



Reason Foundation



Stimulating Green Electric Dreams: Lobbying, Cronyism and Section 1705 Loan Guarantees

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Executive Summary

Over the past decade, federal and state governments have significantly increased their support for nonconventional energy technologies, ranging from wind-powered electricity generators to battery-powered cars. One of the largest such programs was the Department of Energy's Section 1705 Loan Guarantee Program—the subject of this study.

The \$16 billion dollar program “invested” in various failed enterprises, including Solyndra and Abound Solar. But those are just the tip of the iceberg of the DOE's poorly diversified portfolio of mostly “junk” grade investments, many of which, years later, are still “under construction.”

So why did the DOE systematically make loan guarantees to companies that are financially unsound? We found that many recipients had close ties to those in charge of approving the loan guarantees. Moreover, we found that the DOE allocated funds broadly in proportion to applicants' lobbying expenditures. In

other words, it is likely that loan guarantees were allocated not on the merits of the projects but, rather, according to the degree to which the applicants were able to use political connections.

The DOE's Section 1705 Loan Guarantee Scheme represents a multi-billion dollar transfer from taxpayers to political cronies. But if that weren't bad enough, this green cronyism likely undermined the very thing it was supposed to support: by encouraging private investment in unduly risky projects, it diverted money away from more sustainable projects that might actually result in environmental improvements.

To protect taxpayers from further waste and to increase the sustainability of investments in technologies that result in environmental protection, the government should stop guaranteeing loans for “green” energy projects immediately.

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Part 1

Introduction

Over the past decade, federal and state governments have significantly increased their support for nonconventional energy technologies, ranging from wind-powered electricity generators to battery-powered cars. This support has come in many different forms, including: mandatory minimum amounts of “renewable” energy, such as federal gasoline standards and state renewable portfolio standards for electricity generation; emission restrictions, such as California’s zero emission vehicle standard; import restrictions, especially limits on ethanol imports, and various other subsidies.

This paper evaluates the allocation of one specific source of such support: the loan guarantees funded by the American Recovery and Reinvestment Act that the Department of Energy (DOE) offered to certain classes of nonconventional energy technologies. The paper begins with a description of the loan-guarantee program, followed by an analysis of the types of companies and projects that received funding and the status of those projects. In an attempt to understand the allocations, we look at the relationship between lobbying expenditures and allocations, testing the hypothesis that the government allocated funds in proportion to applicants’ lobbying expenditures.

Part 2

The Department of Energy's Section 1705 Loan-Guarantee Program

Title XVII of the Energy Policy Act of 2005 introduced “incentives for innovative energy technologies” in the form of loan guarantees of up to 80 percent of an eligible project’s cost.¹ Section 1703 of the act specifies that eligible projects should: “(1) avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases, and (2) employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued.”²

In 2009, the American Recovery and Reinvestment Act (ARRA) amended Title XVII by adding Section 1705, a temporary loan-guarantee program. Section 1705’s eligibility criteria were wider than those for Section 1703, with the following project types being potentially eligible:³

- Renewable energy systems, including incremental hydropower, that generate electricity or thermal energy, and facilities that manufacture related components.
- Electric power transmission systems, including upgrading and reconditioning projects [those that replace existing conductors or wires].
- Leading-edge biofuel projects that will use technologies performing at the pilot or demonstration scale that the [Energy] Secretary determines are likely to become commercial technologies and will produce transportation fuels that substantially reduce life-cycle greenhouse gas emissions compared with other transportation fuels.

In contrast to Section 1703, Section 1705 does not in general require that the technologies employed be either new or significantly improved. In addition,

whereas Section 1703 loan guarantees required recipients to put up an amount equal to the “credit subsidy cost” (i.e., the estimated net present value of the loan guarantee) unless a separate appropriation provided for that amount, the ARRA included a \$2.435 billion appropriation (after rescissions) to cover this cost.⁴

There were some additional restrictions: recipients were required to pay wages at rates not less than those prevailing on similar work in the locality, loan guarantees were limited to \$500 million, and the program was set to expire on September 30, 2011.⁵

Twenty-six projects received loan guarantees under Section 1705.⁶ Next, we describe some characteristics of these projects.

Part 3

Risk and Diversification of the Section 1705 Loan Portfolio

The higher an investment’s risk, the lower the probability of success and the higher the probability of failure. So, why take any risk? The answer is that the potential return of some risky investments is higher than that of some less risky investments. The Department of Energy (DOE) was not obligated to take significant risks with its Section 1705 loan guarantees, however, nor did it have any statutory requirement to favor projects with a higher potential return on investment. Instead, the statute required a “reasonable prospect of repayment by the Borrower.”⁷ So it is intriguing that credit rating agencies rated most of the projects the DOE funded as “highly speculative”—i.e., very risky. Indeed, 22 out of the 26 projects were rated as “junk” grade investments or lower, and the other four projects were rated in the “BBB” range, the lowest “investment” grade class.⁸ (See Appendix B for a list of each project’s credit grade.) It’s hard to tell if other companies that applied for Section 1705 loans, but were denied, were more speculative or less speculative than the companies that ended up receiving funding. This is because the DOE has failed to maintain records of the creditworthiness of denied loan applications—possibly in violation of the Federal Records Act.⁹

One way to mitigate risk is through diversification: the investment equivalent of not putting all your eggs in one basket. Investing in multiple projects (or companies) with different risk and return characteristics is supposed to increase net returns and reduce the chance of losing money. While there have been occasions when most asset classes have been affected simultaneously (such as the 2008 financial crisis), such events are rare. Diversification is generally considered a good investment strategy, and most private investment managers

employ it. It would also seem to be good practice for government agencies “investing” taxpayers’ money.

Diversification can take several forms. For the purposes of energy technology investments, the most relevant are diversification among types of technology and diversification among companies. As Figure 1 shows, the DOE’s Section 1705 loan guarantees were concentrated in just one technology, solar, which received 83 percent of all funds. Wind received 11 percent, and no other technology received more than 3 percent.

