

As the election draws near, the failures and successes of the Federal stimulus funds are in sharp focus. Ed Dodge takes a look at that poster-child for failure, Solyndra, asking — and answering — probing questions.

SOLYNDRA: HYPE AND REALITY



Questions have been swirling since Solyndra went into bankruptcy. What does this bankruptcy indicate about the appropriate role of government in helping new technologies?

Does Solyndra indicate that solar electricity is overhyped and a poor investment, or is it a single business failure due to bad management? Is Solyndra an example of political corruption and crony capitalism or the victim of unfair foreign competition?

Solyndra

Solyndra was a manufacturer of an innovative type of thin film photovoltaic panels using CIGS (copper indium gallium diselenide) as the photoelectric material. In an era of high — and thought to be rising — silicon prices, Solyndra's approach attracted attention and investors.

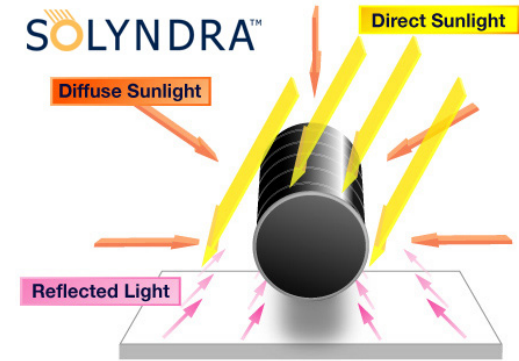
Solyndra's other unique technological approach was their tubular panels. Being round instead of flat, they always presented an optimal angle to the sun while also capturing reflected sunlight, particularly when mounted above a white surface. Their tubular modules were intended to be cheaper to install than conventional panels because they came mounted in racks that allowed air to move freely. Air flow meant they were subject to less wind and snow loading, requiring less ballast and structural supports, which translated to reduced installation and system costs.

No other company was attempting the same approach.

Political Corruption?

Solyndra was a high profile company. Many respected and well funded venture funds, such as [RedPoint Ventures](#), [CMEA Capital](#) and [RockPort Capital Partners](#), invested heavily. One of Solyndra's biggest investors, George Kaiser of Argonaut Private Equity, was a top fund-raiser for President Obama and a frequent White House visitor. Solyndra's founder and CEO, Chris Gronet, was himself well known in Washington. The combination of Mr. Kaiser

and Mr. Gronet fueled speculation of political favoritism. A congressional investigation revealed



no inappropriate lobbying, a fact supported through analysis by [Bloomberg](#), which showed that political criticism was largely overblown.

In fact, Solyndra made its original application to the DOE in 2006. The Bush Administration made its own attempts to fast track the company, but it still took 3 years for the loan to finally be approved. During the process, Solyndra was subject to numerous rounds of detailed financial auditing by DOE professional staff, not by political appointees. The Obama administration then picked up the baton, hoping to claim its success. In the end,

Solyndra became a political catastrophe when the company failed.

Management Ineptitude?

To understand why Solyndra failed, it is instructive to review the company's history. Documents reveal a firm whose management had faith in its novel technology, but chewed through cash, while failing to see the shifting winds in the industry. The Chinese government massively funded their photovoltaic industry, leading to a huge surge of panels coming to market, resulting in a 50% price drop from 2009-2011. In addition, silicon prices dropped dramatically, removing the benefits that Solyndra hoped to enjoy by their novel, non-silicon based technology. ▶

Key Dates

DOE Actions
Investor Actions
Market Impacts

2005	May	<ul style="list-style-type: none"> Solyndra founded.
	July	<ul style="list-style-type: none"> Bush Administration signs the Energy Policy Act of 2005, creating the DOE 1703 Loan Guarantee Program.
2006	December	<ul style="list-style-type: none"> Solyndra applies for 1703 loan.
2007	Late 2007	<ul style="list-style-type: none"> DOE approves Solyndra loan as one of 16 companies ready to move forward with application process.
2008	November	<ul style="list-style-type: none"> Silicon prices remain high. Solyndra is very attractive to investors. Raising \$144 million; total now \$450 million.
	2009	<ul style="list-style-type: none"> January: Bush administration takes Solyndra before a DOE credit review committee that remands the loan back to DOE for more information. March: The committee moves the strengthened loan application forward. June: Chinese silicon begins to hit the market and prices begin to drop. In the next two years PV prices would drop 50%. September: <ul style="list-style-type: none"> Solyndra raises an additional \$219 million venture capital. The DOE closes on the \$535 million loan guarantee after six months of due diligence. Application to closing the process took 3 years. January-June: <ul style="list-style-type: none"> PV prices continue to slide Investors and analysts question Solyndra's ability to compete. Solyndra pulls its IPO. Raises another \$175 million from investors. May: Obama visits Solyndra facility, is photographed holding tubes while talking with founder Chris Gronet. July: Gronet replaced as CEO. November: <ul style="list-style-type: none"> Solyndra closes Fab 1 facility. Company concentrates on DOE funded Fab 2, on time and on budget.
2011	February	<ul style="list-style-type: none"> Liquidity crisis. Investors provide \$75 million to restructure loan guarantee. DOE chooses to give the company a fighting chance.
	March	<ul style="list-style-type: none"> Republican Representatives complain that DOE funds are not being spent quickly enough. House Energy and Commerce Committee Chairman Fred Upton (R-MI): "despite the Administration's urgency and haste to pass the bill [the American Recovery and Reinvestment Act] ... billions of dollars have yet to be spent."
	August	<ul style="list-style-type: none"> Amidst falling PV prices, analysts worry that Solyndra cannot compete. DOE refuses to restructure the loan a second time.
	September	<ul style="list-style-type: none"> Solyndra declares bankruptcy. Closes manufacturing facility and lays off 1,100 workers.

