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# Electric Vehicles: Ineptitude, Apathy and Piles of Taxpayer Money

By John Petersen, Contributor | November 18, 2011

The last few weeks have been a media and political circus in the U.S. as a pair of high-profile Department of Energy loan guarantees wound up in bankruptcy court. In the first case, solar power innovator Solyndra filed two years after closing a $535 million loan for a factory that never quite made it into production. In the second case, flywheel storage innovator Beacon Power (BCONQ.PK) filed about a year after scoring a $43 million loan for a 20-MW frequency regulation plant that was commissioned in June. Both are black eyes for the Obama administration's green energy policies.

Commentators are quick to note that loan guarantees to undercapitalized companies are indistinguishable from sub-prime mortgages for busboys the ultimate –heads I win, tails you lose" opportunity for the chosen few. While they re right, of course, I think a superficial analysis of individual outcomes obscures deeper and more disturbing policy choices that are having a disastrous impact on American innovation, particularly in energy storage.

The ancients taught that necessity is the mother of invention, which is why we have such a wide variety of energy storage technologies. They each serve different needs and they re each important in their own right because we live in a world where there are no silver bullets, and the best we can hope for is silver buckshot. Unfortunately, preferential governmental support for a specific technology or family of technologies is the equivalent of an intellectual abortion clinic. The mere act of choosing one technology group for favorable treatment stifles inquiry and innovation on other ideas that deviate from the government-sanctioned path of righteousness.

It s official, **OTHERS NEED NOT APPLY!**

Lithium-ion has been chosen as the golden child of energy storage, and sorry to the innovator who has an idea for a second-generation nickel metal chloride battery, a new flow battery, an advanced lead-acid battery or any other energy storage device or system that doesn t pay grovelling homage to the official orthodoxy. In the end, society suffers when government chases the pipe dreams and promises of politically connected missions. While the taxpayers usually get fleeced, investors invariably get gutted.

In August 2009, the U.S. gave a stunning **$1.2 billion of ARRA Battery Manufacturing Grants** to a handful of battery companies on the theory that good intentions would trump economics and usher in a golden age of electric cars to free America from the tyranny of imported oil. The 95 percent allocation to emerging lithium-ion technology compared to the five percent allocation to all other battery technologies combined said it all.

Nobody bothered to ask whether the world s mines could produce enough raw materials to make the batteries at relevant scale. In most cases they re still not asking, even though metal prices are climbing faster than energy prices. Power-drunk political appointees simply assumed there would be no critical supply chain or technology issues and

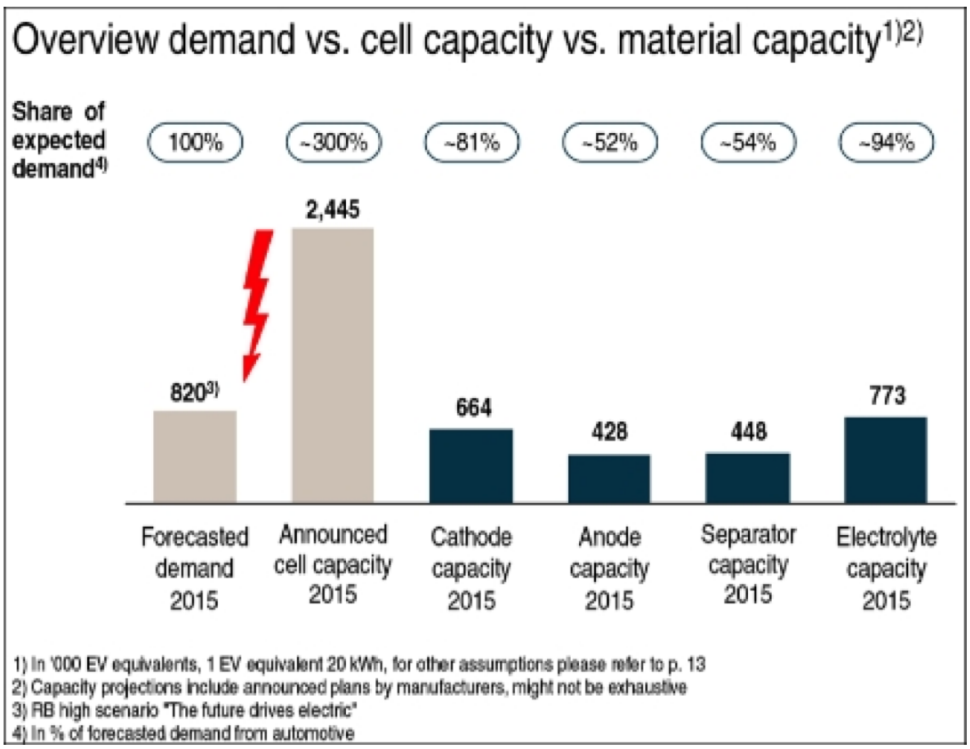
staggered down the primrose path. Similar ill-conceived plans were adopted with reckless abandon by governments worldwide.

