DEPARTMENT OF ENERGY OVERSIGHT: THE DOE LOAN GUARANTEE PROGRAM

JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY &
SUBCOMMITTEE ON OVERSIGHT

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTEENTH CONGRESS

SECOND SESSION

March 3, 2016

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DEPARTMENT OF ENERGY OVERSIGHT: THE DOE LOAN GUARANTEE PROGRAM

THURSDAY, MARCH 3, 2016

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND
SUBCOMMITTEE ON OVERSIGHT
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, D.C.

The Subcommittees met, pursuant to call, at 9:37 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Randy Weber [Chairman of the Subcommittee on Energy] presiding.

LAMAR S. SMITH, Texas
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RANKING MEMBER

Congress of the United States
House of Representatives
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Subcommittees on Energy and Oversight

Department of Energy Oversight: The DOE Loan Guarantee Program

Thursday, March 3, 2016
9:30 a.m. – 11:00 a.m.
2318 Rayburn House Office Building

Witnesses

Mr. Mark McCall, Executive Director, Loan Programs Office, Department of Energy

Dr. Frank Rusco, Director, Natural Resources and Environment, Government Accountability Office

Mr. Gregory Kats, President, Capital E

Mr. Nicolas Loris, Herbert and Joyce Morgan Fellow, Thomas A. Roe Institute for Economic Policy Studies, The Heritage Foundation

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

HEARING CHARTER

Department of Energy Oversight: The DOE Loan Guarantee Program

Thursday, March 3, 2016
9:30 a.m. – 11:00 a.m.
2318 Rayburn House Office Building

PURPOSE

The Subcommittees on Energy and Oversight will hold a joint hearing titled *Department of Energy Oversight: The DOE Loan Guarantee Program* on Thursday, March 3, 2016, at 9:30 a.m. in Room 2318 of the Rayburn House Office Building. The purpose of the hearing is to conduct oversight of the Department of Energy's loan guarantee program and direct loans, and examine the market impact and risk associated with federal loan guarantees for energy innovation.

WITNESS LIST

- **Mr. Mark McCall,** *Executive Director, Loan Program Office, U.S. Department of Energy*
- **Dr. Frank Rusco,** *Director, Natural Resources and Environment, Government Accountability Office*
- **Gregory Kats,** *President, Capital E*
- **Mr. Nick Loris,** *Herbert and Joyce Morgan Fellow, Thomas A. Roe Institute for Economic Policy Studies, Heritage Foundation*

BACKGROUND

The Department of Energy (DOE) Loan Program Office (LPO) manages the Title XVII (Section 1703) innovative clean energy projects loan guarantee program and the Advanced Technology Vehicles Manufacturing (ATVM) direct loan program.[1] The LPO also monitors loan guarantees authorized under the Section 1705 loan guarantee program, a temporary loan guarantee program created by the American Recovery and Reinvestment Act of 2009.[2] The DOE LPO maintains a portfolio of loans for clean energy projects and advanced technology vehicle manufacturing facilities through these programs, as well as issuing solicitations for future loans and loan guarantees under existing authority in the Section 1703 and ATVM program.[3]

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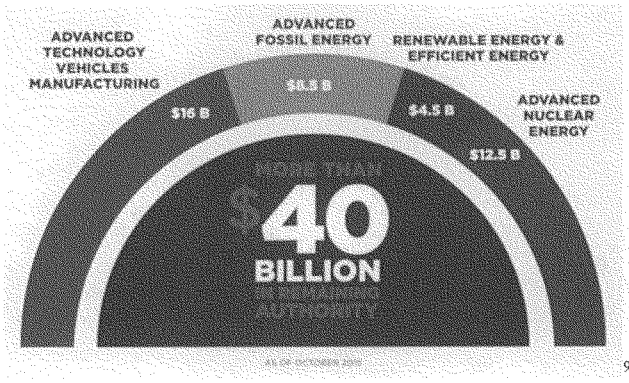
[1] Loan Program Office. "LPO Portfolio Overview." U.S. Department of Energy. Available at http://energy.gov/lpo/portfolio
[2] Loan Program Office. "Section 1705 Loan Program." U.S. Department of Energy. Available at http://energy.gov/lpo/services/section-1705-loan-program
[3] Loan Program Office. "LPO Portfolio Overview." U.S. Department of Energy. Available at http://energy.gov/lpo/portfolio

The Department's current loan programs portfolio consists of 34 loans and loan guarantees that total approximately $28 billion in support of 30 projects.[4] Many loan guarantees and ATVM loan program projects have completed construction and are in operation. However, borrowers have defaulted on loans for five projects, including two solar manufacturing projects, two advanced automotive manufacturing projects, and one energy storage project.[5] According to the Government Accountability Office (GAO), between 2008 and 2014, administrative costs have totaled approximately $312 million, or $251.6 million for loan guarantees and $60.6 million for the ATVM loan program, a cost that has been partially offset by the approximately $196 million in fees collected under the loan guarantee program in the same period.[6] GAO estimates that the total credit subsidy cost (the expected net cost of subsidizing loans over their duration) for the current portfolio to be $2.21 billion, including $807 million for loans that have defaulted.[7]

DOE has over $40 billion in remaining loan and loan guarantee authority under the Section 1703 and ATVM loan programs.[8]



[9]

Section 1703

The Title XVII innovative clean energy projects loan program (commonly referred to as Section 1703) was authorized in the Energy Policy Act of 2005, and was designed to provide loan guarantees to innovative clean energy technology.[10] Under the Title XVII loan program, the Department is authorized to issue loan guarantees to energy technologies including advanced

[4] U.S. Government Accountability Office. "DOE Loan Programs: Current Estimated Net Costs Include $2.2 Billion in Credit Subsidy, Plus Administrative Expenses." GAO-15-438: Published: Apr 27, 2015. Publicly Released: Apr 27, 2015. Available at http://www.gao.gov/products/GAO-15-438
[5] Ibid.
[6] Ibid.
[7] Ibid.
[8] Loan Program Office. "Loan Program Office Update." U.S. Department of Energy. February 2016. Available at http://energy.gov/sites/prod/files/2016/02/f29/DOE-LPO_Email-Update_013_Final_2-Feb-2016.pdf
[9] Ibid.
[10] Loan Program Office. "Title XVII." U.S. Department of Energy. Available at http://www.energy.gov/lpo/title-xvii

fossil energy, nuclear energy, renewable energy and energy efficiency that "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases," and "employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued."[11] Title XVII allows DOE to guarantee up to 80% of the eligible costs of a project.[12] LPO is currently accepting applications under Advanced Fossil Energy, Advanced Nuclear Energy, and Renewable Energy and Energy Efficiency solicitations.[13]

In August 2015, President Obama announced that the DOE Loan Programs Office (LPO) would make an additional $1 billion in loan guarantees available for commercial scale distributed energy projects.[14] The DOE LPO issued guidance to consider distributed energy projects under the Renewable Energy and Energy Efficiency (REEE) and Advanced Fossil Energy Projects, including rooftop solar, energy storage, smart grid technology, and methane capture and storage technology.[15]

Section 1705

The Section 1705 loan program, a temporary loan guarantee program focused on deployment of renewable energy technologies, was created under the American Recovery and Reinvestment Act of 2009.[16] Under Section 1705, the Department was authorized to provide loan guarantees for projects that began construction on or prior to September 30, 2011.[17] Unlike the Section 1703 program, Congress provided $2.4 billion in appropriations for credit subsidy costs associated with Section 1705 loans.[18] This appropriation provided a significant advantage to companies who received Section 1705 loans, as they were able to receive loan guarantees with the credit subsidy fees paid for by the taxpayer.[19] The LPO guaranteed approximately $16 billion in Section 1705 loans to 26 clean energy projects before the authority expired.[20]

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[11] Energy Policy Act of 2005, Title XVII, Section 1703. Aug 8, 2005. Available at http://energy.gov/sites/prod/files/2014/03/f14/EPAof2005.pdf

[12] Loan Program Office. "Title XVII Frequently Asked Questions." U.S. Department of Energy. Available at http://www.energy.gov/lpo/title-xvii-faqs

[13] Loan Program Office. "Title XVII Open Solicitations." U.S. Department of Energy. Available at http://www.energy.gov/lpo/title-xvii-open-solicitations

[14] U.S. Department of Energy, *President Obama Announces More Than a Billion Dollars in Energy Department Initiatives to Advance Innovative Clean Energy Technologies.* August 24, 2015, available at http://www.energy.gov/articles/president-obama-announces-more-billion-dollars-energy-department-initiatives-advance

[15] U.S. Department of Energy, *Guidance for Distributed Energy Projects*. August 24, 2015, available at http://www.energy.gov/lpo/distributed-energy-projects

[16] Brown, Philip. "Loan Guarantees for Clean Energy Technologies: Goals, Concerns, and Policy Options." Congressional Research Service. January 17, 2012. Available at https://www.fas.org/sgp/crs/misc/R42152.pdf

[17] Loan Program Office. "Section 1705 loan program." U.S. Department of Energy. Available at http://energy.gov/lpo/services/section-1705-loan-program

[18] Brown, Philip. "Solar Projects: DOE Section 1705 Loan Guarantees." Congressional Research Service, October 25, 2011. Available at http://www.ourenergypolicy.org/wp-content/uploads/2013/08/CRSSolar.pdf

[19] Ibid.

[20] Brown, Philip. "Loan Guarantees for Clean Energy Technologies: Goals, Concerns, and Policy Options." Congressional Research Service, January 17, 2012. Available at https://www.fas.org/sgp/crs/misc/R42152.pdf

The first company to receive a Section 1705 loan guarantee was Solyndra, a solar company which filed for bankruptcy in 2011, after receiving a $535 million loan guarantee in 2009.[21] Solyndra's high profile default increased scrutiny and concerns about the loan guarantee program, resulting in congressional hearings, several GAO reports on DOE LPO operations, and an Inspector General (IG) investigation into DOE LPO conduct during the Solyndra loan approval and management process.[22] In addition to concern over taxpayer liability after Solyndra and other loan defaults, the Congressional Research Service outlined concerns with the imbalance between government risk and potential reward, political pressure to approve loan guarantees, and adverse market impact caused by government-backed investment in long-term projects without technology flexibility.[23]

After four years of investigation, the DOE IG released a report on the Solyndra loan guarantee on August 26, 2015.[24] While the report outlined consistent false claims and limited disclosure of updated contract information on the part of Solyndra executives, the IG also found that DOE officials repeatedly failed to verify claims made about performance and sales provided by the company, and relied on third party reviews of Solyndra's finances.[25,26] The IG report also recognized that DOE officials had many opportunities to validate Solyndra's claims but did not do so, saying DOE's "due diligence process missed opportunities to surface and critically analyze problematic information that Solyndra had provided to the Department."[27]

Section 136 (ATVM)

In addition to loan guarantee programs, the DOE LPO also manages the Advanced Technology Vehicles Manufacturing (ATVM) direct loan program.[28] Established in Section 136 of the Energy Independence and Security Act of 2007, the program was designed to support the production of fuel-efficient, advanced technology vehicles and qualifying components in the

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[21] De Rugy, Veronique. "Testimony Before the House Committee on Oversight and Government Reform: Assessing the Department of Energy Loan Guarantee Program." Mercatus Center at George Mason University. June 19, 2012. Available at http://mercatus.org/publication/assessing-department-energy-loan-guarantee-program

[22] Rusco, Frank. "DOE Loan Programs: DOE Has Made More Than $30 Billion in Loans and Guarantees and Needs to Fully Develop Its Loan Monitoring Function." Highlights of GAO-14-645T, a testimony before the Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, House of Representatives. U.S. Government Accountability Office, May 30, 2014. Available at http://gao.gov/assets/670/663707.pdf

[23] Brown, Philip. "Loan Guarantees for Clean Energy Technologies: Goals, Concerns, and Policy Options." Congressional Research Service. January 17, 2012. Available at https://www.fas.org/sgp/crs/misc/R42152.pdf

[24] Feking, Kevin. "Report: Solyndra misrepresented facts to get loan guarantee." Associated Press. August 26, 2015. Available at http://bigstory.ap.org/article/30189ac3d2eb4daf926f2575cf6d0874/report-solyndra-misrepresented-facts-get-loan-guarantee

[25] U.S. Department of Energy Office of the Inspector General, *Special Report: The Department of Energy's Loan Guarantee to Solyndra, Inc.* August 24, 2015, available at http://energy.gov/sites/prod/files/2015/08/f26/11-0078-I.pdf

[26] Freking, Kevin. "Report: Solyndra misrepresented facts to get loan guarantee." Associated Press. August 26, 2015. Available at http://bigstory.ap.org/article/30189ac3d2eb4daf926f2575cf6d0874/report-solyndra-misrepresented-facts-get-loan-guarantee

[27] U.S. Department of Energy Office of the Inspector General, *Special Report: The Department of Energy's Loan Guarantee to Solyndra, Inc.* August 24, 2015, available at http://energy.gov/sites/prod/files/2015/08/f26/11-0078-I.pdf

[28] Loan Program Office. "ATVM Program Overview." U.S. Department of Energy. Available at http://energy.gov/lpo/atvm

United States by providing direct loans to companies engaged in advanced vehicle manufacturing.[29]

Congress provided appropriations for the ATVM program in 2009, allocating $7.5 billion to cover the subsidy cost for the $25 billion in loans, as well as $10 million for program implementation.[30] Since 2007, DOE has awarded $8.4 billion in loans to five companies (Fisker, Ford, Nissan, Tesla, and the Vehicle Production Group). Two companies were unable to continue payments on their loans, resulting in $181 million in losses to the Department.[31] ATVM has $16.6 billion in remaining loan authority, and has not awarded new loans since 2011.[32]

Important questions and key issues to be discussed at the hearing include:

- What are the Administration's goals for the DOE loan programs, and how do these goals reflect the long-term energy needs of the American economy?
- What is the market effect of DOE's loan and loan guarantee programs? What secondary effects could federal government loan guarantees have on the availability and accessibility of private capital for large scale energy projects?
- What is the risk to the taxpayer inherent in the DOE loan guarantee program? Since loan guarantees transfer risk from the lender to the taxpayer, is there sufficient benefit to justify this risk?
- What changes should be made to the DOE loan program to address taxpayer liability?
- What is the total cost, to date, of the program, including credit subsidy costs?
- What are the most significant risks to the current portfolio? How did the Department identify them and what steps is the Department taking to mitigate them?

[29] Loan Program Office. "ATVM Program Overview." U.S. Department of Energy. Available at http://energy.gov/lpo/atvm
[30] Canis, Bill and Brent D. Yacobucci. "The Advanced Technology Vehicles Manufacturing (ATVM) Loan Program: Status and Issues" Congressional Research Service, January 15, 2015. Available at https://www.fas.org/sgp/crs/misc/R42064.pdf
[31] Ibid.
[32] Loan Program Office. "ATVM Program Overview." U.S. Department of Energy. Available at http://energy.gov/lpo/atvm

Chairman WEBER. The Subcommittees on Energy and Oversight will come to order. Without objection, the Chair is authorized to declare recesses of the Subcommittee at any time.

Today's hearing is entitled "Department of Energy Oversight: The DOE Loan Guarantee Program." I recognize myself for five minutes for an opening statement.

Good morning, and we're glad you all showed up, so thank you for being here. Today, we will hear from the Department and a number of expert witnesses on the Department of Energy's loan program, and will examine the market impact and the risk associated with federal loan guarantees for energy innovation.

The DOE Loan Guarantee Program was established in 2005, and was designed to use loan guarantees to advance commercial application for innovative clean energy technology. Through the Section 1703 program, the Department "guarantees" a private loan given to an energy company. To guarantee a loan, DOE tells private investors that if the company defaults, then the taxpayers, that's us, will foot the bill. Instead of the private sector taking on risk to fund scale-up of new technology, the government steps in, risking federal dollars on the hopes for success of energy projects. DOE also provides direct loans to large automobile companies through the Advanced Technology Vehicle Manufacturing (or ATVM) program.

As a part of the stimulus in 2009, Congress temporarily expanded the Loan Guarantee Program, and gave DOE another $2.4 billion, with a B, to subsidize the costs of loan guarantees. In these subsidized loans, known as Section 1705 loans, companies not only received government backing for their loan but additional taxpayer dollars to pay the "credit subsidy cost" of the loan, or the estimated cost to the federal government over the lifetime of the loan. With political pressure to issue loans before the temporary subsidy program expired, DOE rushed loan applications, issuing some $16 billion in loans to just 26 projects.

But both the DOE Inspector General and GAO found that DOE did not have the necessary expertise or the metrics to effectively evaluate these loans. What's worse, it seems the loan guarantees for President Obama's political allies were often fast-tracked, with little consideration for project merit or benefits to the taxpayer.

Companies that received Section 1705 loans had no skin in the game and weren't carefully considered. And we're all familiar with the results. With high-profile defaults like the $535 million loan guarantee provided to Solyndra in 2011, $68 million lost when Abound Solar filed for bankruptcy in 2012, and $139 million lost from a direct loan to Fisker Automotive, the Department has lost over $800 million on bad loans.

According to GAO estimates, the total cost for the current loan portfolio is $2.2 billion with a B, plus another $312 million in program administrative costs. These costs will increase if another loan defaults or if the Department issues more loan guarantees to projects with any financial risk.

And unlike a private lender, there is no benefit to the taxpayer if the guaranteed loan is paid in full. Regular Americans take on the liability of the full loan; they do not see a return even if the project is successful and the loan is paid back. American tax dollars

subsidize loans for large companies with billions in available capital like Ford, Goldman Sachs, Google, GE, and Berkshire Hathaway. DOE loans and loan guarantees have been overwhelmingly awarded to subsidiaries of large companies or companies with high-profile private investors who jump, quite frankly, at the chance for government security. But if something goes wrong, these big companies aren't stuck with the bill. The America people are stuck with the bill.

While supporters of the Loan Guarantee Program often cite the low percentage of default loans, those numbers don't tell the whole story. First, the DOE loan program is a prime example of the government trying to do something that the private sector actually does better. GAO has consistently criticized DOE for lacking the appropriate expertise, both technical and financial, to evaluate and monitor those loans. Private sector investment firms have this expertise, and they make investment decisions based on profit, not on political favors. It's no surprise that mistakes are made when rushing loans without proper scrutiny is the main priority. And political pressure to issue loan guarantees will only increase as this Obama Administration comes to a close.

Second, loan guarantees are only one piece of the billions of taxpayer dollars President Obama has spent on his clean energy agenda. A quick look at the loan portfolio reveals companies that benefited from countless subsidies, from tax credits and cash grants from other government programs, not to mention federal and state mandates that push utilities to enter into power purchase agreements for higher-cost energy from renewable power.

In the case of SolarReserve's Crescent Dunes project in Nevada, a concentrating solar power project that received a $737 million loan guarantee, Nevadans will pay 66 percent more per kilowatt hour for electricity produced by that plant. So the loan program risks American tax dollars, and then the tradeoff is it rewards Americans, Nevadans in this case, with more expensive utility bills when the project is finally complete.

Finally, federal meddling in the energy market crowds out investment for innovative technologies that don't receive loan guarantees.

By subsidizing loans to favored technologies, DOE has driven private investors to choose projects based strictly on loan security, not necessarily market success or innovation. Why would a private investor take a risk on an innovative technology when they can invest in a project backed by the government? The federal government should get out of the way, focus our limited resources on research and development, and let the market drive investment for energy innovation.

I do want to thank Mr. McCall and all of our witnesses for testifying to the Committee today, and we look forward to a review of the DOE's loan portfolio.

As some of our witnesses will point out today, the DOE loan programs are just one more way the Obama Administration is picking winners and losers in the energy market. We can't afford to risk American tax dollars or increase costs for the American people to play favorites. The fact is, when those loans fail, like Solyndra,the American taxpayers are the losers.

[The prepared statement of Chairman Weber follows:]

COMMITTEE ON
SCIENCE, SPACE, & TECHNOLOGY
Lamar Smith, Chairman

For Immediate Release
March 3, 2016

Media Contact: Zachary Kurz
(202) 225-6371

Statement of Energy Subcommittee Chairman Randy Weber (R-Texas)
Department of Energy Oversight: DOE Loan Program

Chairman Weber: Good morning and welcome to today's joint Energy and Oversight Subcommittee hearing. Today, we will hear from the Department and a number of expert witnesses on the Department of Energy's loan program, and will examine the market impact and risk associated with federal loan guarantees for energy innovation.

The DOE loan guarantee program was established in 2005, and was designed to use loan guarantees to advance commercial application of innovative clean energy technology. Through the Section 1703 program, the Department "guarantees" a private loan given to an energy company. To guarantee a loan, DOE tells private investors that if the company defaults, the taxpayers will foot the bill for the loan.
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But both the DOE Inspector General and GAO found that DOE did not have the necessary expertise or metrics to effectively evaluate these loans. What's worse, loan guarantees for President Obama's political allies were often fast-tracked, with little consideration for project merit or benefits to the taxpayer.

Companies that received Section 1705 loans had no skin in the game and weren't carefully considered – and we're all familiar with the results. With high profile defaults – like the $535 million loan guarantee provided to Solyndra in 2011, $68 million lost when Abound Solar filed for bankruptcy in 2012, and $139 million lost from a direct loan to Fisker Automotive – the Department has lost over $800 million on bad loans.
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And unlike a private lender, there is no benefit for the taxpayer if the guaranteed loan is paid in full. Regular Americans take on the liability of the full loan, they don't see a return – even if the project is successful and the loan is paid back. American tax dollars subsidize loans for large companies with billions in available capital like Ford, Goldman Sachs, Google, GE, and Berkshire Hathaway. DOE loans and loan guarantees have been overwhelmingly awarded to subsidiaries of large companies, or companies with high profile private investors who jump at the chance for government security.

But if something goes wrong, these big companies aren't stuck with the bill – the America people are. While supporters of the loan guarantee program often cite the low percentage of default loans, the numbers don't tell the whole story.

First, the DOE loan program is a prime example of the government trying to do something the private sector does better. GAO has consistently criticized DOE for lacking the appropriate expertise, both technical and financial, to evaluate and monitor loans. Private sector investment firms have this expertise, and make investment decisions based on profit, not political favors. It's no surprised that mistakes are made when rushing loans without proper scrutiny is the main priority. And political pressure to issue loan guarantees will only increase as the Obama administration comes to a close.

Second, loan guarantees are only one piece of the billions of taxpayer dollars President Obama has spent on his clean energy agenda. A quick look at the loan portfolio reveals companies that benefited from countless subsidies, tax credits, and cash grants from other government programs, not to mention federal and state mandates that push utilities to enter into power purchase agreements for higher cost energy from unreliable renewable power. In the case of SolarReserve's Crescent Dunes project in Nevada, a concentrating solar power project that received a $737 million loan guarantee, Nevadans will pay 66% more per kilowatt hour for electricity produced by the plant. So the loan program risks American's tax dollars, and then rewards them with more expensive utility bills when the project is complete. Finally, federal meddling in the energy market crowds out investment for innovative technologies that don't receive loan guarantees.

By subsidizing loans to favored technologies, DOE has driven private investors to choose projects based on loan security, not market success or innovation. Why would a private investor take a risk on an innovative technology when they can invest in a project backed by the government? The federal government should get out of the way, focus our limited resources on research and development, and let the market drive investment for energy innovation.

I want to thank Mr. McCall and all our witnesses for testifying to the Committee today, and I look forward to a review of DOE's loan portfolio. As some of our witnesses will point out today, the DOE loan programs are just one more way the Obama Administration is picking winners and losers in the energy market. We can't afford to risk American tax dollars or increase costs for the American people to play favorites.

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Chairman WEBER. So at this time I'll recognize the Ranking Member for his statement.

Mr. GRAYSON. Thank you, Mr. Chairman.

I welcome our witnesses to today's hearing on the Department of Energy's Loan Programs Office. I strongly support the efforts of the Loan Programs Office to commercialize and deploy innovative new clean energy technologies.

The Loan Programs Office manages a large and diverse portfolio comprising more than $30 billion in loans, loan guarantees, and commitments covering more than 30 major projects across the entire United States. These projects include launching utility-scale solar power plants and accelerating the resurgence of the U.S. auto manufacturing industry. Overall, these loans and loan guarantees have resulted in more than $50 billion in total project investments in energy in the United States.

The Loan Programs Office has maintained strong financial performance even though its mission carries some degree of risk inevitably since it includes financing innovative clean energy projects. The Loan Programs Office record actually compares favorably with private financing of conventional energy projects in the United States.

Congress identified an area where the lending market wasn't meeting our national needs, and we directed the Department of Energy to take on this task. By statute, this meant that the Department was allowed to take on some risk. As with any financial portfolio, gains may come with some losses, but the basis of modern lending is the acceptance of some level of risk to provide our economy with greater access to capital to grow.

Despite this risk, the Loan Programs Office has had an overall success rate of over 90 percent. Losses to date represent only 2.27 percent of the Department's $34 billion loan and loan guarantee portfolio and less than ten percent of the $10 billion in loan loss reserves that Congress set aside to cover expected losses in these programs. In fact, interest rate payments to the federal government received to date for these loans now total more than $500 million more than the estimated losses to the portfolio.

This program was not a partisan issue when the Department of Energy was first directed to carry out these activities in the Energy Policy Act of 2005 and then expanded twice more in 2007 and 2009. The statutory authority for the two active programs, the Loan Programs Office, were crafted in bipartisan legislation and signed into law by a Republican President.

I applaud the Department for its efforts to apply lessons learned from its few unsuccessful investments, and I look forward to learning how the loan program has evolved to better protect the taxpayers' interests. I also look forward to hearing the GAO's recommendations and Mr. McCall's plans on how the program can continue to improve and meet our goal of a great America.

I look forward to hearing each of your testimonies today, and I yield back.

[The prepared statement of Mr. Grayson follows:]

OPENING STATEMENT

Ranking Member Alan Grayson (D-FL), Subcommittee on Energy
House Committee on Science, Space & Technology

"Department of Energy Oversight: The DOE Loan Guarantee Program"
Joint Subcommittee Hearing, Subcommittees on Energy & Oversight

March 3, 2016

Thank you Mr. Chairman. I would like to welcome our witnesses to today's hearing on the Department of Energy's Loan Programs Office.

I strongly support the efforts of the Loan Programs Office to commercialize and deploy innovative new clean energy technologies. The Loan Programs Office manages a large, diverse portfolio…comprising more than $30 billion in loans, loan guarantees, and commitments…covering more than 30 major projects across the United States. These projects include building America's first new nuclear power plant in over 30 years, launching utility-scale solar power plants, and accelerating the resurgence of the US auto manufacturing industry.

Overall, these loans and loan guarantees have resulted in more than $50 billion in total project investments. The Loan Programs Office has maintained its strong financial performance, even though its mission carries some degree of financial risk, since it includes financing innovative clean energy projects. The Loan Programs Office's record even compares favorably with private financing of conventional energy projects in the United States.

Congress identified an area where the financial market wasn't meeting our national needs, and directed the Department of Energy to take on this task. By statute, this meant the Department had to take on some risk. As with any financial portfolio, gains often come with some losses. The basis of our financial market is the acceptance of some level of risk to provide our economy with greater access to capital to grow.

Despite this risk, the Loan Programs Office has an incredible overall success rate of over 90%. Losses to date, represent just 2.27% of the Department's $34 billion loan and loan guarantee portfolio…and less than 10% of the $10 billion loan loss reserve that Congress set aside to cover expected losses in these programs.

In fact, interest payments the federal government has received, to date for these loans, now total over $500 million *more* than the estimated losses to the portfolio.

This program was not a partisan issue when the Department of Energy was first directed to carry out these activities in the Energy Policy Act of 2005, and then expanded twice more in 2007 and 2009. The statutory authority for the two active programs in the Loan Programs Office were crafted in bipartisan legislation, and signed by a Republican President.

Yet, I am sure we will hear partisan attacks today on the Department's efforts for doing exactly as Congress instructed it to do. We are bound to hear, yet again, the echoes of Solyndra during our discussion.

On that note, I applaud the Department for its efforts to apply lessons learned from its few unsuccessful investments. And I look forward to hearing how the loan programs have evolved to better protect the taxpayers' interests. I also look forward to hearing GAO's recommendations, and Mr. McCall's plans on how the program can continue to improve.

I look forward to hearing each of your testimonies today. Thank you again. I yield back.

Chairman WEBER. Thank you, Mr. Grayson.

I now recognize the Chairman of the Subcommittee on Oversight, Mr. Loudermilk, for his opening statement.

Mr. LOUDERMILK. Well, thank you, Mr. Chairman. And I'd like to thank all of our witnesses for being here today.

Today's hearing is an examination of the Administration's effort to use taxpayer dollars to fund a massive green energy experiment. The 2009 stimulus directed billions of dollars toward green energy initiatives like the Department's Loan Guarantee Program. President Obama said we will "harness the sun, the winds, and the soil" to fuel our cars and to run our factories. The President is referring to the billions of dollars spent propping up the solar industry, not just in loans and loan guarantees, but through subsidies, grants, tax credits, and federal and state renewable energy mandates.

The resulting renewable power dotted across our nation is threatening the reliability of our electrical grid. To make matters worse, mandates like the renewable fuel standard will release more emissions across their lifecycles than conventional fuels do while increasing the cost of fuel at the pump.

Several years ago—or several years into this experiment, it became clear these efforts have wasted vast sums of taxpayer dollars, and yet in August 2015 the President announced that the Department of Energy Loan Program Office would make an additional one billion dollars in loan guarantees available for commercial-scale distributed energy projects. This committee welcomes and embraces new business and technologies with open arms, but it's important that these technologies be brought to commercial scale by market forces, not political whims.

In the President's second inauguration speech, he stated "The path towards sustainable energy sources will be long and sometimes difficult." President Obama was referring to the five Department of Energy Loan Program Office projects that failed to the tune of $800 million taxpayer dollars lost. The same Loan Program Office failed to properly monitor the risks and financial measures of Solyndra, which defaulted on a $500 million loan guarantee.

The Loan Program Office has faced strong criticism from Congress in the past. This Committee, the Energy and Commerce Committee, and the Oversight and Government Reform Committee held many hearings outlining concerns with the program. In one hearing, the former Loan Program Office Director, Jonathan Silver, faced harsh criticism from Congressman Jim Jordan for using a personal email account to conduct official business and intentionally circumventing the Federal Records Act. Director Silver also used his personal email account to lobby White House officials on approving loan guarantee projects based on their political impact, not on their financial merits. Additionally, it was commonplace among staff in the Loan Program Office to use personal email to avoid recordkeeping requirements. This is just one of the concerns the Oversight and Government Reform Committee highlighted in its report on the program, which I would like to enter into the record.

Chairman WEBER. Without objection.

[The information appears in Appendix II]

Mr. LOUDERMILK. It is abundantly clear that billions of taxpayer dollars were put at undue risk though the Loan Program Office, which often lacked the expertise to even evaluate loan applications. The DOE Inspector General described the Loan Program Office as "attaching a garden hose to a fire hydrant." Had it not been for Congress drawing attention to the problems with the Loan Program Office, the losses could have been far greater.

Mr. McCall is here today to explain the improvements of the Loan Guarantee Program and to ensure that this type of conduct does not take place under his watch. I want to be clear, Mr. McCall, that this committee holds you accountable for the billions of taxpayer dollars at your discretion, as will the American people. I look forward to hearing how Mr. McCall plans to learn from the mistakes of his predecessor and prevent these problems from happening again.

I also look forward to hearing from Dr. Rusco from the Government Accountability Office on the recommendations GAO has made for the Loan Program Office, particularly the outstanding recommendations that have not been implemented by the loan program. I also welcome Mr. Loris from the Heritage Foundation, who has testified on this matter a number of times before Congress.

And thank you, Mr. Chairman. I yield back.

[The prepared statement of Mr. Loudermilk follows:]

COMMITTEE ON
SCIENCE, SPACE, & TECHNOLOGY
Lamar Smith, Chairman

For Immediate Release
March 3, 2016

Media Contact: Zachary Kurz
(202) 225-6371

Statement of Oversight Subcommittee Chairman Barry Loudermilk (R-Ga.)
Department of Energy Oversight: DOE Loan Program

Chairman Loudermilk: Good morning. Thank you Chairman Weber. I would also like to thank our witnesses for being here today.

Today's hearing is an examination of the administration's effort to use taxpayer dollars to fund a massive green energy experiment. The 2009 stimulus directed billions of dollars toward green initiatives like the Department's Loan Guarantee Program. President Obama said that we will "harness the sun, the winds, and the soil" to fuel our cars and to run our factories. The President is referring to the billions of dollars spent propping up the solar industry – not just in loans and loan guarantees, but through subsidies, grants, tax credits, and federal and state renewable energy mandates. The resulting renewable power dotted across our nation is threatening the reliability of the electrical grid. And mandates like the renewable fuel standard will release more emissions across its life cycle than conventional fuels while increasing the cost of fuel at the pump.

Several years into this experiment, it is becoming clear these efforts have wasted vast sums of taxpayer dollars, and yet in August 2015 the President announced that the DOE Loan Program Office would make an additional $1 billion in loan guarantees available for commercial scale distributed energy projects. This committee welcomes and embraces new businesses and technologies with open arms, but it is important that these technologies be brought to commercial scale by market forces, not political whims.

In the President's second inauguration speech, he stated "The path towards sustainable energy sources will be long and sometimes difficult." President Obama is referring to the five Department of Energy, Loan Program Office projects that failed to the tune of $800 million taxpayer dollars lost. The same Loan Program office failed to properly monitor the risks and financial measures of, Solyndra, which defaulted on a $500 million loan guarantee.

The Loan Program Office has faced strong criticism from Congress in the past. This Committee, the Energy and Commerce Committee, and the Oversight and Government Reform Committee held many hearings outlining concerns with the Program. In one hearing, the former Loan Program Office Director, Jonathan Silver, faced harsh criticism from Congressman Jim Jordan for using a personal email

account to conduct official business and intentionally circumventing the Federal Records Act. Jonathan Silver also used his personal email account to lobby White House Officials on approving loan guarantee projects based on their political impact not financial merits. Additionally, it was common place among staff in the Loan Program office to use personal email to avoid record keeping requirements. This is just one of the concerns the Oversight and Government Reform Committee highlighted in their report on the program, which I would like to enter into the record.

It is abundantly clear that billions of taxpayer dollars were put at undue risk though the Loan Program Office, which often lacked the expertise to even evaluate loan applications. The DOE inspector general described the Loan Program office as "attaching a garden hose to a fire hydrant." Had it not been for congress drawing attention to the problems with the Loan Program Office, the losses could have been far greater.

Mr. McCall is here today to explain the improvements of the Loan Guarantee Program and to ensure to us that this type of conduct does not take place under his watch. I want to be clear, Mr. McCall, that this Committee holds you accountable for the billions of taxpayer dollars at your discretion. I look forward to hearing how Mr. McCall plans to learn from the mistakes of his predecessor.