Through Oct. 2009 Solyndra had raised approximately \$970 million through equity financing. The company steadily lost money every year. While not unusual for tech start-ups, Solyndra showed no clear path to profitability. The company consumed vast amounts of capital, showing losses of \$27 million in 2006, \$114 million in 2007, \$232 million in 2008, and \$119 million in the nine months of 2009. It also spent \$1.38 billion constructing its Fab 2 facility, which involved inventing a custom robotic assembly line. Solyndra projected improved performance and lower prices from its new plant, but the projections were never able to bear fruit.

By 2009, analysts were dubious of the production numbers at Solyndra. Based on their overall sales data, it appeared that their panels cost over \$6 per watt to manufacture and sold for \$3.42 per watt, compared to industry leaders who were at or below one US dollar. On the up-side, Solyndra had significantly lower installation costs than flat panels. At \$.50 per watt compared to \$2-4 per watt, the lower installation costs could reduce the difference in pricing if the panels performed as advertised.

But by 2010 customers were complaining that the Solyndra tubes were not producing the expected power outputs. The company officially de-rated its listed power output by 3.5% in 2010, which company insiders considered to be a disaster.

As a result of internal problems and external industry shifts, Solyndra called off its IPO in 2010. The founder, Chris Gronet, was replaced as CEO in July 2010. Mr. Gronet had insisted on maintaining high prices, and argued with customers who complained of poor product performance. Gronet also abandoned the company's traditional sales channels in pursuit of higher paying customers. These actions further burned bridges. When President Obama visited the company in May 2010, Solyndra was already in big trouble. It was soon clear that the White House had made a political mistake by attaching itself to Solyndra's star.

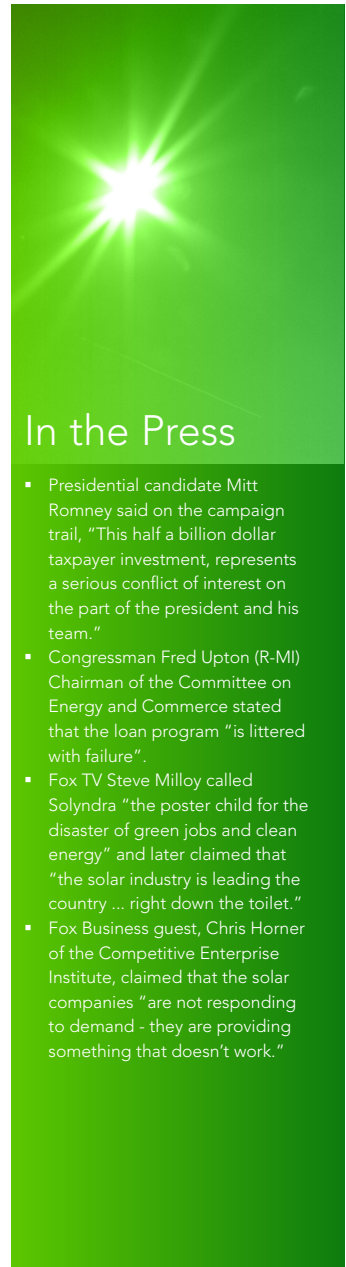
Summing up Mr. Gronet's strengths and weaknesses, a former employee said, "Chris is basically a decent guy, but he's like many high achievers in Silicon Valley. There was irrational exuberance about the cylindrical design. One of the most dangerous things business people

can do is fall in love with their product."

Changing Political Landscape

Recently the US Department of Commerce and the World Trade Organization (WTO) gave support to the argument that the Chinese policy of heavily subsidizing solar manufacturers was in violation of WTO rules. Chinese manufacturers, such as Sunzone, are able to go through an expedited financing and permitting process in a matter of months, receive low interest loans, and desirable land at well below market prices. China has made a commitment to lowering manufacturing costs to boost exports to the US and Europe, where the governments have subsidized consumers of PV through feed-in-tariffs, cash grants and mandates to utilities to use renewables.