We live on a resource challenged planet where six billion people want a small slice of the lifestyle that one billion of us have and take for granted. Our world produces almost two tons of energy resources a year for every man, woman and child on the planet, but it only produces 8.5 kg of non-ferrous industrial metals. Given the stubborn and inflexible nature of metal production constraints, it doesn t take much math skill to see the problem.

The stark reality is that we can t make enough machines to have a significant impact on global energy consumption and CO2 emissions because the world's miners can t provide the necessary raw materials. It's not just a question of lithium. The physical constraints on global production of aluminum, copper, lead, nickel, cobalt and a host of scarcer metals are staggering and the six billion people who simply want electric lights, a washing machine and maybe a refrigerator will not sacrifice their basic needs so that Tesla Motors (**TSLA**) can sell electric cars in California financed by a **$465 million ATVM loan** that it likely can t repay.

The first fruits are evident. Existing and planned lithium-ion battery plants will be able to manufacture cells for 2.4 million EVs a year by 2015, however, they can only expect 820,000 units of demand in a high penetration rate scenario. While the looming global **glut of cell manufacturing capacity is widely recognized**, a more pervasive and perverse dynamic exists in the supply chains for several critical components those factories will need if they hope to manufacture cells.

The following graph comes from an **August 2011 presentation from Roland Berger Strategy Consultants**. It shows that the global supply chain for anodes will be exhausted if cell production reaches 430,000 units per year while the supply chain for separators will be exhausted if cell production reaches 450,000 units per year. It also shows that the supply chain for cathodes and electrolytes will hit ceilings at 660,000 and 770,000 units respectively.




Since it s impossible to manufacture cells without anodes, cathodes, separators and electrolytes, I have to wonder about

the management teams that are building cell manufacturing facilities without first ensuring the integrity of their supply chains. The apparent lack of concern over supply chain issues is staggering. I can t decide whether it s reckless apathy or simply a childlike faith that the taxpayers, like doting first-time grandparents, are breathlessly waiting for any opportunity to provide whatever the golden child needs or wants.

How do you justify building cell-manufacturing capacity that s three times greater than your best-case demand?

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How do you justify building cell-manufacturing capacity that s six times greater than your supply chain can support?

Is government somehow exempt from the duty to conduct reasonable due diligence before investing?

The dominoes have already started to fall.

Ener1 (**HEVV.PK**) spent about half of its $120 million ARRA Battery Manufacturing grant before an obscenely optimistic investment in Th!nk Motors brought the company to its knees. In the process its stock tumbled from a post-grant high of $7.53 to a current price of $0.11. Now Ener1 s third management team in eight months plans to change the business focus from automotive to heavy-duty transport and grid-based applications. Thanks to $80 million of improvident borrowing and $51.8 million of additional planned goodwill impairments that are buried in an attachment to its **recent Notification of Late Filing**, Ener1 s fate will probably be decided in a bankruptcy case controlled by its largest creditor Goldman Sachs, which put a $3.75 price target on the stock last March while I was warning readers to run for cover.