I also look forward to hearing from Dr. Rusco from the Government Accountability Office on the recommendations GAO has made for the Loan Program Office – particularly the outstanding recommendations that have not been implemented by the Loan Program. I also welcome Mr. Loris from the Heritage Foundation, who has testified on this matter a number of times before Congress. And with that I yield the back to the chair.

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Chairman WEBER. Thank you, Mr. Loudermilk.

And I'll—before I recognize the gentleman from Virginia, they're going to be calling votes pretty quick here, and what we thought we would do for the benefit of the Committee is we will probably just kind of go in shifts. Chairman Loudermilk and myself will take turns here, and we'll probably keep this thing rolling, which means you all might be a little safer. There'll be less of us here to ask those hard questions.

I now recognize Mr. Beyer for his opening statement.

Mr. BEYER. Thank you, Mr. Chairman. And thank you for the logistical plan.

Thank you, Chairman Weber and Chairman Loudermilk, for holding this hearing today on the DOE loan program.

Fundamentally, I believe the federal government has a crucial role to play in fostering scientific innovation in the development of advanced technologies. Throughout the past century, the U.S. Government has banked—backed and bankrolled a host of technical discoveries from global positioning satellites, semiconductors, nuclear power, and a vast array of medical and healthcare-related devices. Economist Mariana Mazzucato points out that one dozen of the key technologies that make the iPhone possible, from microprocessors to touch screens to lithium-ion batteries, were developed with the investment and support of federal agencies from the National Science Foundation to the Department of Defense to the Department of Energy.

I believe the DOE Loan Program helps to advance the commercialization of new and emerging clean energy technologies. It encourages private investment in these key areas that would have been absent without federal support. Just like in the private sector, however, not every venture proves viable; not every investment is an automatic success. But not every failure is reason to dismember a program or withdraw from federal support of innovation that has been the established norm in this country for well over a century.

Some of my friends in the Majority have acknowledge this fact, but investments the federal government has chosen to make in key technologies have helped spawn new industries, including the information revolution, and solidified America's place as the global hub of scientific innovation, revolutionary discoveries, and advanced technological development. I believe our government should also strive to be a leader in developing clean energy technologies as well, and the DOE Loan Program helps us do just that.

However, ensuring that federal dollars in these enterprises are well invested, thoughtfully managed, and efficiently distributed is proper and appropriate. And I look forward to hearing from Mr. McCall today about how the DOE Loan Program is doing just that and from our other witnesses, including Frank Rusco from GAO, about how the program can improve to be better in the future.

The Majority has expressed particularly interest in three projects related to a company named Abengoa that received funding from the DOE Loan Program. Their particular interest in these loans is understandable because Abengoa, based in Spain, has recently begun insolvency proceedings. Fortunately, the $132 million loan for an Abengoa-related bioenergy project backed by a DOE loan guarantee has been repaid in full, repaid in full. And the other two

projects named Solana and Mojave are currently operating and repaying principal and interest on these DOE loans as scheduled.

I look forward to Mr. McCall explaining how federal dollars have been protected by the structure of these loans, and I hope you can clear up some of the misinformation in the media about the specific Abengoa projects supported by the DOE Loan Program.

I'd also point out that these three Abengoa-related loan guarantees combine total almost $2.8 billion, while the DOE provided guarantees to nearly three times as much, $8.3 billion, for construction of the new Vogtle nuclear plant in Georgia, which I very much support.

And I would remind the majority that the U.S. Government has provided more than $470 billion—$2.8 billion—$470 billion in subsidies to the oil and gas industry over the past 100 years, and they continue to receive these today.

Let me just emphasize, a loan guarantee is paid back to the taxpayers, very low but a subsidy is never paid back. And the Chair talks about picking winners and losers. We've been picking winners and losers for over a century.

Last, I'd also like to express a particularly warm welcome to Mr. Gregory Kats. Mr. Kats is uniquely placed to provide a broad view of the DOE Loan Program and the critical need for this sort of federal investment. Hopefully, you can put—place the failures and the successes in the proper context. You're a former DOE official, now a venture capitalist and has been on the board of directors of two companies which have applied for DOE loans. So I look forward to your description of the rigors of the DOE Loan Program from your perspective and in the private arena investing in clean energy technologies and companies that have helped move our country forward.

So thank you, Mr. Chairman. I yield back.

[The prepared statement of Mr. Beyer follows:]

OPENING STATEMENT

Ranking Member Don Beyer, Subcommittee on Oversight
House Committee on Science, Space & Technology

"Department of Energy Oversight: The DOE Loan Guarantee Program"
Joint Subcommittee Hearing, Subcommittees on Energy & Oversight

March 3, 2016

Thank you Chairman Weber and Chairman Loudermilk for holding this hearing today on the DOE Loan Program.

Fundamentally, I believe the federal government has a crucial role to play in fostering scientific innovation and the development of advanced technologies. Throughout the past century, the U.S. government has backed and bankrolled a host of technical discoveries from global positioning satellites (GPS), semiconductors, nuclear power, and a vast array of medical and healthcare related devices. Economist Mariana Mazzucato points out that one dozen of the key technologies that make the iPhone possible, from microprocessors to touch screens to lithium-ion batteries were developed with the investment and support of federal agencies from the National Science Foundation to the Department of Defense and Department of Energy (DOE).

I believe the DOE Loan Program helps to advance the commercialization of new and emerging clean energy technologies. It encourages private investment in these key areas that would have been absent without federal support. Just like in the private sector, however, not every venture proves viable and not every investment is an automatic success. But not every failure is reason to dismember a program or withdraw from federal support of innovation that has been an established norm in this country for well over a century.

Some of my friends in the Majority may not like to acknowledge this fact, but investments the federal government has chosen to make in key technologies has helped to spawn new industries, including the information revolution, and solidified America's place as the global hub of scientific innovation, revolutionary discoveries and advanced technological development. I believe our government should also strive to be a leader in developing clean energy technologies as well. The DOE Loan Programs help us do that.

Ensuring, however, that federal dollars in these enterprises are well invested, thoughtfully managed and efficiently distributed is proper and appropriate. I look forward to hearing from Mr. McCall from DOE about how the DOE Loan Program is doing that today, and from our other witnesses, including Mr. Frank Rusco from the Government Accountability Office (GAO) about how they believe the program can improve to do that better in the future.

The Majority has expressed particular interest in three projects related to a company named Abengoa that received funding from the DOE Loan Program. The particular interest in these loans is understandable because Abengoa, based in Spain, has recently begun insolvency proceedings. Fortunately, the $132 million loan for an Abengoa related bioenergy project,

backed by a DOE loan guarantee, has been repaid in full and the other two projects, named Solano and Mojave, are currently operating and repaying principal and interest on these DOE loan guarantees as scheduled.

I look forward to Mr. McCall explaining how federal dollars have been protected by the structure of these loans and I hope that he can help clear up some of the misinformation in the media about the specific Abengoa projects supported by the DOE Loan Program.

I would point out that these three Abengoa related loan guarantees combined totaled almost $2.8 billion dollars while the DOE provided guarantees for nearly three times as much funding, $8.3 billion, for construction of the new Vogtle nuclear plant in Georgia. And I would remind our Majority that the U.S. government has provided more than $470 billion in subsidies to the oil and gas industry over the past 100 years that they continue to receive today despite the extensive maturity of that industry.

Lastly, I would also like to express a particularly warm welcome to Mr. Gregory Kats. Mr. Kats is uniquely placed to provide a broad view of the DOE Loan Program and the critical need for this sort of federal investment. I believe he can help place the quote "failures" of the program in perspective educating us on the "success" rate of the private sector when it comes to investing in new energy technologies. Mr. Kats is a former DOE official and is now a venture capitalist and has been on the Board of Directors of two companies who have applied for DOE loans. I look forward to his description of the rigors of the DOE Loan program from his perspective in the private arena investing in clean energy technologies and companies that can help move our country and our advanced energy technologies forward.

Thank you. I yield back.

Chairman WEBER. I thank the gentleman.

Misinformation in the media? Gosh. According to the media, you would never say anything like that.

Well, it's a pleasure to be here today. Let me introduce our witnesses.

Our first witness today is Mr. Mark McCall, Executive Director of the Loan Programs Office at the Department Of Energy. Prior to joining the DOE, Mr. McCall spent 17 years as Managing Director and CFO for Lime Rock Partners. You were a venture capitalist kind of like Mr. Kats is. Did you all swap places? And Mr. McCall received his bachelor's degree from Georgetown and his law degree from Yale.

Our next witness is Dr. Frank Rusco—is that right?

[Nonverbal response.]

Chairman WEBER. Okay. Director of Natural Resources and Environment at the Government Accountability Office. Dr. Rusco leads work on a broad spectrum of energy issues, including federal oil and gas management, DOE's energy and R&D programs, the Nuclear Regulatory Commission oversight, and government-wide energy programs. What do you do in your spare time? Dr. Rusco received his master's and Ph.D. in economics from the University of Washington in Seattle.

Our third witness today is Mr. Gregory Kats, President of Capital E. Mr. Kats previously served for five years as Director of Financing for Energy Efficiency and Renewable Energy at the DOE. Mr. Kats received his bachelor's degree from UNC, his MBA from Stanford, and his MPA from Princeton.

Our final witness is Mr. Nicolas Loris, Herbert and Joyce Morgan Fellow for the Heritage Foundation. Before being named Morgan Fellow, Mr. Loris was a Policy Analyst specializing in energy and environmental issues. Mr. Loris received his master's in economics from George Mason University and his bachelor's degree in economics, finance, and political science from Albright College.

Welcome, gentlemen.

Mr. McCall, you're recognized for five minutes.

TESTIMONY OF MR. MARK MCCALL, EXECUTIVE DIRECTOR, LOAN PROGRAM OFFICE, U.S. DEPARTMENT OF ENERGY

Mr. MCCALL. Chairman Smith, Subcommittee Chairmen Weber and Loudermilk, Ranking Members Johnson, Grayson, and Beyer, and members of the subcommittees, thank you for the opportunity to appear before you today. My name is Mark McCall, and I am the Executive Director of the Loan Programs Office at the Department of Energy.

Before joining LPO last July, I spent the prior 17 years at a private equity firm focused on investing in the oil and gas sector. I served as the Chief Financial Officer for the firm and for the first 12 of those 17 years as its general counsel as well.

My investment background in the energy sector has informed my view of the challenges and opportunities for the United States to be at the cutting-edge of commercialization of new energy tech-

nologies. I feel privileged to be leading LPO, and I appreciate the opportunity to bring my private sector experience to public service.

LPO issues loans and loan guarantees to accelerate the commercial deployment of clean energy projects and advanced vehicle manufacturing projects in the United States. LPO's authority to support these projects comes under two separate programs: the Title XVII loan program and the Advanced Technology Vehicles Manufacturing, or ATVM, loan program.

The Title XVII program fills a gap in the marketplace for projects that cannot access private debt financing. Deploying innovative technologies at commercial scale for the first time is often a capital-intensive, long-term process that entails both technology and scale-up risks. Because of these risks, commercial lenders are often unwilling to finance these projects until they have a proven history of performance at commercial scale.

Title XVII portfolio technologies currently in operation and under construction range from utility-scale PV and concentrating solar thermal to nuclear energy, including plant Vogtle in Georgia, the first new nuclear plant in the United States in 30 years. LPO currently has over 15 projects in operation that generate enough clean energy to power more than 1 million average American homes.

The ATVM program fulfills a critical role in the marketplace by providing debt financing to help automakers meet fuel economy standards. ATVM has played and continues to play an important role in recovery of the American auto industry. ATVM remains available to both auto manufacturers and vehicle component manufacturers.

Collectively, Title XVII and ATVM projects have supported tens of thousands of jobs, and every LPO transaction requires private investment. Equity investment from private sources must cover at least 20 percent of the total project costs, and borrowers frequently invest more. In fact, borrowers have committed over $18 billion in financing to their LPO-financed projects, meaning they have significant skin in the game.

Our portfolio has now been significantly de-risked as many of LPO's projects have completed construction and begun operating in recent years and borrowers have begun repayment of their loans. As of January 2016, $5.7 billion in principal and nearly $1.4 billion in interest on LPO loans and loan guarantees has been repaid. Because of LPO's prudent due diligence, losses for the $32 billion portfolio represent just above two percent of total commitments, a rate I believe would be highly competitive in the private sector for a portfolio of this nature.

With all of these positive results, the portfolio is clearly performing well. This good performance is no accident. Before making a loan or loan guarantee, LPO conducts extensive due diligence, including rigorous financial, technical, legal, environmental, and market analysis by DOE's professional staff and outside advisors. Transactions are structured to identify and mitigate risk.

After closing, LPO continues to use powerful monitoring tools, including strong covenants and strict milestones to control the risk that it assumes. LPO requires borrowers to meet clear benchmarks before disbursing funds and staggers disbursements to ensure borrowers are meeting their obligations.

LPO has benefited from recommendations for improvement from Congress, from GAO, DOE's Inspector General, and from independent consultants such as Herb Allison. LPO has taken his recommendations seriously and implemented changes to address them. LPO is always seeking to improve its underwriting and monitoring and to incorporate lessons learned and ensure best practices to protect taxpayer interests.

In closing, energy innovation is widely recognized as a key driver for the American and global economy. The United States needs to lead on innovation so that we develop the intellectual capital, we build the enduring companies, and we create good-paying jobs for our workers. LPO has demonstrated that we know how to prudently finance these game-changing projects, get them built and operating, and protect taxpayers at the same time.

Thank you for allowing me to address the Committee, and I look forward to your questions.

[The prepared statement of Mr. McCall follows:]

Summary of the Testimony of Mark A. McCall

Executive Director, Loan Programs Office

U.S. Department of Energy

Before the

Subcommittees on Energy and Oversight

Committee on Science, Space, & Technology

U.S. House of Representatives

March 3, 2016

- Before joining LPO last July, I spent the prior 17 years at a private equity firm, focused on investing in the oil and gas sector. I served as the firm's Chief Financial Officer -- and for the first 12 of those 17 years -- as its General Counsel, as well. My investment background in the energy sector has informed my view of the challenges and opportunities for the U.S. to be at the cutting edge of commercializing new energy technologies.
- The Loan Programs Office (LPO) at the U.S. Department of Energy issues loans and loan guarantees to accelerate the commercial deployment of clean energy projects and advanced vehicle manufacturing in the U.S. under two programs: the Title XVII loan guarantee program and the Advanced Technology Vehicles Manufacturing (ATVM) loan program. LPO fills a gap in the marketplace for projects that cannot access private debt financing.
- Under Title XVII, LPO currently has over 15 projects in operation that generate enough clean energy to power more than 1 million homes. Title 17 portfolio technologies currently in operation and under construction range from utility-scale PV and concentrating solar thermal to nuclear energy. In June 2015, LPO completed an $8 billion loan guarantee to support the construction of the first new nuclear project in the U.S. in thirty years -- at Plant Vogtle in Georgia.
- The ATVM program provides debt financing to help automakers meet fuel economy standards. The ATVM program has played an important role in the recovery of the American auto industry.
- Collectively, Title XVII and ATVM projects have supported tens of thousands of jobs.
- Every LPO transaction requires at least 20 percent private investment, with borrowers investing $18 billion in financing. As a result, borrowers have significant "skin in the game."
- LPO has a portfolio of more than $30 billion in loans, loan guarantees, and conditional commitments, which supports about $50 billion in total project costs. Because of LPO's prudent due diligence, losses for the $32 billion portfolio represent just above two percent of total commitments.
- DOE takes its responsibility to the American taxpayer very seriously. As a result, LPO underwrites and structures its loans and loan guarantees to protect the interests of taxpayers and maximize prospects for full repayment.

- LPO has taken the recommendations of Congress, the Government Accountability Office, the DOE Inspector General, and independent consultants seriously, and has implemented many changes to address them. LPO is also always working to ensure best practices are utilized.
- Energy innovation is widely recognized as a key driver for the future of the global economy. Deploying new technologies at commercial scale is critical to moving the U.S. towards a stronger future. LPO programs can continue to play an important role in supporting this effort, while protecting the taxpayer.

Testimony of Mark A. McCall

Executive Director, Loan Programs Office

U.S. Department of Energy

Before the

Subcommittees on Energy and Oversight

Committee on Science, Space, & Technology

U.S. House of Representatives

March 3, 2016

Introduction

Chairman Smith, Subcommittee Chairmen Weber and Loudermilk, Ranking Members Johnson, Grayson, and Beyer, and Members of the Subcommittees, thank you for the opportunity to appear before you today. My name is Mark McCall, and I am the Executive Director of the Loan Programs Office (LPO) at the Department of Energy (DOE or Department). I have served in this position at the Department since July 2015.

Prior to joining DOE, I spent seventeen years as a Managing Director and the Chief Financial Officer for Lime Rock Partners, a private equity firm focused on the energy sector. From 1998 to 2010, I also served as the firm's General Counsel. Before joining Lime Rock Partners, I served as Vice President at Delus Corp., was an associate in the mergers and acquisitions group of Lehman Brothers, and the Director of Operations for E-II Holdings in Moscow.

I feel honored to have the opportunity to serve the public and apply my private sector experience in finance and investments to lead the LPO. My background in the upstream oil and gas market has informed my view of the challenges and opportunities for the U.S. to be at the cutting edge of commercializing new energy technologies.

Overview of the Loan Programs Office

The LPO issues loans and loan guarantees to accelerate the commercial deployment of clean energy projects and advanced vehicle manufacturing in the U.S. under two programs: the Title XVII loan guarantee program and the Advanced Technology Vehicles Manufacturing (ATVM) loan program.

The Title XVII loan guarantee program was authorized by the Energy Policy Act of 2005 and signed into law by President George W. Bush. It directs the Department to issue loan guarantees to support the commercial deployment of clean energy projects that utilize innovative technology and reduce, avoid, or sequester greenhouse gases. The program covers a number of eligible

technology areas including advanced fossil energy, advanced nuclear energy, renewable energy, and energy efficiency.

The ATVM loan program was authorized under Section 136 of the Energy Independence and Security Act of 2007. It directs the Department to issue direct loans to auto manufacturers and component suppliers to manufacture fuel-efficient vehicles and components in the U.S.

The Importance of the Loan Programs Office

Deploying clean energy technologies at commercial scale for the first time entails both technology and market risk. Advancing these technologies further requires significant amounts of capital. Commercial lenders and bondholders are often unwilling to finance projects that use new technologies because those technologies have not been deployed at full commercial-scale and do not yet have a history of performance.

The Title XVII program fills a critical gap in the marketplace, providing project developers sufficient full-term debt financing to design and construct projects.

The ATVM program fulfills another critical role in the marketplace by providing low-cost, long-term financing to expand domestic auto manufacturing and help manufacturers achieve future fuel economy standards.

Without these important programs, U.S. leadership in energy and auto manufacturing will suffer. Congress has recognized these market gaps and LPO's unique ability to address them by issuing loan and loan guarantees in situations where traditional debt providers are either unwilling or unable to assume the debt.

Even as LPO addresses market gaps, every transaction is a public-private partnership. While the Department issues loans and loan guarantees to provide the necessary debt financing for these projects, project sponsors must provide significant equity investments. Equity invested from private sources must represent at least 20 percent of the total cost of every project, and is frequently more. The LPO has a portfolio of more than $30 billion in loans, loan guarantees, and conditional commitments, which supports about $50 billion in total project costs. To that end, at financial close of these loans and loan guarantees, borrowers will have provided over $18 billion in financing to support their LPO-financed projects. In other words, the borrowers with which the LPO works have significant "skin in the game" because they have contributed substantial amounts of financing.

Strong Portfolio Performance

Although LPO's mission – by its nature – carries some degree of financial risk, LPO has maintained strong financial performance – even when compared with private financing of conventional energy and manufacturing projects in the United States. In total, LPO currently manages a $32 billion portfolio comprised of loan guarantees, loans, and conditional commitments that includes a diverse array of technologies in 20 states across the country. Twenty-two LPO projects are currently operating and four are under construction or development. The loans and loan guarantees issued by LPO are all structured to be fully repaid

with interest over the tenor of the loan. Each project in the portfolio must begin repaying the principal and interest on its loan around the time it reaches completion. As many of LPO's projects have reached completion in recent years, project sponsors have begun repayment of their loans. As of January 2016, $5.72 billion in principal and $1.38 billion in interest were repaid. Because of prudent due diligence on the part of LPO and reduced risk with maturation of the portfolio, actual and estimated losses for the portfolio represent just above two percent of closed and committed loans and loan guarantees – a rate that would be viewed favorably even in the private sector for a portfolio of a similar type.

Risk and Portfolio Management

The Department of Energy takes its responsibility to the American taxpayer very seriously. As a result, the LPO underwrites and structures its loans and loan guarantees to protect the interests of taxpayers and maximize prospects for full repayment. Before making a loan or loan guarantee, the LPO conducts extensive due diligence on the application, with rigorous financial, technical, legal, environmental and market analysis by DOE's professional staff, including qualified engineers, financial experts, and outside advisors.

The LPO also has one of the largest, most experienced project finance teams in the world that has the capabilities and tools to support a number of different project types, all while managing risk appropriately. Transactions are structured to identify and mitigate risk as effectively as possible before proceeding with a loan or loan guarantee. Once a project closes, the LPO continues to use powerful monitoring tools — including strong covenants and strict project milestones — to control the amount of risk it assumes. LPO requires borrowers to meet clear benchmarks before disbursing funds and staggers these disbursements to ensure borrowers are meeting their obligations under the loan guarantees. DOE will continue to be an active manager, continuously monitoring projects, their market environments, and other identified risks to seize all opportunities to minimize exposure to loss.

As stated in a previous Government Accountability Office (GAO) report, some private lenders have noted that the Department's due diligence is as rigorous – or more so –than that performed in the private sector. Due in large part to the Department's meticulous due diligence, its commitment to establishing protections within all agreements and robust project monitoring, the portfolio as a whole continues to perform very well with total losses to date of only about two percent.

Despite these efforts, and consistent with Congressional intent through the appropriation of credit subsidy, we have experienced some losses and thus constantly strive to improve every aspect of our operations. Given the nature of our work, we have benefited from several recommendations for improvement, including recommendations from Congress, the GAO, DOE's Inspector General (IG), and independent consultants such as former U.S. Department of Treasury official Herb Allison.

DOE has adopted many of these improvements, including but not limited to:

- strengthening its internal oversight of LPO by restructuring the former LPO Credit Division to encompass a Risk Management Division;
- streamlining the application process;
- adding appropriate transparency to the approval process;
- filling key positions with experienced professionals, who bring private sector experience;
- clarifying authorities, strengthening internal oversight of the programs;
- developing a state-of-the-art workflow management system;
- establishing a robust early warning system through which LPO monitors market, regulatory, and counterparty risks that can affect credit performance and develops periodic reports for each transaction which provide an in-depth analysis of the risks; and
- improving reporting and transparency to the public.

Furthermore, LPO continuously looks for additional ways of improving its underwriting and asset monitoring activities to incorporate lessons learned and ensure best practices to protect taxpayer interests.

Advancing Clean Energy Technologies

To date, the LPO has been successful in advancing its mission of accelerating the commercialization of new technologies and advancing an "all-of-the-above" energy strategy that avoids, reduces, and sequesters greenhouse gases. As of September 2015, LPO projects have avoided 25 million metric tons of carbon dioxide (CO2) emissions, and the amount of CO2 avoided will continue to grow as projects achieve full commercial operation. In addition, LPO projects have supported local economies, supporting 56,000 good-paying American jobs across 16 states. The following are sample projects debt-financed by LPO that illustrate the Department's commitment to American competitiveness and achieving an "all-of-the-above" energy strategy:

Supporting Construction of America's First New Nuclear Reactor in 30 Years

In 2010, the Department offered a total of $8.3 billion in conditional commitments to Georgia Power Company (GPC), Oglethorpe Power Corporation (OPC) and Municipal Electric Authority of Georgia (MEAG Power) to support the construction of two new 1,100 megawatt (MW) Westinghouse AP1000® nuclear reactors at the Alvin W. Vogtle Electric Generating Plant in Waynesboro, GA. I had the opportunity to visit the Vogtle Project one month ago and was impressed at the breadth and complexity of the project. The Vogtle project represents a new generation of advanced nuclear reactors in the United States and the first new nuclear reactors to begin construction in the United States in nearly three decades.

LPO reached financial close on the last loan guarantees for this project in June 2015. The deal took several years to finalize in large part due to its uniqueness and complexity, the use of innovative technology that had never been deployed commercially in the U.S., and several different borrowers.

The deployment of this innovative technology at commercial scale has put the U.S. at the forefront of a new generation of advanced nuclear reactors, as two more reactors using this technology are currently under construction in the U.S. Vogtle has helped to revive a world-class workforce with specialized expertise at building nuclear power projects and trained a new generation of engineers, technicians, electricians, welders, and more.

These loan guarantees are an important part of the Administration's commitment to restart the U.S. nuclear power industry and ensure the continued role of safe nuclear power in America's electricity mix.

Launching Utility-Scale PV Solar in the U.S.

In 2009, there were exactly zero photovoltaic (PV) solar facilities larger than 100 MW in the U.S. A number of project developers with long-term power purchase agreements (PPAs) were interested in building large, utility-scale projects, but were unable to secure the necessary debt financing due to the scale and innovative nature of the projects. LPO helped to address this market roadblock by providing $4.6 billion in loan guarantees to support the first five utility-scale PV projects larger than 100 MW, representing more than 1,500 MW of capacity. With the loan guarantee for the Desert Sunlight project, LPO worked with a number of commercial lenders through the Financial Institution Partnerships Program (FIPP), enabling them to build experience with utility-scale PV projects.

Following these five projects, 28 additional PV projects larger than 100 MW were financed solely by commercial lenders in the U.S, illustrating how LPO helped launch the utility-scale PV market and facilitated private lenders taking over debt financing for this new market. Today, solar projects at this scale are readily financed by private lenders – many of whom began their participation in the solar sector working with the LPO through FIPP. These lending partners include leading financial institutions, such as John Hancock, Bank of America, and Citigroup.

This sequence of events demonstrates the ability of the LPO to reduce the risk of new technology while supporting the entrance of commercial lenders into new markets.

Scaling Up Concentrating Solar Power:

LPO has also been instrumental in launching the first commercial-scale concentrating solar power (CSP) plants in the United States in decades - including the first ever with thermal energy storage. Unlike PV solar panels that absorb sunlight to directly generate electricity, CSP uses mirrors to reflect the sun's rays onto a focal point that warms up a heat transfer fluid. The heat transfer fluid heats water to create steam to power a turbine that generates electricity, just like a conventional fossil fuel power plant. A benefit of thermal energy storage is that heat can be stored for later use, which allows CSP plants to continue operating during cloud cover or even after the sun sets, helping provide energy on demand when the resource is not available.

Between 2010 and 2011, LPO financed five of the world's largest CSP projects. By integrating thermal energy storage, two of these projects brought the first utility-scale "nighttime solar" to the United States. An example of this technology is the 250 MW Solana CSP facility in Gila Bend, Arizona. LPO helped finance Solana with a $1.4 billion loan guarantee issued in 2010.

This facility uses parabolic trough technology and includes the world's largest operating molten salt storage system, which allows the facility to produce six hours of energy without any sunlight. In 2014, Solana earned the Innovation Award for utility-scale projects at Energy Storage North America and was recognized as a Top Plant by POWER Magazine.

Similarly, the Mojave solar project, also a parabolic trough concentrating solar plant, is one of the world's largest CSP facilities. The Mojave project uses innovative solar receiver and frame designs to further enhance already proven parabolic technology. The construction of this solar plant created 830 construction jobs and supports 70 permanent jobs. The Mojave project received a $1.2 billion loan guarantee from the Department in 2011.

As you are aware, Solana and Mojave have been in the news recently not because of their award-winning innovation, but due to the financial status of Abengoa, S.A.

I want to take this opportunity to make clear that LPO is not currently guaranteeing any loans to Abengoa S.A. or its subsidiaries. Rather, the DOE guaranteed loans for both the Solana and Mojave solar projects are currently for separate project companies – Arizona Solar One LLC and Mojave Solar LLC – whose sole business activities are the ownership and operation of the Solana and Mojave plants, respectively. Mojave Solar LLC is owned by Atlantica Yield Plc (formerly Abengoa Yield Plc) and Arizona Solar One LLC is owned by Atlantica Yield and Liberty Media Interactive. The projects have long-term contracts with investment grade utilities for the sale of the power generated by the projects. The repayment of the loans guaranteed by DOE is based on the revenues from the sale of this power to the utility, and not the financial standing of other companies. This arrangement helps to insulate the borrowers from financial distress of others. Today, Solana and Mojave are both operating and current on their principal and interest repayments to DOE.

The five utility-scale CSP plants that have received DOE loan guarantees will generate enough clean electricity to power 252,000 homes. In addition to adding substantial clean energy to the grid, constructing these projects in Arizona, California and Nevada has put thousands of Americans in the Southwest to work and created a value chain that stretches across the United States with manufacturing supply chains like steel, mirrors, and gear.

Supporting the American Auto Industry Resurgence

Ford Motor Company is helping to position the U.S. auto industry as a leader in fuel-efficient vehicles worldwide. Through LPO's ATVM program, Ford retooled and modernized factories in the United States, which created and preserved manufacturing jobs for more than 33,000 Ford employees.

The factory improvements from this project enabled Ford to continue improving fuel efficiency in more than a dozen popular vehicles, including the Escape, F-150, Focus, Fusion, and C-Max. The innovations include the family of Ford EcoBoost engines, which are available in almost all models, and introductions of new hybrid, plug-in hybrid, and all-electric plug-in vehicles. At the

end of last year, Ford announced that it was on track to sell more than 1 million cars with EcoBoost Engines for the first time in a single year.

In addition to supporting established American automakers like Ford, the ATVM program helped launch Tesla Motors, America's first all-electric automaker. Tesla's $465 million loan enabled it to reopen a shuttered auto manufacturing plant in Fremont, California and to produce battery packs, electric motors, and other powertrain components. The construction of the Tesla plant initially created more than 3,000 full time jobs in California. Tesla now employs 12,000 individuals – far more than the company initially estimated – and is building out a supply chain that supports numerous additional jobs and technologies, which has helped bring advanced manufacturing technology back to America. In May 2013, Tesla repaid the entire remaining balance on its loan nine years earlier than required.

If the U.S. Does Not Lead, Other Countries Will

So far I have shared what LPO is, how it works, and what it has achieved. However, it important to talk about what LPO can achieve in the future and why it is critical. The energy and auto manufacturing sectors include some of the most fiercely-competitive industries in the world. These industries also present enormous economic growth opportunities and in some cases are the backbone of economic development in countries. As a result, countries are racing to increase their market share and stake claim to the technological advancements in these industries. Although many advanced technologies in the energy and automobile spheres have been developed in the United States, other countries--including China and Germany– are leading.

In 2009, China replaced the United States for the first time as the world's largest car market. Today, China is not only the world's largest market for selling automobiles, but is also the world's top auto producer. China is also a leading investor in the $6 trillion global energy market. Renewable energy is a large and growing piece of this market, and China has positioned itself as the dominant player in the manufacturing and deployment of renewable electricity generation systems and technologies. Recent data shows that China led the world with $26.7 billion invested in renewable energy in just the 3rd quarter of 2015. The U.S. was second for the same period at $13.4 billion.

There is no doubt that energy innovation is the future. The U.S. needs to lead on innovation, related jobs, and intellectual property to ensure our continued economic growth. The LPO has demonstrated how to prudently finance game changing technologies; making these investments now will mean a stronger economy in the future.

Conclusion

Moving forward, LPO will focus on three priorities:

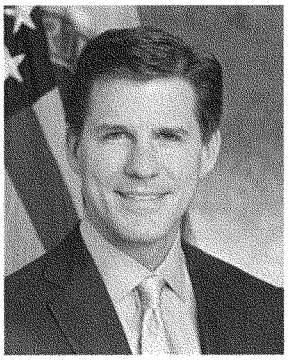
1) Getting good deals done: Starting in December 2013, when LPO issued its first new solicitation since 2011, the Title XVII and ATVM programs have received applications from a diverse array of innovative projects for more than $20 billion in loans and loan guarantees. We will continue to move these applications efficiently through the process, engage in rigorous due diligence, and close on good and prudent deals.

2) Diligently managing the existing portfolio: Once LPO closes a loan or loan guarantee, projects are monitored and evaluated throughout project development, construction, commissioning, and operation until the loan has been repaid in full. LPO's team of financial, technical, environmental, and legal professionals will continue to protect taxpayer interests through this very important function.

3) Continuing to build out a pipeline of clean energy and auto manufacturing projects that support LPO's mission: LPO currently has more than $16 billion in remaining authority for the ATVM direct loan program and three open loan guarantee solicitations for Title XVII – $12.5 billion for Advanced Nuclear Energy Projects, $8.5 billion for Advanced Fossil Energy Projects, and $4.5 billion for Renewable Energy & Efficient Energy Projects (REEE).

Deploying new technologies at commercial scale is critical to moving the U.S. towards a stronger future. I am confident that LPO programs can continue to play an important role in supporting this effort, while protecting the taxpayer. I appreciate your attention and look forward to any questions you may have.

U.S. DEPARTMENT OF ENERGY
LOAN PROGRAMS OFFICE



Mark A. McCall
Executive Director
Loan Programs Office
U.S. Department of Energy

Mark A. McCall was appointed by President Obama in July 2015 to serve as Executive Director of the Loan Programs Office (LPO) at the U.S. Department of Energy. Mr. McCall oversees the program's more than $30 billion portfolio of loans and loan guarantees, making it the largest project finance organization in the U.S. government. Mr. McCall is responsible for ensuring that LPO carries out its mission to accelerate the deployment of innovative clean energy projects and domestic advanced vehicle manufacturing.

Mr. McCall brings more than two decades of financial sector experience to help lead LPO's team in issuing commitments and closing loans to advance the Department's all-of-the-above energy strategy. The Department has open loan guarantee solicitations for a broad range of technologies, including advanced fossil energy, renewable energy and energy efficiency, and advanced nuclear energy, as well as direct loans available for manufacturers of advanced technology vehicles and their components.

Prior to leading LPO, Mr. McCall spent seventeen years as a Managing Director and the Chief Financial Officer for Lime Rock Partners, a private equity firm focused on the energy sector. He also served as Lime Rock's General Counsel from 1998 to 2010. Before joining Lime Rock Partners, Mr. McCall gained diverse experience in international business and finance as a Vice President at Delus Corporation, an Associate in the mergers and acquisitions group of Lehman Brothers, and as the Director of Operations for E-II Holdings in Moscow.

Mr. McCall earned a B.A. from Georgetown University and a J.D. from Yale Law School.