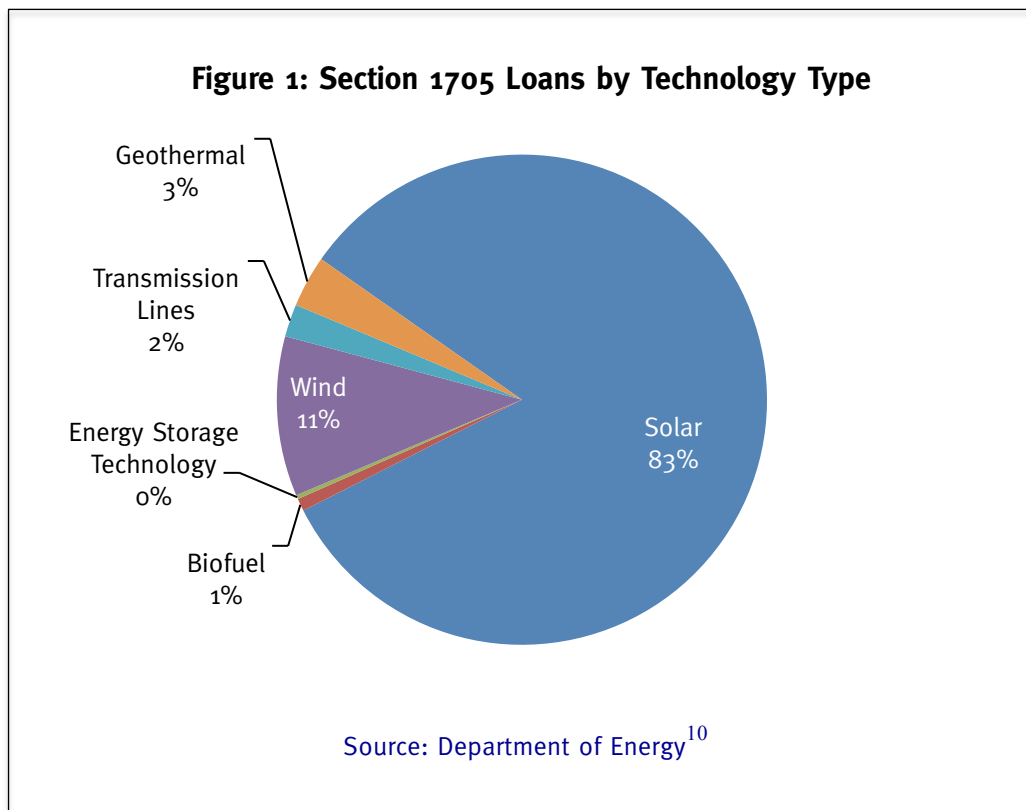
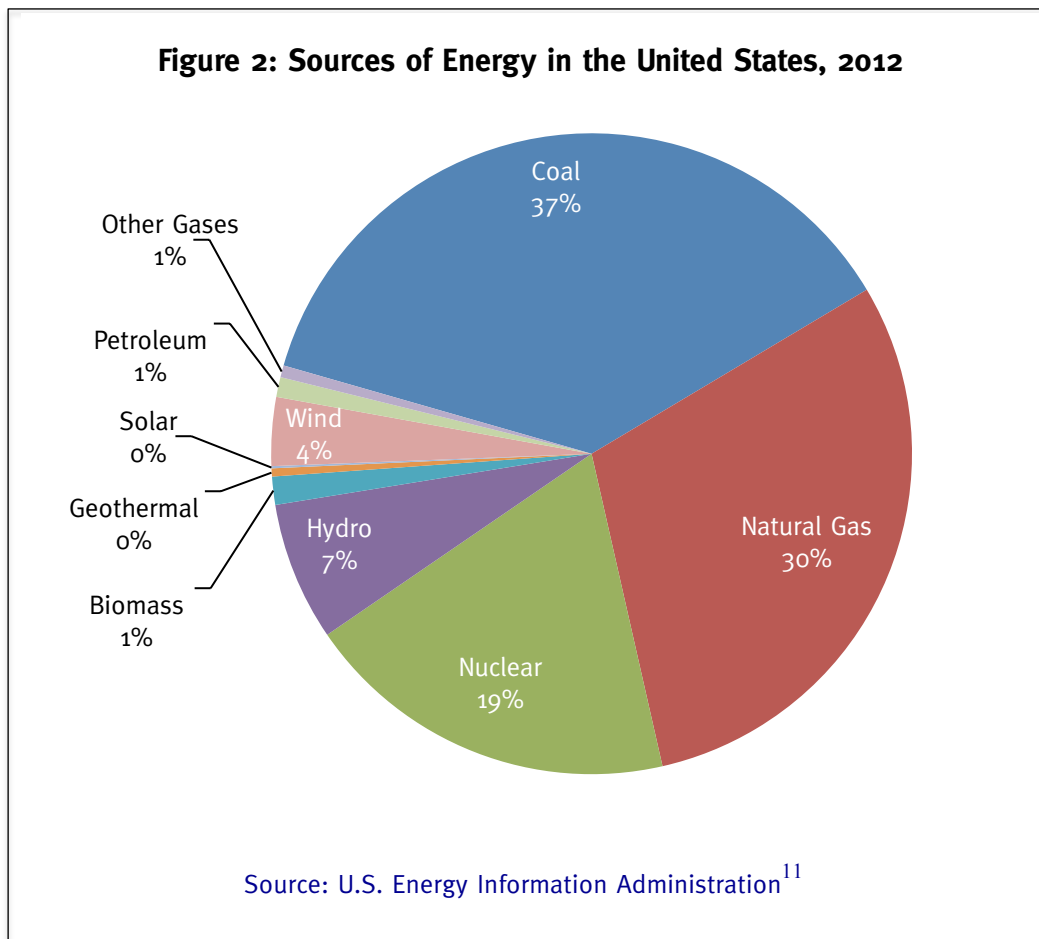


Figure 2 shows the mix of energy used for electricity generation in the United States in 2012 as estimated by the Energy Information Administration. Coal, natural gas and nuclear made up 86 percent of electricity generation capacity. Of the nonconventional energy sources, only hydro made up a significant proportion (approximately 7 percent). Wind made up 3.46 percent, while solar made up 0.11 percent—far lower than biomass (1.42 percent) or even geothermal (0.41 percent). It seems odd that the DOE would allocate the most Section 1705 funding to the technology that has the least market share (solar). Presumably, solar has a low market share because it is not cost effective

compared with alternatives in most applications. Yet, if the DOE wanted to increase the amount of power produced from low-carbon sources, wouldn't it make sense to fund the low-carbon sources that are most cost effective and therefore most likely to be self-sustaining once the government stops subsidizing them?



