries to enable them to travel further on a single charge than such cars can operate today. Investments in domestic advance battery production such as through the Advanced Technology Vehicles Manufacturing Program ensure that the United States is not simply substituting our reliance on foreign oil with a reliance on foreign batteries as it ramps up production of electric and hybrid cars.

This scenario could very well happen. Korea, Japan, and China currently supply 95 percent of the world's advanced batteries, according to an Indiana University study. The top global producer of lithium batteries is the Automotive Energy Supply Corporation of Japan, which is affiliated with Nissan. Meanwhile, South Korea's "Battery 2020 Project" aims to make it the world's dominant battery producer within the next 10 years.

China also hopes to capture significant advanced battery market share, in part by building on its competitive advantages—cheap labor, abundant raw material, and favorable government incentives.

The Chinese government plans to invest $15.4 billion in the new efficient vehicle industry—pure electric hybrid and fuel-cell vehicles—throughout the next decade. The government projects that 10 million of these cars will be on the road 2020, up from almost none as of last year.

Chen Quingquan, chairman of the World Electric Vehicle Association, an international organization that promotes research, development, and dissemination of electric vehicles, anticipates that China will have 15 percent of the global market share for hybrid and pure electric vehicle sales by 2020.

Hu Zhaoguang, vice president at State Grid, the largest utility in China says:

> ...electric cars will grow fast in China because the government wants them to. In the next five years growth will be very rapid.

The chart below shows which nations dominate the advanced battery market.

World leaders

The top makers of automotive lithium-ion batteries by volume shipping in megawatt-hours, 2011

Company	Location	Volume shipped
Automotive Energy Supply Corp.[1]	Japan	966
BYD Co.	China	400
LG Chem Ltd.	S. Korea	221
Lithium Energy Japan[2]	Japan	99
Ener1 Inc.[3]	S. Korea	26
Primearth EV Energy Co.[4]	Japan	11
Toshiba Corp.	Japan	11
Sanyo Electric Co.	Japan	10

1 Joint venture of Nissan Motor Co, NEC Corp, and NEC Tokin Corp.
2 Joint venture of GS Yuasa Corp., Mitsubishi Corp., and Mitsubishi Motors Corp.
3 US-based company that operates in S. Korea
4 Joint Venture of Panasonic Corp. and Toyota Motor Corp.

Source: Institute of Information Technology Ltd., Japan from Wall Street Journal "Battery Companies in Need of a Boost" December 5, 2011

Then there's the United States. At the dawn of 2009, we had just two factories manufacturing advanced batteries, producing less than 2 percent of the world's supply. But with recent investments the U.S. share of global production capacity for advanced batteries is projected to rise to 40 percent by 2015.

http://www.americanprogress.org/issues/2011/12/weiss_atvm.html

Several domestic facilities already transitioned from foreign-based manufacturers to U.S. companies, showing that President Obama's advanced vehicle and battery technology investments are succeeding, leveling the playing field for U.S.-based companies and empowering them to compete in the global battery market.

For instance, Ford, maker of the hybrid Escape, previously imported most of its batteries through Compact Power, Inc., a subsidiary of LG Chem, a South Korea-based global company. Now the company buys its batteries from Johnson Controls Inc., an advanced battery manufacturer in Michigan that won a $299 million grant through the Recovery Act. The company's battery business will create a total of 3,000 jobs thanks to this grant.

Another example of this transition can be seen with General Motors and Nissan. Several years ago, when those companies were taking bids for the plug-in hybrid Volt and batteries for the completely electric Leaf, respectively, suppliers such as A123, a Massachusetts manufacturer of lithium ion batteries, lost the bids because they did not "have proven production for lithium phosphate technology."

Randy Fox, a spokesman for GM, explained that they "did not select the A123 solely on its battery chemistry." But A123 has proven its manufacturing capabilities over the past two years, and its lithium battery has a longer lifetime than alternatives.

The next step: Building the infrastructure

While production of both advanced vehicles and battery technologies increases, emphasis must be placed on solidifying infrastructure and creating a user-friendly charging system for consumers.

To meet the goal we'll need something similar to the bipartisan Promoting Electric Vehicles Act, S. 948, sponsored by Sens. Jeff Merkley (D-OR) and Lamar Alexander (R-TN), which would create "deployment communities" to "jumpstart the market penetration of electric vehicles." This program would provide start-up funds to pilot communities that plan to build publicly available recharging infrastructure for plug-in hybrids and electric vehicles.

350Green, a developer of recharging stations for plug-in hybrids and electric vehicles, studies consumer trends for electric vehicles. As they roll out recharging infrastructure in the Washington-metropolitan area, they are confident that there is a demand for vehicles, and manufacturers are producing cars to meet that demand.

David Goodridge, vice president of 350Green, said in an interview with E&E Daily (subscription required):

> [With] the demand we see, by 2015 there will be a million vehicles on the road. In the Baltimore/DC area [alone], I'd say [there will be] at least 50,000 in the next couple of years.

The bottom line: This program is worth it

The Washington Post's commentary aside, continuing government assistance for innovative vehicles is essential. It will continue to expand our domestic production rather than surrendering this market to foreign-made vehicles and batteries. It puts us on a track to domestically produce vehicles that use relatively little oil and limit carbon dioxide pollution that contributes to climate change. To increase the payoff from these federal investments in electric vehicles, much more emphasis on investments in recharging infrastructure is essential.

President Obama's modern fuel economy standards, combined with investments in manufacturing and infrastructure, will build a market for these advanced low-oil vehicles and lead to the success of the Advanced Technology Vehicle Manufacturing program while creating jobs right here in the United States.

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