Chairman WEBER. Thank you, Mr. McCall.
Dr. Rusco, you're now recognized for five minutes.

TESTIMONY OF DR. FRANK RUSCO, DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT, GOVERNMENT ACCOUNTABILITY OFFICE

Dr. RUSCO. Thank you. Chairmen Smith, Weber, and Loudermilk, Ranking Members Johnson, Grayson, and Beyer, and members of the subcommittees, I am pleased to be here today to discuss GAO's oversight of the DOE's Loan Programs Office and specifically focusing on its Loan Guarantee Program, or LGP.

The LGP was authorized by Congress in 2007 to encourage investment in innovative energy technologies by guaranteeing loans for qualifying energy projects. The original authorization required that recipients of such loans were to pay for the cost of these loans up front. These upfront costs are referred to as credit subsidy costs and are estimated to cover the expected losses in the event of default, as well as other costs associated with financing and servicing the loans.

Since 2007, GAO has performed oversight of the loan programs, which has resulted in 12 reports and Congressional testimonies. We have found that LGP generally has been behind the curve in developing its standard operating procedures and guidance. For example, in 2010 we found that the LGP had issued conditional commitments for loans without going through its due diligence process. And in 2014, we found that the Loan Program Office had not fully set up or staffed its loan monitoring operation despite having made many loans.

We have issued 24 recommendations to improve the loan programs, and to date, DOE has implemented fully 15 or about 63 percent of those recommendations. This is below the government-wide implementation rate of 80 percent.

Under Section 1705, the LGP made its first loan in 2010, and through September 2011, had issued 26 additional loans. All of these loans were made using Recovery Act money to cover the credit subsidy costs. The loans were for commercially viable and shovel-ready projects that were required to break ground by September 2011 in order to qualify. These loans also came at a time when international financial markets were in disarray and when the U.S. economy was in a deep recession. As such, the LGP provided funding that would likely have not been available privately.

The performance of these loans has been mixed. Most of the loans were for utility-scale solar, wind, or geothermal projects that got significant additional federal support from grants or tax credits and also benefited from state renewable portfolio standards requiring utilities to purchase power from renewable sources. These projects received off-take agreements guaranteeing them a revenue stream sufficient to pay off their loans. None of these loans has defaulted, and the expected cost of these loans has fallen slightly as the projects have been completed and come online.

On the other hand, four of the loans, three for solar panel manufacturers and one energy storage project, did not have any such

guaranteed revenue streams, and of these loans, one has not yet received any funds from LGP while the three that did receive funds all defaulted, resulting in losses to the federal government of about $623 million.

Overall, the losses with these defaults can be thought of in a couple of ways: first, as a proportion of the total amount of money that has been disbursed through 1705. The $623 million loss amounts to about 4.74 percent of these disbursements. Secondly, the loss amounts to about 43.5 percent of the expected initial losses of all loans made. So when the loans were made, the credit subsidy cost was the expected cost, and 43.5 percent of that has now been used.

Going forward, I believe there are two types of risk facing the LGP program. The first is that the program has still not fully implemented all of our recommendations. They're taking steps to do so but they're not there. Therefore, they are operating without full guidelines, standard operating procedures, and without being fully staffed. This is risky behavior from the perspective of good government.

Secondly, it is unclear that there is much demand for LGP loans going forward. The program was successful in making loans when it had Recovery Act money to pay the credit subsidy costs and when financial markets were generally not loaning to these types of projects. However, now that credit markets have recovered and interest rates remain relatively low by historical standards, commercial-ready projects, even if they are deemed to be innovative enough to qualify for an LGP loan, may find it easier and less costly to seek private funding. On the other hand, more innovative projects that are less able to qualify for private funding will be, by their very nature, more risky, and thus will have higher credit subsidy costs.

The LGP will require such projects to pay their own credit subsidy costs upfront going forward, but it is unclear whether such projects will be able to do so. So time will tell if there is a strong demand for LGP services going forward or if the program will end up mostly servicing its existing portfolio.

Thank you. I will be happy to answer any questions the Subcommittee may have.

[The prepared statement of Dr. Rusco follows:]

United States Government Accountability Office

GAO

Testimony before the Subcommittees on Energy and Oversight, Committee on Science, Space, and Technology, House of Representatives

For Release on Delivery
Expected at 9:30 a.m. ET
Thursday, March 3, 2016

DOE LOAN PROGRAMS

Information on Implementation of GAO Recommendations and Program Costs

Statement of Frank Rusco, Director, Natural Resources and Environment

GAO Highlights

Highlights of GAO-16-150T, testimony before the Subcommittees on Energy and Oversight, Committee on Science, Space, and Technology, House of Representatives

Why GAO Did This Study

DOE's Loan Programs Office administers the LGP for certain renewable or innovative energy projects and the ATVM loan program for projects to produce more fuel-efficient vehicles and components. Both programs can expose the government to substantial financial risks if borrowers default. DOE considers these risks in calculating credit subsidy costs. The law requires that the credit subsidy costs of DOE loans and loan guarantees be paid for by appropriations, borrowers, or some combination of both.

This testimony summarizes (1) DOE's progress in addressing GAO's prior recommendations related to the implementation and oversight of its loan programs and (2) GAO's 2015 report on the credit subsidy costs of the DOE loan programs.

This statement is based on a body of work that GAO completed between February 2007 and April 2015. GAO made numerous recommendations in these reports and obtained updates from agency officials. GAO is not making any new recommendations in this testimony.

View GAO-16-150T. For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

March 3, 2016

DOE LOAN PROGRAMS

Information on Implementation of GAO Recommendations and Program Costs

What GAO Found

The Department of Energy (DOE) has made efforts to improve the implementation and oversight of its loan programs and, to date, has taken actions to address 15 of 24 of GAO's prior related recommendations. DOE's Loan Guarantee Program (LGP), authorized by Congress in 2005, was designed to encourage certain types of energy projects (e.g., nuclear, solar, and wind generation; solar manufacturing; and energy transmission) by agreeing to reimburse lenders for the guaranteed amount of loans if the borrowers default. DOE's Advanced Technology Vehicles Manufacturing (ATVM) loan program, authorized by Congress in 2007, was designed to encourage the automotive industry to invest in technologies to produce more fuel-efficient vehicles and their components. In 2007, 2008, and 2010—which covered the early stages of the LGP—GAO made 15 recommendations to address numerous concerns where DOE had moved forward with that program before key elements were in place. For example, in its February 2007 report, GAO found that DOE's actions had focused on expediting program implementation—such as soliciting preapplications for loan guarantees—rather than ensuring the department had in place the critical policies, procedures, and mechanisms needed to better ensure the program's success. DOE has implemented 11 of the 15 recommendations. In 2011, 2012, and 2014, as Congress expanded the loan programs, GAO made 9 additional recommendations to address concerns about DOE making loans and disbursing funds without having sufficient engineering expertise, sufficient and quantifiable performance measures for assessing program progress, or a fully developed loan monitoring function, among other things. Although DOE generally agreed with most of the 9 recommendations, to date it has implemented only 4 of them.

In an April 2015 report, GAO found that DOE estimated the credit subsidy costs of the loans and loan guarantees in its portfolio—that is, the total expected net cost to the government over the life of the loans—to be about $2.2 billion as of November 2014, including about $807 million for five loans on which borrowers had defaulted. The estimated $2.2 billion in credit subsidy costs was a decrease from DOE's initial estimates totaling about $4.5 billion. GAO found that changes in credit subsidy cost estimates varied by loan program and the type of technology supported by the loans and loan guarantees, among other factors. Specifically, defaults on loan guarantees for two solar manufacturing projects and one energy storage project were largely responsible for an increase in the credit subsidy cost estimate for the LGP's portfolio from $1.33 billion when the loan guarantees were issued to $1.81 billion as of November 2014. Borrowers also defaulted on two ATVM loans, but the credit subsidy cost estimate for the ATVM loan program's portfolio decreased from $3.16 billion to $404 million as of November 2014, mainly because of a significant improvement in the credit rating of one loan. In DOE's portfolio, 21 of the 30 projects had guaranteed revenue streams provided for under a long-term contract, such as a power purchase agreement, but none of the five defaulted loans supported projects with such a contract. GAO also found that administrative costs of the loan programs totaled about $312 million from fiscal year 2008 through fiscal year 2014; these costs are not included in credit subsidy costs.

Chairmen Weber and Loudermilk, Ranking Members Grayson and Beyer, and Members of the Subcommittees:

I am pleased to be here today to discuss the Department of Energy's (DOE) loan programs. The Loan Guarantee Program (LGP), authorized by Congress in 2005,[1] was designed to encourage investment in new or significantly improved technologies in energy projects because funding for such technologies can be difficult to obtain. Similarly, the Advanced Technology Vehicles Manufacturing (ATVM) loan program, which Congress authorized in 2007,[2] was designed to encourage the automotive industry to invest in new technologies for more fuel-efficient passenger vehicles and their components. Congress has authorized DOE to make tens of billions of dollars in loans and guarantees under these programs. Congress has also appropriated billions of dollars to cover associated credit subsidy costs—the net present value of the difference between projected cash flows to and from the government over the life of the loans or guarantees. If borrowers default on the loans, the federal government can be exposed to substantial financial risks.

DOE provides information related to the costs of its loan programs in reports, financial statements, and budget documents. Other entities, including Congress and the public, rely on this information to weigh the benefits of these programs, but the complexity of this information can lead to confusion if users of this information are not aware of the context. For example, DOE reported in November 2014 that the loan programs had earned more than $810 million in interest and that DOE expected to earn $5 billion in interest payments over the life of the loans and loan guarantees.[3] However, in part because this report did not include the interest that DOE pays the government to finance its lending, the information on expected interest earnings has been misinterpreted in several media accounts as projecting $5 billion in profits for the DOE loan programs. We have examined this and other issues related to DOE's loan

[1]Pub. L. No. 109-58, title XVII, 119 Stat. 594, 1117-22 (2005), *codified at* 42 U.S.C. §16511-16516.

[2]Pub. L. No. 110-140, §136, 121 Stat. 1492, 1514 (2007), *codified at* 42 U.S.C. §17013.

[3]DOE Loan Programs Office, *LPO Financial Performance* (Washington, D.C.: November 2014) accessed February 23, 2016, http://energy.gov/sites/prod/files/2014/11/f19/DOE-LPO-Financial Performance November2014.pdf

programs in a series of reports and testimonies. (See a list of related GAO products at the end of this statement.)

My testimony today draws on this body of work, in which we have reported on our concerns about DOE's implementation and oversight of the programs and recommended actions for improvement. I will focus my remarks today on (1) DOE's progress in addressing our prior recommendations related to the implementation and oversight of its loan programs and (2) our most recent report on the credit subsidy costs of the DOE loan programs.

For this statement, we relied on our reports that were issued from February 2007 through April 2015.[4] Detailed information about the scope and methodology used to conduct our prior work can be found in each of our issued reports. Regarding the status of prior recommendations, we followed up with agency officials to determine what actions they had taken. The work on which this statement is based was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Since issuing its first loan guarantee in 2009, DOE's Loan Programs Office, which administers the LGP and ATVM program, has issued a total

[4]GAO, *DOE Loan Programs: Current Estimated Net Costs Include $2.2 Billion in Credit Subsidy, Plus Administrative Expenses*, GAO-15-438 (Washington, D.C.: Apr. 27, 2015); *DOE Loan Programs: DOE Should Fully Develop Its Loan Monitoring Function and Evaluate Its Effectiveness*, GAO-14-367 (Washington, D.C.: May 1, 2014); *DOE Loan Guarantees: Further Actions Are Needed to Improve Tracking and Review of Applications*, GAO-12-157 (Washington, D.C.: Mar. 12, 2012); *Department of Energy: Advanced Technology Vehicle Loan Program Implementation Is Under Way, but Enhanced Technical Oversight and Performance Measures Are Needed*, GAO-11-145 (Washington, D.C.: Feb. 28, 2011); *Department of Energy: Further Actions Are Needed to Improve DOE's Ability to Evaluate and Implement the Loan Guarantee Program*, GAO-10-627 (Washington, D.C.: July 12, 2010); *Department of Energy: New Loan Guarantee Program Should Complete Activities Necessary for Effective and Accountable Program Management*, GAO-08-750 (Washington, D.C.: July 7, 2008); and *The Department of Energy: Key Steps Needed to Help Ensure the Success of the New Loan Guarantee Program for Innovative Technologies by Better Managing Its Financial Risk*, GAO-07-339R (Washington, D.C.: Feb. 28, 2007).

of more than $30 billion in loans and loan guarantees. The LGP was originally designed to address a fundamental impediment to innovative and advanced energy projects: securing funding. Projects that entail risks—either that new technology will not perform as expected or that the borrower or project itself will not perform as expected—can face difficulty securing enough affordable financing to survive the period between development and commercialization of innovative technologies. Because the risks that commercial lenders must assume to support new technologies can put the cost of private financing out of reach, companies may not be able to commercialize innovative technologies without the federal government's financial support.

To accurately account for the expected and actual costs of federal loan programs, agencies estimate the costs of a program in accordance with the Federal Credit Reform Act of 1990 by calculating credit subsidy costs for loans and loan guarantees, excluding administrative costs. DOE estimates the credit subsidy cost for each loan or loan guarantee by, among other things, projecting disbursements to the borrower as well as interest and principal repayments from the borrower, and adjusting these projected cash flows for the risk of default and other factors. Paying the credit subsidy cost is either the responsibility of the borrower or the program, depending on whether Congress has provided appropriations to cover such costs.

For the LGP, Title XVII of the Energy Policy Act of 2005 (EPAct)—specifically section 1703—authorized DOE to guarantee loans for energy projects that (1) use new or significantly improved technologies as compared with commercial technologies already in service in the United States and (2) avoid, reduce, or sequester emissions of air pollutants or man-made greenhouse gases. Congress provided DOE $34 billion in loan guarantee authority for section 1703 loan guarantees. Initially, Congress provided no appropriation to cover the credit subsidy costs of loan guarantees under section 1703, requiring all borrowers receiving a loan guarantee to pay to offset the credit subsidy costs of their own projects. In February 2009, Congress passed the American Recovery and Reinvestment Act of 2009 (Recovery Act),[5] which amended Title XVII by adding section 1705, under which DOE could guarantee loans for projects

[5]Pub. L. No. 111-5, 123 Stat. 115 (2009).

using existing commercial technologies.[6] For section 1705, the Recovery Act provided $2.5 billion to cover credit subsidy costs, which DOE estimated would suffice to cover those costs for about $18 billion in loan guarantees.[7] In April 2011, Congress appropriated $170 million to pay credit subsidy costs for a subset of projects under section 1703, specifically, energy efficiency and renewable energy projects. DOE estimated this appropriation would cover those costs for about $848 million in loan guarantees. As table 1 shows, DOE had about $28.7 billion remaining in loan guarantee authority under section 1703 as of November 2014. At that time, it also had three open solicitations for loan guarantee applications that accounted for much of that remaining authority. The ATVM loan program remains open to applications on a rolling basis and had about $16 billion remaining in loan authority as of November 2014.

Table 1: Loan or Loan Guarantee Authority and Credit Subsidy Appropriations for Department of Energy Loan Programs (as of November 2014)

Credit subsidy costs are the net present value of the difference between projected cash flows to and from the government over the life of the loans or guarantees.

Program	Total authorized loan/guarantee amount	Amount appropriated to cover credit subsidy costs	Remaining loan/ guarantee authority
LGP section 1703	$34 billion	$170 million[a]	$28.7 billion
LGP section 1705		$2.5 billion[b]	$0
ATVM	$25 billion	$7.5 billion[c]	$16 billion
Total	**$59 billion**	**$10.2 billion**	**$44.7 billion**

Legend: LGP = Loan Guarantee Program; ATVM = Advanced Technology Vehicles Manufacturing

Source: DOE data. | GAO-16-150T

[a]Congress appropriated these funds to pay credit subsidy costs for a subset of projects, specifically energy efficiency and renewable energy projects.

[b]The American Recovery and Reinvestment Act of 2009 provided for these funds.

[c]The fiscal year 2009 continuing resolution appropriated these funds to support the program's direct loans to manufacturers of passenger vehicles and their components by paying the credit subsidy costs of the loans.

[6]The authority to enter into loan guarantees under section 1705 expired on September 30, 2011. Projects supported by section 1705 were required to employ renewable energy systems, electric power transmission systems, or leading-edge biofuels that met certain criteria.

[7]The Recovery Act initially appropriated nearly $6 billion to pay credit subsidy costs; however, Congress subsequently reduced this amount by transfer and rescission to fund other priorities.

DOE Has Made Efforts to Improve Loan Program Implementation and Oversight by Implementing Some but Not All Related GAO Recommendations

DOE has made efforts to improve its loan program implementation and oversight and, to date, has taken actions in response to 15 of our 24 prior recommendations. (See app. I for details on the status of each of the 24 recommendations we have made concerning the DOE loan programs). In 2007, 2008, and 2010—which covered the early stages of the LGP—we made 15 recommendations to address numerous issues where DOE had moved forward with the program before key elements were in place.[8] DOE implemented 11 of our 15 recommendations from this period. For example:

- In our February 2007 report,[9] we found that DOE's actions had focused on expediting program implementation—such as soliciting preapplications for loan guarantees—rather than ensuring the department had in place the critical policies, procedures, and mechanisms necessary to better ensure the program's success. We made five recommendations addressing these concerns. DOE agreed with and implemented all 5 of these recommendations by establishing key policies and procedures and issuing final program regulations, among other things.
- In contrast, in our July 2010 report,[10] we found that, among other things, DOE had favored some applicants by, for example, deviating from its stated review procedures. DOE did not concur with—and has not taken actions to address—our recommendation that it take steps to ensure that its implementation of the LGP treats applicants consistently.

As Congress expanded the DOE loan programs to include 1705 projects and ATVM, we issued additional reports in 2011, 2012, and 2014 highlighting our concerns about DOE making loans and disbursing funds without having sufficient expertise and performance measures, among other things. Our reports included recommendations to address these issues from February 2011 through May 2014. To date, DOE has implemented four of the nine recommendations but has not addressed the remaining five. For example:

[8]GAO-07-339R, GAO-08-750, and GAO-10-627.

[9]GAO-07-339R.

[10]GAO-10-627.

- In February 2011,[11] we found that DOE was using ATVM staff with largely financial, and not technical, expertise to evaluate the progress of projects to produce more fuel-efficient passenger vehicles and their components. We recommended that DOE accelerate efforts to engage sufficient engineering expertise to verify that borrowers are delivering projects as required by the loan agreements. DOE implemented our recommendation by changing its budgeting practices for monitoring ATVM loans to better ensure that funds would be available to engage independent engineering expertise; DOE also changed its policy for engaging technical expertise to align with the Title XVII LGP policy.

- Also in our February 2011 report,[12] we found that DOE did not have sufficient performance measures that would enable the department to fully assess whether the ATVM program had achieved its program goals, including protecting taxpayers' financial interests. We recommended that DOE develop sufficient and quantifiable performance measures for its program goals. DOE disagreed with this recommendation and took no steps to implement it. As a result, Congress does not have important information on whether the funds DOE has spent so far are furthering the program's goals and, consequently, whether the program warrants continued support.

DOE generally agreed with most of the additional recommendations we made in our March 2012 and May 2014 reports as the programs expanded,[13] but it has not fully implemented them. For example, in May 2014 we found that DOE adhered to its monitoring policies inconsistently or not at all because the Loan Programs Office was still developing its organizational structure, including its staffing. We recommended that DOE fully develop its organizational structure by staffing key loan monitoring positions, among other things. DOE agreed and has taken steps to identify key staffing positions but, as of February 2016, most of these positions remain unfilled. Filling these positions would help DOE carry out activities critical to monitoring these loans.

[11]GAO-11-145.

[12]GAO-11-145.

[13]GAO-12-157 and GAO-14-367.

Estimated Net Costs of DOE's Loan Programs Include about $2.2 Billion in Credit Subsidy Costs, Plus Administrative Expenses

In our April 2015 report, we found that DOE estimated the credit subsidy costs of the loans and loan guarantees in its portfolio to be about $2.2 billion as of November 2014,[14] including about $807 million for five loans on which the borrowers had defaulted. At that time, the portfolio consisted of 34 loans and loan guarantees in support of 30 projects in a diverse array of technologies. We also found that administrative costs totaled about $312 million from fiscal year 2008 through fiscal year 2014.[15] The estimated $2.2 billion in credit subsidy costs was a decrease from initial DOE estimates totaling about $4.5 billion,[16] and we found that changes in credit subsidy cost estimates varied by loan program and the type of technology supported by the loans and loan guarantees, and by other factors, such as the availability of a steady stream of revenue for a project. Specifically, defaults on loan guarantees for two solar manufacturing projects and one energy storage project were largely responsible for an increase in the credit subsidy cost estimate for DOE's LGP portfolio from $1.33 billion (when the loan guarantees were issued) to $1.81 billion as of November 2014. Borrowers also defaulted on two ATVM loans, but the credit subsidy cost estimate for DOE's ATVM loan program's portfolio decreased from initial DOE estimates totaling about $3.16 billion to $404 million as of November 2014, mainly because of a significant improvement in the credit rating of one loan. This decrease was enough to more than offset the increases from the defaults in DOE's overall loan portfolio. See table 2 for changes in DOE's credit subsidy cost estimates.

[14]GAO-15-438.

[15]GAO-15-438.

[16]Initial credit subsidy cost estimates are based on disbursements for each loan guarantee and reflect the initial credit subsidy rates as estimated by DOE.

Table 2: Changes in Credit Subsidy Cost Estimates Since Initiation for the Department of Energy's Loan Programs, as of November 2014

Credit subsidy costs are the net present value of the difference between projected cash flows to and from the government over the life of the loans or guarantees.

Program	Number of loans/guarantees	Number in default	Total obligated loan/ guarantee amount[a]	Sum of initial estimated credit subsidy costs[b]	Sum of estimated credit subsidy costs as of November 2014[c]
Dollars in millions					
LGP section 1705					
Solar generation	14	0	$10,167	$1,233	$1,163
Wind generation	4	0	1,674	48	31
Solar manufacturing[d]	3	2	746	58	591
Geothermal	3	0	532	34	50
Other[e]	3	1	491	25	40
LGP section 1705 subtotal	**27**	**3**	**13,609**	**1,398**	**1,875**
LGP section 1703 – nuclear generation	**2**	**0**	**6,184**	**(73)[f]**	**(68)**
ATVM	**5**	**2**	**8,061**	**3,163**	**404**
Total	**34**	**5**	**$27,854**	**$4,488**	**$2,211**

Legend: LGP = Loan Guarantee Program; ATVM = Advanced Technology Vehicles Manufacturing

Source: GAO analysis of DOE data. | GAO-16-150T

Note: Numbers may not sum due to rounding.

[a]Portions of some loan guarantees have been deobligated since the loan guarantee agreement was made.

[b]Initial credit subsidy cost estimates are based on disbursements for each loan guarantee and reflect the initial credit subsidy rate estimate.

[c]Current credit subsidy costs are based on disbursements for each loan guarantee.

[d]Includes one loan guarantee that has not yet been disbursed.

[e]Includes loan guarantees for one biomass project, one energy transmission project, and one energy storage project. These projects have been combined to prevent disclosure of credit subsidy data for individual loan guarantees.

[f]The credit subsidy cost estimate for the LGP section 1703 loans is negative, meaning the present value of projected cash flows to the government exceeds the present value of projected cash flows from the government. Borrowers for these loans were not required to pay to offset credit subsidy costs.

We found in our April 2015 report that most projects in DOE's portfolio have completed construction and are in operation—producing power or automobiles, for instance. None of the projects with loans in default had revenue streams that were provided for under long-term contracts for the sale of energy produced by the project pursuant to a power purchase agreement, offtake agreement, or similar contractual language. Power purchase agreements and offtake agreements generally guarantee a stream of revenue to the project owner for 20 or 25 years after the project begins generating electricity, effectively ensuring a buyer for the produced power. In DOE's portfolio, 21 of the 30 projects supported by the program included power purchase or offtake agreements.

Regarding administrative costs, our April 2015 report found that such costs for the programs have totaled about $312 million from fiscal year 2008 through fiscal year 2014, including approximately $251.6 million for LGP and $60.6 million for the ATVM loan program.[17] We also found that, for the LGP, the fees DOE has collected have not been sufficient to cover all of its administrative expenses for the program, in part because the maintenance fees on the current loan guarantees were too low to cover ongoing monitoring costs.[18] As a result, some of the administrative expenses have been paid with taxpayer funds. DOE addressed the low maintenance fee levels by changing the fee structure in its new solicitations, announced from December 2013 to December 2014, to allow increased maintenance fees—up to $500,000 per year. DOE officials told us that the new fee structure should allow DOE to cover a greater portion of LGP monitoring costs on new loan guarantees. However, the actual fee amounts will depend on the individual loan guarantees and negotiation of the loan guarantee agreements, making predictions of future fee income a challenge. It is now too early to tell whether DOE's actions will result in sufficient funds to offset LGP's future administrative costs.

Chairmen Weber and Loudermilk, Ranking Members Grayson and Beyer, and Members of the Subcommittees, this completes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

[17]GAO, *DOE Loan Programs: Current Estimated Net Costs Include $2.2 Billion in Credit Subsidy, Plus Administrative Expenses*, GAO-15-438 (Washington, D.C.: Apr. 27, 2015).

[18]GAO-15-438. ATVM administrative expenses are paid for from program appropriations.

GAO Contact and Staff Acknowledgments

If you or your staff members have any future questions about this testimony, please contact me at (202) 512-3841 or ruscof@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Key contributors to this testimony include Karla Springer, Assistant Director; Michael Krafve; Cynthia Norris; Barbara Timmerman; and Jarrod West.

Appendix I: Status of GAO Recommendations on Department of Energy Loan Programs

GAO-07-339R		
Recommendation	**Status**	**Action taken**
The Secretary of Energy should ensure that the department, before selecting eligible projects for loan guarantees, establishes policies and procedures to account for loan guarantees.	Closed - Implemented	In May 2007, the Department of Energy (DOE) implemented this recommendation when its Office of Finance and Accounting established standard operating procedures for accounting and reporting for DOE loan programs (SOP 1.4). Among other things, the procedures enable DOE to account for payments received from applicants for administrative costs, which is important because the Energy Policy Act of 2005, which established the Loan Guarantee Program (LGP), requires that borrowers be charged fees to cover DOE's costs to administer the program. DOE established the procedures before it issued the first loan guarantee in 2010, meeting the intent of our recommendation.
The Secretary of Energy should ensure that the department, before selecting eligible projects for loan guarantees, establishes policies and procedures for developing subsidy and administrative cost estimates.	Closed - Implemented	In March 2009, DOE issued a Credit Policies and Procedures Manual that lays out policies and procedures for estimating subsidy costs and defines administrative costs. In addition, according to DOE, in November 2008 the Office of Management and Budget approved the LGP's model for calculating the credit subsidy costs of loan guarantees. DOE's solicitations describe how it will charge these administrative costs to applicants. These actions meet the intent of our recommendation.
The Secretary of Energy should ensure that the department, before selecting eligible projects for loan guarantees, establishes policies and procedures for selecting lenders and loans to guarantee and for monitoring lenders and loans once the guarantees have been issued.	Closed - Implemented	DOE satisfied our recommendation to establish policies and procedures for selecting lenders and loans to guarantee and for monitoring lenders and loans once the guarantees have been issued. On October 23, 2007, and December 4, 2009, DOE issued final rules that incorporated policies and procedures for the issuance of solicitations, submission of applications, and the evaluation of loan guarantee applications. The rules also lay out the requirements for eligible lenders. In addition, on March 5, 2009, DOE issued a credit policies and procedures manual for the program that provides further detail on policies and procedures for selecting lenders and loans to guarantee. The manual also provides policies and procedures for credit monitoring of projects once loan guarantees have been issued.
The Secretary of Energy should ensure that the department, before selecting eligible projects for loan guarantees, issues final program regulations that protect the government's interests, manage risk, and ensure that borrowers are aware of program requirements.	Closed - Implemented	On October 23, 2007, and December 4, 2009, DOE issued final rules implementing its Title XVII LGP for innovative energy technologies. The rules elaborate on the program established by Title XVII by defining the technologies and types of projects covered by the program, as well as the financial structure required for projects. Issuing a rule is in keeping with the intent of our recommendation to provide greater protection of the government's interests because this rule, like other regulations, cannot be changed without public or congressional input and carries the force of law.

The Secretary of Energy should ensure that the department, before selecting eligible projects for loan guarantees, further defines program goals and objectives tied to outcome measures for determining program effectiveness.	Closed - Implemented	DOE has taken actions to define program goals and performance measures in order to determine program effectiveness.
GAO-08-750		
Recommendation	**Status**	**Action taken**
The Secretary of Energy should direct the Chief Financial Officer to amend application guidance to clarify the program's equity requirements to the 16 companies invited to apply for loan guarantees and in future solicitations before substantially reviewing LGP applications.	Closed - Implemented	DOE substantively addressed our recommendation with its October 2009 and August 2010 solicitations, which provided an expanded definition of equity that also addressed exclusions.
The Secretary of Energy should direct the Chief Financial Officer to amend application guidance to further develop and define performance measures and metrics to monitor and evaluate program efficiency, effectiveness, and outcomes before substantially reviewing LGP applications.	Closed - Implemented	Since our 2008 recommendation, DOE developed nine performance measures to evaluate the program's efficiency and outcomes, implementing our recommendation.
The Secretary of Energy should direct the Chief Financial Officer to amend application guidance to improve the LGP's full tracking of the program's administrative costs by developing an approach to track and estimate costs associated with offices that directly and indirectly support the program and including those costs as appropriate in the fees charged to applicants before substantially reviewing LGP applications.	Closed - Implemented	In October 2008, the Loans Programs Office (LPO) began using a DOE software system to track administrative costs within the office, including, for example, staff salaries and travel associated with reviewing the applications for various solicitations. In addition, DOE staff in the field office that was reviewing the greatest number of loan guarantee applications reached an agreement with the program concerning performance of and reimbursement for this work.
The Secretary of Energy should direct the Chief Financial Officer to amend application guidance to include more specificity on the content of independent engineering reports and on the development of project cost estimates to provide the level of detail needed to better assess overall project feasibility before substantially reviewing LGP applications.	Closed – Not Implemented	Since our 2008 recommendation, DOE increased the content guidelines for engineering reports in later solicitations, partly implementing our recommendation. However, the actions taken by DOE did not fully address the intent of our recommendation.
The Secretary of Energy should direct the Chief Financial Officer to clearly define needs for contractor expertise to facilitate timely application reviews before substantially reviewing LGP applications.	Closed – Implemented	To facilitate timely action on applications for loan guarantees, DOE developed "standing source" lists of contractors with legal, engineering, financial, and marketing expertise. Listed contractors were determined by DOE to be capable of providing specific services that DOE identified. Such contractors were available for selection, under a competitive process, to review projects under consideration for loan guarantees. Developing the standing list helped ensure that DOE would have the necessary expertise readily available during the review process.

The Secretary of Energy should direct the Chief Financial Officer to complete detailed internal loan selection policies and procedures that lay out roles and responsibilities and criteria and requirements for conducting and documenting analyses and decision making before substantially reviewing LGP applications.	Closed – Implemented	In March 2009, DOE issued a *Credit Policies and Procedures Manual* that established detailed internal loan selection policies and procedures, including roles and responsibilities for LGP staff, and criteria for conducting analyses and decision making, but the manual did not provide detailed guidance for documenting analyses. In October 2011, LGP revised its Credit Policies and Procedures manual to also include specific instructions to LGP staff to document their analyses and decisions in LGP's records management system.
GAO-10-627		
Recommendation	**Status**	**Action taken**
The Secretary of Energy should direct the program management to develop relevant performance goals that reflect the full range of policy goals and activities for the program, and to the extent necessary, revise the performance measures to align with these goals.	Closed – Not Implemented	According to DOE officials, LGP adheres to and supports the current DOE Strategic Plan. However, LGP could not provide documentation or evidence of either an improvement in alignment between DOE performance goals and LGP policy goals or the revision of LGP performance measures. We continue to believe that relevant and revised performance goals and measures would improve DOE's ability to evaluate and implement the LGP.
The Secretary of Energy should direct the program management to revise the process for issuing loan guarantees to clearly establish what circumstances warrant disparate treatment of applicants so that DOE's implementation of the program treats applicants consistently unless there are clear and compelling grounds for doing otherwise.	Closed – Not Implemented	DOE did not concur with the recommendation and has not taken action to implement it.
The Secretary of Energy should direct the program management to develop an administrative appeal process for applicants who believe their applications were rejected in error and document the basis for conclusions regarding appeals.	Closed – Not Implemented	DOE did not concur with the recommendation and has not taken action to implement it.
The Secretary of Energy should direct the program management to develop a mechanism to systematically obtain and address feedback from program applicants, and, in so doing, ensure that applicants' anonymity can be maintained, for example, by using an independent service to obtain the feedback.	Closed – Implemented	In September 2010, DOE created a mechanism for submitting feedback—including anonymous feedback—through its website.
GAO-11-145		
Recommendation	**Status**	**Action taken**
The Secretary of Energy should direct the ATVM Program Office to accelerate efforts to engage sufficient engineering expertise to verify that borrowers are delivering projects as agreed.	Closed – Implemented	Since issuance of our report in February 2011, DOE changed its budgeting practices for monitoring ATVM loans to better ensure that funds would be available to engage independent engineering expertise when needed. DOE also changed its policy for engaging technical expertise, making it the same as for the Title XVII LGP.

The Secretary of Energy should direct the ATVM Program Office to develop sufficient and quantifiable performance measures for its three goals.	Closed – Not Implemented	In its original comments to our report, and in a subsequent statement of its management decisions, DOE stated that it disagreed with our recommendation. DOE stated its belief that the ATVM program adhered to the requirements of the statute authorizing the program and that the performance measures we suggested would greatly expand the scope of the program—DOE stated it would not develop any new measures not specified by Congress.

GAO-12-157

Recommendation	Status	Action taken
The Secretary of Energy should direct the Executive Director of the Loan Programs Office to commit to a timetable to fully implement a consolidated system that enables the tracking of the status of applications and that measures overall program performance.	Open	DOE did not concur with the recommendation and has not taken action to implement it.
The Secretary of Energy should direct the Executive Director of the Loan Programs Office to ensure that the new records management system contains documents supporting past decisions, as well as those in the future.	Open	DOE concurred with this recommendation but has not provided us with information regarding its implementation.
The Secretary of Energy should direct the Executive Director of the Loan Programs Office to regularly update the LGP's credit policies and procedures manual to reflect current program practices to help ensure consistent treatment for applications to the program.	Closed – Implemented	In December 2015, DOE published its revised LPO credit policies and procedures manual, which sets the basic criteria for the determination of eligibility, underwriting of loan and loan guarantee requests, and the management of closed loans and loan guarantees.