On the second measure of diversification, the DOE also seems to have done a poor job, with excessive concentration of investment in a few companies. For instance, just four firms received 68 percent of all loan guarantees allocated under the Section 1705 program, and three of those four are also predominantly invested in solar energy-generation projects. Through four solar generation-related projects, energy conglomerate NRG Energy received the largest amount in loan guarantees: a total of \$5.2 billion, representing 32.5 percent of total funds.

The concentration of loan guarantees to highly risky enterprises combined with a failure to mitigate risk through diversification is disconcerting. This assessment concurs with the conclusions of a 2012 U.S. House Oversight Committee report, which stated that committee staff had identified a pattern of poor management and unconstrained lending that resulted in a “high risk, speculative and undiversified loan portfolio.”¹²

Part 4

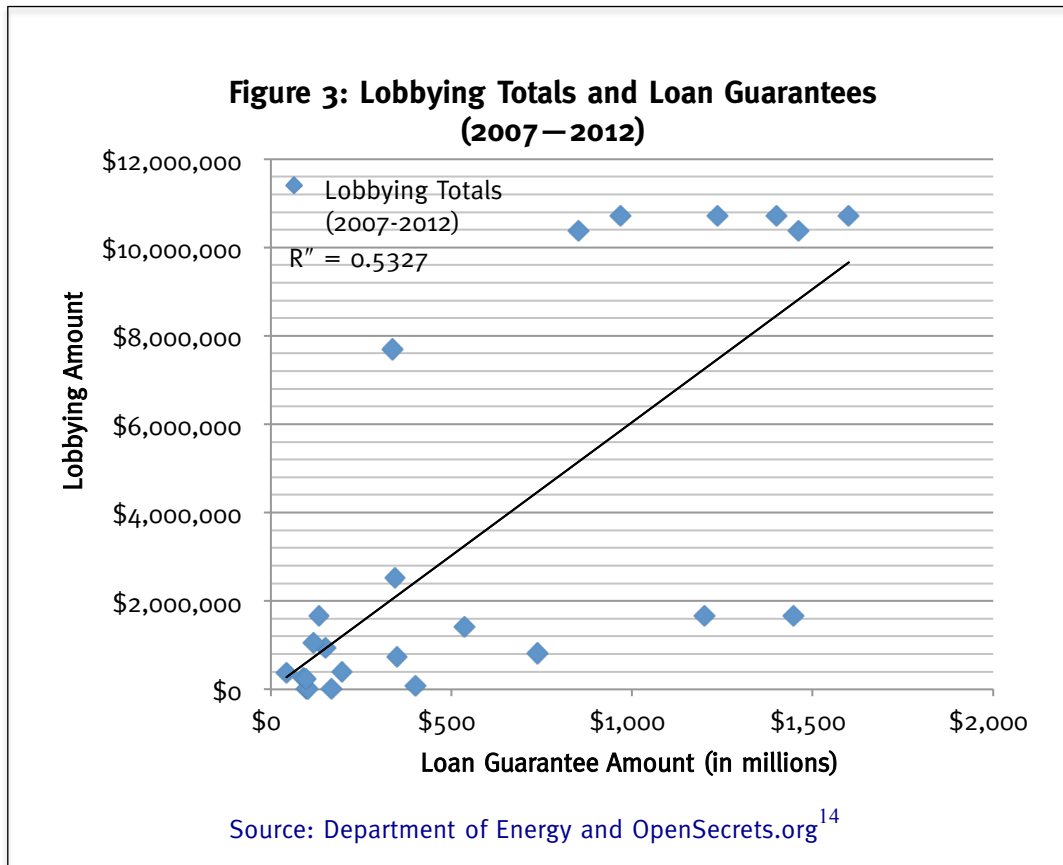
Explaining the DOE's Section 1705 Allocations

Given that the DOE allocated the tax dollars appropriated for its Section 1705 loan-guarantee program to highly risky projects predominantly in the realm of solar power and to a small range of companies, it is perhaps not surprising that those investments have not performed well. Why did the DOE make such investments in the first place when it was not obligated to make risky investments? Moreover, Section 1705 makes no mention of solar power, so there was clearly no legislative intent to put most of the program's eggs in the solar basket.

One explanation is that the loose eligibility criteria, combined with an obligation to distribute the loan guarantees in a narrow timeframe, led the DOE to rely heavily on external information rather than internal evaluation in making its allocation decisions. Moreover, those external parties most motivated to supply such information were vested interests seeking to obtain loan guarantees. This information gives us the following hypothesis: The DOE made decisions largely in proportion to the investment in information provision by companies seeking loan guarantees.

To test this hypothesis, we calculated how much each entity spent on lobbying and then looked at how this amount correlated with the amounts allocated in loan guarantees. We excluded some projects and lobbying activities because it was not possible to differentiate lobbying on Section 1705-related activities, or even lobbying on energy issues more generally, from other lobbying activities.¹³ For instance, Google has invested \$100 million into the Caithness Shepherds Flat wind farm project, but it is unclear how much of Google's multimillion dollar lobbying expenditures are for energy lobbying. For

similar reasons, we excluded Exelon Corp., since it has primarily been involved in nuclear-energy and electric-utilities lobbying and its annual lobbying expenditures are so large that they would dramatically skew the results. Figure 3 shows our findings.



The results show an R-squared of 0.5327, which indicates a moderate relationship between lobbying totals and the loan-guarantee amounts the various companies received. The relationship becomes stark when one looks at the largest and smallest loan-guarantee recipients side by side with the lobbying amounts. Table 1 shows the five largest and Table 2 the five smallest Section 1705 loan-guarantee recipients and their associated lobbying expenditures from 2007 through 2012. The projects that received more funding also spent considerably more on lobbying.

