The American Energy Initiative: The Cost of Loan Guarantees

Testimony Before
The Committee on Energy and Commerce Subcommittee on Energy and Power
United States House of Representatives

July 12, 2012

David W. Kreutzer, Ph.D.
The Heritage Foundation

Summary

The Section 1705 loan program is based on flawed understanding of capital markets. The loan guarantees misallocate capital, reduce productivity, and burden federal finances. Loan-guarantee recipients should be able to procure private financing if their projects are truly commercially viable.

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CONGRESSIONAL TESTIMONY

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My name is David Kreutzer. I am Research Fellow in Energy Economics and Climate Change at The Heritage Foundation. The views I express in this testimony are my own and should not be construed as representing any official position of The Heritage Foundation.

Investment

The list of investment opportunities is virtually unlimited, but the capital to finance them is strictly limited. This requires that choices be made among the different investments. It makes the most sense to apply capital to those investments with the highest expected return. This is what capital markets do.

All investments are uncertain, but some have a smaller chance of success than others, or are at least perceived to have smaller chances. This must be factored into the investment decision. A project that has a 99 percent chance of returning $100 is worth twice as much as a project that has a 49.5 percent chance of returning $100. So the projects with lower chances of success must be associated with higher rewards when they do succeed or they will not be chosen. Nor should they be chosen if they do not offer a higher reward.

It is an open question how much additional reward is required to offset additional risk. Investments with greater risk usually require a more than proportionally larger reward to compensate for the risk. However, because investments can be pooled, allowing investors to take small shares of a large number of high-risk investments, the premium for accepting risk need not be huge.

Investments are made before returns are received. There is always a valley of death between the initiation of a project and the point where it starts generating revenue. The wider the valley (that is, the more distant the return), the less attractive is the investment. Suppose, for instance, there are two $50 investments that each yield $100. Project A returns the $100 in five years, while Project B returns the $100 in 10 years. If Project A is chosen, then the investor can repeat the investment starting in year five and get another $100 at the end of the tenth year. So, choosing Project A generates a net of $50 in year five and another $100 in year 10—all from the initial $50 investment. Choosing Project B would forego the additional $50 in year five. There is no sense in pretending that the length of the payback time doesn't matter.

However, contrary to popular assertion, private investors do finance projects that take longer than the next quarterly report to pay off. Amazon.com was founded in 1994 and went public in 1997 with a business plan that did not expect a profit for four to five years. The dot-com bust delayed Amazon's progress, and it made its first full-year profit in 2003.[1] Pharmaceutical investments cost more and can take longer to pay off. A recent calculation showed that the average cost of a new drug was over $4 billion[2] and that the time from discovery to market was about a decade.[3] For an appropriate return, investors

[1] Saul Hansell, "TECHNOLOGY; Amazon Reports First Full-Year Profit," *The New York Times*, January 28, 2004, http://www.nytimes.com/2004/01/28/business/technology-amazon-reports-first-full-year-profit.html (accessed July 9, 2012).
[2] Matthew Herper, "The Truly Staggering Cost of Inventing New Drugs," *Forbes*, February 10, 2012, http://www.forbes.com/sites/matthewherper/2012/02/10/the-truly-staggering-cost-of-inventing-new-drugs/ (accessed July 9, 2012)
[3] Michael Dickson and Jean Paul Gagnon, "The Cost of New Drug Discovery and Development," *Discovery Medicine*, June 20, 2009, http://www.discoverymedicine.com/Michael-Dickson/2009/06/20/the-cost-of-new-drug-discovery-and-development/ (accessed July 9, 2012).

will wait. People will wait 10 years for Christmas trees to grow and 20 years for whisky to age before they see a profit.

Private investors will finance risky projects, new projects, and projects with long payback periods. None of these conditions is an example of market failure or a call for loan guarantees.

Section 1705 Loans

In October 2010, the director of the Department of Energy's Loan Program Office, David Frantz, explained the department's loan-guarantee programs funded by Section 1705 of the American Recovery and Reinvestment Act.[4] He listed the criteria that projects must meet to qualify for loan guarantees. Two of the criteria presented were mutually exclusive. The first criterion was that projects should be commercially viable. The second was that those seeking funding must demonstrate that the projects cannot get private financing.

"Commercially viable" has to mean that the investment will pay off—not just repay the money but pay a rate of return that is at least as good as the best investment that does not get funded. That is the sort of project that investors are always seeking. A loan guarantee might help to finance a project that otherwise would not get financed because the expected rate of return was not high enough compared to other investments. If so, then

[4]U.S. Department of Energy, "Loan Guarantee Program Status Update," October 29, 2010, *http://www.uschamber.com/sites/default/files/issues/environment/files/LGP%20Update%20_Chamber_102910_Final.pdf* (accessed April 10, 2011).

capital is diverted from a better project to a worse one, and the overall productivity of capital declines.