GAO-14-367

Recommendation	Status	Action taken
The Secretary of Energy should direct the Executive Director of the Loan Programs Office to fully develop its organizational structure by staffing key monitoring positions.	Open	DOE officials told us that they developed short- and long-term plans for staffing key loan monitoring positions and risk mitigation positions within the Portfolio Management Division and Risk Management Division, respectively. In February 2016, DOE provided us with evidence that it had identified 24 key positions in these two divisions; however, most of these positions remain unfilled, so the recommendation status remains open.
The Secretary of Energy should direct the Executive Director of the Loan Programs Office to fully develop its organizational structure by updating management and reporting software.	Closed – Implemented	In February 2016, DOE officials provided us with evidence that they had completed and implemented updates for their management and reporting systems.

The Secretary of Energy should direct the Executive Director of the Loan Programs Office to fully develop its organizational structure by completing policies and procedures for loan monitoring and risk management.	Open	In February 2016, DOE officials provided us with evidence that they developed, revised, reviewed, and implemented the majority of their portfolio monitoring and risk management policies and procedures. However, some key work processes (e.g., Alleged Fraud, Waste, or Abuse reporting and Risk Assessment processes) are still under development, so the recommendation status remains open.
The Secretary of Energy should direct the Executive Director of the Loan Programs Office to evaluate the effectiveness of DOE's monitoring by performing the credit review, compliance, and reporting functions outlined in the 2011 policy manual for DOE's loan programs.	Closed – Implemented	In February 2016, DOE officials told us that the Risk Management Division evaluates the effectiveness of DOE's monitoring via annual internal assessments. DOE began the first of these annual assessments in October 2015 and provided GAO with updated procedures for conducting these assessments.

Source: GAO | GAO-16-150T

Note: Recommendations remain open until they are designated as closed – implemented or closed – not implemented.

Related GAO Products

DOE Loan Programs: Current Estimated Net Costs Include $2.2 Billion in Credit Subsidy, Plus Administrative Expenses. GAO-15-438. Washington, D.C.: April 27, 2015.

DOE Loan Programs: DOE Has Made More Than $30 Billion in Loans and Guarantees and Needs to Fully Develop Its Loan Monitoring Function. GAO-14-645T. Washington, D.C.: May 30, 2014.

DOE Loan Programs: DOE Should Fully Develop Its Loan Monitoring Function and Evaluate Its Effectiveness. GAO-14-367. Washington, D.C.: May 1, 2014.

Federal Support for Renewable and Advanced Energy Technologies. GAO-13-514T. Washington, D.C.: April 16, 2013.

Department of Energy: Status of Loan Programs. GAO-13-331R. Washington, D.C.: March 15, 2013.

DOE Loan Guarantees: Further Actions Are Needed to Improve Tracking and Review of Applications. GAO-12-157. Washington, D.C.: March 12, 2012.

Department of Energy: Advanced Technology Vehicle Loan Program Implementation Is Under Way, but Enhanced Technical Oversight and Performance Measures Are Needed. GAO-11-145. Washington, D.C.: February 28, 2011.

Department of Energy: Further Actions Are Needed to Improve DOE's Ability to Evaluate and Implement the Loan Guarantee Program. GAO-10-627. Washington, D.C.: July 12, 2010.

Department of Energy: New Loan Guarantee Program Should Complete Activities Necessary for Effective and Accountable Program Management. GAO-08-750. Washington, D.C.: July 7, 2008.

Department of Energy: Observations on Actions to Implement the New Loan Guarantee Program for Innovative Technologies. GAO-07-798T. Washington, D.C.: April 24, 2007.

The Department of Energy: Key Steps Needed to Help Ensure the Success of the New Loan Guarantee Program for Innovative Technologies by Better Managing Its Financial Risk. GAO-07-339R. Washington, D.C.: February 28, 2007.

BIO for Frank Rusco

Frank Rusco is a Director in GAO's Natural Resources and Environment team, leading work on a broad spectrum of energy issues, including federal oil and gas management; DOE's energy, R&D and loan programs; Nuclear Regulatory Commission oversight; Federal Energy Regulatory Commission oversight and activities; and government-wide energy programs and activities. Mr. Rusco holds both a master's degree and Ph.D. in economics from the University of Washington in Seattle.

Chairman WEBER. Thank you, Dr. Rusco. They have called votes but we're going to try to get to the testimony.

Mr. Kats, five minutes, please.

TESTIMONY OF MR. GREGORY KATS, PRESIDENT, CAPITAL E

Mr. KATS. Thank you for the opportunity to speak with you today on this important issue.

I've had the opportunity to invest in 40 U.S. energy companies and to serve on the boards of two dozen firms, two of which applied to the DOE Loan Guarantee Program. Based on this experience, I can attest that the DOE application process is lengthy and rigorous. U.S. firms and projects first seek private sector financing, but if the projects involve new technology, new scale, or other innovation, private sector funding may be difficult or impossible to secure until a technology or project scale has been built and demonstrated. The DOE loan program allows this to happen.

I served for five years as the Director of Financing for Energy Efficiency and Renewable Energy at the U.S. Department of Energy and more recently as a member of the National Academy of Science's committee developing policy recommendations to strengthen U.S. innovation and competitiveness.

It remains concerning that, while the United States leads in energy innovation, too often countries like China reap the benefits by building the commercial plants. This happens in large part because our competitors provide large grants and subsidized loans. The U.S. DOE loan program allows the United States to retain or regain global leadership in key clean energy technology areas, including solar PV and advanced vehicles. These industries matter because the countries that lead the race to supply clean power plants and clean vehicles will have millions of well-paid workers in these global industries.

The DOE loan program outlines broad categories of energy such as renewable energy or nuclear. Private sector firms decide which technologies and which projects and whether they apply or not. The requirements include having third-party engineering firms undertake independent reviews, and these are determinative for DOE loan decisions. The DOE loan program therefore does not distort the market.

The objective of the Loan Guarantee Program is to finance projects that cannot otherwise get commercial financing. If projects are very low risk, that is investment grade, they would have access to commercial funding, and a DOE loan guarantee would be an unattractive option. The rigorous nature, difficulty, and cost means that a DOE loan guarantee is pursued by U.S. firms only when they cannot get competitive private sector financing.

Like other commercial lending programs, the DOE Loan Guarantee Program assumes a default rate as normal and expected. DOE loan guarantee default rates have proven far lower than projected by OMB and Congress. In establishing the 1705 Loan Guarantee Program, for example, OMB budget predicted and Congress budgeted for $2.7 billion to cover expected defaults or partial defaults, but defaults have proven to be only 1/3 of this.

In 2011 the DOE Loan Guarantee Program provided guarantees to the first five utility-scale solar projects. This scale of solar is viewed as important but new and risky by banks and therefore require DOE loan program support. Since these five DOE-supported utility-scale solar projects, the private sector has funded 28 utility-scale solar projects totaling some 7 gigawatts. This represents several tens of billions of dollars in private capital and tens of thousands of good and widely distributed U.S. jobs. The DOE loan program clearly unlocks and enables expanded private capital investing in clean energy.

As of October 2015, the DOE loan program metrics were strong with principal repayment exceeding $5 billion, interest earned by the U.S. Government exceeding $1.2 billion, and actual and expected losses of about two percent. This reflects a very low default rate. And almost any experienced investor in portfolios of projects or for that matter almost anyone with a knowledge of investing would recognize this as a very successful track record.

Defaults tend to occur early in the loan cycle, so additional default in the existing loan portfolio are unlikely. With some $32 billion in loans and loan guarantees issued, interest repayment back to the U.S. Government will exceed $5 billion. A full accounting includes the tax impact of additional federal taxes from the jobs created. Conservatively, assuming 50,000 jobs created at an average salary of $50,000 indicates $2.5 billion in taxable wages plus additional corporate taxable income generating over $500 million annually in federal revenue.

Overall, the net federal earnings from the DOE loan program will be about $10 billion, making the DOE Loan Guarantee Program very profitable for the federal government. By any reasonable measure, this is a notably cost-effective and successful program and has played a large role in allowing the United States to allow a global leadership position in clean and advanced energy.

For parties interested in U.S. competitiveness, the DOE loan program has proven highly successful. Whether the United States wins or loses in the clean energy race matters a great deal because the outcome will shape future U.S. employment, economic strength, and the linked threats of security and climate change.

Thank you. I'd be happy to answer any questions.

[The prepared statement of Mr. Kats follows:]

Statement of Gregory H. Kats
President of Capital E
Managing Director, ARENA Investments, LLC

Before the
House Committee on Science, Space & Technology
Subcommittees on Energy and Oversight

Evaluation of the DOE Loan Guarantee Programs

March 3, 2016

FOR RELEASE ON DELIVERY

Thank you for the opportunity to speak with you today on this important issue.

I have had the opportunity to invest in 40 US energy companies and to serve on the boards of a dozen firms, two of which have applied for the DOE loan program guarantees. Based on this experience I can attest that the DOE application process is lengthy and rigorous. US firms and projects first seek private financing. But if the projects involve new technology, new scale or other innovation, private sector funding may be difficult or impossible to secure until the technology or project scale has been built and demonstrated. The DOE loan program allows this to happen, and then private capital steps in. DOE loan program technologies and projects are chosen by the private sector, and not by DOE.

In five years as the Director of Financing for Energy Efficiency and Renewable Energy at U.S. Department of Energy and more recently as member of a National Academy of Sciences committee developing policy recommendations to strengthen US innovation and competitiveness, it remains concerning that while the US leads in advanced energy innovation, too often countries like China and Germany reap the benefits by building the commercial plants. This happens in large part because our competitors provide large grants and subsidized loans, etc. to allow these new technologies to be built and proven in their country at a commercial scale. The US DOE loan program allows the US to retain or regain global leadership in key clean energy technology areas including solar PV and electric vehicles. These industries matter because solar and wind already provide half the new electricity capacity in Europe and US, and because the countries that dominate the race to supply clean power plants and clean vehicles will have many millions of well paid workers in these global industries.

Brief biography of Gregory Kats:

- Managing Director of ARENA Investments LLC, a US energy investor
- President of Capital E (cap-e.com), a national clean energy advisory firm
- Former Managing Director of Good Energies, a multibillion dollar global clean energy investor
- Invested $1.5 billion in 40 advanced US energy firms
- Served on the boards of a dozen advanced U.S. energy firms
- Served as the Director of Financing for Energy Efficiency and Renewable Energy at U.S. Department of Energy (1995-2001)
- Founding Chairman of IPMVP, the international energy efficiency design and measurement standard used in $50 billion in energy efficiency projects, enabling off balance sheet financing
- Partnered with JP Morgan and Citi to develop financial strategies to scale US funding for energy efficiency from $20 billion a year to $150 billion a year
- Chairs the congressionally established advisory board guiding the energy upgrading of 430,000 federal buildings
- Member, National Academy of Sciences Committee on Comparative National Innovation Policies: Best Practices for the 21st Century". Published as "Rising to the Challenge: US Innovation Policy for the Global Economy". National Research Council, 2011-2012
- Author of Greening Our Built World: Costs, Benefits and Strategies (2010), and 50 book chapters and articles on energy, finance and economics
- Regularly testifies on energy and finance issues in US and in Europe
- Education: BA, UNC (Morehead Scholar); MBA from Stanford University, MPA from Princeton University, Q level security clearance (inactive), Certified Energy Manager

This hearing addresses several questions, including:

- What role DOE loan and loan guarantee programs play in commercializing and deploying new clean energy technologies, and is this a role that the private sector would otherwise fill?
- What is the overall record of DOE's loan portfolio?
- What is the level of rigor of the review process that the DOE loan program carries out?
- What role does the DOE loan program have on US competitiveness and employment?

What role does DOE loan and loan guarantee programs play in commercializing and deploying new clean energy technologies, and is this a role that the private sector would likely fill for these projects?

The DOE loan program outlines broad categories of energy such as renewable energy or nuclear, and private sector firms decide which technologies and projects and whether they apply or not. DOE loan program technologies and projects are chosen and submitted by the private sector, and not by DOE. The loan program therefore does not distort the market. The application process is expensive and rigorous, so companies that apply do not undertake the process lightly. The requirements include having 3rd party engineering and other firms undertake independent reviews, and these are determinative for DOE loan decisions.

The DOE loan guarantee process requires extensive and expensive due diligence – largely paid for by the applying companies. The rigor of the loan review program makes it demanding. I have served on the boards of two US energy firms that applied for DOE loan guarantees, and I can attest that the DOE application process is detailed and rigorous. In both cases, the DOE's loan review process involved very detailed and extensive documentation, submission of 3rd party validation and testing and performance data, and payment of up-front fees. Fees paid by applicants typically include application fees, facility fees, maintenance fees and sometime additional fees beyond that.

One DOE loan guarantee application I was involved in was for Sage Electrochromic Glass, a Minnesota based, very high performance window development and manufacturing firm. Sage is a company we invested in and for which I served on the board, and we pursued a DOE loan guarantee to finance construction of a six-acre manufacturing facility in Minnesota that would employ several hundred people. Sage Electrochromic Glass spent two years and several million dollars in application costs, paying for third party engineering, market, and legal reviews by firms qualified by DOE and selected by DOE. DOE ultimately turned down the loan guarantee application largely because of concerns about market demand for this new product class. Without the DOE loan guarantee, Sage could not secure US financing it needed to build its commercial manufacturing plant. As a result, a large French multinational acquired Sage. While the first scale manufacturing plant was built in Minnesota, the additional manufacturing plants will likely be built in Europe.

This case illustrates the fact that the DOE loan guarantee application process is demanding - and is perhaps too demanding. I serve on the board of a carbon sequestration firm called Blue Planet that applied for a DOE loan guarantee to build carbon sequestration facilities at natural gas, coal and cement plants to sequester carbon dioxide by converting it to aggregate by mineralization for use in building materials like concrete. Over the last few years the loan application process appears to have become even more rigorous - and somewhat more streamlined.

The objective of a loan guarantee program is to finance projects that cannot otherwise get commercial financing If energy projects were very low risk (investment grade) they would have access to commercial funding, and a DOE loan guarantee would be an unattractive option. The rigorous nature, difficulty and cost of these applications means that a DOE loan guarantee is pursued by US firms only when they cannot get competitive private sector financing.

As noted above, there are substantial costs associated with 3rd party review, documentation and the like, and there is a onetime fee to cover credit risk equal to up to 5% to 10% of loan amount. Added together these costs mean that the effective cost for a DOE loan guarantee is about the same as private sector financing. But because of the DOE credit risk fee is front loaded, and the application process typically in some ways more demanding than that of conventional bank financing, it is a less attractive funding. Put differently, because the DOE loan program is arduous and imposes costs sufficient to make it largely self-funding on a standalone basis, it is an option that US companies take when they are not able to secure private financing.

Like other bank and government commercial lending programs, the DOE loan guarantee program assumes a default rate as normal and expected. DOE loan guarantee default rates have proven to be far lower than projected by OMB and Congress. In establishing the 1705 loan guarantee program, for example, the Office of Management and Budget predicted, and Congress budgeted for, $2.47 billion to cover expected project defaults or partial defaults, but defaults proved to be one third of this.[1]

In 2010-2011, the DOE Loan guarantee program provided guarantees to the first 5 utility scale solar projects (over 100 MW). This scale of solar was viewed as important but new and risky by banks, and therefore required DOE loan program support for this large expansion in US clean energy development. Since these 5 DOE loan program supported utility scale solar projects, the private sector has funded 28 utility scale solar projects totaling some 7 GW. This represents several tens of billions of dollars in private capital and tens of thousands of good and widely distributed US jobs. This is clearly a great success for the DOE loan guarantee program and for the US – and deserves to be recognized and celebrated. The DOE loan program clearly increases the availability and accessibility of private capital for large scale advanced clean energy projects.

As of September 2014, $3.5 billion in loan principal had been repaid on DOE loan guarantees along with $810 million in interest payments. Loan losses of as of September 2014, including for Solyndra, were only $780 million, under 3% of the program loans – far lower than projected and budgeted for by the OMB. As of October 2015 the DOE loan guarantee program metrics had further strengthened, with principal repayment exceeding $5 billion, interest earned by the US government exceeding $1.2 billion, and actual and expected losses still at about $780 million. This reflects a very low default and loss rate. Almost any experienced investor in portfolios of projects – or for that matter almost anyone with knowledge of investing - would recognize this as a very successful track record.

Some critics appear to anticipate additional defaults in the existing portfolio. But defaults tend to occur early in the loan cycle, so additional defaults in the existing loan portfolio are actually unlikely. With some $32 billion in loans and loan guarantees issued, interest repayment back to the US government will exceed $5 billion. Additional federal tax revenue from the jobs created should be included in any full accounting. A full accounting includes the tax impact of additional federal taxes from the jobs created. Assuming 50,000 jobs created [2] and at an average wage of $50,000 per year indicates $2.5 billion in taxable wages, plus additional corporate taxable income, generating over $500 million in Federal revenue annually. Overall the net federal tax revenue (revenue minus costs) from the DOE loan programs over 20 years will be on the

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[1] http://www.whitehouse.gov/omb/budget/Supplemental

[2] http://energy.gov/sites/prod/files/2015/12/f27/DOE-LPO_Report_Financing-Innovation-Climate-Change.pdf

order of $10 billion, making the DOE loan guarantee program very profitable for the federal (and state and local) governments.

But the value of the DOE loan program goes well beyond being a large job creator and substantial net source of revenue for the federal government. The DOE loan guarantee for Tesla Motors allowed Tesla to build its Fremont California manufacturing plant that now employs about 3000 people. The DOE program enabled Tesla to survive and thrive, building what is widely viewed as the worlds most advanced electric vehicles, vaulting the US ahead in the race with Germany, China and other countries for the very fast growing global market for electric vehicles. The Tesla DOE loan was repaid early - with interest - using money that Tesla, with US DOE loan in hand, was able to raise through stock and debt raises. This illustrates the fact that US firms rely on the DOE loan program when they cannot raise funds in the private sector, and demonstrates that the DOE loan program successfully plays the role intended.

The DOE loan program has enabled the US to regain some global leadership in the critical areas of advanced transportation and power generation at a time when it was falling behind its international competition in these fundamentally critical industries. It is difficult to place a dollar value on this, but clearly the value to US economy and competitiveness is large. The fact that the DOE loan program does so with loan losses in the 2% range – far below projected and budgeted - and in a way that will generate about $10 billion in profit to the federal government – largely through expanded tax revenues that also benefits state and local governments - deserves wider recognition.

For parties interested in US competitiveness, this has proven to be a highly successful and significant program. By any reasonable measure this is a notably cost-effective and successful program and has played a large role in allowing US to regain or retain some global leadership in clean and advanced energy.

On the basis of its record, the DOE loan guarantee program can be viewed as one of the most cost-effective, pro-competitive American programs on record.

Department of Energy loan program is a very cost-effective way to maintain US competitiveness in the face of large domestic subsidies by other countries

The DOE loan guarantee program is essential to maintaining US global leadership in the fast-growing clean advanced energy and transportation industries.

I served as a member of the Steering Committee of the National Academy of Sciences study on "Comparative national innovation policies: Best Practices for the 21st Century". The findings were published as 570-page book entitled "Rising to the Challenge: US Innovation Policy for the Global Economy".[3] Our work focused on US global competitiveness, how it erodes and how it can be strengthened. The work identified polices that are necessary to support and strengthen US global competitiveness in a time of increasing international competition. Key findings include the critical importance of sustaining US leadership and innovation in clean energy to maintaining US global competitiveness. The report found that "the United States needs to make greater efforts to capture the output of US investments in innovation, that is, to provide an environment that encourages retention and growth of high tech businesses and the high quality jobs they bring". The DOE loan program achieves exactly these objectives.

The modern wind and the solar technologies were largely developed and refined here in the United States, including during the 5-year period I served as the Director of Financing for Energy Efficiency and Renewable Energy at U.S. Department of Energy

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[3] Rising to the Challenge: U.S. Innovation Policy for the Global Economy. Washington, D.C.: National Academies Press, 2012. http://www.nap.edu/catalog/13386.

But our major competitors, including China and Germany, through sustained domestic subsidies and purchases, have rapidly expanded their domestic advanced energy corporations. Today, of the top 20 global wind turbine and PV manufacturers three quarters are located outside of the US. This reflects sustained financial investment by foreign countries into their clean energy companies and projects. The DOE loan guarantee program – which is largely self-financing - provides an effective response to help offset the subsidies provided by other countries.

The European Union funds renewable energy projects through loans by the European Investment Bank, which provides billions of euros to support renewable energy in the EU. In addition, individual European countries provide financial support directly to their own national renewable and clean energy companies. For example, KfW (the German government owned development bank)[4] Renewable Energy Program provides low-interest loans with a fixed interest period of 10 years including a repayment-free start-up period for investments in electricity generation facilities.

Similarly, the Chinese Government offers low-interest loans and large credit lines through the China Development Bank (CDB).[5] In 2010, for example, the CDB lent a total of 232 billion yuan (US$36.8 billion) for energy-saving and pollution control projects and provided China's major solar panel manufacturers with a combined total of 203 billion yuan (US$32.2 billion) in very low cost loans to increase production capacity and expand overseas operations. Chinese wind and PV firms have been given land for construction, long term contracts that foreign firms effectively cannot bid on, and a range of other subsidies.

As documented by Bloomberg New Energy Finance, Asia increasingly dominates global investment in clean energy, with Asian counties now investing more than three times as much as the US in these critical industries. Limiting the DOE loan program would damage long term US competiveness. The DOE loan program is a central part of how US can and must maintain its advanced clean energy global leadership. The DOE loan guarantee program does so in way that strengthens US industry and US financial institutions.

Positive Employment Impact

Expansion of US manufacturing of clean energy technologies and projects supported by the DOE loan guarantees enables private sector funding and jobs. Virtually all of these are located in the United States.

The Council of Economic Advisors, the National Bureau of Economic Research, and the US Congressional Budget Office share a view that programs like the DOE loan guarantee programs have large, positive employment benefits. A February 2016 report by the US Council of Economic Advisors, for example, estimates that American Recovery and Reinvestment Act clean energy-related programs created roughly 900,000 job-years in innovative clean energy fields between 2009 and 2015.[6]

The Advanced Technology Vehicles Manufacturing DOE loan program has supported more than $8 billion in US advanced automotive production, creating over 35,000 jobs in eight states. The guarantees supported 4 million fuel efficient cars, in turn reducing oil consumption and driving down fuel costs nationally while strengthening the US economy, employment and balance of trade.

Major banks such as Citi and JP Morgan also believe that that investments in clean advanced energy produces a lot of well-paying US jobs. A Deutsche Bank report entitled "Repowering America: Creating Jobs" forecasted energy supply and energy employment through 2030 based on projections of sustained US investment and growth in the areas of energy efficiency and clean energy. Deutsche Bank determined that such a strategy would result in 7.9 million cumulative net job-years of direct and indirect US energy

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[4] https://www.kfw.de/inlandsfoerderung/Unternehmen/Energie-Umwelt/index-2.html
[5] https://china.lbl.gov/sites/all/files/lbl-5579e-green-finance-wiresjune-2012.pdf
[6] https://www.whitehouse.gov/sites/default/files/page/files/20160225_cea_final_clean_energy_report.pdf

employment, of which 6.35 million jobs (80%) would come from energy efficiency or renewable energy sectors (e.g. geothermal, solar PV, solar thermal and wind).[7] Dialing back the DOE loan guarantee program would hurt US ability to match the support other countries give to their clean energy firms, and would adversely impact US employment.

Long bipartisan history, rationale for public–private investing, including for the DOE loan guarantee program

There is a long bipartisan history of U.S. government support for clean and advanced energy, as exemplified by the DOE Loan program. The first part of the DOE loan programs, Section 1703, authorized DOE to provide loan guarantees to enable commercialization of clean energy technologies and projects. This program was part of the bipartisan Energy Policy Act of 2005 and was signed into existence by President George W Bush. The second part of the DOE Loan program addresses advanced technology vehicles manufacturing (ATVM) and was established in the bipartisan Energy Independence and Security Act (2007) and signed into law by President George W Bush.

The DOE loan guarantee program now supports expanded investment of US companies and projects in clean energy, including solar, wind, energy efficiency, transmission and energy storage as well as advanced nuclear, fossil fuel plants and efficient transportation. Like loan guarantee programs in general, these are projects that are viewed as unlikely to receive commercial funding because the companies or projects are early stage, somewhat risky and/or not yet fully commercial proven.

Bipartisan support for the DOE loan guarantee program has been based on a common understanding that the DOE loan program strengthens the US economy and security and US competitiveness, and builds US jobs by expanding US investment in clean energy such as solar PV and wind. As Republican Governor of Iowa, Terry Branstad, observed in the Wall Street Journal "The wind power industry is an American success story that is helping us build our manufacturing base, create jobs, lower energy costs and strengthen our energy security."[8]

Positive Security Impact

The DOE loan program strengthens US security, as defined by the US military.

One of the objectives of the DOE loan guarantee program is to expand US clean energy manufacturing and generation capacity as a way to strengthen US security. Secretary of the Navy Ray Mabus[9] asked: "Why the interest in alternative energy? The answer is pretty straightforward: We buy too much fossil fuel from potentially or actually volatile places on earth. We buy our energy from people who may not be our friends. We would never let the countries that we buy energy from build our ships or our aircraft or our ground vehicles, but we give them a say on whether those ships sail, whether those aircraft fly, whether those ground vehicles operate because we buy their energy. There are great strategic reasons for moving away from fossil fuels. It's costly… But it's costly in more ways than just money. For every 50 convoys of gasoline we bring in, we lose a Marine. We lose a Marine, killed or wounded. That is too high a price to pay for fuel."

According to the DoD, this matters because of "a $21 billion annual energy bill and because the fragility of the grid "leaves DoD vulnerable to service disruptions and places continuity of critical missions at serious

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[7] http://www.dbcca.com/dbcca/EN/_media/DB_Repowering_America_Creating_Jobs.pdf
[8] http://www.wsj.com/articles/SB10001424052702304070304577398493215885010
[9] National Clean Energy Summit 4.0 Las Vegas, NV August 30, 2011

and growing risk."[10,11] the US military has set ambitious targets to reduce energy use and develop renewable energy sources. The Army and Navy both have net zero programs, aimed at reducing energy use on bases, with the Navy targeting 50 percent of its bases to have net zero energy consumption by 2020. Energy is, in the words of Admiral Mullen, about "not just defense but security, not just survival but prosperity."[12] Our national defense infrastructure and systems hold the potential to "help to stem the tide of strategic security issues related to climate change"[13] while simultaneously improving operational effectiveness.[14]

Limiting the DOE loan program that supports clean energy technologies that the US military needs would ultimately force our military to import the technologies it needs to achieve its mission of shifting to clean energy and so would weaken US security. The US military commitment to expanding US strength and investment in advanced and clean energy as a critical security objective is clear. The DOE loan program strengthens US security.

Conclusion

Given the clear success of the loan guarantee program to date based on measures of financial performance and impact on security, employment and US competitiveness, the DOE should not slow or limit the loan program. In the real world where US companies are investing to build jobs and strengthen America's competitive position in global markets, the DOE loan program is a big success. The DOE loan program enables innovation and enables expanded venture capital and private equity investment in these industries. The DOE loan guarantee program is critical to scaling of first time and innovative clean energy companies and projects that the private sector is otherwise unwilling to finance.

The DOE loan program provides critical and very cost effective financial support to scale clean energy and bring new technologies to commercial scale. By any reasonable measure this is a notably cost-effective and successful program and has played a large role in allowing the US to maintain a global leadership position in clean and advanced energy.

For US citizens and businesses, whether the US wins or loses in the clean energy race matters a great deal because the outcome will shape future US employment, economic strength, and the linked threats of security and climate change.

Thank you

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[10] Speech by Dorothy Robyn, Deputy Under Secretary of Defense for Installations and Environment Washington DC, ICF international office, 19 April 2012
[11] "Department of Defense Annual Energy Management Report Fiscal Year 2010" July 2011
[12] Energy Security Forum Speech as Delivered by Admiral Mike Mullen, chairman of the Joint Chiefs of Staff, Washington, D.C. Wednesday, October 13, 2010 http://www.jcs.mil/speech.aspx?id=1472
[13] Energy Security Forum Speech as Delivered by Admiral Mike Mullen, chairman of the Joint Chiefs of Staff, Washington, D.C. Wednesday, October 13, 2010 http://www.jcs.mil/speech.aspx?id=1472
[14] Energy Security Forum Speech as Delivered by Admiral Mike Mullen, chairman of the Joint Chiefs of Staff, Washington, D.C. Wednesday, October 13, 2010 http://www.jcs.mil/speech.aspx?id=1472

Gregory H Kats

Greg has played substantial roles in developing the clean energy and green building industries, and is a long-time thought leader and investor in the transition to a low carbon economy. He is Managing Director at ARENA Investments LLC - a clean energy impact investment firm, and President of Capital E - which works with cities, corporations and financial institutions to design, scale and implement clean energy and low carbon strategies.

Greg previously served as Managing Director of Good Energies, a multi-billion dollar global clean energy PE/VC fund, where he led investments in smart grid, energy efficiency, green materials and green buildings. Over the past decade he has invested $1.5 billion in 50 US clean energy firms. Greg served for 5 years as the Director of Financing for Energy Efficiency and Renewable Energy at the US Department of Energy. Greg was the Founding Chairman of IPMVP and built it into the international energy and water efficiency design and verification standard for >$50 billion in building efficiency upgrades. He was the Principal Advisor guiding the development of Green Communities, the comprehensive green design standard for over 50,000 units of green affordable housing. He recently helped design the World Bank's large new green building financing program. Greg is a founder of both the American Council on Renewable Energy (ACORE) and the country's first green bank. In 2011 he was the first recipient of the US Green Building Council's Lifetime Achievement Award.

Greg Chairs the congressionally established board guiding the greening of 430,000 federal buildings, serves on the Mayor's Green Ribbon Committee guiding the greening of the District of Columbia, and served on a National Academy of Sciences board on strengthening US global competitiveness. He earned an MBA from Stanford University and (concurrently) an MPA from Princeton, a BA from UNC as a Morehead Scholar and is a Certified Energy Manager. Greg is the author of Greening Our Built World; Costs Benefits and Strategies and 50 technical papers, reports and book chapters on energy and financial issues. He serves on several clean energy corporate boards, and a solar PV system powers his DC family home and an electric car.

Chairman WEBER. Thank you, Mr. Kats. We were going to recess after your testimony.

Mr. Loris, you're recognized for five minutes.

TESTIMONY OF MR. NICK LORIS,
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Mr. LORIS. Great. Chairmen Smith, Weber, Loudermilk, Ranking Members Grayson and Beyer, and distinguished members of the subcommittees, thank you for this opportunity to discuss the Department of Energy's loan and loan guarantee programs. The views I express in this testimony are my own and should not be construed as representing any official position of the Heritage Foundation.

The number of investment opportunities is broad and expansive, but the capital to finance them is not. This requires that choices be made among different investments. Through a number of financing mechanisms of their own, the federal government distorts these decisions at the risk of the taxpayer and to the detriment of innovation and the American economy. Quite simply, it is not the role of the federal government to play venture capitalist or prop up specific energy technologies. Private stakeholders should take the risk and reap the benefits or suffer the losses using their own money.

My submitted written testimony examines each loan and loan guarantee recipient and finds several problematic themes pervasive throughout the portfolio. I'll briefly address four.

First, DOE's loan portfolio contains obvious failures that couldn't survive even with generous support from the federal government. Second, when subsidies influence investment decisions, companies divert funds to projects that have higher political rates of return than economic ones. This process skews the rules of free enterprise and creates tremendous opportunity costs. A dollar invested in a taxpayer-backed project could not simultaneously be invested into another company.

DOE loans and loan guarantees pull capital out of the market and dictate who should receive it. For example, private investors sunk over $1 billion each into the failed companies Fisker and Solyndra, but much of that private financing came after DOE announced and closed the respective loan and loan guarantee.

Private investors look at government loans as a way to substantially reduce their exposure. A project may be an economic loser but will attract private investment when the government covers a substantial portion of the downside with guaranteed loans. It essentially becomes, heads, the investor wins or, tails, the taxpayer loses.

Third, it is important to stress that whether a government-backed investment is profitable or goes bankrupt, the policy itself is a failure. Proponents of DOE loan programs often argue a few failures are worth the risk because these success stories far outweigh bankrupt companies or ones struggling financially. But it is a mistake to attribute a project's success to the loan guarantee.

Companies receive private investments all the time because their technology is promising and worth the risk. In these cases, especially when the government-backed loans go to more established companies, the DOE's involvement partially offsets private sector investments that would have been made without the federal support.

Many of the allegedly successful projects within DOE's loan portfolio are nothing more than corporate welfare. In numerous cases, perhaps out of fear of more bankruptcies, DOE distributed loan guarantees to companies with huge market capitalizations and were backed by some of the largest financiers in the world, including Goldman Sachs, Berkshire Hathaway, NRG Energy, Exelon, General Electric, Google, among others. These are companies that do not need the taxpayers' help.

And fourth, the business model companies built for these projects in the loan portfolio rely on many subsidies. For example, many companies collected cash grants from the Treasury Department as part of the 2009 stimulus bill. Businesses can take advantage of state renewable portfolio standards that effectively guarantees a customer for their product, which they can sell at a premium. They also benefit from federal tax credits, state subsidies, and other DOE spending programs. A project artificially constructed by subsidies should not be labeled a success.

And what is most perverse is that these subsidies significantly obstruct the long-term success of the very technologies they intend to promote. Instead of relying on a process that rewards competition and innovation, subsidies prevent a company from recognizing the true price point at which they will be economically viable. Sure, you'll end up with a handful of subsidized wind farms and maybe a few nuclear power plants, but government lending handouts will stunt the long-term growth and trap valuable resources in unproductive places.

And to be clear, there's absolutely nothing wrong with more renewable energy or alternative fuels replacing conventional sources of energy, but that shift will be more effective and sustainable when driven by market forces, not forced through with government playing favorites.

The fact of the matter is energy is one of the last sectors of the economy that needs help from the federal government. When left unencumbered, the laws of supply and demand work quite well. The demand for energy to light this room, to heat our homes, and to fuel our cars, among many other things, isn't going anywhere anytime soon. In fact, the global energy market is a multi-trillion dollar opportunity. So any successful technology won't need help from the federal government or be created by any federal government program.

The prophet incentive reward groundbreaking ideas. Entering into this market is not a problem of the so-called valley of death where good ideas are unable to attract substantial investment. It is a valley of wealth waiting to be had. Private actors will make these investments if it is in their best interest to do so, but rather than privatizing the gains and socializing the losses, as DOE loan programs do, risk and reward should be properly aligned.

In conclusion, the market, not the federal government, is much better at determining how to allocate resources to meet consumer demand. The government's interference in capital markets significantly distorts that process.