One explanation for this correlation is that larger companies get larger loan guarantees because their projects' scopes are larger and because they can spend more on lobbying. But this explanation does not always hold true. For instance,

when you compare the annual revenues of SolarReserve and Cogentrix—\$44.9 million in estimated annual revenues for Cogentrix compared with SolarReserve’s \$2.8 million—Cogentrix is the bigger company. Even so, SolarReserve and its investors spent more on lobbying than Cogentrix and received \$600 million more in loan guarantees.

Table 1: Section 1705 Loan Guarantees and Lobbying Among Top Five Recipients

Company	Additional Primary Investors/Partners	Loan	Lobbying (2007–2012)
NRG Energy	ProLogis	\$5,204,000,000	\$10,724,000
Abengoa		\$2,778,400,000	\$1,650,000
NextEra Energy		\$2,312,000,000	\$10,380,000
Caithness Shepherds Flat	Google, GE Energy Financial Services, Itochu, Sumitomo	\$1,300,000,000	\$1,477,000
SolarReserve, LLC	Santander, ACS Cobra	\$737,000,000	\$820,000

Source: Department of Energy and OpenSecrets.org¹⁵

Table 2: Section 1705 Loan Guarantees and Lobbying Among Bottom Five Recipients

Company	Additional Primary Investors/Partners	Loan	Lobbying (2007–2012)
Record Hill Wind		\$102,000,000	\$0
Nevada Geothermal Power Company, Inc.		\$98,500,000	\$0
U.S. Geothermal, Inc.		\$97,000,000	\$240,000
Cogentrix of Alamosa, LLC	Goldman Sachs	\$90,600,000	\$260,000
Beacon Power		\$43,000,000	\$370,000

Source: Department of Energy and OpenSecrets.org¹⁶

Part 5

Green Cronyism

Some companies receiving loan guarantees, such as Record Hill Wind and Nevada Geothermal Power Company, did not report any lobbying expenditure during the years surveyed, but they had other political connections that may have made lobbying unnecessary.

In 1997, Maine Governor Angus King signed into law a bill requiring utilities to generate at least 30 percent of their energy from green sources such as wind. Ten years later, King founded a wind-energy company, Independence Wind; Record Hill Wind's wind farm is that company's first major project. In 2010, King announced his candidacy for Senate, a race he eventually won in 2012. Although he divested himself from Independence Wind, he did not do so until after the company received its \$102 million loan guarantee from the Department of Energy. King received a \$407,000 "success" fee from Record Hill Wind as a result of acquiring the loan guarantee.¹⁷ To the extent that the Maine bill and loan guarantee increased the value of Independence Wind prior to King's divestiture, it could be argued that he is a major beneficiary of his own legislation.

The three Nevada-based projects, Nevada Geothermal, Ormat Nevada and SolarReserve, are all located in Senate Majority Leader Harry Reid's home state. Sen. Reid championed for the inclusion of DOE green energy loans in the Recovery Act, and executives from the companies running the three green energy projects in his home state rewarded him with \$58,000 in campaign contributions from 2008 through April 2012.¹⁸ *The New York Times* noted, "Mr. Reid has taken the nascent geothermal industry under his wing, pressuring the Department of Interior to move more quickly on applications to build clean energy projects on federally owned land."¹⁹

Record Hill Wind and Nevada Geothermal are not the only companies with these sorts of issues. What follows is a sampling of questionable relationships, practices and incidences that further suggest some degree of cronyism within the DOE's green energy programs.

Beacon Power: This company paid three executives a total of more than a quarter of a million dollars in bonuses in March 2010. Executives received bonuses for their success in securing the company \$43 million in loan guarantees from the DOE.²⁰ Eighteen months later, Beacon declared bankruptcy. Bonuses, especially from companies receiving taxpayer money, should reflect performance in delivering on outcomes (such as completing projects and delivering energy to consumers in a timely and cost-effective way). Companies should not award bonuses for obtaining subsidies.

Abengoa: In 2007, former U.S. Vice President Al Gore's company bought a stake in Abengoa. Longtime solar-energy supporter and former DOE Secretary and New Mexico Governor Bill Richardson also serves on Abengoa's advisory board, a paid position.²¹ Abengoa has been using lobbyists with close ties to the Obama administration and with past associations to cronies, such as Santiago Seage and Mark Rokala. Before lobbying for Abengoa, Seage was a partner at consulting firm McKinsey & Company, where he worked with the former executive director of the DOE's loan-guarantee program and a senior Recovery Act advisor.²² Rokala was a former lobbyist at PMA Group, which was shut down in 2008 after a pay-to-play scandal broke that led to the arrest of PMA Group President Paul Magliocchetto and his sentencing to 27 months in federal prison.²³

Abound Solar: In a June 2010 e-mail, DOE Loan Program Executive Director Jonathan Silver informed an agency credit advisor "that the WH (White House) wants to move Abound forward."²⁴ Another message describes an atmosphere of "transaction pressure under which we are all now operating."²⁵ The emails seem to contradict President Obama's claim that "these are decisions . . . that are made by the Department of Energy . . . [they] have nothing to do with politics."²⁶

Solyndra: Investors in the now-bankrupt solar panel manufacturer included George Kaiser, a major Obama donor. Its executives and board members

donated over \$87,000 to the president's election campaign.²⁷ Executives at the company received \$370,000 in bonuses in addition to their six-figure salaries even as the company was struggling, putting themselves ahead of both their investors and the company's success.²⁸

SoloPower: SoloPower received its first DOE grant, of \$2.3 million, in 2007. Since then it has obtained millions more in grants, subsidies and tax breaks from the city of San Jose, the state of California, the state of Oregon, and of course the DOE.²⁹ In spite of—or perhaps because of—all this government support, SoloPower's Section 1705 project received one of the lowest ratings: CCC+. So how did SoloPower manage to obtain its loan guarantee? According to a House Oversight Committee report, "What SoloPower lacked in economic value, it made up for in political connections."³⁰ For example, its chief commercial officer, Bruce Khouri, donated more than \$28,000 to the Democratic National Committee's 2008 "Obama Victory Fund," and the Chairman of the Board at SoloPower previously worked as a General Partner at a venture capital firm with a current DOE stimulus advisor, according to the same report.³¹

As noted previously, this list is just a sampling of readily discovered instances of "green cronyism": companies receiving loan guarantees not on the merits of their projects but on the back of political connections and support.