Some might argue that a less-than-full-employment economy removes the need for meeting rate-of-return criteria; that is, that the resources will come from the slack in the economy. This reasoning fails for at least two reasons.

First, the resources to actually produce or construct the project do not come entirely from the unemployment line. They come from productive employment elsewhere.

Second, even if the resources came entirely from the unemployed, there are still alternative projects that are not undertaken that could offer a better return.

A program that seeks to fund projects that are both market viable and unable to get private financing will have to settle for projects that meet just one or neither of those criteria. That is, the projects are likely to fail, or they could have gotten private financing.

Section 1705 Recipients

The majority of the Section 1705 loans fall into two categories: Either they were not market viable, as demonstrated by subsequent economic performance, or they should have been able to get private financing for truly viable programs. In the first category:

- Solyndra received a loan guarantee for $535 million in the fall of 2009. In the spring of 2010, it failed to complete its initial public offering after an independent audit questioned the ongoing viability of the firm.[5] Then, in the fall of 2010, the firm closed one of its manufacturing facilities and laid off 180 workers.[6] In the fall of 2011, Solyndra filed for bankruptcy and laid off all but a handful of its remaining employees.
- Beacon Power received a $43 million loan guarantee in July 2009. Beacon Power also filed for bankruptcy in the fall of 2011.[7]
- Abound Solar laid off 125 employees and filed for Chapter 7 bankruptcy July 2, 2012, after drawing $70 million of its $400 million loan guarantee.[8]
- Nevada Geothermal Power's Blue Mountain geothermal project received a loan guarantee for $98.5 million. Since fall 2010, the price of Nevada Geothermal Power has fallen more than 90 percent to $0.04 per share.[9]

In the second category are projects whose owners have the resources and sophistication to arrange private financing:

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[5]David Freddoso, "Obama's Big Green Gamble: Solyndra," *The Washington Examiner*, July 14, 2010, *http://washingtonexaminer.com/node/65146#* (accessed April 10, 2011).
[6]Ronnie Greene and Matthew Mosk, "Green Bundler With the Golden Touch," *The Huffington Post*, March 30, 2011, *http://www.huffingtonpost.com/2011/03/30/green-bundler-with-the-golden-touch_n_842863.html* (accessed April 10, 2011).
[7] Reuters News Service, "Beacon Power Bankrupt; Had U.S. Backing like Solyndra," October 31, 2011, http://www.reuters.com/article/2011/10/31/us-beaconpower-bankruptcy-idUSTRE79T39320111031 (accessed June 14, 2012).
[8] Reuters News Service, "Abound Solar Files to Liquidate in Bankruptcy," July 2, 2012, http://www.reuters.com/article/2012/07/02/us-aboundsolar-bankruptcy-idUSBRE86118020120702 (accessed July 9, 2012).
[9] Bloomberg/Business Week Stock Quote, http://investing.businessweek.com/research/stocks/charts/charts.asp?ticker=NGP:CN (accessed June 14, 2012).

- Caithness Shepherds Flat project received a $1.3 billion loan guarantee. The investment partners include General Electric, whose market capitalization is $170 billion.
- Cogentrix of Alamosa received a loan guarantee for $90.6 million. Cogentrix is owned by a subsidiary of Goldman Sachs, a company that has a market capitalization of $47 billion and is one of the most successful financiers, if not the most successful financier, in the world. For instance, Goldman Sachs handled $529 billion of mergers and acquisitions in 2011.[10]
- Exelon received a loan guarantee of $646 million. Exelon has a market capitalization of $32 billion.
- Granite Reliable received a loan guarantee of $168.9 million. Granite is 75 percent owned by Brookfield Asset Management, whose market capitalization is $20.5 billion.
- Mesquite Solar 1 received a loan guarantee of $337 million. Mesquite is owned by a subsidiary of Sempra Energy, whose market capitalization is $16.5 billion.
- NextEra Energy Resources received loan guarantees of $2.3 billion for two projects. NextEra has a market capitalization of $20 billion.
- NRG received loan guarantees of $3.8 billion for three projects. NRG Energy has a market capitalization of $3.9 billion. NRG's biggest loan guarantee was for its BrightSource project, where NRG's partners include subsidiaries of BP, Chevron, and Statoil, who together have a market capitalization of more than a half-***trillion*** dollars.

[10] Christine Harper, "Goldman Sachs Winning CEOs as Global No. 1 With M&A-Equity Deals," Bloomberg News, December 28, 2011, http://www.businessweek.com/news/2011-12-28/goldman-sachs-winning-ceos-as-global-no-1-with-m-a-equity-deals.html#p2 (accessed July 10, 2012).