Thank you, and I look forward to your questions.

[The prepared statement of Mr. Loris follows:]

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CONGRESSIONAL TESTIMONY

Examining the Department of Energy's Loan Portfolio

The House of Representatives Committee on Science, Space and Technology's Subcommittee on Energy and Subcommittee on Oversight

March 3, 2016

Nick Loris

Herbert & Joyce Morgan Fellow

The Heritage Foundation

My name is Nick Loris and I am the Herbert & Joyce Morgan Fellow 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.

I would like to thank the House of Representatives Committee on Science, Space and Technology's Subcommittee on Energy and Subcommittee on Oversight for the opportunity to address the Department of Energy's (DOE) loan portfolio.

Opponents of the DOE's loan and loan-guarantee programs point to bankrupt projects as reasons to close the program. Proponents argue that the health of the portfolio is strong; outperforming many private portfolios and the federal government could make money if the interest payments more than cover any losses. However, neither justifies the Department of Energy's role as an investment banker. In fact, both the failures and the successes illustrate why the federal government should not use taxpayer-backed loans to intervene in market investment decisions.

In some instances, DOE has lent out taxpayer dollars to projects that could not survive even with policies trying to prop up favored technologies. In other instances, successful projects result from the DOE awarding money to very profitable, well-established companies or ones that benefit from the great number of federal, state, and local subsidies at their disposal. Their current and long-terms success depends on more subsidies. Furthermore, there could be instances where some companies quite simply have an innovative, money-making technology. If that is the case, private actors should bear the full risk and reap the benefits of investing in such endeavors.

The DOE's two loan-guarantee programs and its Advanced Technology Vehicles Manufacturing program have and continue to put taxpayers at risk. But the economic pain cuts deeper than wasted taxpayer money because government interventions distort free enterprise, create government dependence, and allow Washington to direct the flow of private-sector investments. This is not a recipe for more innovation and economic growth. Congress should prevent the DOE from administering any new loans and loan guarantees and pursue three fundamental energy policy objectives: open markets, eliminate favoritism, and reduce the regulatory burden for all energy sources and technologies.

A Review of the DOE's Loan Portfolio and Common Themes

Below is a brief review of each project (listed alphabetically) in the DOE's entire loan portfolio, including the 1703 loan-guarantee program, the 1705 loan-guarantee program, and the Advanced Technology Vehicles Manufacturing (ATVM) loan program. Several patterns and problems stand out throughout the portfolio, which will be discussed in more detail following the review of each project. When analyzing all of the projects, the following themes are pervasive:

- Failed companies that could not survive even with the federal government's help.

- Projects labeled as success stories but are still in the infancy of their operation and it is too early to tell if they will succeed in the long run.
- Projects that have the backing of companies with large market capitalizations and substantial private investors. These companies should have no trouble financing a project without government-backed loans if they believe it is worth the investment.
- Private investors hedging their bets and congregating toward public money. These projects on their surface appear to be financial losers but the government involvement entices companies to take a chance.
- Companies and projects that benefit from a plethora of federal, state, and local policies that push renewable energy.
- Government incompetence in administering and overseeing the loans.

1366 Technologies

1366 Technologies was the recipient of an Advanced Research Projects Agency-Energy (ARPA-E) loan in October 2010 and subsequently received $20 million in venture capital funding and seed funding, including from South Korea's Hanwa Chemical Corporation that has a market capitalization of more than $4 trillion.[1] 1366 has a strategic partnership with the major chemical corporation.[2] The company then received a loan from the Department of Energy in 2011. Fast Company named 1366 technologies one of the most innovative technologies in energy for 2015.[3] The company is pushing to make a silicon wafer that will produce solar cheaper than coal; if the solar company can produce a cost-competitive technology, it should not need any special government-backed loans.

Jonathan M. Silver, the head of the Energy Department's loan-guarantee program, said that 1366's innovation was "the result of exactly what the Department of Energy is trying to do, to develop a cradle-to-market innovation strategy that helps identify transformative technologies early in the process, and makes it possible for them to grow and mature more rapidly, and leapfrog many of the steps along the way." However, the opportunity cost of leapfrogging is that government-anointed winners get public and private backing, while other innovative or profitable technologies miss out.

Abengoa Bioenergy's Mojave and Solana Projects

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[1]Matthew Wald, "A Cheaper Route to Solar Cells," *The New York Times*, October 19, 2010, http://green.blogs.nytimes.com/2010/10/19/a-cheaper-route-to-solar-cells/ (accessed February 26, 2016).
[2]Bloomberg Business, "Company Overview of 1366 Technologies, Inc," February 26, 2016, http://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapid=42747014 (accessed February 26, 2016).
[3]Press release, "1366 Technologies Named 'One of Ten Most Innovative Companies in Energy' for 2015 by Fast Company Magazine," 1366 Technologies, February 10, 2015, http://1366tech.com/1366-technologies-named-one-of-the-ten-most-innovative-companies-in-energy-for-2015-by-fast-company-magazine/ (accessed February 26, 2016), and Yahoo! Finance, Hanwha Chemical Corp, February 26, 2016, http://finance.yahoo.com/q?s=009830.KS (accessed February 26, 2016).

Abengoa Bioenergy, one of the largest renewable energy giants in Spain and all of Europe, is in financial trouble. The company recently released a "Viability Plan" that seeks another $1.85 billion in creditor support to avoid bankruptcy. According to credit analyst Felix Fischer of Lucror Analytics in Singapore, "[T]he outline of the business plan does little to comfort investors in terms of providing fresh capital."[4] The United States government is Abengoa's largest creditor. The Federal Financing Bank, overseen by the U.S. Treasury, holds more than $2.34 billion in the company.[5]

Abengoa received two DOE loan guarantees for solar projects: $1.2 billion for Mojave, a California-based solar power plant[6] and $1.45 billion for Solana, an Arizona solar plant with molten salt thermal energy storage.[7] According to the DOE, the Mojave project is improving the efficiency of a technology that has been around for more than two decades: "Mojave uses innovative solar receiver and frame designs to further enhance already proven parabolic trough technology that has been employed for nearly 25 years at facilities throughout the Mojave desert."[8] And some of the loan-guarantee projects still need to use natural resources such as oil or natural gas. For instance, the Solana project uses solar to heat synthetic oil that runs through tubes to generate steam to power the turbine generator.

The Mojave Solar Project was also the beneficiary of a $376.8 million cash grant from Treasury as part of the 2009 American Recovery and Reinvestment Act, more commonly known as the stimulus bill.[9] Language in the 2009 stimulus allowed renewable companies to take cash grants from the Treasury Department in lieu of the targeted tax credits they would normally receive.

The loan program office also issued a $132.4 million loan guarantee to Abengoa for a commercial cellulosic ethanol plant in Kansas.[10] The DOE also awarded Abengoa $97 million in direct grant money to build the bioenergy plant in 2007.[11] Keep in mind, the federal government has also mandated the production of billions of gallons of cellulosic ethanol, provided special tax

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[4]Macarena Munoz Montijano, "Abengoa Seeks $1.85 Billion in Funds to Back Viability Plan," Bloomberg, February 17, 2016, http://www.bloomberg.com/news/articles/2016-02-17/abengoa-seeks-1-85-billion-in-funds-to-back-viability-plan (accessed February 26, 2016).

[5]Daniel Badia, "Abengoa creditors : United States, Santander and more than 200 entities," Expansion, November 26, 2015, http://www.expansion.com/empresas/energia/2015/11/26/5656ad0bca4741a43c8b461f.html (accessed February 26, 2016).

[6]Department of Energy Loan Programs Office, Mojave, http://www.energy.gov/lpo/mojave (accessed March 1, 2016).

[7]Department of Energy Loan Programs Office, Solana, http://www.energy.gov/lpo/solana (accessed March 1, 2016).

[8]Department of Energy Loan Programs Office, Mojave, http://energy.gov/lpo/mojave (accessed March 1, 2016).

[9]U.S. Department of Treasury, 1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits, https://www.treasury.gov/initiatives/recovery/Pages/1603.aspx (accessed March 1, 2016).

[10]Department of Energy Loan Programs Office, Abengoa Bioenergy, http://energy.gov/lpo/abengoa-bioenergy (accessed March 1, 2016).

[11]Department of Energy Office of Energy Efficiency and Renewable Energy, Abengoa, http://www.energy.gov/eere/bioenergy/abengoa (accessed March 1, 2016).

breaks for biofuels, and spends taxpayer dollars through the annual appropriations process at the DOE attempting to commercialize and reduce the cost of biofuels.

Abengoa repaid the DOE in full in March 2015 for the bioenergy loan, but creditors of a bioenergy plant in Nebraska have not been as lucky where creditors are seeking $4 million from Abengoa in unpaid grain costs.[12] If Abengoa restructures to reduce its debt or ultimately becomes insolvent, U.S. taxpayers could be out billions of dollars.

Abound Solar

Abound Solar is one of several DOE loan-guarantee failures and the venture failed quite quickly. The DOE conditionally approved the loan guarantee in July 2010 and made the first loan disbursement in December 2010. By September 2011, the DOE already suspended funding because Abound failed to meet milestone markers. Less than a year later Abound filed for bankruptcy, leaving toxic waste at its empty facilities behind.[13]

A 2014 DOE Inspector General (IG) Audit report on the DOE loan to Abound expounds on several of the problems with the government's involvement in financing projects. The audit identified many glaring issues with the DOE's administration and monitoring of the loan. Specifically, the report criticized the Program Office for:

- **Failing to tell the Department's Credit Review Board that it had significantly lowered the estimated recovery rate from 38 percent down to 8.3 percent.** The change is significant because the estimated recovery rate affects the amount of money distributed as part of the credit subsidy. The credit subsidy is the "net present value of the difference between projected cash flows to and from the government over the life of the loan."[14] In the case of Abound, lowering the estimated recovery rate increased the credit subsidy from $71 million to $96 million, paid for with taxpayer money from the American Recovery and Reinvestment Act of 2009.[15]

- **Ignoring concerns from technical experts and proceeded to distribute taxpayer-backed loans.** The loan program's internal solar expert and independent engineer recommended that the office not lend additional money because of product quality and

[12]"Creditors Seek to Put Abengoa's U.S. Bioethanol Unit into Bankruptcy," Reuters, February 3, 2016, http://www.reuters.com/article/abengoa-restructuring-nebraska-idUSL2N15I20H (accessed February 26, 2016).
[13] Mark Jaffe, "Bankrupt Abound Solar's toxic wastes cleaned at 4 Colorado facilities," July 8, 2013, http://www.denverpost.com/ci_23621546/bankrupt-abound-solars-toxic-wastes-cleaned-at-4 (accessed March 1, 2016).
[14]Government Accountability Office, "Department of Energy: Current Estimated Net Costs Include $2.2 Billion in Credit Subsidy, Plus Administrative Expenses," April 2015, http://www.gao.gov/assets/670/669847.pdf (accessed February 26, 2016).
[15]U.S. Department of Energy Office of Inspector General Office of Audits and Inspections: Audit Report, "The Department of Energy's Loan Guarantee to Abound Solar Manufacturing, LLC," U.S. Department of Energy, April 14, 2014, http://energy.gov/sites/prod/files/2014/04/f15/DOE-IG-0907.pdf (accessed March 1, 2016).

control issues, including concerns that the panels could catch fire.[16] Despite the technical concerns and an initial suspension of funding, the DOE continued to disperse funds.

- **Lacking expertise and failing to document assumptions when analyzing the financial prospects of the company.** If the federal government wants to have a role as an investment banker, one would assume they would hire competent expertise. This was not the case for Abound. The analysis of market conditions to approve and disperse the money had little, if any, documentation to support how analysts reached their conclusions. Perhaps even more alarming, the IG report says, "we noted that the individual assigned to monitor the Abound loan had no prior loan management experience and limited background in project finance and financial statement analysis."[17]

The federal government's involvement in promoting Abound's technology began even before the loan guarantee and in fact dated back to the 1990s. The National Science Foundation and the DOE's National Renewable Energy Laboratory (NREL) spent money trying to advance Abound's technology, a thin-film cadmium telluride solar technology.[18] Funding provided the means to refine and attempt to prove commercial viability. Abound provides an example of the problems when the government directs taxpayer money toward specific technologies, even when the money is allegedly spent for basic research and development. The government money funnels to politically preferred technologies and tries to force them to succeed. Researchers at the national laboratories could be working on other projects and spending taxpayer dollars more efficiently—or saving them altogether by simply not spending money on activities where the federal government should have no part.

Agua Caliente

Agua Caliente is an Arizona-based solar project using thin-film technologies built by First Solar. The company received a $967 million conditional commitment from the DOE in January 2011 and the agency finalized the loan guarantee August 5, 2011.[19] The well-established renewable energy company NRG purchased the project from First Solar the exact same day. NRG has a market capitalization of $3.45 billion. In January 2012, Berkshire Hathaway Renewables

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[16]Ibid.
[17]Ibid.
[18]Statement of Craig Witsoe, CEO Abound Solar, Inc., Regarding the U. S. Department of Energy 1705 Loan Program Before the Subcommittee on Regulatory Affairs, Stimulus Oversight and Government Spending House of Representatives Committee on Oversight and Government Reform, May 16, 2012, https://oversight.house.gov/wp-content/uploads/2012/05/5-16-12-RegAffairs-Witsoe.pdf (accessed February 26, 2016).
[19]U.S. Department of Energy, "Department of Energy Offers Support for Arizona Solar Project," January 20, 2011, http://energy.gov/articles/department-energy-offers-support-arizona-solar-project (accessed February 26, 2016), and U.S. Department of Energy, "Department of Energy Finalizes a $967 Million Loan Guarantee to Support the Agua Caliente Solar Project," February 5, 2011, http://energy.gov/articles/department-energy-finalizes-967-million-loan-guarantee-support-agua-caliente-solar-project (accessed February 26, 2016).

acquired 49 percent of the company.[20] The project began commercial operation in 2014 and proponents of the DOE program hail Agua Caliente as a success story.[21]

As of 2014, nearly 90 percent of Berkshire Hathaway Energy, of which Berkshire Hathaway Renewables is a subsidiary, is owned by Berkshire Hathaway.[22] The multinational holding company run by Chief Operating Officer Warren Buffet has a market capitalization of $325.8 billion. In 2013, Berkshire Hathaway Energy alone raised $8.3 billion for investments in their projects.[23]

Alamosa

The Alamosa Solar Generating Project, owned by Cogentrix, received a conditional loan-guarantee commitment in May 2011 and the DOE finalized the $90.6 million loan guarantee that September. The project, which commenced commercial operations in April 2012, is one of the first utility-scale high-concentration photovoltaic solar projects in the United States, having nearly 30 megawatts of generation capacity.[24]

At the time of the loan guarantee, a subsidiary of Goldman Sachs owned Cogentrix. Goldman Sachs had a market capitalization of $77 billion at the time and is one of the most successful financiers in the world.[25] The Carlyle Group, "global alternative asset manager with more than $203 billion in assets under management across 129 funds and 141 fund of private equity funds vehicles" acquired Cogentrix from Goldman Sachs in 2012.[26] Cogentrix also received a $35 million cash grant from the Treasury in July 2012.[27]

Antelope Valley Solar Ranch

The Antelope Valley Solar Ranch (AVSR) is a utility-scale solar project in southern California that received a $646 million loan guarantee. Now owned by massive energy-provider Exelon, the solar ranch illustrates how loan guarantees can misallocate capital and reduce overall output. Much like the Agua Caliente project, First Solar first developed AVSR. Hours after receiving the

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[20]BHE Projects: Agua Caliente, https://www.bherenewables.com/aguacaliente_solar.aspx (accessed February 26, 2016).
[21]Department of Energy Loan Programs Office, Agua Caliente, http://energy.gov/lpo/agua-caliente (accessed March 1, 2016).
[22]"Buffett's MidAmerican Energy Adopts Berkshire Name," Reuters, April 30, 2014, http://www.reuters.com/article/berkshirehathaway-midamerican-namechange-idUSL2N0NM21620140430 (accessed February 26, 2016).
[23]Berkshire Hathaway Energy, Financial Strength, https://www.berkshirehathawayenergyco.com/investors/ (accessed February 26, 2016).
[24]Department of Energy Loan Programs Office, http://energy.gov/lpo/alamosa (accessed March 1, 2016).
[25]Nicolas Loris, "Spurring Investment in America's Clean Energy Technology," testimony before the Committee on Natural Resources, U.S. Senate, http://www.heritage.org/research/testimony/2013/09/spurring-investment-in-americas-clean-energy-technology (accessed February 26, 2016).
[26]Cogentrix, A Leading Independent Power Producer, http://www.cogentrix.com/ (accessed February 26, 2016).
[27]U.S. Department of Treasury, 1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits, https://www.treasury.gov/initiatives/recovery/Pages/1603.aspx (accessed March 1, 2016).

$646 million loan guarantee, First Solar sold the project to Exelon for $75 million.[28] The loan guaranteemakes the project more attractive to potential purchasers, like Exelon, by lowering borrowing costs.

In 2012 testimony, my colleague David Kreutzer estimates 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.[29]

Blue Mountain and Ormat Nevada

Nevada Geothermal Power is another company that received help from the taxpayers in several capacities. In September 2010, the DOE issued a $98.5 million partial loan guarantee through its Financial Institution Partnership Program (FIPP) for the Blue Mountain geothermal power plant in Nevada. According to the DOE, FIPP is "designed to expedite the loan guarantee process for renewable energy generation projects that use commercial technologies and to expand credit capacity for financing of U.S. renewable energy projects. In a FIPP financing, the DOE provides a partial guarantee for up to 80 percent of a loan provided to a renewable energy project by qualified financial institutions." The company also received nearly $66 million in July 2011 from the U.S. Treasury through the 1603 grant program in the stimulus.

Through this program, the DOE poured taxpayer dollars into a struggling project that already had established lenders. A 2012 House of Representatives Committee on Oversight and Government Reform details the financial troubles Nevada Geothermal Power faced—troubles the DOE was well aware of when administering the loan guarantee. Furthermore, the Oversight report emphasizes that the government-backed loan served more as a creditor bailout than anything else:

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[28]SustainableBusiness.com News, "First Solar Sells Massive Solar Projects to Utilities," October 3, 2011, http://www.sustainablebusiness.com/index.cfm/go/news.display/id/22981 (accessed February 26, 2016).
[29]David Kreutzer, "Testimony before the Committee on Energy and Commerce Subcommittee on Energy and Power United States House of Representatives," July 12, 2012, http://www.heritage.org/research/testimony/2012/07/the-american-energy-initiative-the-cost-of-loan-guarantees (accessed February 26, 2016).

> Less than three months after the conditional approval, DOE finalized this loan guarantee, enabling Nevada Geothermal to refinance a loan from TCW through John Hancock. The loan did not finance any new construction and therefore did not help to create a single new job. DOE's awarding of this loan guarantee raises questions about why DOE was investing significant taxpayer resources in an entity with well-established financial difficulties.[30]

The Blue Mountain project under-delivered on its projected power generation for years and the future viability of the project remains unclear. AltRock, founded in 2007 by some of the United States' largest venture capital firms including Google.org, Vulcan Capital, and Kleiner Perkins, acquired the company in May 2015.[31] At that time, AltRock's CEO Aaron Mandell said his company would fully repay the DOE's loan guarantee by 2029.[32] Ormat Technologies received nearly $80 million for the engineering, procurement, and construction for the Blue Mountain project.[33] The same company benefitted from the DOE finalizing a $350 million partial loan guarantee through FIPP for geothermal power plants owned by Ormat Nevada.[34]

California Valley Solar Ranch

The California Valley Solar Ranch (CVSR) is a 250-megawatt utility-scale solar project that received a $1.24 billion loan guarantee from the DOE September 30, 2011.[35] SunPower originally sponsored the project and applied for the loan guarantee but Fortune 500 company NRG acquired the project shortly thereafter and worked with SunPower to build the plant.[36] SunPower had a power purchase agreement with Pacific Gas & Electric a few years before the project began commercial operation in October 2013. If the solar generation remains commercially viable, CVSR will help California meet its ambitious renewable portfolio standard of providing 33 percent of its electricity from renewable power by 2020. At its peak in June 2014, the project had a capacity factor of nearly 33 percent (for a comparison, a nuclear power

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[30]U.S. House of Representatives Committee on Oversight and Government Reform, "The Department of Energy's Disastrous Management of Loan Guarantee Programs," March 12, 2012, https://oversight.house.gov/wp-content/uploads/2012/03/FINAL-DOE-Loan-Guarantees-Report.pdf (accessed February 26, 2016).
[31]Press release, "Baseload Clean Energy Partners Acquires the Blue Mountain Geothermal Power Plant," AltaRock Energy, June 1, 2015, http://altarockenergy.com/in_the_news/baseload-clean-energy-partners-acquires-blue-mountain-geothermal-power-plant/ (accessed February 26, 2016).
[32]Katie Fehrenbacher, "A Troubled Geothermal Plant Finds a Savior in a Startup and Vinod Khosla," *Fortune*, May 20, 2015, http://fortune.com/2015/05/20/geothermal-altarock-nevada/ (accessed February 26, 2016).
[33]U.S. House of Representatives Committee on Oversight and Government Reform, "The Department of Energy's Disastrous Management of Loan Guarantee Programs," March 12, 2012, https://oversight.house.gov/wp-content/uploads/2012/03/FINAL-DOE-Loan-Guarantees-Report.pdf (accessed February 26, 2016).
[34]Department of Energy Loan Programs Office, Ormat Nevada, http://energy.gov/lpo/ormat-nevada (accessed March 1, 2016).
[35]U.S. Department of Energy, "Energy Department Finalizes $1.2 Billion Loan Guarantee to Support California Solar Generation," September 30, 2011, http://energy.gov/articles/energy-department-finalizes-12-billion-loan-guarantee-support-california-solar-generation (accessed February 26, 2016).
[36]Business Wire, "NRG Energy, NRG Yield and SunPower Begin Commercial Operations at 250 MW California Valley Solar Ranch," October 31, 2013, http://www.businesswire.com/news/home/20131031006341/en/NRG-Energy-NRG-Yield-SunPower-Commercial-Operations#.U29fhUks8oA (accessed February 26, 2016).

plant has a capacity factor of 90 percent) and as of November 2014, CVSR had a capacity factor of less than 16 percent.[37]

Crescent Dunes

The DOE issued a $737 million loan guarantee in September 2011 to SolarReserve's Crescent Dunes concentrated solar project in Tonopah, Nevada.[38] The $1 billion plant received the large majority of its funding from the federal government with an additional $260 million in equity financing from SolarReserve, ACS Cobra, and Banco Santander.[39]

SolarReserve's solar project with thermal storage is operational and performed some test runs delivering electricity to the grid and could soon began supplying power to Nevada. The facility is a 110-megawatt tower consisting of more than 17,000 mirrors that collect the sun's energy to heat molten rock stored in a 640-foot tower. The molten rock will then flow through the tower to a storage tank to generate steam and therefore electricity.[40] The company entered into a 25-year power purchasing agreement. SolarReserve will sell its power to Nevada Power Company at 13.5 cents per kilowatt hour, about twice the cost of electricity supplied from a natural gas–fired power plant.[41] For reference, Nevadans paid 8.10 cents per kilowatt hour across all sectors of the economy in November 2015.[42]

Desert Sunlight and Genesis

Former DOE loan-guarantee director Peter Davidson called the Desert Sunlight project a "shining example" of how the loan program is bringing utility-scale solar into the market.[43] More accurately, Desert Sunlight is a shining example of corporate welfare. The DOE issued two partial loan guarantees in September 2011 totally nearly $1.5 billion through FIPP. The lead funder through this program was Goldman Sachs Lending Partners LLC with Citigroup Global Markets co-arranging the funding. Again, almost immediately after closing the taxpayer-backed

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[37]U.S. Energy Information Administration, Electricity Data Browser, http://www.eia.gov/electricity/data/browser/#/plant/57439/ (accessed February 26, 2016).
[38]Department of Energy Loan Programs Office, Crescent Dunes, http://www.energy.gov/lpo/crescent-dunes (accessed March 1, 2016).
[39]Kevin Smith, "Crescent Dunes Solar Energy Project Tonopah, Nevada," Solar Reserve, June 27, 2012, http://www.csptoday.com/usa/presentations/day1/920-Kevin-Smith-Solar-Reserve-2.pdf (accessed February 26, 2016).
[40]U.S. Department of Energy, "Energy Department Finalizes $737 Million Loan Guarantee to Tonopah Solar Energy for Nevada Project," September 28, 2011, http://energy.gov/articles/energy-department-finalizes-737-million-loan-guarantee-tonopah-solar-energy-nevada-project (accessed February 26, 2016).
[41]Eric Wesoff, "Almost $5B in DOE Loans: Antelope Valley, Desert Sunlight, CVSR Funded, Sold; Prologis Funded," Greentech Media, September 30, 2011, http://www.greentechmedia.com/articles/read/doe-closes-two-solar-loans-just-before-the-deadline (accessed February 26, 2016).
[42]U.S. Energy Information Administration, Electric Power Monthly, "Average Price of Electricity to Ultimate Customers by End-Use Sector by State November 2015 and 2014 (Cents per Kilowatthour)," January 26, 2016, https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a (accessed February 26, 2016).
[43]U.S. Department of Energy, "Desert Sunlight Is Shining Example of How DOE Loan Guarantees Helped Launch Utility-scale PV Solar Market," February 9, 2015, http://energy.gov/lpo/articles/desert-sunlight-shining-example-how-doe-loan-guarantees-helped-launch-utility-scale-pv (accessed February 26, 2016).

loan guarantee, First Solar sold the project to three of the world's largest corporations—General Electric (market capitalization of $296 billion), NextEra Energy (market capitalization of $53 billion) and Sumitomo Corporation (market capitalization of $13 billion). The Desert Sunlight project also received more than $360 million as part of the stimulus program.[44]

The project, which uses thin-film cadmium-telluride solar panels as opposed to the more common crystalline-silicon panels, is on federal government land. The company is renting the federal land at a discounted price of $1.37 million per yearand has entered into power purchase agreements with Pacific Gas & Electric and Southern California Edison to help meet the state's renewable portfolio standard.[45]

NextEra was also the recipient of an $852 million partial loan guarantee through FIPP for Genesis Solar Project. The solar facility is also on Bureau of Land Management property and much like the Solana project, it uses solar to heat synthetic oil that runs through tubes to generate steam to power the turbine generator. According to the plant manager, it takes an hour and a half to heat the oil running through the tubes necessary to generate electricity on a good sunny day.[46] Genesis Solar also received a $328 million Treasury grant in lieu of the solar investment tax credit.

Fisker

Fisker Automotive is one of the failures from the DOE's Advanced Technology Vehicles Manufacturing (ATVM) program. The DOE awarded the electric car company a $529 million loan in April 2010 to develop and produce two lines of hybrid plug-in vehicles at a plant in Delaware. Fisker's inability to meet performance targets caused the DOE to cap the money lent at $192 million. Fisker filed for bankruptcy in November 2013. The federal government recovered $28 million and recovered another $25 million by selling the loan at auction, leaving a loss of $139 million.[47]

Red flags that existed should have made it apparent that Fisker was not credit-worthy for a government loan. Fisker spent $600,000 per car that was sold to auto dealers for an average of $70,000 and had a CCC+ credit rating.[48] After the Fisker failure, head of the loan program office

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[44]U.S. Department of Treasury, 1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits, https://www.treasury.gov/initiatives/recovery/Pages/1603.aspx (accessed March 1, 2016).

[45]"DOE Closes on Four Major Solar Projects," Renewable Energy World, September 30, 2011, http://www.renewableenergyworld.com/articles/2011/09/doe-closes-on-three-major-solar-projects.html (accessed February 26, 2016).

[46]K. Kaufmann, "Riverside East Solar Zone's Genesis Project Is Ready," *The Desert Sun*, April 24, 2014, http://www.desertsun.com/story/tech/science/energy/2014/04/25/riverside-east-solar-zone-nextera-energy-genesis-ready/8137853/ (accessed February 26, 2016).

[47]Peter Davidson, "An Update on Fisker Automotive and the Energy Department's Loan Portfolio," U.S. Department of Energy, September 17, 2013, http://energy.gov/articles/update-fisker-automotive-and-energy-department-s-loan-portfolio (accessed February 26, 2016).

[48]PrivCo, "Fisker Automotive's Road to Ruin: How a 'Billion-Dollar Startup Became a Billion-Dollar Disaster'" April 17, 2013, http://www.privco.com/fisker-automotives-road-to-ruin (accessed February 26, 2016), and Aamer

Peter Davidson offered why the government sank money into the project, writing, "Early on, Fisker Automotive looked very promising—raising more than $1.2 billion from leading private sector investors who believed in the company and its business plan, and also attracting strong support from both Republicans and Democrats."[49] If a company can attract $1.2 billion from the private sector, it should not need help from the federal government. The question is would Fisker have generated that much investment absent the government's loan.

The DOE loan artificially made this dubious investment appear more attractive and lowered the risk of private investment. For instance, private investors sank $1.1 billion into Fisker but much of the private financing came after the Department of Energy approved and closed the loan for Fisker. Fisker, formed in August 2007, raised $94 million before the DOE approved the loan in September 2009.[50] Fisker raised another $57 million between the time the DOE approved and closed the loan in April 2010. After the DOE closed the loan, Fisker raised over $1 billion in various rounds of venture-capital funding.[51]

Ford and Nissan

The DOE issued ATVM loans to both Ford and Nissan North America to retool their factories to produce more fuel-efficient and electric vehicles. In September 2009, the DOE issued $5.9 billion to Ford to upgrade facilities in Illinois, Kentucky, New York, Michigan, Missouri, and Ohio. DOE officials boasted that the funds helped Ford manufacture and sell its Ford 3.5-liter V6 EcoBoost®-equipped F-150 truck. They tout that EcoBoost trucks save drivers money because of improved fuel efficiency and also take "another step in helping our country become more resilient against the threats presented by climate change."[52] Nissan's involvement with the ATVM program is similar. In January 2010, the DOE issued a $1.45 billion loan to build a battery manufacturing plant and retool existing factories to expand the development of its electric vehicle, the Nissan LEAF.[53]

Ford and Nissan are well-established companies that have market capitalizations of $48 billion and $36 billion, respectively.[54] Drivers value energy efficiency and saving on fuel costs. If Ford and Nissan thought these investments and retooling of manufacturing plants were a way to meet market demand, they should have been completely privately financed outside the DOE. Additionally, the government mandates efficiency through its corporate average fuel economy

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Madhani, "GOP, White House Clash over Loan to Troubled Car Maker," *USA Today*, April 24, 2013, http://www.usatoday.com/story/money/cars/2013/04/24/obama-fisker-gop/2110689/ (accessed February 26, 2016).
[49]Peter Davidson, "An Update on Fisker Automotive and the Energy Department's Loan Portfolio," U.S. Department of Energy, September 17, 2013, http://energy.gov/articles/update-fisker-automotive-and-energy-department-s-loan-portfolio (accessed February 26, 2016).
[50]Fisker raised $68 million of the $94 million after submitting the loan application.
[51]PrivCo, "Fisker Automotive's Road to Ruin."
[52]Peter Davidson, "ATVM Loans Help Boost Pickup Truck Efficiency," U.S. Department of Energy, May 7, 2014, http://energy.gov/lpo/articles/atvm-loans-help-boost-pickup-truck-efficiency (accessed February 26, 2016).
[53]Department of Energy Loan Programs Office, Nissan, http://energy.gov/lpo/nissan (accessed March 1, 2016).
[54]Yahoo! Finance, Ford Motor, Co., http://finance.yahoo.com/q?s=F (accessed February 26, 2016).

standards. The government should not be forcing efficiency through mandates in the first place, but they should not be subsidizing companies through loans or targeted tax credits to meet those targets.

Granite Reliable

Granite Reliable received a partial loan guarantee of nearly $169 million through FIPP in September 2011. The DOE provided the money to build a 99-megawatt wind farm in New Hampshire. Granite is 75 percent owned by Brookfield Asset Management, whose market capitalization is more than $30 billion.[55] Granite Reliable also collected $56.2 million as a cash grant from the 1603 Treasury grant program in 2012.[56] Much of the electricity generated by Granite Reliable will be sold to Vermont utilities to meet their renewable portfolio standard.

Ivanpah

Ivanpah, a 392-megawatt solar plant in California, received a $1.6 billion loan guarantee backed by the taxpayers in September 2011.[57] BrightSource Energy and Bechtel developed the project, which had financial backing from NRG Energy and Google, among other investors. The more than $2 billion plant is failing to deliver on how much electricity it projected to produce.

Along with replacing broken equipment the plant has run into several problems. As *The Wall Street Journal* reports,

> One big miscalculation was that the power plant requires far more steam to run smoothly and efficiently than originally thought, according to a document filed with the California Energy Commission. Instead of ramping up the plant each day before sunrise by burning one hour's worth of natural gas to generate steam, Ivanpah needs more than four times that much help from fossil fuels to get the plant humming every morning. Another unexpected problem: not enough sun. Weather predictions for the area underestimated the amount of cloud cover that has blanketed Ivanpah since it went into service in 2013.[58]

The company is at risk of defaulting on their contracts to distribute electricity to Pacific Gas & Electric. To pay off the loan, the company is applying for a $539 million taxpayer-funded grant. In applying, NRG said the company "believes in a clean and sustainable energy future and

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[55]Bloomberg Business, Brookfield Asset Management Inc., http://www.bloomberg.com/quote/BAM:US (accessed February 26, 2016).
[56]U.S. Department of Treasury, 1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits, https://www.treasury.gov/initiatives/recovery/Pages/1603.aspx (accessed March 1, 2016).
[57]Department of Energy Loan Programs Office, Ivanpah, http://energy.gov/lpo/ivanpah (accessed March 1, 2016).
[58]Cassandra Sweet, "High-Tech Solar Projects Fail to Deliver," *The Wall Street Journal*, June 12, 2015, http://www.wsj.com/articles/high-tech-solar-projects-fail-to-deliver-1434138485 (accessed February 26, 2016).

therefore participates in available government programs to develop and expand the use of clean energy to accelerate America's energy independence."[59]

One problem with NRG's statement is that even if Ivanpah generated the 392 gross megawatts of power it plans to, the additional electricity will not make much difference when it comes to energy independence. Most electricity consumed in the United States is produced domestically, with a small amount imported from friendly nations. Another problem is that energy independence should not be the goal of energy policy. The goal should be to create a free market in energy that allows producers and consumers to respond to energy prices and market signals appropriately.