This cronyism was not limited to Democrats. To the extent that Republicans have been less successful than Democrats in funneling green energy loans to their supporters and constituents, it is not for a lack of trying. While some Republican members of Congress decried these loans in public, in private many quietly lobbied the DOE while it was doling out these loans. For instance, Sen. Mitch McConnell (R-KY) has cited Solyndra's failure on numerous occasions as evidence of the failure of the Stimulus Act and of green energy technologies, saying, "The White House fast-tracked a half-billion dollar loan to a politically connected energy firm," yet Sen. McConnell is just one of several prominent Republicans who have tried to secure a federal loan to a company with which they had connections.³² In 2009 Sen. McConnell made two personal appeals to Energy Secretary Steven Chu, asking him to approve \$235 million in federal loans for Zap Motor Manufacturing to build an electric vehicle manufacturing

plant in his home state. Federal lobbying disclosures show that his support for the project came after Zap hired a Kentucky-based lobbyist who has been a frequent campaign contributor to Sen. McConnell and who boasts about his close ties to the senator on his website.³³ The loans would have been a part of the DOE's Advance Technology Vehicle Manufacturing Program (see Appendix C), but the DOE did not approve Zap's application, likely because of financial problems that plagued the company. Those financial problems didn't stop McConnell from asking the DOE for money on Zap's behalf.³⁴

Another Republican on the Hill, Texas Representative Lamar Smith, engaged in similarly hypocritical behavior. In 2011, he asked Attorney General Eric H. Holder Jr. to appoint an outside investigator to determine how the Department of Energy distributes clean-energy money, espousing anti-green-energy rhetoric similar to Sen. McConnell's. Yet, in 2009, Rep. Smith wrote to Secretary Chu asking him to approve loan guarantees for a Texas project proposed by Tessera Solar.³⁵ Tessera didn't receive any DOE loans, though it applied, but it did receive over \$600 million in stimulus money.³⁶

Part 6

Policy Implications

The Department of Energy's allocation of Section 1705 loan guarantees appears to have been widely abused by political insiders seeking to make a quick buck. Many Section 1705 recipients also received other substantial funds from the DOE under the ARRA and other programs, including the ongoing Section 1703 program, suggesting that the DOE's entire green-energy program is ill-conceived.

The fundamental problem is that government loan officers do not have incentives to ensure that the investments they make on the public's behalf generate a return on investment. In contrast with private venture capitalists and angel investors, government agencies have no skin in the game. Whether the projects they fund succeed or fail makes practically no difference to them. In the absence of such incentives, loan officers are motivated to make their lives easier by doing politicians' bidding or by simply allocating funds to the companies that do the most sweet-talking.

This situation has distorted investments in innovative technologies. In the absence of such subsidies, venture capitalists would have made investment decisions based on the likelihood of a return, which would have entailed an evaluation of the likely future demand for the technology, the price that could be charged and the production costs. An important factor in this decision would have been the cost and availability of alternative technologies.

The Obama administration has sought to justify its investment in solar, wind and other "renewable" technologies on the grounds that they offer a means of reducing carbon emissions. But it seems to have given little consideration to the cost of achieving this reduction. In the context of electricity generation, the dramatic increase in availability of natural gas and the consequent reduction in its price are significant. By subsidizing the current generation of solar and wind

technologies, the Administration may have reduced investments in gas generation that could otherwise have helped reduce carbon emissions at a lower cost—for example, by expanding the supply of natural gas or by increasing natural gas generation capacity. And these subsidies have most likely reduced the capital invested in future, more innovative forms of generating capacity because potentially innovative companies can't compete with government subsidized green energy companies.

A Better Way

Ideally, the government would terminate its decades-long failed attempt to push “green” energy technologies. But if it insists on promoting such technologies, there is a far better way to allocate funds. It could establish prizes that it would only award to technologies that meet specific criteria.

Private philanthropists already use prizes in this way. In 2010, the X Prize Foundation and Wendy Schmidt partnered to create the Oil Cleanup X Challenge to “develop innovative, rapidly deployable, and highly efficient methods of capturing crude oil from the ocean surface.”³⁷ The Oil Cleanup X Challenge’s goal was simple: Whoever could create the most efficient method of removing oil from the surface of seawater, meeting a minimum oil recovery rate of 2,500 gallons per minute, would receive \$1 million. Second and third place would get \$300,000 and \$100,000, respectively. Over 350 teams preregistered, and the results were impressive. Seven of the final 10 teams doubled the standard oil recovery rate of 1,100 gallons per minute. The winner, privately held Elastec/American Marine of Illinois, produced an oil recovery rate of nearly 4,700 gallons a minute. In a single year, without any federal funding, the X Prize had identified a problem, provided an incentive to solve it, and allowed the competitors to have at it, leading to the creation of an efficient and cheap technology that more than quadrupled the industry standard for cleaning oil spills.³⁸

Other governments have started recognizing the merits of prizes over subsidies. In 2009, the governments of the United Kingdom, Italy, Canada, Russia and Norway partnered with the Bill and Melinda Gates Foundation to commit \$1.5 billion toward the purchase of vaccines to the first company to

develop a vaccine for a disease that primarily affects people in poorer countries. The reward for the first company to develop an effective vaccine is large-scale purchases of its vaccine. The move to a prize system rather than a subsidy system came after conventional government subsidies for vaccine research failed.³⁹

As noted, a prize or set of prizes for “green” technology would require the establishment of clear criteria. Examples might include vehicle engines that operate at significantly higher efficiency, electricity-generating technologies that emit fewer noxious chemicals into the environment, and heating and air conditioning systems that consume less energy. But the criteria in each case should also include a cost component, since the development of technologies that are in principle “greener” is irrelevant if at commercially scaled levels of production their costs are so much higher than those of comparable existing technologies that they are unaffordable. Thus, for each, a key criterion would be that the total cost of ownership should be no more than the cost for widely available current technologies, assuming a reasonable discount rate.