In May, 2012 the US Department of Commerce imposed tariffs on imports of Chinese solar panels after finding that Chinese manufacturers were selling panels below cost. However, the changes came too late to help Solyndra.▶



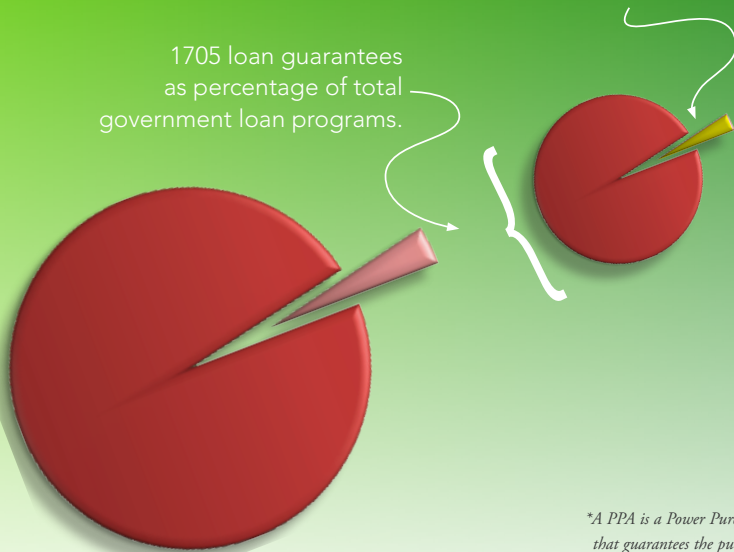
In the Press

- Presidential candidate Mitt Romney said on the campaign trail, "This half a billion dollar taxpayer investment, represents a serious conflict of interest on the part of the president and his team."
- Congressman Fred Upton (R-MI) Chairman of the Committee on Energy and Commerce stated that the loan program "is littered with failure".
- Fox TV Steve Milloy called Solyndra "the poster child for the disaster of green jobs and clean energy" and later claimed that "the solar industry is leading the country ... right down the toilet."
- Fox Business guest, Chris Horner of the Competitive Enterprise Institute, claimed that the solar companies "are not responding to demand - they are providing something that doesn't work."

The US DOE (Department of Energy) Loan Program was created in 2005 under the Bush Administration. The program enjoyed bipartisan support for financing the growth of innovative clean energy technologies. Solyndra was funded under the 1705 loan guarantee program, which is valued at \$16.1 billion and constitutes 1.7% of the federal government's loan guarantee programs across all agencies. Solyndra's guarantee of \$535 million is medium sized for the fund, representing 3% of the portfolio. Overall, 87% of the funds have been used to back 18 power generation projects, with low risk of default because they were required to have a Power Purchase Agreement (PPA*). The fund was constructed with the expectation that some loans would not be repaid. Of the original \$16.1 billion, \$2.47 billion was appropriated for project losses. Despite the failure of Solyndra and other recipients, the overall fund has performed as expected.

Solyndra loan as percentage of total 1705 loan guarantee.

1705 loan guarantees as percentage of total government loan programs.



*A PPA is a Power Purchase Agreement that guarantees the purchase of energy, at a set price, produced by the project.

Conclusion

The backlash from Solyndra's failure continues to ripple through the political landscape. While Solyndra demonstrates the risks inherent in promoting cutting edge technologies, many other start-up companies will fail — or overcome — their own technological, economic or management failures. Investors pick their own 'failure rates', subsidizing mistakes by successes. In a risky business, it is nearly impossible to predict which companies will succeed or which possess the eagerly sought-after technological breakthrough.

If, as a society, we want vibrant renewable energy industries — with their high capital costs — I believe we are going to need to invest public funds as the Chinese are doing. Solyndra failed due to high costs, management errors and stiff foreign competition, but other firms may be able to learn from Solyndra's insights and mistakes.

As Mr. Zhao, of Chinese manufacturer Sunzone said, "Who wins this clean energy race really depends on how much support the government gives." The energy industries — coal, oil, gas and nuclear — have long enjoyed some of that support, and they are not alone. Defense, agriculture, utilities, telecom, aerospace, computer and internet businesses all benefit from government largess

and lobby heavily for legal positions that favor their industries. For all the talk of free markets, critics on the left and right only criticize businesses they don't like, while they always encourage the support of the industries they prefer. Much of the criticism of Solyndra smacks of partisanship and ideology.

The Chinese have made a commitment to growing a large photovoltaic industry and have put massive funds behind it. The ultimate question is, what is America willing to do to compete in the international markets? The DOE loan program exists because it is difficult for early stage energy companies to get over the hump from proof of concept to commercialization. The economies of scale are too high for the capital markets to take on the challenge alone. If we want America to have a vibrant clean tech industry, it is going to require some measure of government assistance. Otherwise, foreign competition will beat us to it. ■

Edward Dodge is an experienced technology professional with a background in renewable energy and information technology. He has an MBA and a BS from Cornell University.

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