Kahuku

Kahuku Wind Power, LLC, the owner and operator of the Kahuku Wind Power project, received a $117 million loan guarantee in July 2010 to develop a 30-megawatt wind facility.[60] Treasury also awarded Kahuku with a $35.1 million cash grant in February 2012.[61] Kahuku has an agreement to sell to the Hawaiian Electric Company and will help to meet the state's renewable mandate where utilities have to have 30 percent of its net electricity sales come from renewables by 2020, and 100 percent by 2045.[62]

Mesquite

Mesquite Solar 1 received a loan guarantee of $337 million in September 2011 to finance a 170-megawatt solar plant in Arizona.[63] Mesquite is owned by a subsidiary of Sempra Energy, whose market capitalization is $25 billion.[64] Mesquite was also the beneficiary of a $163.8 million cash grant from the Treasury in August 2013.[65] Sempra has a 20-year power purchase agreement with Pacific Gas & Electric Company and the state has a 15 percent by 2025 renewable portfolio standard. Sempra has another customer for the third phase of its Mesquite Solar Complex: the

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[59]William La Jeunesse, "World's Largest Solar Plant Applying for Federal Grant to Pay Off Federal Loan," FoxNews, November 8, 2014, http://www.foxnews.com/politics/2014/11/08/world-largest-solar-plant-applying-for-federal-grant-to-pay-off-its-federal.html (accessed February 26, 2016).
[60]U.S. Department of Energy, "Secretary Chu Announces Closing of $117 Million Loan Guarantee for Kahuku Wind Power Project," June 27, 2010, http://energy.gov/articles/secretary-chu-announces-closing-117-million-loan-guarantee-kahuku-wind-power-project (accessed February 26, 2016).
[61]U.S. Department of Treasury, 1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits, https://www.treasury.gov/initiatives/recovery/Pages/1603.aspx (accessed March 1, 2016).
[62]U.S. Department of Energy Efficiency and Renewable Energy, DSIRE, Renewable Portfolio Standard, http://programs.dsireusa.org/system/program/detail/606 (accessed February 26, 2016).
[63]Department of Energy Loan Programs Office, Mesquite, http://energy.gov/lpo/mesquite (accessed March 1, 2016).
[64]Yahoo! Finance, Sempra Energy, http://finance.yahoo.com/q?s=SRE (accessed February 26, 2016).
[65]U.S. Department of Treasury, 1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits, https://www.treasury.gov/initiatives/recovery/Pages/1603.aspx (accessed March 1, 2016).

federal government. Sempra will supply a third of the electricity for 14 U.S. Navy and Marine Corps bases in California.[66]

One Nevada Line

The DOE's loan program has involvement in supporting the build of transmission lines, too. One economic challenge facing renewable energy facilities is delivering the electricity. Many large-scale renewable projects in the United States are located in remote areas and therefore transmission lines are necessary to take the power to more densely populated areas. The DOE granted a $343 million loan guarantee for the One Nevada Line transmissions project in February 2011, which brings wind and solar power from rural areas of Idaho, Nevada, and Wyoming to urban areas.[67] The project is mostly owned by LS Power Equity Advisors , an"established investment manager with $6.36 billion in equity capital raised across three private equity investment funds."[68] NV Energy owned the rest of the project. Berkshire Hathaway Energy acquired NV Energy in 2013.[69]

Record Hill Wind

Owned by Record Hill Wind and Yale University, the small 51-megawatt wind project received a $102 million loan guarantee in August 2011.[70] Less than a year later, Record Hill collected a $33.7 million cash grant from the Treasury's 1603 program.[71] The money helped pay for two Siemens wind turbines, a company with a market capitalization of $68 billion.[72] Though hailed as an innovative technology, the 2012 House Oversight Committee reveals that was not the case. The money helped deploy an already existing technology that had been operating in Europe since 2005 and in the U.S. a year later. More than 1,300 of these turbines exist worldwide and implementing minor modifications does not signify the cutting edge technology the program is supposed to support.[73]

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[66]Sempra U.S. Gas and Power, Solar Under Construction: Mesquite Solar 3, http://www.semprausgp.com/project/mesquite-solar-3/ (accessed February 26, 2016).
[67]Peter Davidson, "Loan Guarantees Can Play a Role in Rural Opportunity Investment," U.S. Department of Energy, July 24, 2014, http://energy.gov/lpo/articles/loan-guarantees-can-play-role-rural-opportunity-investment (accessed February 26, 2016).
[68]LS Power, About Us, http://www.lspower.com/about.htm (accessed February 26, 2016).
[69]U.S. Securities and Exchange Commission, Merger agreement among MidAmerican Energy Holdings Company, Silver Merger Sub, Inc., and NV Energy, Inc." December 19, 2013, http://www.sec.gov/Archives/edgar/data/71180/000119312513479163/d647847d8k.htm (accessed February 26, 2016).
[70]Department of Energy Loan Programs Office, Record Hill, http://energy.gov/lpo/record-hill (accessed March 1, 2016).
[71]U.S. Department of Treasury, 1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits, https://www.treasury.gov/initiatives/recovery/Pages/1603.aspx (accessed March 1, 2016).
[72]Yahoo! Finance, Siemens Aktiengesellschaft, http://finance.yahoo.com/q?s=SIE.DE (accessed February 26, 2016).
[73]U.S. House of Representatives Committee on Oversight and Government Reform, "The Department of Energy's Disastrous Management of Loan Guarantee Programs," March 12, 2012, https://oversight.house.gov/wp-content/uploads/2012/03/FINAL-DOE-Loan-Guarantees-Report.pdf (accessed February 26, 2016).

Shepherds Flat

In December 2010, the DOE announced a $1.3 billion partial loan guarantee to support the world's largest wind farm. The money went to one of the world's largest companies, General Electric, whose market capitalization is more than $270 billion.[74] Google also invested $100 million in the project.[75] The project also provides another example of the egregious amount of subsidies at all levels of government to support such corporate welfare and how little private companies have to spend to hedge their bets. In fact, a Memorandum for the President written by Obama Administration officials Carol Browner, Ron Klan, and Larry Summers identifies the amount of double-dipping for taxpayer handouts a company can collect, including federal, state, and local handouts.[76]

Solyndra

Solyndra became the poster child for why the federal government should not be an investment banker. Solyndra received one of the first stimulus loan guarantees, a $535 million loan in September 2009.[77] During a visit to the plant, President Obama touted: "Companies like Solyndra are leading the way toward a brighter and more prosperous future." [78] The company also benefited from other state handouts from California.

Not soon after, Solyndra closed one of its facilities and canceled its initial public offering, and Solyndra filed for Chapter 11 bankruptcy and laid off all of its 1,100 workers in September 2011. Solyndra provides another example of private-sector investment chasing after a government-anointed project. Private investors sank $1.1 billion into Solyndra. Much of the private financing came after the Department of Energy announced Solyndra was one of 16 companies eligible for a loan guarantee in 2007.

Stephentown Spindle (Beacon Power)

Beacon Power received a $43 million loan guarantee in July 2009. Beacon Power filed for bankruptcy in the fall of 2011, a few months after Solyndra. Stephentown Spindle uses Beacon's flywheel technology for energy storage and is still in operation. Nevertheless, it is clear that in the instances of Solyndra, Beacon, Fisker, and other failures of loan-guarantee recipients, the lack of financing for these projects was not a result of a market failure or bridging the valley of

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[74]Yahoo! Finance, General Electric Company http://finance.yahoo.com/q?s=GE (accessed February 26, 2016).
[75]Rick Needham, "Shepherding the Wind," Google, April 18, 2011, http://googleblog.blogspot.com/2011/04/shepherding-wind.html (accessed February 26, 2016).
[76]Carol Browner, Ron Klan, and Larry Summers, Memorandum for the President, Renewable Loan Guarantees and Grants, http://dailycaller.com/wp-content/uploads/2010/11/browner-loan-guarantee-memo.pdf (accessed February 26, 2016).
[77]U.S. Department of Energy, "Timeline of DOE's Review of the Solyndra Loan Guarantee Application," http://energy.gov/sites/prod/files/Solar%20Background%20Document%201.pdf (accessed February 26, 2016).
[78]George Avalos, "Fremont Solar Tech Firm Solyndra to Shut Down, Lay Off Hundreds of Workers," *San Jose Mercury News*, 2011, http://www.mercurynews.com/bay-area-news/ci_18795739?source=rss (accessed February 26, 2016).

death that ostensibly necessitates preferential financing from the government. They were economically uncompetitive ventures and failed even with help from the government.

Tesla

The DOE and proponents of government-backed loans and loan guarantees advertise Tesla as a success of the ATVM program. The DOE issued a $465 million loan January 2010 to reopen a former plant in California for the production of Tesla's electric vehicles and to develop a manufacturing plant to produce battery packs. Tesla fully paid back the loan in May 2013. Whether Tesla remains profitable remains to be seen, especially if policymakers strip away all of the state and federal incentives for electric vehicles. The company collected more than $1.8 billion in state and local subsidies since 2007.[79] However, if Tesla's electric vehicles are the wave of the future, they should have secured investment and loans through the private sector.

Chairman and CEO Elon Musk and his companies (Tesla, among others) have had their share and benefitted from an array of government handouts in the forms of government loans and special tax breaks, all without any say from the taxpayer. However, one should not fully place blame at the companies taking advantage of taxpayer-funded program. Instead, the bulk of the blame belongs with the politicians who dangle these policies in front of investors in hopes of building plants in their districts and to help them out come election time. Such crony behavior when the federal government involves itself with decisions that should be made in the marketplace.

U.S. Geothermal Oregon

U.S. Geothermal received a $97 million loan guarantee from the DOE in February 2011 and began commercial operations in November 2012.[80] The loan comprised 75 percent of the total cost of the project.[81] Enbridge, the Canadian-based energy-delivery company with a market capitalization of $28 billion, is an equity partner.[82] Treasury also gave a $32.7 million cash grant for the Neal Hot Springs facility.[83]

Vogtle

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[79]Good Jobs First, Tesla Motors, http://subsidytracker.goodjobsfirst.org/prog.php?parent=tesla-motors (accessed February 26, 2016).
[80]Department of Energy Loan Programs Office, USG Oregon, http://energy.gov/lpo/usg-oregon (accessed March 1, 2016).
[81]Press release, "U.S. Geothermal Receives Funding from $96.8-Million Loan for Neal Hot Springs Project," U.S. Geothermal Inc., August 31, 2011, http://www.sec.gov/Archives/edgar/data/1172136/000106299311003532/exhibit99-1.htm (accessed February 26, 2016).
[82]Yahoo! Finance, Enbridge Inc., http://finance.yahoo.com/q?s=ENB (accessed February 26, 2016).
[83]U.S. Department of Treasury, 1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits, https://www.treasury.gov/initiatives/recovery/Pages/1603.aspx (accessed March 1, 2016).

Of the four nuclear reactors under construction in the U.S. today, two are being subsidized under a DOE loan guarantee. The DOE awarded a loan guarantee of $8.3 billion for construction of Southern Company's Vogtle 3 and 4 reactors in 2014. Contrary to claims that federal support was necessary to kickstart a nuclear renaissance, the loan guarantee was blatant corporate welfare. Years before the loan guarantee was finalized, construction on the reactors began in 2009, investors were willing to finance the project (Georgia Power reportedly had amassed $4.3 billion by 2012), and Southern Company initially claimed it did not need a loan guarantee. Two other companies considering the DOE's loan-guarantee program ultimately rejected it, explaining that private financing was more attractive than complying with the overly expensive and complicated process for the DOE loan program.

Nuclear subsidies like the DOE's loan program are a bad deal for the industry and taxpayer alike. Subsidies only temporarily mask the deeper wrinkles in regulatory environment that does not promote growth, innovation, or competition. Further, the Vogtle agreement took over four years to complete. Taxpayers would have been better served if the DOE focused on the regulatory issues that currently restrain the U.S. commercial nuclear industry.

The DOE concluded the first loans under the Section 1703 program this year, all of which went to the Vogtle reactor project in Georgia. The DOE calculated the cost of the Vogtle subsidy to be zero dollars. The subsidy cost is supposed to be the money that the loan recipient pays to protect the taxpayer against the risk of default. In determining that the cost is zero, the Department of Energy is essentially suggesting that Vogtle is absent of risk. Why then would the DOE feel obliged to guarantee such a loan? The private sector would surely jump at the opportunity to finance a risk-free project. And, indeed, it did. The Vogtle project was well underway by the time the federal loan guarantee was executed. Essentially, the DOE decided, for whatever reason, to intervene in an otherwise viable private transaction.

The problem, though, is that the loan is not risk-free and zero does not represent the true cost of the loan to taxpayers. The Congressional Budget Office concluded that

> budgetary cost estimates…are not a comprehensive measure of the cost to taxpayers of those guarantee commitments. Specifically, [Federal Credit Reform Act] estimates do not recognize that the government's assumption of financial risk has costs for taxpayers that exceed the average amount of losses that would be expected from defaults.[84]

Where the government does not have complete or perfect information, the result is a vicious cycle that always leaves the taxpayer in a worse position than if the project were to remain in the private sector. Increasing loan fees to protect taxpayers from losses drives away more creditworthy companies. This seems to be the case in 2010 when Constellation Energy turned

[84] Congressional Budget Office, "Federal Loan Guarantees for the Construction of Nuclear Power Plants," August 2011, http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/122xx/doc12238/08-03-nuclearloans.pdf (accessed March 1, 2016).

down the DOE's loan proposal. As Constellation COO Michael Wallace explained, the $880 million subsidy cost and the "unreasonably burdensome conditions" of the loan guarantee were enough for the company to walk away. Consequently, this also increases the likelihood that those that do accept the guarantee are also projects that will cost the government more than estimated and ultimately expose taxpayers to undue risk. Conversely, if the DOE were to lower the fees in order to attract more and better projects, this would endanger the taxpayer with uncovered risk and would amount to nothing shy of corporate welfare.

VPG

The Vehicle Production Group (VPG) received a $50 million direct loan through the DOE's ATVM program in March 2011 to develop and produce natural gas–powered vehicles that were wheelchair accessible.[85] The VPG failed to make loan payments, the DOE discontinued the project, and the company ceased operation in May 2013.[86] The DOE recovered $3 million by selling the loan and recovered $5 million from an escrow payment, leaving a loss of $42 million. The company had raised $400 million in private capital, including from investor T. Boone Pickens.

Alcoa

Alcoa is another well-established company that received an ATVM loan. The company has market capitalization of $11.6 billion, had $23 billion in sales in 2013, and a CEO who made $18.2 million.[87] One would think it would not be too difficult to attract private financing or self-finance with that market. However, in March 2015, the DOE conditionally approved a $259 million loan for Alcoa to produce high-strength aluminum for vehicle manufacturing. Alcoa is another company that benefits tremendously from other federal and state subsidies.[88]

Government Meddling Distorts Investment Opportunity

The number of investment opportunities is broad and expansive, but the capital to finance them is not. This requires that choices be made among the different investments. Through a number of regulations, mandates, and subsidies, the federal government clouds these decisions. Government investments essentially pull capital out of those limited reserves and dictate who should receive it. While established and "sure-bet" companies will likely still receive a loan, those that are more on the margin may lose an opportunity.

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[85]Department of Energy Loan Programs Office, Portfolio Projects, http://energy.gov/lpo/portfolio-projects (accessed March 1, 2016).
[86]Chris Woodyard, "Van Maker VPG, Backed by DOE Loans, Shuts Down," *USA Today*, May 8, 2013, http://www.usatoday.com/story/money/cars/2013/05/08/vpg-auto-fisker-solyndra-tesla-doe-loan/2143201/ (accessed February 26, 2016).
[87]Yahoo! Finance, Alcoa Inc., http://finance.yahoo.com/q?s=AA (accessed February 26, 2016).
[88]Good Jobs First, Alcoa, http://subsidytracker.goodjobsfirst.org/prog.php?parent=alcoa (accessed February 26, 2016).

There are substantial opportunity costs caused by government's loan and loan-guarantee programs. Because capital is in limited supply, a dollar loaned to a government-backed project will not be available for another project. This means that the higher-risk, higher-reward companies that drive innovation and bring new services and technologies into the marketplace may not get support, while companies with strong political connections or those that produce something that politicians find appealing will get support.

Private investors look at government loans as a way to substantially reduce their risk. Even if a project may be an economic loser but has a huge upside, private companies can invest a smaller amount if the government provides a loan. These investors are using political calculus to hedge their bets. Many of the projects in the DOE's loan-portfolio program demonstrate how private investors will flock toward government-backed projects, oftentimes without an adequate analysis of the merits of the project.

Imagine, for instance, that you and your friends have an NCAA college bracket pool with a $100 buy-in. Twenty friends participate in a winner-take-all pot of $2,000. Though the opportunity sounds enticing, maybe $100 is too much of a risk for you to enter. But then the government comes along and says it will pitch in $75. If you win, you can pay the government back with some interest but if you lose, you lose less and the taxpayers bear a substantial portion of the loss. This distortion of risk calculation made by private investors is very problematic when the government meddles in capital markets.

The market, not politicians in Washington, is much better at determining how to allocate resources to meet consumer demand. When a firm minimizes costs, the firm not only maximizes profit but also maximizes value to the consumer. The government's intervention in capital markets significantly distorts that process. Furthermore, when the government dictates how private-sector resources are spent, both industries that stand to benefit and those that are harmed by those policy decisions will concentrate more effort into lobbying for government handouts to prevent competitors from receiving the handout.

This process, which results in the political process continually picking winners and losers, has been identified by economist Gordon Tullock and later defined by economist Anne Kreuger as rent-seeking.[89] Rather than engaging in a profit-seeking behavior, the producer is engaging in a rent-seeking behavior. The more the government involves itself in decisions that should be made in private financial markets, the more the American economy will experience misallocated labor and capital. The result will be less economic growth, not more.

Government-backed loans also create a moral hazard problem. Government officials administering and monitoring the loan have less at stake because it is not their money. Private

[89]Gordon Tullock, "The Welfare Costs of Tariffs, Monopolies, and Theft," *Western Economic Journal*, Vol. 5, No. 3 (1967), pp. 224–232, and Anne Krueger, "The Political Economy of the Rent-Seeking Society," *American Economic Review*, Vol. 64, No. 3 (1974), pp. 291–303.

investors have less at stake because of the government's involvement, leading to less than optimal oversight and scrutiny. Both Government Accountability Office (GAO) and DOE Office of Inspector General reports identify that the loan programs were fraught with inefficiencies, lack of due diligence, and inadequate oversight and management.[90] Ensuring proper oversight, transparency, and accountability are necessary. What is more important, however, is to emphasize what led to these problems in the first place and that is the federal government's involvement with investment decisions that are better left for the private sector. The government's intervention in the market rewards political connectedness over economic viability.

Successful Projects in Loan Portfolio Does Not Equate to a Successful Policy

Whether it is the Department of Energy's ATVM loan program or its 1703 and 1705 loan-guarantee programs, supporters argue a few failures are worth the risk and the number of success stories far outweigh bankrupt companies or ones facing difficult financial times. But even if a project receives a DOE loan or loan guarantee, it is a mistake to attribute that company's success to the federal government's investment. There are companies that would, and often do, receive investment from the private sector because their technology is profitable or because investors find their technology promising and want to pursue the risk. In these cases, the DOE's loan partially offsets private-sector investments that would have been made without the federal backing.

A few failures could mean that the government invests in less risky projects or provide loans and loan guarantees to well-established companies that could secure private financing if they truly believed the project was worth the risk. Many alleged successful programs within the DOE's loan portfolio are nothing more than blatant corporate welfare.

A project's success may also result because of a multitude of policies at the federal, state, and local level to pick winners and losers. As stated in many of the project descriptions, these companies can take advantage of state renewable portfolio standards, state and local grants and tax credits, government renting land at below market value, collecting premium prices for electricity generated through multi-decade power purchase agreements, federal tax credits, and federal grants in lieu of tax credits. All of these policies give companies an opportunity to remain in business; however, it is not the model for long-term technological innovation.

Energy subsidies for all sources and technologies significantly obstruct the long-term success and viability of the very technologies and energy sources that they were intend to promote. Instead of relying on a process that rewards competition, taxpayer subsidies prevent a company

[90]Government Accountability Office, "DOE Loan Guarantees: Further Actions Are Needed to Improve Tracking and Review of Applications," March 2012, http://www.gao.gov/assets/590/589210.pdf (accessed February 26, 2016), and U.S. Department of Energy Office of Inspector General Office of Audits and Inspections, Audit Report, "The Department of Energy's Loan Guarantee to Abound Solar Manufacturing, LLC," April 14, 2014, http://energy.gov/sites/prod/files/2014/04/f15/DOE-IG-0907.pdf (accessed February 26, 2016).

from truly understanding the price point at which the technology will be economically viable. When the government plays favorites, it traps valuable resources in unproductive places. Companies will plead for "business certainty" when asking for special tax treatment or subsidies, but the political process of picking winners creates dependence, not certainty. True business certainty will occur when America ends federal policies that subsidize and mandate specific energy sources and technologies.

Valley of Death or Valley of Wealth?

The problem with the federal government's investment in the clean-energy economy is that it does not allow technologies and companies to recognize the true point toward achieving economic viability, but instead induces them to rely on the crutch of the taxpayer. Or, the federal government coerces the taxpayer to subsidize investments that would be successful on their own. If the cost of renewable-energy technologies decreases or improves and the price of conventional energy increases, we may see increased generation. However, the signals of profits and losses determine what adds economic value and should determine the extent of that transition, and investors should obtain their financing in private markets to properly align the risk and reward of such investments.

To be clear, the market opportunity for clean energy investments already exists. Americans spend hundreds of billions of dollars annually on gasoline. Both the electricity and the transportation fuels markets are multi-trillion-dollar markets. The global market for energy is $6 trillion.[91] Clean-energy investments alone totaled $1 trillion from 2004–2011.[92] Any clean-energy technology that obtains a part of that market share will make tens, if not hundreds, of billions of dollars annually.

And the reality is many Americans are likely willing to pay more for an energy with specific characteristics. Ratepayers may pay a premium knowing their energy comes from wind power. But those decisions should be driven by choice, not forced upon consumers through regulations, mandates and subsidies.

Families in the United States and all over the world desire to get their vehicles from point A to point B and to turn their light switches on with a sense of reliability and affordability. The market demand for transportation and electricity is incentive enough to spur competition in the industry and obtain private financing without distortions from the federal government.

More Internets, Fewer Solyndras

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[91]SelectUSA, "The Energy Industry in the United States," http://selectusa.commerce.gov/industry-snapshots/energy-industry-united-states (accessed February 26, 2016).
[92]Bloomberg New Energy Finance, "Clean Energy Attracts Its Trillionth Dollar," December 6, 2011, http://bnef.com/PressReleases/view/176 (accessed February 26, 2016).

When the government involves itself in capital markets, Americans are continually promised the next Internet but we continually experience the next Solyndra. That is not to say, however, that the federal government does not have a role or that innovative technologies cannot emerge from federal research. But there is a stark difference between how the Internet became commercially viable versus attempts to commercialize energy technologies.

Government projects that have become commercial successes—the Internet, computer chips, the global positioning system (GPS)—were not initially intended to meet a commercial demand but were developed for national security needs. Entrepreneurs saw an opportunity in these defense technologies and created the commercially viable products available today. The role of the DOE should be to conduct the research to meet government objectives and create a system that allows the private sector, using private funds, to tap into that research and commercialize it. Federal labs should allow research to reach the market organically.

Move toward Energy Free Enterprise, Not Energy Intervention

The road map for abundant energy supplies, competitive prices, more innovation, and a better standard of living is centered on open markets and less government intervention. Establishing a framework now that relies on market forces and eliminates favoritism will benefit the American people, taxpayers, businesses, the energy sector, and the economy at large.

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Nicolas (Nick) Loris, an economist, focuses on energy, environmental and regulatory issues as the Herbert and Joyce Morgan fellow at The Heritage Foundation.

A senior policy analyst in Heritage's Roe Institute for Economic Policy Studies, Loris researches and writes about energy supplies, energy prices and other economic effects of environmental policies and regulations, including climate change legislation, energy efficiency mandates and energy subsidies. He covers coal, oil, natural gas, nuclear gas and renewable energy policy and articulates the benefits of free market environmentalism.

Loris has testified before House and Senate committees. He has been published and quoted in publications such as The Wall Street Journal and The New York Times. His radio and television appearances include CNN, Fox News Channel, MSNBC and National Public Radio. He is a prolific contributor to the energy and environment section of The Daily Signal.

Loris, a senior policy analyst since 2013, was named Morgan fellow the year before. The fellowship was endowed by retired real estate developer Herbert Morgan and his late wife, Joyce, of Arlington, Va., longtime proponents of free enterprise and limited government.

Before joining Heritage in 2007, Loris was an associate at the Charles G. Koch Charitable Foundation, immersing himself for a year in a market-based management program.

He received his master's degree in economics from George Mason University in Fairfax, Va. He holds a bachelor's degree in economics, finance and political science from Albright College in Reading, Pa.

Loris, who was born and grew up in Quakertown, Pa., currently resides Washington, D.C.

Chairman WEBER. Thank you, Mr. Loris. We will now recess and be back after the last vote.

[Recess.]

Chairman WEBER. Okay. We are going to reconvene this hearing. Thank you. Welcome back. I appreciate the Ranking Member finally showing up.

And the Chair now——

Mr. GRAYSON. Right back at you.

Chairman WEBER. And the Chair now recognizes himself for five minutes.

Dr. Rusco and Mr. McCall, we'll start with you, Mr. McCall. We'll go this way. In your prepared—well, actually, I'm sorry, you're going to have the follow-up to this. Dr. Rusco, so I'll start with you. In your prepared testimony you outline the number of recommendations made by the GAO to the DOE to improve the loan guarantee and direct loan programs.

You also note the DOE has only implemented 15 of those 24 recommendations made by the GAO, which I did the calculations on that. Thank God for iPhone and the little calculators. That's a 62.5 percent rate and so we would call that failing in most classes that I grew up in. In your opinion, why has the DOE neglected to implement all of those recommendations?

Dr. RUSCO. I think it's a mixed answer. So some they didn't concur with. So we felt in one report that they needed to implement a timetable and a consolidated system for tracking applications because applicants were telling us that they, you know, they would call and they wouldn't get information they needed.

DOE didn't—did not concur with that, so they're just—they just disagree with us. There are others that they agreed with and they've taken some steps to implement and, for example, in 2014 we said that they needed to staff key monitoring and risk management positions, and they needed a complete monitoring and risk management policies and procedures. They are taking steps to do that and they have made some progress, but we don't close it until we think they've made enough progress or shown sufficient staying power to actually get there. So once they get there, we'll close those if they——

Chairman WEBER. You actually said in another part of your testimony that 2010 that there was commitments added before the DOE did its due diligence on those loans. Was that one of the recommendations to do their due diligence before making those commitments?

Dr. RUSCO. We—yes, we recommended that they finish standing up their due diligence process and that, yes, that—it's actually—we didn't have to recommend that they do it other than it was their guidance that they should do it.

Chairman WEBER. Right.

Dr. RUSCO. So we said follow your guidance.

Chairman WEBER. I got you.

And, Mr. McCall, now your follow-up, it seems like according to the information we have that DOE has actually told committee staff on several occasions that the DOE has implemented all of the GAO's recommendations. Is that true?

Mr. MCCALL. Thank you for your question, Chairman Weber. Yes, we track—as you know, we've received many recommendations and a lot of scrutiny in the program, so we've received recommendations from the GAO, from the IG, from Congress, and we have a system where we're tracking the recommendations that we've received. And we believe that we have addressed each one of the recommendations that we've received. As Dr. Rusco pointed out, we haven't concurred with each one of them, but we have tried to take on board the intent of them and it——

Chairman WEBER. Well, how do you implement something if you don't concur with it? You said you——

Mr. MCCALL. Well, so for certain things if we really don't agree with it and we're just not going to do it, then that might be one, but there are some where maybe it's just not practical to do it in a way that was recommended but we're still trying to implement the intent of the provision.

And I would say, you know, it's actually been very helpful to the program to have these recommendations, and I feel like we've come a long way. And I think Dr. Rusco, you know, pointed out that even on some of the ones that are not listed as closed out we have made significant progress. So one of them was policies and procedures. I mean, we now have policies and procedures for our risk group——

Chairman WEBER. Well, that's——

Mr. MCCALL. —and for our portfolio monitoring group.

Chairman WEBER. I'm glad to hear that. Would you agree that a 62.5 percent grade as it were, 15 out of the 24, is a failing rate?

Mr. MCCALL. I would ask you to look at the rate of recommendations that have been closed out and fully implemented plus the ones that we've made significant progress on because I think that would be a better and fairer——

Chairman WEBER. And perhaps they need to be rank ordered in priority. I mean, I'll give you that.

Mr. MCCALL. Thank you.

Chairman WEBER. Mr. Kats, you state in your opening testimony that "the objective of a loan guarantee program is to finance projects that cannot otherwise get commercial financing. If energy projects were very low risk, investment grade, they would have access to commercial funding and a DOE loan guarantee would be an unattractive option." That's what you state in your testimony.

Now, we heard from Mr. McCall in his testimony about how basically the program is far less risky than it actually appears and that the DOE recently issued a loan guarantee with a zero credit subsidy cost. That means there is no—zero risk subsidy credit cost—no inherent risk of the project defaulting. Is that true?

Mr. KATS. I don't know the specifics of all of the loan offerings. I would just say that the way that the private sector and the financial community looks at this loan program is that it is a second-choice option. And so in the 40 or so energy companies that we invested in, they try and get private sector financing. When those are unavailable because the technology has risk attributes like it's a new technology or it's a different scale, they will go to the DOE loan program even though that is a very burdensome and rigorous process. It typically is a longer process in the private sector. So

some people have suggested that the loan program substitutes for private capital.

What the financial markets and businesses and industry would tell you is that it doesn't substitute for it. What it actually does is unlocks and enables private sector financing.

Chairman WEBER. Well, but it is backed up by taxpayers. The idea of zero risk really seems like a contradiction to me. I mean, you wouldn't need the program if there was zero risk in a company defaulting. Is the purpose of the loan program to provide financing to technologically advanced, risky projects that could otherwise not receive financing or is the purpose of the loan program to provide financing to safe projects with actually have what's been labeled as zero risk of defaulting? How can that be? Does it—is that a contradiction?

Mr. KATS. So two of the companies that we invested in actually applied for DOE loan guarantees, and those are a cumbersome process. It's very much a second choice for U.S. energy companies that want to get funding. In each case where funding occurs that we've looked at, that enables private sector financing.

And if you look at this program relative to China which, for example, in 2010 provided $32 billion in very low-cost loans just to Chinese solar, that cost the federal government of China quite a lot.

In contrast, the DOE loan guarantee, because of its low default rate and because it generates additional tax revenue to the government is actually a profit center. And so the way the private sector in the United States and the finance sector thinks about the loan program is that it achieves a policy purpose of supporting and enabling private financing at the same time as generating profitability to the U.S. Government. That's why the U.S. energy industry and finance industry views this as a big success.

Chairman WEBER. Would you agree with that, Mr. Loris? You view that as a big success?

Mr. LORIS. I would, and I don't think the Department of Energy has any business being a profit center. And when you look at Southern Company's Vogtle nuclear power plants, and here's a company that said they didn't need the loan guarantee, they went forward with it anyway——

Chairman WEBER. I'm aware of it.

Mr. LORIS. —low risk, it's a—I mean, when you have these huge companies with huge market capitalizations, you have to wonder why the federal government is involved in these projects at all.

Chairman WEBER. Okay. Well, I'm out of time so I'm going to yield to the Ranking Member.

Mr. GRAYSON. Thank you. Mr. McCall and Mr. Kats, you've had some major shade thrown at you this morning, I wanted to give you a chance to respond. One of my colleagues said earlier that the government is trying to do something that the private sector does better. Mr. McCall, is that really true or is that not so true?

Mr. MCCALL. Thank you for your question, Ranking Member Grayson. Our sense is that the Congress actually recognized a gap in the marketplace. There is a gap in terms of what commercial lenders are willing to finance, and in particular, when you combine innovative technology and scale up—so we're actually typically de-

ploying new technology at the point in time where it's scaling up to commercial scale, you're simply going to find a case where commercial lenders are not going to finance those first few projects. But after it's been demonstrated, then they step into that market and are willing to carry it forward. So our sense is that we are absolutely filling a gap in the marketplace, not competing with private lenders.

Mr. GRAYSON. All right. Now, you were derided for offering loans on the basis of political favors rather than on the basis of profit. Is that a fair rap or not?

Mr. MCCALL. It is not. We follow a very rigorous due diligence process, an application process that we follow in each case, and that diligence process includes technical, market, legal, environmental due diligence on—and contract due diligence. And we engage in many different ways of structuring the projects in order to protect the taxpayer, and so I think that we—I think the performance is in on the program and it shows that we've actually done a very good job of that.

Mr. GRAYSON. Mr. Kats, have you seen loans issued on the basis of "political favors"?

Mr. KATS. I haven't looked closely at every loan program. I can just talk about the way the VC community looks at it and the companies that apply, which is that the loan program lays out very broad requests in areas as broad as nuclear power and renewable energy. Private sector companies then make a decision to apply or not. Private sector companies decide what projects or companies to apply, whether they apply for it, when they apply for it, so that decision is all on the basis of the private sector.

I think one of the things that makes the application process challenging is that much of the review process is outsourced to very well-known third-party engineering firms that undertake independent reviews of each application. Those third-party reviews are determinative of whether or not the loan goes forward. So the process as we've seen it from the private and finance sector is really about the private sector making the decision to apply or not, and third-party engineering firms and others going through the process of doing an independent review that ultimately determines whether that loan gets made. So we don't see any politics in this.

I will say, though, with respect to politics that this has traditionally received bipartisan support. Republican Governor of Iowa, Terry Branstad, writing in the Wall Street Journal wrote "the wind power industry is an American success story that's helping to build our manufacturing base, create jobs, lower energy costs, and strengthen energy security."

This has been a bipartisan-supported issue until recently, and it's worrying, I think, in the private sector that this—the value and importance of the clean energy transition is not recognized in a bipartisan way as a supportive of U.S. jobs, U.S. finance, and U.S. competitiveness.

Mr. GRAYSON. Mr. McCall, another aspersion cast in your general direction is the idea that the Obama Administration is picking winners and losers in the energy market. What about that?

Mr. MCCALL. Well, again, as Mr. Kats pointed out, I mean, we are responding to applications from private sector parties. So we

are not actually actively, you know, picking winners and losers. We're simply responding to the applications that come in and evaluating them using a very rigorous and lengthy process, as was pointed out, and involving many third-party experts in terms of making that evaluation. So I wouldn't characterize it as picking winners and losers.

Mr. GRAYSON. Well, you've been accused today of propping up the solar industry. What about that?

Mr. MCCALL. Well, so we're very proud of the role that we played in particularly launching the utility-scale PV market in the United States. So, as you may know, prior to 2010 there were actually no utility-scale PV facilities in the United States and LPO stepped in and financed the first five of them. And then we—after having proven the technology, we stepped back from that market and the private sector has now taken over and financed 28 facilities of that nature.