Part 7

Conclusion

The DOE's loan guarantee program distorts investments incentives and undermines competition. In the case of the Section 1705 program, the result was to transfer billions of dollars from taxpayers to politically connected corporations. Much of that money was simply wasted on projects that failed or remain incomplete. It is likely that the net effect has been to reduce investment in innovative technologies that are able to compete in the marketplace.

This green cronyism must be stopped. Ideally, government would get out of the business of funding energy projects altogether. If there is a political consensus that such funding should continue, then a more neutral mechanism should be used that rewards demonstrated success, rather than subsidizing failure. A prize system similar to that developed for the X Prize might be one way to do that.

Appendix A: Recipients of Section 1705 Loan Guarantees

Appendix A summarizes the results of the Section 1705 loan program. Three companies were found to have gone bankrupt, and based on media reports seven additional companies we identified as “troubled.” These numbers are likely to change as there are still 14 projects incomplete and under construction. Even after the construction phase is completed companies (and taxpayers) are not necessarily out of the woods yet. Section 1705 loan guarantee recipients can and have gone bankrupt after completing projects.

Abound Solar: The Colorado-based solar-panel manufacturer filed for bankruptcy in July 2012, shutting its factories and laying off 125 employees. There have been investigations into the panels Abound manufactured. The investigations concern whether Abound knew of major problems with the panels, which in some cases suffered “catastrophic failure,” and hid them from customers and investors.⁴⁰

Solyndra: After receiving a \$535 million DOE loan guarantee, as well as over \$1 billion in private investment, Solyndra filed for bankruptcy in the fall of 2011.⁴¹ It will only repay about \$24 million of that loan back to the U.S. government.⁴² Solyndra was the first company to receive a loan guarantee under the program in 2009, and over 1,000 people lost their jobs as a result of the bankruptcy. The Solyndra bankruptcy became a massive political football.

Beacon Power: Two months after the Solyndra bankruptcy, Beacon Power, the recipient of a \$43 million DOE loan guarantee for an energy storage facility in Stephentown, New York, completed its project but failed to generate enough revenue from it to stay in business.⁴³ Beacon Power filed for bankruptcy in October 2011. Unlike Solyndra, Beacon Power’s Stephentown energy storage facility was not shut down. Beacon Power reached a deal in February 2012 with private equity firm Rockland Capital to buy most of its assets, including the Stephentown plant. Under the deal, the DOE stands to lose about 30 percent on the loan.⁴⁴

Table A1: Bankrupt Recipients

Section 1705 Loan Recipients	Loan Guarantee Amount	Jobs (Permanent/ Construction)	Location
Abound Solar	\$400,000,000	Not applicable/400	Longmont, CO, and Tipton, IN
Solyndra, Inc.	\$535,000,000	Not applicable/3,000	Fremont, CA
Beacon Power	\$43,000,000	14/20	Stephentown, NY

Source: Department of Energy⁴⁵

Table A2: Troubled Recipients

Section 1705 Loan Recipients	Loan Guarantee Amount	Jobs (Permanent/ Construction)	Location
Abengoa Bioenergy Biomass of Kansas, LLC	\$132,400,000	65/300	Hugoton, KS
Abengoa Solar, Inc. (Mojave Solar)	\$1,200,000,000	70/830	San Bernardino Co., CA
Abengoa Solar, Inc. (Solana)	\$1,446,000,000	60/1,700	Gila Bend, AZ
Kahuku Wind Power (First Wind, LLC)	\$117,000,000	10/200	Kahuku Oahu, HI
SoloPower	\$197,000,000	450/270	Portland, OR
Nevada Geothermal Power Company, Inc. (Blue Mountain)	\$98,500,000	14/200	Humboldt County, NV
LS Power Associates (ON Line)	\$343,000,000	15/400	Ely to Las Vegas, NV

Source: Department of Energy

Table A3: Completed Projects

Section 1705 Loan Recipients	Loan Guarantee Amount	Jobs (Permanent/ Construction)	Location
Kahuku Wind Power, LLC	\$117,000,000	10/200	Kahuku Oahu, HI
Cogentrix of Alamosa, LLC	\$90,600,000	10/75	Alamosa, CO
Beacon Power Corporation	\$43,000,000	14/20	Stephentown, NY
Record Hill Wind	\$102,000,000	8/200	Roxbury, ME

Source: Department of Energy

Abengoa: Contractors have filed more than \$16 million in claims against the Spanish company regarding its solar operations in Arizona.⁴⁶ The contracting companies say Abengoa has owed them about \$13 million to \$16 million since 2012. Several other Arizona companies that claim they were not paid have filed liens totaling \$437,000. Some have settled privately. In 2013, the company's biofuel division halted production at two of its Nebraska plants as well, citing "unfavorable market conditions."⁴⁷

Table A4: Incomplete Projects

Section 1705 Loan Recipients	Loan Guarantee Amount	Jobs (Permanent/ Construction)	Location
1366 Technologies, Inc.	\$150,000,000	70/50	Lexington, MA
Caithness Shepherds Flat	\$1,300,000,000	35/400	Gilliam and Morrow Counties, OR
Exelon (Antelope Valley Solar Ranch)	\$646,000,000	20/350	Lancaster, CA
Granite Reliable	\$168,900,000	6/198	Coos, NH
Mesquite Solar 1, LLC (Sempra Mesquite)	\$337,000,000	7/300	Maricopa County, AZ
NextEra Energy Resources, LLC (Desert Sunlight)	\$1,460,000,000	15/550	Riverside County, CA
NextEra Energy Resources, LLC (Genesis Solar)	\$852,000,000	47/800	Riverside County, CA
NRG Energy, Inc. (BrightSource)	\$1,600,000,000	86/1,000	Baker, CA
NRG Solar (California Valley Solar Ranch)	\$1,237,000,000	15/350	San Luis Obispo, CA
NRG Solar, LLC (Agua Caliente)	\$967,000,000	10/400	Yuma County, AZ
Ormat Nevada, Inc.	\$350,000,000	64/332	Jersey Valley, McGinness Hills, and Tuscarora, NV
Prologis (Project Amp)	\$1,400,000,000	42/1,000+	28 states
SolarReserve, LLC (Crescent Dunes)	\$737,000,000	45/600	Nye County, NV
U.S. Geothermal, Inc.	\$97,000,000	10/150	Malheur County, OR