How do you default on a grant?

A less dramatic but equally ominous surprise was the Johnson Controls (**JCI**) - SAFT divorce. Their ambitious plans to make automotive batteries together till death do us part couldn t even survive the commissioning of a new factory that s being built with $300 million of DOE grants. In the face of feeble automotive demand, JCI wanted to expand the joint venture's focus to encompass stationary and ancillary markets. SAFT wanted no part of that proposal because it didn t want yet another competitor for its factory in Florida that was; you guessed it, built with $95.5 million in DOE grants.

While they re keeping a stiff upper lip in public, I can t help but feel a little sorry for A123 Systems (**AONE**), which is building a factory with $249 million in DOE Grants and wants to borrow hundreds of millions more under the DOE's ATVM loan program. Their IPO prospectus spoke of strong relationships with global automotive manufacturers and tier 1 suppliers, but their automotive design wins to date are limited to a $15,000 electric upgrade to the $15,000 GM Spark and the gorgeous but corpulent Fisker Karma, which is being financed with yet another **$530 million from the public trough**.

While it s a decidedly pessimistic view I can identify over $3 billion in battery and electric vehicle projects funded by Federal money that have poor to dismal business prospects, including:

$299.2 ARRA Battery Manufacturing Grant to JCI-Saft

$249.2 ARRA Battery Manufacturing Grant to A123 Systems

$118.5 ARRA Battery Manufacturing Grant to EnerDel

$95.5 ARRA Battery Manufacturing Grant to Saft America

$528.7 ATVM Loan to Fisker Automotive

$465.0 ATVM Loan to Tesla Motors

$1,400.0ATVM Loan to Nissan Motors

I m a frequent critic of the headlong rush to build electric vehicle manufacturing capacity and infrastructure without any real proof that the planned wonder vehicles will satisfy customer needs, or that the facilities will be used for something other than homeless shelters for displaced green workers.

My fundamental problem arises from the fact that every industrial revolution in history started with a technology that proved its economic merit in a free market and then went on to change the world. Companies and indeed industries that cannot survive without government subsidies can t thrive with them. Supporting the moribund with the lifeblood of the vibrant may be compassionate, but it can t produce a good economic outcome.

Over a decade of experience in the HEV market shows that consumer demand ramped sharply for several early years, hit a market penetration rate of about three percent and then flatlined. Over the last three years, **clean diesels and plug-ins have begun to cannibalize the HEV market**, but they've done nothing to bring new buyers to the fold.

Once again, governments are pushing on a string and trying to force the market to embrace electric drive, the only vehicle class with an unbroken 100-year history of failure. Once again governments will fail, just like they did with other panacea energy solutions including fast breeder reactors, synthetic fuels, hydrogen fuel cells, clean coal and the ever popular corn ethanol and biodiesel that turn food into fuel and make both more expensive.

In late 2008 the world fell into the mother of all recessions as it reached the peak of a decades long debt supercycle. Now the piper is demanding his due and individuals, businesses and governments around the world are being forced to reduce their crushing debt burdens. In the midst of a global deleveraging, I don t see how insolvent governments can continue to use public funds to subsidize the ideology-based personal consumption of eco-royalty. How many bottomless pits can one nation's taxpayers be expected to fill?


Even if our governments are willing to continue this foolishness, I don t see how a vibrant market for EVs can possibly develop among real world consumers who can buy gasoline versions of a Lotus Elise, Ford Focus or GM Spark for half the price of their electric counterparts.

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***Disclosure:*** *None.*

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http://www.renewableenergyworld.com/rea/news/article/2011/11/electric-vehicles-ineptitude-apathy-and-piles-of-taxpayer-money