- Prologis, a real estate trust with a market capitalization of $15.2 billion, received a loan guarantee of $1.4 billion.
- Abengoa, a Spanish firm with a market capitalization of $1.3 billion, received loan guarantees totaling $2.7 billion for three projects.

It is not credible that firms worth $10 billion, $20 billion, or $200 billion cannot find financing for $1 billion commercially viable projects. Either the projects are expected to generate below-market rates of return or the owners simply want the interest-rate subsidy that comes with a guarantee from the federal government.

Loan Guarantees Misallocate Capital

The Antelope Valley Solar Ranch (AVSR), now owned by Exelon, illustrates how loan guarantees can misallocate capital and reduce overall output.

The AVSR project was originally started by First Solar. Hours after receiving the $646 million loan guarantee, First Solar sold the project to Exelon for $75 million. Most of the work was yet to be done on the project. So what Exelon purchased with its $75 million were the plans, the obligation to buy the materials and actually build the solar farm, and two very valuable financial assets. The first of these assets was a set of 25-year power-purchase agreements with two California utilities. The second was the $646 million loan guarantee.[11]

[11] David Kreutzer, "Money Loser + $100 Million Subsidy = Money Maker?" *The Foundry*, The Heritage Foundation, February 13, 2012, http://blog.heritage.org/2012/02/13/money-loser-100-million-subsidy-money-maker/.

For some reason, the price for the power-purchase agreements is confidential, so we cannot determine their value to the AVSR package sold to Exelon, but we can estimate the value of the loan guarantee. If a federal loan guarantee cuts the interest rate by two points, say from 6.5 percent to 4.5 percent, the loan would cut $9 million per year from the finance costs on the $646 million, 20-year loan. This saving would have a present value of about $100 million. An 8-K filing First Solar made with the Securities and Exchange Commission reveals that First Solar sold the project to Exelon for only $75 million. This implies that without the loan guarantee, the project's net expected value would have been negative. Of course, the overall cost of the project to Exelon will be much more than $75 million, but the project also comes with power-purchase agreements that guarantee a revenue stream.

So the present value of the revenue stream appears to be $25 million *less* than the present value of the costs without the loan guarantee. If this were the case, it is not too surprising that Exelon would not want to privately finance the project regardless of Exelon's market capitalization.

Guarantees Are Not Costless to the Government

Though it is obviously false in retrospect, one assertion early on was that loan guarantees would not cost the government much since the loans would be repaid. As noted above, the Section 1705 program has already lost about $650 million.

Another apology for the losses is that they should be expected when financing risky ventures. For instance, venture capitalists know that some of their investments will not pay off.

There are big differences between venture funding and guaranteed loans. First, venture capitalists lose their own money when projects fail. Continued failure gets them out of the business of misallocating capital. Second, venture capitalists have equity positions that allow them to profit from successful investments. These profits are what allow them to suffer the occasional loss. The Section 1705 loan program gave the government no equity position. In any event, it would also be inappropriate for the government to get into the equity side.

CO_2 Emissions

Another argument for subsidizing renewable energy is that it will cut CO_2 emissions. Whether it is worth cutting CO_2 emissions or not, it certainly does not make sense to cut them with an expensive program when a less costly technology achieves the same reductions.

With their heavy subsidies, solar and wind power combined generate about 3 percent of total electricity in the U.S. Compared to coal-generated electricity, this would save about 110 million metric tons of CO_2 emissions per year. Natural gas generated 15.8 percent of electricity in 2000. By 2011, natural gas generation grew to 24.1 percent. Because natural gas emits only 63 percent as much CO_2 per unit of electricity as does coal, this market-

share increase of 8.3 percent reduced CO_2 emissions by 120 million metric tons.[12] The latest data show that natural gas now generates about 32 percent of electricity, which nearly doubles the CO_2 reductions calculated for last year. In short, just the *increase* in generation from unsubsidized natural gas over the past 12 years cut more CO_2 per year than all the solar and wind power combined.

Conclusion

The Section 1705 loan guarantees are based on the false premise that the Department of Energy can systematically discover commercially viable investment projects that private investors have overlooked. The evidence indicates that the Section 1705 program funded projects that were either not commercially viable or, were they viable, could have been funded by the owners. These loan guarantees misallocate capital, have a significant cost to the federal government, and fund projects that do not reduce CO_2 emissions as effectively as the unsubsidized move to cheap natural gas has done.

[12] David Kreutzer, "U.S. Way Ahead in Clean Energy Race," *The Foundry*, The Heritage Foundation, October 25, 2011, http://blog.heritage.org/2011/10/25/u-s-way-ahead-in-clean-energy-race/.

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