Source: Department of Energy

Kahuku Wind: Kahuku was the site of a three-day battery fire in 2012 that destroyed Kahuku’s multimillion dollar taxpayer-funded battery-storage system. This battery fire was the third at the site.⁴⁸ Also, the wind turbines that were to power the now-burned batteries turned out to be defective. It doesn’t look like they will be replaced anytime soon, as the wind-turbine manufacturer has laid off 174 employees and is dissolving the company.⁴⁹

SoloPower: In May 2013 the solar panel manufacturer sold off thousands of dollars’ worth of equipment from its California headquarters. It has already laid off 61 employees and is reportedly preparing for more layoffs as it restructures.⁵⁰

Nevada Geothermal: According to a report in *The Washington Times*, auditors have expressed doubts about whether the company can stay afloat after racking up nearly \$100 million in net losses over the last several years.⁵¹

LS Power: The company's power transmission line project has faced several delays and "wind-related damage" that have put timely project completion in doubt.⁵² The project, partly funded with the \$343 million in DOE loan guarantees, was supposed to be completed by the end of 2012, but the delays have pushed the anticipated completion date to late 2013 at the earliest.⁵³

Of the four projects reported as complete, only two are up and running with any sense of normalcy. As mentioned earlier, Beacon Power went bankrupt after completing its project, and the Kahuku project site has been riddled with issues surrounding the soundness of its wind turbines. The rest of the Section 1705 projects are in various stages of completion.

Appendix B: Section 1705 Loan Guarantee Recipient Project Credit Rating

It's not all that surprising that the Section 1705 program saw companies fail. At the outset of the program, rating agencies classified 22 out of the 26 DOE 1705 loan guarantees as “junk” grade investments or lower. Only four projects were rated above junk, and they were all classified in the “BBB” range, the lowest end of the “investment” grade classification. Overall, the entire portfolio of 1705 projects has an average rating of BB-, a junk grade rating.

Table B1: The Credit Rating of Section 1705 Loan Recipients

Section 1705 Loan Recipients	Loan Credit Rating
1366 Technologies, Inc.	B
Abengoa Bioenergy Biomass of Kansas, LLC	CCC
Abengoa Solar, Inc. (Mojave Solar)	BB
Abengoa Solar, Inc. (Solana)	BB+
Abound Solar	B
Beacon Power Corporation	CCC+
Caithness Shepherds Flat	BBB-
Cogentrix of Alamosa, LLC	B
Exelon (Antelope Valley Solar Ranch)	BBB-
Granite Reliable	BB
Kahuku Wind Power, LLC	BB+
LS Power Associates	BB+
Mesquite Solar 1, LLC (Sempra Mesquite)	BB+
Nevada Geothermal Power Company, Inc. (Blue Mountain)	BB+
NextEra Energy Resources, LLC (Desert Sunlight)	BBB-
NextEra Energy Resources, LLC (Genesis Solar)	BBB+
NRG Energy, Inc. (BrightSource)	BB+
NRG Solar (California Valley Solar Ranch)	BB+
NRG Solar, LLC (Agua Caliente)	BB+
Ormat Nevada, Inc.	BB
Prologis (Project Amp)	BB
Record Hill Wind	BB+
SolarReserve, LLC (Crescent Dunes)	BB
SoloPower	CCC+
Solyndra, Inc.	BB-
U.S. Geothermal, Inc.	BB

Source: U.S. House of Representatives⁵⁴

Appendix C: Other “Green” Technology Programs

The extent DOE’s funding of green technology goes well beyond the Section 1705 program. At the same time companies were being issued Section 1705 loan guarantees, the DOE was also handing out grants to manufacturers of electric car components. These grants supported the DOE’s previous investments in the manufactures of electric cars themselves, through direct loans. Like the Section 1705 program, the DOE’s other recent green technology programs have included notable failures.

Electric Drive Vehicle Battery and Component Manufacturing Initiative

In addition to Section 1705, in 2009 the government awarded \$2.4 billion in ARRA grants to 48 projects seeking to develop batteries and other electric car components.⁵⁵ A White House statement issued on the day of the announcement asserted, “The announcement marks the single largest investment in advanced battery technology for hybrid and electric-drive vehicles ever made. Industry officials expect that this \$2.4 billion investment, coupled with another \$2.4 billion in cost sharing from the award winners, will result directly in the creation tens of thousands of manufacturing jobs in the U.S. battery and auto industries.”⁵⁶

Excluding funds that went toward educational programs at public universities, the initiative distributed \$1.9 billion to 35 companies for various projects. As of the first quarter of 2013, 17 projects are reported to be more than 50 percent complete, nine less than 50 percent complete, and nine are reportedly complete. A total of 13,157 jobs were created according to Recovery.gov at a cost of \$144,000 per job.⁵⁷ Table 3 shows the results.

Table C1: Electric Drive Vehicle Battery and Component Manufacturing Initiative Results