And one of the things that we try to do is bring in private sector lenders into our deal so that they get comfortable with the structure and they see the technology, and in that case we were able to do that. And one of the later projects, we brought in 14 commercial lenders as part of a syndicate, and that's the group that is now out financing those types of projects. So we feel like we've been able to successfully launch that industry, and we've seen costs come down in that industry as a result of the early projects.

Mr. GRAYSON. Mr. Kats, you alluded to what's going on in other countries. In other countries is there any government involvement in the energy industry, for instance, oh, state-owned oil industries and so on?

Mr. KATS. There is. One of the members mentioned—Mr. Beyer, I think—the $470 billion in subsidies that mostly have gone to fossil fuels. I mean, other countries are like that. In the last 15 years the European and Asian market intervention to support clean energy has been very, very large, tens of billions of dollars, because they view this as the energy strategy of the future. It makes their economies more competitive when they're spending less on energy, when there's less pollution, when there's lower health costs. They view this as strategically important. And I think part of the traditional U.S. Congressional bipartisan support for transition to clean energy has been because of this competitiveness issue.

I was part of a National Academy of Sciences—they came out with a book that is a good read if you have problems sleeping at night called "Rising to the Challenge: U.S. Innovation Policy." And it really talks about the importance of this clean energy transition to U.S. competitiveness. Other countries recognize that. They put a lot of subsidies into supporting clean energy.

And again, what's remarkable about the DOE loan program is, despite a few problems like Solyndra, the success rate, as Mr. Rusco pointed out, the losses are less than half projected. And when you add in the full benefits back to the U.S. Government, this is a program that makes the U.S. Government money, unlike Chinese support, which has cost Chinese taxpayers a lot of money. So it's been a terrific combination of leveraging the market, leveraging the private sector, and it doing it in a way that U.S. fi-

nancial firms find very helpful and that leverages and unlocks a lot of U.S. capital, private capital.

Mr. GRAYSON. Thank you. I'll yield back.

Chairman WEBER. I thank the gentleman.

I would note that, you know, most of the majority would probably agree we're not in favor of governments taking over the oil companies either, much less clean energy companies or the healthcare industry for that matter.

So the Chair now recognizes Mr. Loudermilk.

Mr. LOUDERMILK. Thank you, Mr. Chairman.

Before I start my questioning, Mr. Loris, could you take 30 seconds and comment on the past politics in the loan program?

Mr. LORIS. Yes, sure. I mean, if you look at what companies and what the DOE does, you know, this isn't objectively deciding among companies. This is picking winners and losers. It's exactly what the program does. And to pad the stats to give loans to companies that again have these huge multibillion dollar market capitalizations, it's absolutely playing favoritism and making this program look better than it is and look necessary when it's simply not.

Mr. LOUDERMILK. Okay. I thank you.

Mr. McCall, the IG investigated and issued a report last August regarding the much-talked and heard-about Solyndra loan guarantee. The IG found that the Department of Energy officials repeatedly failed to verify claims made by—about performance and sales provide by Solyndra executives. Did the IG make any recommendations in their report to you?

Mr. MCCALL. I thank you for your question, Chairman Loudermilk, and of course we have taken on board the report of the Inspector General. And I would note that the Inspector General also noted in that report that the actions of the Solyndra officials were at the heart of the matter, and they effectively undermined the Department's efforts to manage the loan guarantee process. And they also stated that the actions of certain Solyndra officials were at best reckless and irresponsible or at worst an orchestrated effort to knowingly and intentionally deceive and mislead the Department.

Having said that, we are aware of the Inspector General's comments on some of the things that the Department could have done better nonetheless, and we have tried very diligently to improve our processes. And I think you can see that in the later performance of the deals that came after that.

Mr. LOUDERMILK. Well, I understand Solyndra is a bad player, and I don't think they're the only ones out there. So we're going to be dealing with others. But have—did the IG make any recommendations to you on how to fix this process? And have you implemented any of those?

Mr. MCCALL. So the IG in that particular report I do not believe they made recommendations in that report, although they have made recommendations to us in the past that we have taken on board and we have done many things to try to improve our processes and procedures. And I come from the private sector and I want to give you some assurance that I've actually been very impressed with what I've seen coming—I started about 7 months ago and so, you know, quite a long time after the events that we're re-

ferring to have transpired and am now in a position to lead the program sort of now in its current state.

And what I can tell you is that the staff is very professional, very capable, very talented and hardworking and has a lot of experience, including private sector experience in terms of how to structure these deals and how to diligence them and how to monitor them.

Mr. LOUDERMILK. Are you working to make this program more transparent, more cooperative with Congress?

Mr. MCCALL. Absolutely. Yes, we have.

Mr. LOUDERMILK. And the IG's findings, of course, with Solyndra is, as you have even brought out in your statement there, very troubling to me and this committee. But what's more troubling is this committee wrote the Department of Energy asking for documents regarding the IG's findings, and this was in September of last year, of 2015. Are you aware of the productions made by DOE in response to the Committee's request, what was provided to this committee?

Mr. MCCALL. I believe we responded to that letter, Mr. Chairman, but I'm not specifically aware of the details.

Mr. LOUDERMILK. Okay. So you weren't aware that you provided zero of the communications that we requested, none?

Mr. MCCALL. Well, we responded to the letter so we responded to the inquiries in that letter, and if there's anything that was—that you feel that we still need to——

Mr. LOUDERMILK. Okay.

Mr. MCCALL. —follow up with, we'd be happy to do that.

Mr. LOUDERMILK. Well, you didn't provide any of the documents that we asked for, and that's completely inadequate.

Would you commit to this committee today that you will provide all the communications we requested in that September 4, 2015, letter?

Mr. MCCALL. We—I will certainly go back with my staff and look at the—look at that request, and we will continue to be responsive to the Committee.

Mr. LOUDERMILK. But you're not willing to commit to give us what we asked for?

Mr. MCCALL. Well, we will review the request and see what is responsive to that.

Mr. LOUDERMILK. Does Congress have an oversight authority——

Mr. MCCALL. Absolutely.

Mr. LOUDERMILK. —over agencies?

Mr. MCCALL. Absolutely. And we appreciate——

Mr. LOUDERMILK. Is not the right of the American people to know what's being done with their taxpayer dollars?

Mr. MCCALL. We certainly recognize and appreciate the role of the Committee in terms of oversight and in terms of ensuring accountability to the American taxpayers so——

Mr. LOUDERMILK. But yet you're not willing——

Mr. MCCALL. —there's no question——

Mr. LOUDERMILK. —to commit to get us the communications that we asked for out of our authority of having oversight and investigatory authority the Constitution gives this body on behalf of the American people? You're not willing to commit to us that you will get us precisely what we're asking for?

Mr. MCCALL. I am willing to commit to continuing to be responsive to the Committee and its requests.

Mr. LOUDERMILK. Okay. I think we got our answer.

Can I get another minute, Mr. Chairman?

Chairman WEBER. Yes, sir.

Mr. LOUDERMILK. Okay. Thank you.

Mr. McCall, the Committee wrote the Department of Energy again in December of 2015 regarding Abengoa Solar and the $1.45 billion taxpayer-funded loan guarantees your office provided in 2010. Are you aware of that letter?

Mr. MCCALL. Yes, I am.

Mr. LOUDERMILK. Are you aware that the Department of Energy has provided the Committee zero requested communications regarding that?

Mr. MCCALL. My impression was that we had actually made two productions to the Committee since the time of that letter that have been responsive to the Committee.

Mr. LOUDERMILK. You did provide two productions but none of the communications that we asked for. Again, will you commit to get that to the Committee?

Mr. MCCALL. I will commit to the—to continuing to be responsive to the Committee.

Mr. LOUDERMILK. Is there a reason why we're not getting the data we're asking for?

Mr. MCCALL. I——

Mr. GRAYSON. Will the gentleman yield for a question? What does the gentleman mean by communications and data? I'm confused at this point.

Mr. LOUDERMILK. Emails. Emails seem to be a very popular thing these days.

Chairman WEBER. Well, let's hang on. The gentleman didn't yield just yet. Hang on.

Mr. LOUDERMILK. Okay. I will yield to his question and then I'll yield to my answer immediately. We're talking about emails, which is—it has been brought up again, but I reclaim my time, Mr. Chairman.

The Abengoa Solar troubles were a shock to me and of course many of my colleagues on this committee. The Loan Program Office, which you're a head of, maintains a risk list, doesn't not?

Mr. MCCALL. So we—thank you for your question, Chairman Loudermilk. And we have all of the monitoring tools that you would expect a program of ours in order to monitor each one of our projects.

Mr. LOUDERMILK. Can you briefly explain this risk list or this monitoring tool?

Mr. MCCALL. Well, sir, the Allison report recommended that we create certain ways to—early warning if you will reports or mechanisms so that we could track emerging risks in the portfolio. And so we do that through a number of tools, and we continue to monitor each one of our transactions in a very diligent and prudent manner, and we have—you know, for instance, we have site visits to each one of the projects while they're under construction, and we do quite—we devote quite a bit of effort to monitoring the portfolio for risk.

Mr. LOUDERMILK. And again, this is—this risk list is one of the things this committee has asked for but yet has not been provided.

So I know I'm running—I appreciate the Chairman's—giving me a little additional time. I do have more questions, but, Mr. Chairman, I think we know what the answer will be so I'll yield back.

Chairman WEBER. I thank the gentleman.

Mr. Beyer, you're up.

Mr. BEYER. Thank you, Mr. Chairman.

I'd like to thank both Chairman Loudermilk, Chairman Weber for pulling this together and in the spirit of bipartisanship point out something I didn't know about from the GAO report that the Loan Guarantee Program was initiated by a Republican Congress and a Republican President in 2005.

Chairman WEBER. The gentleman's time is expired.

Mr. BEYER. And was expanded in 2007 with a Democratic Congress and a Republican President. So we're—this is something we want to work together on.

You know, according to Fitch ratings, U.S. corporate default rate is 2.9 percent, and the energy sector tends to have an even higher default rate, which is climbing to 4.8 percent in recent months. And if you'll look at venture capital portfolios, the default rate is even worse. The National Venture Capital Association estimates that 25 to 30 percent of venture-backed businesses fail, which seems to be conservative by most estimates.

And I know this is not quite apples to apples, but I noticed that your loan program is 2.7 percent failure rate. I have made tens of thousands of auto purchase loans in the last 42 years. As my dad says, we never made a bad loan, they just go bad later.

So can you—Mr. McCall, based on your experience, would you agree with this assessment that the loans that we're making—that we're guaranteeing on behalf of the federal government actually are fairly low risk compared to what's happening in the real world, the private sector?

Mr. MCCALL. Thank you for your question, Ranking Member Beyer. And I would certainly say that the projects that we have financed have carried technology risk and scale-up risk, and so I wouldn't say that they haven't been—they haven't entailed a significant amount of risk at the time that we were financing them, but what I would point to is the rigorous due diligence that we've done on the projects and the processes and procedures that we have to monitor them, including the contractual stipulations that we put into the agreements whereby the project sponsors have to provide information and have to provide access to the project so that we can diligently monitor them.

So I think that the good performance of the portfolio that you're pointing out and particularly in comparison to other private sector portfolios is really due to the fact of the policies and procedures and the people that we have within our organization that carry out that work.

Mr. BEYER. Thank you, Mr. McCall.

It's been pointed out—we've had a lot of questioning about the loan program's ability to follow through with all of the GAO recommendations, trying to tighten it up. Do your folks meet regularly

with GAO to make sure you are making progress on their recommendations?

Mr. MCCALL. And again, thank you for that question. The GAO routinely and regularly comes and does its work with us, and it has been very helpful to us to have their recommendations. And so we continue to track the recommendations that have been made and continue to address them and progress them. And so it's our intention to get as many of those fully implemented as possible.

Mr. BEYER. I'm just trying to put myself in your shoes if I were you. Looking forward to my next Congressional hearing before the Science, Space, and Technology Committee, I'd love to be able to say I've met all the GAO recommendations, at least the ones we agree with, and I've produced all the documents that the Committee has asked for.

So why—I know you—everyone's been trying to be careful here. And we've been trying to characterize you as unresponsive for not turning over the documents. What are the issues around emails that would make it inappropriate, illegal, reluctant, whatever to turn these over to the Committee?

Mr. MCCALL. And thank you for that question. And in response to the Abengoa inquiry, we've responded to the letters that we've received from the Committee, and we've made it clear that we actually did not loan any money to Abengoa SA, which is the company that's referred to in the letter. So we actually don't have exposure to that company. And so, you know, we have responded, and we actually—before we received that letter, we had reached out to the Committee in a proactive way to try to clarify the confusion in the marketplace because there had been some reports in media that the loan program had extended loans to this company that was in financial trouble.

And we tried to reach out to the committee proactively to make sure that the members were aware that that's not actually the case, that our loans have been made to entities that are actually owned by a different company now and that they are in project finance structures and that we're not concerned about the viability of those loans in any way.

And so, you know, we feel that we have been responsive to the important thrust of those letters, and we will continue to go through and try to be—continue to be responsive.

Mr. BEYER. Great. Thank you very much. Mr.—can I put this slide in for one sec?

[Slide.]

Mr. BEYER. Mr. Chairman, can I request an extra 60 seconds to Mr. Kats?

Chairman WEBER. You bet.

Mr. BEYER. Thank you, sir.

Mr. Kats, this is a chart of venture funds loaned by industry, the fourth quarter, and we see IT is at the very top and about the fifth or sixth over industrial energy, only 7—.7 billion. Obviously, it's a huge difference in capital investment infrastructure and the like. Is—do you see—is this part of the whole picture about why we need the loan program in terms of making investments in energy?

Mr. KATS. That's a great question. Most of our—I would say many of our big banks, including Citi and J.P. Morgan, in the last

year or two have done studies looking at the projected investment required for transition to clean energy, which scientists tell us we need to do to limit climate change and which businesses tell us we need to do in order to stay competitive with other countries. Current investment in clean energy is much less than it needs to be. It's ramped up. It's been a fivefold increase from a decade ago, but it needs to ramp up further.

That scale-up process necessarily involves risks and new technologies that are applying it at scale have not been applied before. And this is where the DOE Loan Guarantee Program is so helpful because it allows those scale-up risks to be addressed in a way that allows the private sector to make the choice about what projects to apply to have a rigorous third-party review and screen those and make recommendations on those.

Once those projects have been demonstrated at commercial scale, the private sector, our big banks, our financial firms can step in and finance the expansion to this scale that Citi, that J.P. Morgan, that Morgan Stanley, and others in the private sector say that we need to invest to get through this transition. So my hope is five years from now when you put that chart up the private sector investment will be a much larger number.

Mr. BEYER. Thank you, Mr. Chairman.

Chairman WEBER. I thank the gentleman. The Chair now recognizes Mr. Rohrabacher.

Mr. ROHRABACHER. A couple observations. First of all, earlier on it was mentioned about trying to compare subsidies to the oil industry and the gas industry. The Republicans I know are against any subsidies to oil and gas or anybody else. We believe that, again, picking winners and losers or subsidizing corporations—we call it crony capitalism—it's a major issue in our party and we are basically against it.

I think that basically people, however, have been calling subsidies what is instead Republican position of permitting people to keep more of their own money as if that's a subsidy. I think that the numbers that are being bandied around are based on that versus taking money from someone else and giving it to a large corporate entity. That is a subsidy. Perhaps permitting people to keep more of their own money is not. That's one observation.

And the other observation is, with all due respect, Mr. McCall, it is disconcerting that the Executive Director of a major government program is unwilling to commit, to actually commit to providing all the documents that an investigative committee of Congress has requested and that the answer is being given in using weasel words is what we used to call in the press. That is not more—it's more than unbecoming. It's depressing to see that someone of your stature will take that approach instead of just saying yes, we will provide all the documents to an investigative body of Congress that they have requested. And this is—to me it's unacceptable.

I think that, however, this reflects quite often the things we have faced from this Administration. Any other Administration, I would think, if they were being actually serious and they were being—wanted to reach out to Congress and goodwill would admonish

someone for not saying that they were going to be fully cooperating with every document that's been requested.

With that, let me go to a little bit about the basic philosophy of this program itself. And, Mr. Kats, I—who is actually making the loan? Where does the money come from when someone gets a loan guarantee from this agency?

Mr. KATS. Good question, sir. So, as I understand it, in the companies that we've been involved in that have applied for the loan, there's broad categories such as nuclear, renewables. The private sector companies try to find private sector financing——

Mr. ROHRABACHER. Right.

Mr. KATS. —are not able to do so. They then apply to the Loan Guarantee Program, which uses third-party engineering firms to screen it. And if they're successful—and one of the applications we made actually was not successful to the program, which reflects, we think, a lot of rigor, then the loan guarantee is made available, the project is built, it's demonstrated a new scale, and then the private sector funding takes over.

Mr. ROHRABACHER. Who is actually giving the money?

Mr. KATS. So the DOE loan guarantee makes available a credit of the federal government in a way that makes this program self-financing. So what I think the private sector would say to you, sir, and what industry would say to you is that this program both achieves a public policy purpose of making the United States more competitive——

Mr. ROHRABACHER. I understand, but whose—who lends the money?

Mr. KATS. —and creates jobs, and yet it's self-financing.

Mr. ROHRABACHER. Let me——

Mr. KATS. So the money that——

Mr. ROHRABACHER. Okay. So does that mean the——

Mr. KATS. Are you asking a question——

Mr. ROHRABACHER. federal government is writing the check to the company?

Mr. KATS. The U.S. Government in this self-financing program—so there's zero net cost to the federal government of this program.

Mr. ROHRABACHER. I—you're not—I'm trying to get specific. Who actually gives the money to the company that is now able to build their projects?

Mr. KATS. So the loan program makes available risk support to the company to allow construction of projects in order to unlock and leverage private capital. That gets returned back——

Mr. ROHRABACHER. Who is the——

Mr. KATS. —to the government——

Mr. ROHRABACHER. Okay. Now——

Mr. KATS. —in the form of interest——

Mr. ROHRABACHER. Who actually gives the company the money?

Mr. KATS. So this——

Mr. ROHRABACHER. Is it a private bank? Is it a Goldman Sachs? Is it—who gives them the check that says, okay, you now have this money and you can move forward with your project?

Mr. KATS. Let me turn it over to Mr. McCall to answer that if I may.

Mr. ROHRABACHER. Okay.

Mr. MCCALL. So thank you for the question.

Mr. ROHRABACHER. Please hurry. They just called votes again.

Mr. MCCALL. Okay. The answer is it could be either private sector banks, so if the applicant has—is working with its own bank but that bank was unwilling to finance it without a guarantee from the government, we can issue the guaranteed to that third-party bank or we can issue a guaranteed to the federal financing bank.

Mr. ROHRABACHER. Okay. But there are—it's not coming from—you don't get a—give them a check to that company?

Mr. MCCALL. Well, the Department of Energy doesn't.

Mr. ROHRABACHER. There's no federal checkbook that's writing out this? It's going to actually—the only federal check would go to a bank or a lending institution that is a profit-making lending institution in most cases I would imagine, so we have taken a profit-making—Goldman Sachs or whoever—and we have told them that they will have a guarantee so there will be no risk that they will lose their money. And then they give it to the company who needed the investment? Is that what it is?

Mr. MCCALL. Well, so we would issue the guarantee to the bank. I believe in the case of—if it's a——

Mr. ROHRABACHER. Right.

Mr. MCCALL. If it's a third-party bank, I think that we're limited to only guaranteeing 80 percent of the loan, so I think the bank would actually have some of its own capital that——

Chairman WEBER. I'm going to ask the gentleman——

Mr. ROHRABACHER. But just one point here, and that's——

Chairman WEBER. Hurry.

Mr. ROHRABACHER. —if we are taking away the risk for people who—and they are making a profit on that loan in a private company, this seems like—boy, that is again picking winners and losers as well who gets to provide a risk-free loan because you're going to make a certain amount of profit on it no matter what. So that doesn't seem fair as well.

Thank you very much, Mr. Chairman.

Chairman WEBER. I thank the gentleman.

Mr. Knight, you're recognized for five minutes.

Mr. KNIGHT. I'll be quick, Mr. Chairman.

In 2015 President Obama said that we're going to guarantee another one billion dollars. Has any of that money been sent out? Has there been a guarantee on any of that money that's been loaned out? And I understand from Mr. Rohrabacher's questioning that this is kind of the government having their full faith and backing behind or they're guaranteeing a loan but they're not actually writing a check. But if there's one billion dollars in more loan guarantees for basically the last year of a Presidential term, can you tell me how much of this money has gone out if there is any money that's gone out, and if there is, projects that are coming?

Mr. MCCALL. Thank you for the question, Congressman Knight. And the answer is that the President was announcing additional loan authority for the advanced fossil solicitation and the renewable energy solicitation in particular to support distributed energy projects because we have learned from the market that there is interest in those types of projects, but they are—it wasn't clear to the market as to whether they would be eligible under our program. So

we issued a supplement that clarified that those types of projects would be eligible and devoted additional resources to that.

But the specific answer to your question is at this time we have not made any of those—or we haven't made any loans——

Mr. KNIGHT. Okay.

Mr. MCCALL. —for those types of projects at this point.

Mr. KNIGHT. Very good. And then just two more quick questions. The Advanced Technology Vehicle Manufacturing program, as I understand, hasn't given out any loan guarantees in the last five years. Is that correct?

Mr. MCCALL. We have—we actually have made conditional commitments, so we've made new commitments, but we haven't closed any new loans in that——

Mr. KNIGHT. Okay.

Mr. MCCALL. —period of time.

Mr. KNIGHT. Would we say that that program has been a success and that's why we don't need it anymore and we don't have to have these kind of guarantees? I guess there's many more billions of dollars that can be either loaned out or guaranteed for loans coming up in the future. Is that something that we could just say we're ending this right here and there is no more loan guarantees? And I know I'm using that term loosely, but that's basically what we're talking about.

Mr. MCCALL. I would tell you that the program has been very successful, and I would tell you that what we're seeing now is a shift in terms of our applications. So we're receiving applications. We still have interest to make loans, and we have made a conditional commitment, as I mentioned. And the shift that we're seeing is from the auto manufacturing companies themselves to component manufacturers because we all know the auto industry is doing fairly well at this point in time, but the component manufacturers are still facing stiff competition from overseas.

Mr. KNIGHT. Right.

Mr. MCCALL. And so as they need to upgrade their facilities to produce components that would go into vehicles that would assist the automakers in meeting their mileage standards, there are projects that need financing and can benefit from the program.

Mr. KNIGHT. Okay. And I guess I just have a quick follow-up question. If Congress—and I'm not saying that Congress should do this—but if Congress worked on moving the CAFE standards or something like that up, as Congress liked to do in the '70s quite a bit, would that again infuse this program to be more effective? And again, these are all hypotheticals.

Mr. MCCALL. Thank you for the question, Congressman. And I think that if the mileage—you know, as the mileage standards increase, you're going to see an increasing necessity on the part of the market to invest in new projects in order to meet those standards. So I would say that if the standards do increase—and they are scheduled to increase, I think, between now and 2025 already—but as they increase, you will see increasing appetite for the program.

Mr. KNIGHT. Okay. And in my last minute, Mr. Loris, give me an idea in your—I'll give you 30 seconds here—if the program goes away, completely goes away, do you believe that there is enough

private capital, venture capitalists out there that will take care of these needs without the involvement of government?

Mr. LORIS. I do if they're market viable, and that's the whole issue. You had politicians and pundits predict that, you know, we would never see oil below $100 a barrel again, and look where we are today. And so they make these grand plans to subsidize electric vehicles or biofuels and put in place these programs, but markets time and time again have proved those politicians and pundits wrong.

So I believe there will be substantial investment in renewable energy moving forward. You know, these are finite resources. We'll see some shift in market scenarios both in the United States and globally, but that will happen as the market dictates. It won't be necessary for the government to fund any of these programs, whether it's through direct subsidies or through these loan programs.

And one more point about your fuel efficiency standards is this is the big problem is you have the federal government set these regulations, and then you have the government subsidize them to meet these regulations. You have the government mandate the use of cellulosic biofuels, and then you have the government give out loan guarantees to cellulosic biofuel plants. This is not a winning formula for innovation and economic growth in the renewable energy industry or any energy industry.

Mr. KNIGHT. Okay. Thank you, Mr. Chair. I yield back.

Chairman WEBER. Thank you. I thank the witnesses for their valuable testimony and the members for their questions. The record will remain open for two weeks for additional comments and written questions from the Members.

The hearing is adjourned.

[Whereupon, at 11:32 a.m., the subcommittees were adjourned.]

Appendix I

Answers to Post-Hearing Questions

ANSWERS TO POST-HEARING QUESTIONS

Responses by Mr. Mark McCall

Testimony of Mark A. McCall

Executive Director, Loan Programs Office

U.S. Department of Energy

Before the

Subcommittees on Energy and Oversight

Committee on Science, Space, & Technology

U.S. House of Representatives

March 3, 2016

Introduction

Chairman Smith, Subcommittee Chairmen Weber and Loudermilk, Ranking Members Johnson, Grayson, and Beyer, and Members of the Subcommittees, thank you for the opportunity to appear before you today. My name is Mark McCall, and I am the Executive Director of the Loan Programs Office (LPO) at the Department of Energy (DOE or Department). I have served in this position at the Department since July 2015.

Prior to joining DOE, I spent seventeen years as a Managing Director and the Chief Financial Officer for Lime Rock Partners, a private equity firm focused on the energy sector. From 1998 to 2010, I also served as the firm's General Counsel. Before joining Lime Rock Partners, I served as Vice President at Delus Corp., was an associate in the mergers and acquisitions group of Lehman Brothers, and the Director of Operations for E-II Holdings in Moscow.

I feel honored to have the opportunity to serve the public and apply my private sector experience in finance and investments to lead the LPO. My background in the upstream oil and gas market has informed my view of the challenges and opportunities for the U.S. to be at the cutting edge of commercializing new energy technologies.

Overview of the Loan Programs Office

The LPO issues loans and loan guarantees to accelerate the commercial deployment of clean energy projects and advanced vehicle manufacturing in the U.S. under two programs: the Title XVII loan guarantee program and the Advanced Technology Vehicles Manufacturing (ATVM) loan program.

The Title XVII loan guarantee program was authorized by the Energy Policy Act of 2005 and signed into law by President George W. Bush. It directs the Department to issue loan guarantees to support the commercial deployment of clean energy projects that utilize innovative technology and reduce, avoid, or sequester greenhouse gases. The program covers a number of eligible

technology areas including advanced fossil energy, advanced nuclear energy, renewable energy, and energy efficiency.

The ATVM loan program was authorized under Section 136 of the Energy Independence and Security Act of 2007. It directs the Department to issue direct loans to auto manufacturers and component suppliers to manufacture fuel-efficient vehicles and components in the U.S.

The Importance of the Loan Programs Office

Deploying clean energy technologies at commercial scale for the first time entails both technology and market risk. Advancing these technologies further requires significant amounts of capital. Commercial lenders and bondholders are often unwilling to finance projects that use new technologies because those technologies have not been deployed at full commercial-scale and do not yet have a history of performance.

The Title XVII program fills a critical gap in the marketplace, providing project developers sufficient full-term debt financing to design and construct projects.

The ATVM program fulfills another critical role in the marketplace by providing low-cost, long-term financing to expand domestic auto manufacturing and help manufacturers achieve future fuel economy standards.

Without these important programs, U.S. leadership in energy and auto manufacturing will suffer. Congress has recognized these market gaps and LPO's unique ability to address them by issuing loan and loan guarantees in situations where traditional debt providers are either unwilling or unable to assume the debt.

Even as LPO addresses market gaps, every transaction is a public-private partnership. While the Department issues loans and loan guarantees to provide the necessary debt financing for these projects, project sponsors must provide significant equity investments. Equity invested from private sources must represent at least 20 percent of the total cost of every project, and is frequently more. The LPO has a portfolio of more than $30 billion in loans, loan guarantees, and conditional commitments, which supports about $50 billion in total project costs. To that end, at financial close of these loans and loan guarantees, borrowers will have provided over $18 billion in financing to support their LPO-financed projects. In other words, the borrowers with which the LPO works have significant "skin in the game" because they have contributed substantial amounts of financing.

Strong Portfolio Performance

Although LPO's mission – by its nature – carries some degree of financial risk, LPO has maintained strong financial performance – even when compared with private financing of conventional energy and manufacturing projects in the United States. In total, LPO currently manages a $32 billion portfolio comprised of loan guarantees, loans, and conditional commitments that includes a diverse array of technologies in 20 states across the country. Twenty-two LPO projects are currently operating and four are under construction or development. The loans and loan guarantees issued by LPO are all structured to be fully repaid

with interest over the tenor of the loan. Each project in the portfolio must begin repaying the principal and interest on its loan around the time it reaches completion. As many of LPO's projects have reached completion in recent years, project sponsors have begun repayment of their loans. As of January 2016, $5.72 billion in principal and $1.38 billion in interest were repaid. Because of prudent due diligence on the part of LPO and reduced risk with maturation of the portfolio, actual and estimated losses for the portfolio represent just above two percent of closed and committed loans and loan guarantees – a rate that would be viewed favorably even in the private sector for a portfolio of a similar type.

Risk and Portfolio Management

The Department of Energy takes its responsibility to the American taxpayer very seriously. As a result, the LPO underwrites and structures its loans and loan guarantees to protect the interests of taxpayers and maximize prospects for full repayment. Before making a loan or loan guarantee, the LPO conducts extensive due diligence on the application, with rigorous financial, technical, legal, environmental and market analysis by DOE's professional staff, including qualified engineers, financial experts, and outside advisors.

The LPO also has one of the largest, most experienced project finance teams in the world that has the capabilities and tools to support a number of different project types, all while managing risk appropriately. Transactions are structured to identify and mitigate risk as effectively as possible before proceeding with a loan or loan guarantee. Once a project closes, the LPO continues to use powerful monitoring tools — including strong covenants and strict project milestones — to control the amount of risk it assumes. LPO requires borrowers to meet clear benchmarks before disbursing funds and staggers these disbursements to ensure borrowers are meeting their obligations under the loan guarantees. DOE will continue to be an active manager, continuously monitoring projects, their market environments, and other identified risks to seize all opportunities to minimize exposure to loss.

As stated in a previous Government Accountability Office (GAO) report, some private lenders have noted that the Department's due diligence is as rigorous – or more so –than that performed in the private sector. Due in large part to the Department's meticulous due diligence, its commitment to establishing protections within all agreements and robust project monitoring, the portfolio as a whole continues to perform very well with total losses to date of only about two percent.

Despite these efforts, and consistent with Congressional intent through the appropriation of credit subsidy, we have experienced some losses and thus constantly strive to improve every aspect of our operations. Given the nature of our work, we have benefited from several recommendations for improvement, including recommendations from Congress, the GAO, DOE's Inspector General (IG), and independent consultants such as former U.S. Department of Treasury official Herb Allison.

DOE has adopted many of these improvements, including but not limited to:

- strengthening its internal oversight of LPO by restructuring the former LPO Credit Division to encompass a Risk Management Division;
- streamlining the application process;
- adding appropriate transparency to the approval process;
- filling key positions with experienced professionals, who bring private sector experience;
- clarifying authorities, strengthening internal oversight of the programs;
- developing a state-of-the-art workflow management system;
- establishing a robust early warning system through which LPO monitors market, regulatory, and counterparty risks that can affect credit performance and develops periodic reports for each transaction which provide an in-depth analysis of the risks; and
- improving reporting and transparency to the public.

Furthermore, LPO continuously looks for additional ways of improving its underwriting and asset monitoring activities to incorporate lessons learned and ensure best practices to protect taxpayer interests.

Advancing Clean Energy Technologies

To date, the LPO has been successful in advancing its mission of accelerating the commercialization of new technologies and advancing an "all-of-the-above" energy strategy that avoids, reduces, and sequesters greenhouse gases. As of September 2015, LPO projects have avoided 25 million metric tons of carbon dioxide (CO2) emissions, and the amount of CO2 avoided will continue to grow as projects achieve full commercial operation. In addition, LPO projects have supported local economies, supporting 56,000 good-paying American jobs across 16 states. The following are sample projects debt-financed by LPO that illustrate the Department's commitment to American competitiveness and achieving an "all-of-the-above" energy strategy:

Supporting Construction of America's First New Nuclear Reactor in 30 Years

In 2010, the Department offered a total of $8.3 billion in conditional commitments to Georgia Power Company (GPC), Oglethorpe Power Corporation (OPC) and Municipal Electric Authority of Georgia (MEAG Power) to support the construction of two new 1,100 megawatt (MW) Westinghouse AP1000® nuclear reactors at the Alvin W. Vogtle Electric Generating Plant in Waynesboro, GA. I had the opportunity to visit the Vogtle Project one month ago and was impressed at the breadth and complexity of the project. The Vogtle project represents a new generation of advanced nuclear reactors in the United States and the first new nuclear reactors to begin construction in the United States in nearly three decades.

LPO reached financial close on the last loan guarantees for this project in June 2015. The deal took several years to finalize in large part due to its uniqueness and complexity, the use of innovative technology that had never been deployed commercially in the U.S., and several different borrowers.

The deployment of this innovative technology at commercial scale has put the U.S. at the forefront of a new generation of advanced nuclear reactors, as two more reactors using this technology are currently under construction in the U.S. Vogtle has helped to revive a world-class workforce with specialized expertise at building nuclear power projects and trained a new generation of engineers, technicians, electricians, welders, and more.

These loan guarantees are an important part of the Administration's commitment to restart the U.S. nuclear power industry and ensure the continued role of safe nuclear power in America's electricity mix.

Launching Utility-Scale PV Solar in the U.S.

In 2009, there were exactly zero photovoltaic (PV) solar facilities larger than 100 MW in the U.S. A number of project developers with long-term power purchase agreements (PPAs) were interested in building large, utility-scale projects, but were unable to secure the necessary debt financing due to the scale and innovative nature of the projects. LPO helped to address this market roadblock by providing $4.6 billion in loan guarantees to support the first five utility-scale PV projects larger than 100 MW, representing more than 1,500 MW of capacity. With the loan guarantee for the Desert Sunlight project, LPO worked with a number of commercial lenders through the Financial Institution Partnerships Program (FIPP), enabling them to build experience with utility-scale PV projects.

Following these five projects, 28 additional PV projects larger than 100 MW were financed solely by commercial lenders in the U.S, illustrating how LPO helped launch the utility-scale PV market and facilitated private lenders taking over debt financing for this new market. Today, solar projects at this scale are readily financed by private lenders – many of whom began their participation in the solar sector working with the LPO through FIPP. These lending partners include leading financial institutions, such as John Hancock, Bank of America, and Citigroup.

This sequence of events demonstrates the ability of the LPO to reduce the risk of new technology while supporting the entrance of commercial lenders into new markets.