Year	Quarter	Recipient	Grant Amount	Project Status	Total Jobs Created
2012	4	A123 SYSTEMS, INC.	\$249,000,000	More than 50% completed	418.18
2013	1	DOW KOKAM MI, LLC	\$161,000,000	More than 50% completed	0
2010	4	COMPACT POWER, INC.	\$151,000,000	Less than 50% completed	23
2013	1	LG CHEM POWER, INC.	\$151,000,000	More than 50% Completed	704
2013	1	ENERDEL, INC.	\$118,000,000	More than 50% completed	987.98
2013	1	ELECTRIC TRANSPORTATION ENGINEERING CORPORATION	\$100,000,000	More than 50% completed	1238.4
2013	1	SAFT AMERICA, INC.	\$95,500,000	More than 50% completed	634.25
2012	4	DELPHI AUTOMOTIVE SYSTEMS, LLC	\$89,300,000	Completed	906.9
2013	1	ALLISON TRANSMISSION, INC.	\$62,800,000	More than 50% completed	318.34
2013	1	FORD MOTOR COMPANY	\$62,700,000	More than 50% completed	382.11
2013	1	REMY, INC.	\$60,200,000	More than 50% completed	2126
2012	4	CELGARD, LLC	\$48,800,000	Completed	1025
2013	1	CHRYSLER GROUP, LLC	\$48,000,000	More than 50% completed	482.6
2013	1	SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	\$45,400,000	Less than 50% completed	89.48
2013	1	UQM TECHNOLOGIES, INC.	\$45,100,000	Less than 50% completed	140
2013	1	MAGNA E-CAR SYSTEMS OF AMERICA, INC.	\$40,000,000	More than 50% completed	148.39
2013	1	TODA AMERICA INCORPORATED	\$35,000,000	Less than 50% completed	246.82
2012	4	EXIDE TECHNOLOGIES	\$34,300,000	Completed	576
2012	4	EAST PENN MANUFACTURING CO. INC.	\$32,500,000	Completed	830.34
2013	1	SMITH ELECTRIC VEHICLES U.S. CORP.	\$32,000,000	More than 50% completed	63.23
2013	1	GENERAL MOTORS, LLC	\$30,500,000	More than 50% completed	309.01
2012	3	CHEMETALL FOOTE CORP.	\$28,400,000	More than 50% completed	58
2013	1	HONEYWELL INTERNATIONAL INC.	\$27,300,000	Less than 50% completed	110.15
2013	1	BASF CATALYSTS, LLC	\$24,600,000	Completed	281
2013	1	CASCADE SIERRA SOLUTIONS	\$22,200,000	More than 50% completed	316.83
2012	3	NOVOLYTE TECHNOLOGIES, INC.	\$20,600,000	Less than 50% completed	4
2013	1	KEMET CORPORATION	\$15,100,000	Less than 50% completed	46.77
2012	4	COULOMB TECHNOLOGIES, INC.	\$15,000,000	More than 50% completed	72.4
2012	1	FUTUREFUEL CHEMICAL COMPANY	\$12,600,000	Completed	373
2011	4	PYROTEK, INC.	\$11,300,000	Completed	72.2
2013	1	TOXCO, INC.	\$9,517,951	More than 50% completed	66.36
2012	3	SBE, INC.	\$8,504,946	Completed	40.6
2012	3	POWEREX, INC.	\$6,049,581	Completed	42.42
2011	4	H&T WATERBURY	\$5,040,000	Less than 50% completed	21
2011	1	TPL, INC.	\$999,987	Less than 50% completed	2.5

Source: Recovery.gov⁵⁸

Some of the battery manufacturers' primary customers are auto manufacturers that are receiving DOE funds through other programs, making the success of projects under the ARRA battery initiative dependent on the success of other DOE loan-guarantee recipients and vice versa.⁵⁹ Like the Section 1705 loan-guarantee program, there have also been notable failures.

A123 Systems: Received a \$249 million DOE ARRA grant to manufacture batteries and other electric vehicle components. The company filed for bankruptcy in October 2012. Another ARRA grant recipient, Johnson Controls, has shown interest in buying the failed company. A123 Systems received the second-largest ARRA grant for electric vehicle component manufacturing, after Johnson Controls, and still ended up going out of business.

Ener1: Received a \$118.5 million DOE ARRA grant to produce lithium-ion cells for hybrid and electric vehicles. The company went bankrupt in January 2011, unable to compete with Chinese and South Korean battery manufacturers—even with the DOE grant.⁶⁰ Perhaps making matters worse, federal auto-safety officials scrutinized the company’s potentially faulty batteries that led to a Chevy Volt (an electric car) catching fire.⁶¹

Advanced Technology Vehicles Manufacturing Loan Program

The Advanced Technology Vehicles Manufacturing (ATVM) loan program also fosters a dependency on the success of other DOE loans and grants. The \$25 billion in loans, approved by Congress in September 2008, are designed to develop more fuel-efficient vehicles and lessen U.S. dependence on foreign oil through the development of hybrid, electric and other alternative-technology vehicles.⁶² So far, the government has distributed around \$8 billion, with the largest loans going to some of the world’s largest automakers.⁶³

While the ATVM program was designed and signed into law under the Bush administration and not directly funded by the ARRA, the government did not select these loan recipients until the Obama administration took over in 2009. The ATVM award winners were announced and received funding at the same time as the ARRA loan and grant recipients.⁶⁴

The ATVM program’s goal was to use taxpayer loan money to fund the next generation of American fuel-efficient vehicles while adding thousands of new jobs. The program gave about \$8 billion in loan guarantees to just five carmakers: Fisker Automotive, Vehicle Production Group, Ford Motor Company, Nissan and Tesla Motors. Since the loan program began, two of the five companies receiving loans, Fisker Automotive and Vehicle Production

Group, have stopped producing new vehicles and appear headed toward bankruptcy.⁶⁵

Fisker Automotive: Received a \$529 million loan and still owes about \$192 million in taxpayer money. It has not built a vehicle since July 2012 and has been searching for a buyer as it tries to avoid bankruptcy.⁶⁶

Vehicle Production Group (VPG): Received a \$50 million DOE loan through the ATVM program. In February 2013 the company suspended production and laid off nearly all of its 100 Michigan-based employees.⁶⁷ VPG was supposed to produce 900 jobs, 22,000 vans annually, and take 12,200 tons of carbon dioxide out of the air each year.⁶⁸ The company produced only 2,500 vehicles before folding.

Tesla Motors: Received a \$465 million loan and paid off that loan in May 2013 using proceeds from a \$1-billion-plus offering of stock earlier in the year.⁶⁹ Paying off the loan early allows Tesla to avoid sharing the current appreciation of its stock with the government, as warrants for the DOE to acquire Tesla stock would not have kicked in until later in the loan term.⁷⁰ Tesla is the only carmaker to have fully repaid the government.

Ford Motor Company: Received \$5.9 billion. According to a May 2013 regulatory filing, Ford is making quarterly payments of \$148 million and has \$5.5 billion outstanding on its loan. The loan is scheduled to be paid in full around June 2022.⁷¹

Nissan: Received \$1.4 billion from the program. It is unknown what the outstanding balance or payment schedule is, as Nissan does not report financials in the United States.⁷²

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