Scaling Up Concentrating Solar Power:

LPO has also been instrumental in launching the first commercial-scale concentrating solar power (CSP) plants in the United States in decades - including the first ever with thermal energy storage. Unlike PV solar panels that absorb sunlight to directly generate electricity, CSP uses mirrors to reflect the sun's rays onto a focal point that warms up a heat transfer fluid. The heat transfer fluid heats water to create steam to power a turbine that generates electricity, just like a conventional fossil fuel power plant. A benefit of thermal energy storage is that heat can be stored for later use, which allows CSP plants to continue operating during cloud cover or even after the sun sets, helping provide energy on demand when the resource is not available.

Between 2010 and 2011, LPO financed five of the world's largest CSP projects. By integrating thermal energy storage, two of these projects brought the first utility-scale "nighttime solar" to the United States. An example of this technology is the 250 MW Solana CSP facility in Gila Bend, Arizona. LPO helped finance Solana with a $1.4 billion loan guarantee issued in 2010.

This facility uses parabolic trough technology and includes the world's largest operating molten salt storage system, which allows the facility to produce six hours of energy without any sunlight. In 2014, Solana earned the Innovation Award for utility-scale projects at Energy Storage North America and was recognized as a Top Plant by POWER Magazine.

Similarly, the Mojave solar project, also a parabolic trough concentrating solar plant, is one of the world's largest CSP facilities. The Mojave project uses innovative solar receiver and frame designs to further enhance already proven parabolic technology. The construction of this solar plant created 830 construction jobs and supports 70 permanent jobs. The Mojave project received a $1.2 billion loan guarantee from the Department in 2011.

As you are aware, Solana and Mojave have been in the news recently not because of their award-winning innovation, but due to the financial status of Abengoa, S.A.

I want to take this opportunity to make clear that LPO is not currently guaranteeing any loans to Abengoa S.A. or its subsidiaries. Rather, the DOE guaranteed loans for both the Solana and Mojave solar projects are currently for separate project companies – Arizona Solar One LLC and Mojave Solar LLC – whose sole business activities are the ownership and operation of the Solana and Mojave plants, respectively. Mojave Solar LLC is owned by Atlantica Yield Plc (formerly Abengoa Yield Plc) and Arizona Solar One LLC is owned by Atlantica Yield and Liberty Media Interactive. The projects have long-term contracts with investment grade utilities for the sale of the power generated by the projects. The repayment of the loans guaranteed by DOE is based on the revenues from the sale of this power to the utility, and not the financial standing of other companies. This arrangement helps to insulate the borrowers from financial distress of others. Today, Solana and Mojave are both operating and current on their principal and interest repayments to DOE.

The five utility-scale CSP plants that have received DOE loan guarantees will generate enough clean electricity to power 252,000 homes. In addition to adding substantial clean energy to the grid, constructing these projects in Arizona, California and Nevada has put thousands of Americans in the Southwest to work and created a value chain that stretches across the United States with manufacturing supply chains like steel, mirrors, and gear.

Supporting the American Auto Industry Resurgence

Ford Motor Company is helping to position the U.S. auto industry as a leader in fuel-efficient vehicles worldwide. Through LPO's ATVM program, Ford retooled and modernized factories in the United States, which created and preserved manufacturing jobs for more than 33,000 Ford employees.

The factory improvements from this project enabled Ford to continue improving fuel efficiency in more than a dozen popular vehicles, including the Escape, F-150, Focus, Fusion, and C-Max. The innovations include the family of Ford EcoBoost engines, which are available in almost all models, and introductions of new hybrid, plug-in hybrid, and all-electric plug-in vehicles. At the

end of last year, Ford announced that it was on track to sell more than 1 million cars with EcoBoost Engines for the first time in a single year.

In addition to supporting established American automakers like Ford, the ATVM program helped launch Tesla Motors, America's first all-electric automaker. Tesla's $465 million loan enabled it to reopen a shuttered auto manufacturing plant in Fremont, California and to produce battery packs, electric motors, and other powertrain components. The construction of the Tesla plant initially created more than 3,000 full time jobs in California. Tesla now employs 12,000 individuals – far more than the company initially estimated – and is building out a supply chain that supports numerous additional jobs and technologies, which has helped bring advanced manufacturing technology back to America. In May 2013, Tesla repaid the entire remaining balance on its loan nine years earlier than required.

If the U.S. Does Not Lead, Other Countries Will

So far I have shared what LPO is, how it works, and what it has achieved. However, it important to talk about what LPO can achieve in the future and why it is critical. The energy and auto manufacturing sectors include some of the most fiercely-competitive industries in the world. These industries also present enormous economic growth opportunities and in some cases are the backbone of economic development in countries. As a result, countries are racing to increase their market share and stake claim to the technological advancements in these industries. Although many advanced technologies in the energy and automobile spheres have been developed in the United States, other countries--including China and Germany– are leading.

In 2009, China replaced the United States for the first time as the world's largest car market. Today, China is not only the world's largest market for selling automobiles, but is also the world's top auto producer. China is also a leading investor in the $6 trillion global energy market. Renewable energy is a large and growing piece of this market, and China has positioned itself as the dominant player in the manufacturing and deployment of renewable electricity generation systems and technologies. Recent data shows that China led the world with $26.7 billion invested in renewable energy in just the 3rd quarter of 2015. The U.S. was second for the same period at $13.4 billion.

There is no doubt that energy innovation is the future. The U.S. needs to lead on innovation, related jobs, and intellectual property to ensure our continued economic growth. The LPO has demonstrated how to prudently finance game changing technologies; making these investments now will mean a stronger economy in the future.

Conclusion

Moving forward, LPO will focus on three priorities:

1) Getting good deals done: Starting in December 2013, when LPO issued its first new solicitation since 2011, the Title XVII and ATVM programs have received applications from a diverse array of innovative projects for more than $20 billion in loans and loan guarantees. We will continue to move these applications efficiently through the process, engage in rigorous due diligence, and close on good and prudent deals.

2) Diligently managing the existing portfolio: Once LPO closes a loan or loan guarantee, projects are monitored and evaluated throughout project development, construction, commissioning, and operation until the loan has been repaid in full. LPO's team of financial, technical, environmental, and legal professionals will continue to protect taxpayer interests through this very important function.

3) Continuing to build out a pipeline of clean energy and auto manufacturing projects that support LPO's mission: LPO currently has more than $16 billion in remaining authority for the ATVM direct loan program and three open loan guarantee solicitations for Title XVII – $12.5 billion for Advanced Nuclear Energy Projects, $8.5 billion for Advanced Fossil Energy Projects, and $4.5 billion for Renewable Energy & Efficient Energy Projects (REEE).

Deploying new technologies at commercial scale is critical to moving the U.S. towards a stronger future. I am confident that LPO programs can continue to play an important role in supporting this effort, while protecting the taxpayer. I appreciate your attention and look forward to any questions you may have.

Responses by Dr. Frank Rusco

QUESTIONS FOR THE RECORD
Rep. Dana Rohrabacher
U.S. House Committee on Science, Space, and Technology

Department of Energy Oversight: The DOE Loan Guarantee Program

1. During the hearing, I questioned DOE Loan Program Office Director Mark McCall regarding the structure of the loans and loan guarantees provided by DOE, but was unable to receive a clear answer about who provides financing for loans guaranteed under the program. What is the primary source of financing for loans guaranteed by DOE?

The primary source of funding for loans guaranteed by DOE is Treasury's Federal Financing Bank.[1] Under Title XVII of the Energy Policy Act of 2005 (EPAct) and the American Recovery and Reinvestment Act of 2009 (Recovery Act), DOE has made two different types of loan guarantees. Partial loan guarantees occur when the project developer secures funding from a private lender. The private lender applies to DOE for a loan guarantee for up to 80 percent of the total loan principal amount. The private lender is required to hold at least 20 percent of the credit exposure for the loan. Full loan guarantees cover 100 percent of loans, and the loan is provided through the Federal Financing Bank, which serves as the lender.[2] Similarly, under the ATVM loan program, DOE provides direct loans to borrowers by borrowing funds from the Federal Financing Bank to finance DOE's lending.

Partial loan guarantees under section 1705 were provided under one solicitation, the Financial Institution Partnership Program, which provided federal loan guarantees for commercial technology renewable energy generation projects. This solicitation was unique because it was the only one that invited private lenders to share due diligence activities for identifying and mitigating risk, and for financing a portion of total project costs.

a. What percentage of loans that are guaranteed by the DOE LPO are provided financing by the Federal Financing Bank (FFB)?

As of the end of fiscal year 2014, 27 of the program's 34 loans were ATVM direct loans or LGP loan guarantees financed through the Federal Financing Bank. The remaining 7 loans were provided under the Financial Institution Partnership Program.

b. If the federal government is both providing financing and guaranteeing the loan, doesn't that increase the risk to the taxpayer if a recipient of a loan guarantee defaults on the loan?

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[1]The FFB is a government corporation, created by Congress under the general supervision of the Secretary of the Treasury. It has statutory authority to purchase any obligation issued, sold, or guaranteed by a federal agency to ensure that fully guaranteed obligations are financed efficiently. The government's cost of funds is the interest cost that the federal government must pay for the use of the money it lends to borrowers—that is, the interest rate on Treasury notes at the time the funds are disbursed.

[2]Title XVII of EPAct authorizes DOE to guarantee loans for up to 80 percent of the total project costs for eligible projects.

DOE guarantees 100 percent of the loan principal amount for loans financed through the Federal Financing Bank (i.e. full loan guarantees and ATVM direct loans). DOE guarantees up to 80 percent of the loan principal amount for loans under the Financial Institution Partnership Program, while the private lender is required to hold at least 20 percent of the credit exposure for the loan. As such, loans financed through the Federal Financing Bank increase the amount the government might lose in the case of a loan default. However, the riskiness of any loan or guarantee is dependent on the specific characteristics of the project and borrower. There is no inherent risk difference between full and partial loan guarantees.

QUESTIONS FOR THE RECORD
Chairman Lamar Smith
U.S. House Committee on Science, Space, and Technology

Department of Energy Oversight: The DOE Loan Guarantee Program

1. The majority of loan guarantees in the current DOE Loan Program Office portfolio were provided under the Section 1705 loan guarantee program, the temporary loan guarantee program established under the American Recovery and Reinvestment Act of 2009. Please describe the differences between Section 1705 and Section 1703 loan guarantee authority.

The Loan Guarantee Program was established in Title XVII of the Energy Policy Act of 2005 (EPAct) to encourage early commercial use of innovative technologies in energy projects by agreeing to reimburse lenders for the guaranteed amount of loans if borrowers default. Section 1703 of EPAct authorized DOE to guarantee loans for energy projects that (1) use new or significantly improved technologies as compared with commercial technologies already in service in the United States and (2) avoid, reduce, or sequester emissions of air pollutants or man-made greenhouse gases. Congress authorized $34 billion in loan guarantee authority for section 1703 loan guarantees. Initially, Congress provided no appropriation to cover the credit subsidy costs of loan guarantees under section 1703, requiring all borrowers receiving a loan guarantee to pay fees to offset the credit subsidy costs of their own projects. In April 2011, Congress appropriated $170 million to pay credit subsidy costs for energy efficiency and renewable energy projects, which DOE estimated would cover about $848 million in loan guarantees.

In February 2009, Congress passed the American Recovery and Reinvestment Act of 2009 (Recovery Act),[3] which amended Title XVII by adding section 1705, under which DOE could guarantee loans for projects using existing commercial technologies.[4] For section 1705 loan guarantees, the Recovery Act provided $2.5 billion to cover applicants' credit subsidy costs, which DOE estimated would be sufficient to cover about $18 billion in loan guarantees. The authority to enter into loan guarantees under section 1705 expired on September 30, 2011.

a. Are loan guarantees provided under Section 1705 more or less risky than loan guarantees provided under Section 1703?

The risk associated with the section 1703 and section 1705 programs depends on the characteristics of the underlying borrowers and projects. To date, DOE has issued 3 loan guarantees under section 1703. These section 1703 loan guarantees are expected to cost the government less, on average, than loan guarantees issued under section 1705. In part these section 1703 loans are low risk because the project they support has an offtake agreement that guarantees a stream of revenue once the construction phase of the project is complete. Some,

[3]Pub. L. No. 111-5, 123 Stat. 115 (2009).

[4]Projects supported by section 1705 were required to employ renewable energy systems, electric power transmission systems, or leading-edge biofuels that met certain criteria.

but not all, section 1705 loan guarantees also support projects with that have similar agreements, and these projects are generally less risky than those without such agreements.

Any future loan guarantees issued under section 1703 may potentially be more risky as section 1703 is designed to support more innovative projects than was section 1705. However, without knowledge of the characteristics of these future loans, including the presence or absence of offtake agreements, it is not possible to make a determination regarding potential risk levels.

b. Are loan guarantees provided under Section 1705 more or less innovative than loan guarantees provided under Section 1703?

Loan guarantees issued under section 1705 loans did not have to meet the criteria of "innovative" that the 1703 loans do. Specifically, section 1703 required that loan guarantees support projects that "employ new or significantly improved technologies as compared to commercial technologies in service in the United States." Section 1705, added as a temporary program when Congress passed the Recovery Act, expanded the scope of the Loan Guarantee Program and allowed DOE to include projects that use commercial energy technology. Projects supported by 1705 were required to employ renewable energy systems, electric power transmission systems, or leading-edge biofuels that meet certain criteria. Some projects eligible under section 1705 were the same types of projects eligible under section 1703.

Future loan guarantees issued under section 1703, should any occur, may be for more innovative projects than are currently supported by the Loan Guarantee Program.

c. Loan guarantees provided under Section 1705 were required to begin construction prior to September 30, 2011. Did this requirement push the Department to select less innovative, more shovel ready projects?

We did not evaluate the level of innovation for the projects supported by loan guarantees issued under section 1705. However, because these projects were to begin construction before September 30, 2011, and because many of these projects had offtake agreements, it is reasonable to conclude that loan guarantees would not have been provided for projects that were not considered to be viable in the short term.

2. What would GAO consider the most significant risks to the current portfolio?

a. What additional steps could the Department take to mitigate these risks?

We continue to have concerns about DOE making loans and disbursing funds without having sufficient expertise and performance measures, among other things. We made nine recommendations to address these issues from February 2011 through May 2014.[5] To date, four of these recommendations remain open; specifically, we recommended that the Secretary of Energy direct the Executive Director of the Loan Program Office (LPO) to:

- Commit to a timetable to fully implement a consolidated system that enables the tracking of the status of applications and that measures overall program performance. DOE did not concur with the recommendation and has not taken action to implement it.

[5]GAO-11-145, GAO-12-157, and GAO-14-367.

- Ensure that the new records management system contains documents supporting past decisions, as well as those in the future. DOE concurred with this recommendation but has not provided us with information regarding its implementation.

- Fully develop its organizational structure by staffing key monitoring positions. DOE officials told us that they developed short- and long-term plans for staffing key loan monitoring positions and risk mitigation positions within Portfolio Management Division and Risk Management Division, respectively. In February 2016, DOE provided us with evidence that it had identified 24 key positions in these two divisions; however, most of these positions remain unfilled, so the recommendation status remains open.

- Fully develop its organizational structure by completing policies and procedures for loan monitoring and risk management. In February 2016, DOE officials provided us with evidence that they developed, revised, reviewed, and implemented the majority of their portfolio monitoring and risk management policies and procedures. However, some key work processes (e.g., Alleged Fraud, Waste, or Abuse reporting and Risk Assessment processes) are still under development, so the recommendation status remains open.

Implementing these recommendations would help DOE carry out activities critical to monitoring loans in its portfolio and potentially mitigate some risks to the program.

b. It was suggested during the hearing that the loan guarantee program could be a source of profit for the federal government. In the best case scenario, where there were no loan defaults and all loans were paid in full in the allotted time, could the federal government make money on this program?

Loan or loan guarantees paid off on time or early will result in, at best, a small profit to the government. For example, Tesla Motors, Inc. repaid its loan in full in fiscal year 2013, earning the government $5.6 million profit on a $465 million loan. Similarly, Abengoa Bioenergy Biomass of Kansas, LLC. repaid its loan in full in fiscal year 2015, earning the government $3.4 million profit on $46 million loan guarantee. In contrast, losses from 5 defaults had cost the government approximately $800 million as of November 2014, when we last examined the programs. As of fiscal year 2014, DOE estimated that the loans and loan guarantees in its portfolio would cost the federal government $2.2 billion over the life of the loans and loan guarantees

In November 2014, DOE reported that the loan programs had earned more than $810 million in interest and that DOE expected to earn $5 billion in interest payments over the life of the loans and loan guarantees. However, because this report did not include the cost of borrowing from the Federal Financing Bank or account for losses from defaults, this $5 billion is not a projection of government profits.

Appendix II

Additional Material for the Record

STATEMENT SUBMITTED BY THE FULL COMMITTEE
RANKING MEMBER EDDIE BERNICE JOHNSON

OPENING STATEMENT

Ranking Member Eddie Bernice Johnson (D-TX)
House Committee on Science, Space & Technology

"Department of Energy Oversight: The DOE Loan Guarantee Program"
Joint Subcommittee Hearing, Subcommittees on Energy & Oversight

March 3, 2016

Good morning. Thank you Chairman Weber and Chairman Loudermilk for holding this hearing, and thank you to the panel of distinguished witnesses for being here.

We are gathered this morning to discuss the Department of Energy's Loan Guarantee Program. This program provides loan guarantees for projects across various energy sectors including renewables, nuclear, and fossil fuels. Such support is critical because private lenders are often unwilling to take on the risks associated with financing truly innovative projects in the early stages.

Additionally, the program has been instrumental in creating thousands of American jobs in high tech industries such as wind energy, solar manufacturing, and bioenergy. For example, loans from the Advanced Technology Vehicles Manufacturing program have supported the production of more than 4 million fuel-efficient cars and more than 35,000 jobs across eight states.

Not only does the loan program provide critical investment in cutting-edge energy solutions, but it does so in a fiscally responsible manner. While the Majority has launched yet another investigation designed to paint the loan program as wasteful, this couldn't be further from the truth. As you will hear later from Mr. McCall, director of the Loan Program Office, the careful structures of the DOE's loan guarantees have provided and will continue to provide strong protections for taxpayer funds.

Even initial critics now view the loan guarantee program as a success, with losses equaling only 2.27% of the Office's entire portfolio - a rate that is lower than many venture capitalists achieve. While there will undoubtedly be instances when an individual project does not meet its goal, the DOE's portfolio remains strong and healthy overall.

In closing, I want to emphasize that the DOE loan guarantee program is critical for the United States to compete on the world stage and meet the energy challenges we face in the 21st century. Germany, China, India, and others have implemented robust energy loan and loan guarantee programs. Our utilization of innovative and financially sound programs like the DOE loan guarantee program will ensure that the U.S. remains a world energy leader while fostering greater economic growth.

Again, I thank each of you for joining us today, and with that I yield back the balance of my time.

REPORT SUBMITTED BY REPRESENTATIVE BARRY LOUDERMILK

U.S. House of Representatives

Committee on Oversight and Government Reform

Darrell Issa (CA-49), Chairman

How Obama's Green Energy Agenda is Killing Jobs

STAFF REPORT
U.S. HOUSE OF REPRESENTATIVES
112TH CONGRESS
SEPTEMBER 22, 2011

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EXECUTIVE SUMMARY

Facing the worst economic recession since the Great Depression, President Obama confronted the crisis by promoting "green jobs" as a major component of his recovery strategy. He promised that these programs would create five million jobs within ten years. He cited the efforts of other nations as the rationale to try and subsidize our way to energy independence. Yet, the other nations who tried this experiment have struggled and after nearly three years and billions of spent taxpayer dollars later, the American people have received very little return on President Obama's signature investment.

The theory behind a "green jobs" fueled recovery is also called into question by numerous sources documenting instances of inappropriate political influence affecting the distribution of government grants. Moreover, the Bureau of Labor Statistics' efforts to legitimize the notion of "green jobs" by counting these jobs as a unique job category, would create official metrics for the nascent effort.

The Obama Administration's green energy campaign has been pursued while it simultaneously implemented a regulatory agenda that is choking American businesses and restricting access to abundant domestic natural resources which have traditionally provided cheap energy that supports economic growth.

With unemployment at a staggering 9.2 percent, the ill-fated "green jobs" experiment has done little to create jobs or speed recovery; in fact, by many accounts it has destroyed jobs. This is a dangerous strategy that will drastically increase the price consumers pay for energy, hurt economic growth, and restrict job creation.

By sacrificing domestic carbon-based resources upon the altar of an ill-fated "green energy" experiment, the President has put U.S. economic security in jeopardy and wasted billions in taxpayer money at a time when our fiscal health is in peril.

KEY FINDINGS

- Three years and nearly a hundred billion dollars later, taxpayers have received little return from President Obama's investments in "green jobs;"

- Labeling an occupation as a green job does not mean it has any special economic worth;

- The guise of "green jobs" has become a political rallying cry aimed to unite environmentalists and union leaders in a deliberate effort to consolidate an ideologically-based agenda;

- Labor unions are profiting from the many so-called "green" programs because there are often "strings attached" that require hiring union workers, the payment of union-level wages and other mandates;

- Evidence suggests that the Department of Labor's Bureau of Labor Statistics (BLS) has been subjected to undue political influence to advance this agenda and is now using gimmick-accounting methods to count "green jobs" even though the term is vague, poorly defined, and has led to inaccurate counting;

- The metric of a "green job" is nothing more than a propaganda tool designed to provide legitimacy to a pre-determined outcome that benefits a political ideology rather than the economy or the environment;

- The Obama Administration's "green jobs" agenda has been driven by political favoritism and accusations of pay-to-play relationships benefitting private investors with the security of public loan guarantees, such as in the much-publicized case of Solyndra;

- The Solyndra loan guarantee was further politicized when the federal government's "investor" standing was subordinated to the interest of a private investor—one who happened to be a prominent Obama fundraiser;

- The President's effort to force a transition to "green energy" has pursued twin policies of raising the price of fossil fuels and subsidizing "green energy" at the expense of the domestic energy production sector. Domestic oil, gas and coal industries are being choked under a slew of aggressive federal regulations, despite the proven long-term, job-creating record of this industry;

- There exists an undeniable relationship between America's prosperity and its access to affordable energy sources that if ignored, will setback economic growth;

- The Obama Administration is hypocritical in its energy policy: it promotes traditional energy sources abroad through loans and diplomacy, while openly discouraging it at home;

- President Obama relied on the false pretense that subsidizing "green energy" as other nations such as Spain, Germany and Japan did would result in "good, high-wage jobs" when in actuality, nations such as Spain, Italy, Denmark, Germany and the U.K. have struggled with job destruction, higher energy costs and loss of taxpayer dollars as a result of pursuing such policies.

INTRODUCTION

Taking office amidst the worst recession since the Great Depression, President Obama confronted an unemployment crisis by focusing on the promotion of "green jobs." His goal was to put people to work in ways that improve the environment. As the President asserted in his inaugural address, "we will act not only to create new jobs but to lay a new foundation for growth."[1] He continued, "We will harness the sun and the winds and the soil to fuel our cars and run our factories."[2] This strategy built on his campaign's championing of green jobs as a means to achieve economic recovery, promising that America would create five million green jobs within ten years.[3]

A columnist for the *Los Angeles Times* recently noted that while the push to green energy is not new, having originated in the 1970s, "the mission keeps changing. Is the green energy revolution about energy independence? Or is it about fighting global warming? Or is it about jobs?"[4] While there is certainly merit in promoting both economic growth and environmental conservation, these aims are often at odds with each other.[5] Yet, "green jobs" are a key pillar in the Obama Administration's economic recovery strategy. According to the President, green energy is the current generation's equivalent of the Apollo missions, which sent a man to the moon in 1969.[6] However, the entire Apollo Program (between 1960 and 1973) cost $102.8 billion, adjusted for inflation. In contrast, the Recovery Act alone included $90 billion[7] in clean energy investments, which is on top of billions expended by the federal government since the 1970s.[8] Yet unlike the generation who supported the NASA mission, this generation has very little to show for it.

Nearly three years and billions of taxpayer dollars later, Americans have received very scant return from President Obama's investment. Recent media coverage resoundingly declared the "green jobs" experiment has been a costly failure. An August 16th editorial from *Investor's Business Daily* observed, "The Obama Administration's jobs plan was based on a greening of the economy. But the green jobs aren't materializing...."[9] Two days later, a *New York Times* article went further, "Federal and state efforts to stimulate creation of green jobs have largely failed ...."[10] The *Washington Post's* editorial board was even harsher, declaring on September 9:

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[1] President Barack Obama, Inaugural Speech (Jan. 20, 2009).
[2] *Id.*
[3] *See* David G. Taylor, *Seeds Planted for Green Jobs, but Will They Bear Fruit*, POLITIFACT.COM (St. Petersburg Times), *available at* http://www.politifact.com/truth-o-meter/promises/obameter/promise/439/create-5-million-green-jobs/.
[4] Jonah Goldberg, *America's 'Green' Quagmire*, L.A. TIMES, Aug. 23, 2011.
[5] Michael Greenstone, *The Impacts of Environmental Regulations on Industrial Activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufactures: Working Paper 8484*, NAT'L BUREAU OF ECON. RESEARCH, Sept. 2001, at 28.
[6] President Barack Obama, State of the Union Address (Jan. 25, 2011).
[7] COUNCIL OF ECONOMIC ADVISORS, EXECUTIVE OFFICE OF THE PRESIDENT, THE ECONOMIC IMPACT OF THE AMERICAN RECOVERY AND REINVESTMENT ACT, SECOND QUARTERLY REPORT (2009).
[8] Fred Sissine, et al. *Energy Provisions in the American Recovery and Reinvestment Act of 2009 (P.L.111-5)*, CRS REPORT FOR CONGRESS (Mar. 12, 2009).
[9] Editorial, *Wasted Stimulus*, INVESTORS.COM, Aug. 16, 2011.
[10] Aaron Glantz, *Number of Green Jobs Fails to Live up to Promises*, N.Y. TIMES, Aug. 18, 2011.

> "green jobs" offer a dubious rationale for federal support of clean-energy technology. To the extent that government creates jobs by subsidizing particular companies, it does so by shifting resources that might have created jobs elsewhere. Political favoritism, or the appearance thereof, is an inherent risk.... [11]

The same day, the *Wall Street Journal* lamented, "bureaucrats are betting ... on industries they may not understand... [which] invites political favoritism for the powerful few at the expense of millions of middle-class taxpayers."[12] "Promises of green jobs start withering on vine," reported the *Washington Times* the next week.[13]

Economic realities have levied an even harsher indictment of the President's green agenda. Evergreen Solar and Solyndra, Inc. now typify the problems of forcing green energy upon the American public. Just seven months ago, a headline in an industry publication, *Renewable Energy World,* read "Can Everygreen Solar be Our Sputnik Moment?"[14] Yet, after receiving millions in government support, Boston, MA based Evergreen Solar filed for bankruptcy on August 15, 2011.[15]

Likewise, the Freemont-based solar company, Solyndra – the first company to receive a Department of Energy loan guarantee – was visited by President Obama in May 2010. At this event, the President praised Solyndra as a "testament to American ingenuity and dynamism." Solydra filed for bankruptcy on September 2, 201[16] and has laid off 1,100 workers, despite having received $535 million in federal loan guarantees.[17] Solyndra's failure is evidence of the folly of subsidizing green energy combined with the folly of politicians hand-picking winners and losers in the market.

In addition to these concerns, questions are being raised as to whether DOE awards were made, or if the process was accelerated, on the basis of political favoritism. In the case of Solyndra, White House visitor logs show that "between March 12, 2009, and April 14, 2011, Solyndra officials and investors made no fewer than 20 trips to the West Wing."[18] At a minimum, it appears that the federal government's support of Solyndra was influenced by the White House.

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[11] Editorial, *Lessons from the Solyndra Debacle*, WASH. POST, Sept. 8, 2011.
[12] Review and Outlook, *The Solyndra Scandal*, WALL ST. J., Sept. 9, 2011.
[13] Ben Wolfgang, *Promises of Green Jobs Withering on the Vine*, WASH. TIMES, Sept. 11, 2011.
[14] Clint Wilder, *Can Evergreen Solar be Our Sputnik Moment*, RENEWABLE ENERGY WORLD.COM, Feb. 4, 2011, *available at* http://www.renewableenergyworld.com/rea/news/article/2011/02/can-evergreen-solar-be-our-sputnik-moment.
[15] MB Snow, *Nevergreen Solar-WSJ.com*, POLITICAL NEWS NOW, Aug. 17, 2011, *available at* http://sroblog.com/2011/08/17/nevergreen-solar-wsj-com/.
[16] Scott McGrew, *Solyndra Filing a Disaster for Obama*, NBC BAY AREA.COM, Sept. 2, 2011, *available at* http://www.nbcbayarea.com/news/local/Solyndra-Filing-a-Disaster-for-Obama-128816968.html.
[17] *Id.*
[18] Amanda Carey, *Solyndra Officials made Numerous Trips to the White House, Logs Shows*, THE DAILY CALLER.COM, Sept. 8, 2011, *available at* http://dailycaller.com/2011/09/08/solyndra-officials-made-numerous-trips-to-the-white-house-logs-show/#ixzz1Xhdr06Wf.

The purpose of this report is to examine the effectiveness of President Obama's green energy agenda as a jobs plan. The President has stated, time and again, that this agenda will result in robust job creation which will help America compete in the 21st Century. This report seeks to understand the merits of that claim. This report does not express a technology preference, rather it is the position of the Committee that American consumers should determine which energy technologies meet their needs and preferences.

Of course, we welcome and embrace all new technologies, especially those with the aim of increasing environmental conservation. However, there is an important distinction between industries that can stand on their own and make our economy stronger and those which require taxpayer assistance to survive.

This report provides evidence that the expensive "green jobs" policies implemented by President Obama have not helped Americans get back to work. The 14 million unemployed Americans – 43%, or 6 million, of whom have been without work for 27 weeks or more – deserve to understand why so much money has been spent to create so few jobs. This report also builds on earlier work of the Committee on Oversight and Government Reform ("Committee"), which demonstrated the Obama Administration has put in place numerous regulatory impediments, which have hampered job creation in the traditional energy sector.

Part I of this report deconstructs President Obama's green energy agenda to expose that it has put politics before science, allowing favored industries to succeed while punishing others.

Part II examines the ways in which the Obama Administration's green energy agenda has -- and will continue to -- negatively impact economic growth and job creation in the United States.

Part III focuses on the fundamental flaws in the Obama Administration's claim that green energy can lead to robust job creation.

PART I: OBAMA'S GREEN AGENDA DECONSTRUCTED

"Green Jobs" are a Political Construct

The concept of "green collar jobs" dates back to 1976 and suggests that the work is related to environmental improvement.[19] The phrase is a modern spin on "blue collar jobs," traditionally jobs involving manual labor, and "white collar jobs," typically office jobs involving mainly "cognitive tasks."[20] However, no one contends it is important to understand how many "blue" or "white" collar jobs there are in the labor market because those labels do not, inherently, carry any economic meaning – they are simply nominal references to broad categories of occupations. In much the same way, "green job" is simply a label that denotes work somehow related to the environment. Labeling an occupation as a green job does not mean it has any special economic worth.

"Green Jobs" Unite Democratic Factions

The idea of "green jobs" has become a major political rallying cry for environmentalists and union leaders alike. While seemingly at odds with each other – unions have, historically, been at odds with environmentalists over regulations that destroy jobs[21] – unions and environmentalists have joined forces to secure new mandates and subsidies under the guise of simultaneously bolstering the American manufacturing base and leading to conservation. Many have compared the collaboration of unions and environmentalists to the famous cooperation of "bootleggers and Baptists" to fight for prohibition.[22] Economist Bruce Yandle, who developed the analogy, explains, "Bootleggers … support Sunday closing laws that shut down all the local bars and liquor stores [so they can sell alcohol]. Baptists support the same laws and lobby vigorously for them [for religious reasons]."[23] Similarly, union leaders support "green jobs" because much of the subsidized work is designated to be awarded to unionized workers. For their part, environmentalists benefit from having a broader base of support for policies that seek to "green" the economy. The outcome is a political alliance with incredible power.

The genesis of promoting so-called "green jobs" can be traced to a group known as the Apollo Alliance, which has been the center of gravity for the green jobs movement since 2001.[24] Its membership consists of nearly every major labor union and environmental organization in the country: the AFL-CIO, the Sierra Club, AFSCME, Greenpeace, the International Brotherhood of Electrical Workers, Natural Resources Defense Council (NRDC), the International Brotherhood

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[19] Noam Segal, *Green Collar Jobs: The Alternative Energy Industry and Labor Markets in Reviewing the Middle East: Climate Changes,* in Security and Energy and the New Challenges for EU-Israel Relations. (Roby Natanson & Stephan Stetter eds., IEPN Publication 2008).

[20] TEXAS WORKFORCE COMMISSION, LABOR MARKET AND CAREER INFORMATION DEPARTMENT, GREEN COLLAR WORKERS AND OTHER MYTHICAL CREATURES (2008) [hereinafter Texas Study].

[21] Beth Shulman, *Yes, Union Labor's message to liberals: Rumors of our irrelevance have been much exaggerated,* The American Prospect, Nov. 1, 1996 *available at* http://prospect.org/cs/articles?article=yes_union.

[22] *See e.g.* ANDREW P. MORRISS ET AL., THE FALSE PROMISE OF GREEN ENERGY 149 (2011).

[23] Bruce Yandle, *Bootleggers and Baptists-The Education of Regulatory Economist*, AEI Journal on Government and Society, 13, May/June 1983, *available at* http://www.cato.org/pubs/regulation/regv7n3/v7n3-3.pdf.

[24] Apollo Alliance: Clean Energy & Good Jobs, http://apolloalliance.org/about/ (last visited Sept. 19, 20011).

of Teamster, the National Wildlife Federation, and dozens of others.[25] Accordingly, the Apollo Alliance and other coalition efforts like the Blue-Green Alliance[26] bring together two major components of the Democratic political base – environmentalists and labor unions.

Observing the alliance of labor groups and environmentalists to mobilize support for the green jobs movement, the London-based Institute for Public Policy Research noted in July 2011:

> It enabled environmentalists to counter arguments that climate change policies are 'job destroyers'; it appealed to trade unions concerned about the outsourcing of jobs, the 'low road' strategy of many firms in the renewable energy/energy efficiency sector, and the decline of manufacturing and energy intensive industries; and it allowed politicians, particularly those on the left, to reach out beyond an 'environmental elite' to convince broader constituencies of the benefits of a green economy.[27]

Labor Unions are Profiting under the Pretense of Green Energy

While the green jobs movement clearly advances the interests of environmental special interest groups in the green jobs movement, the interests of labor unions may not be as readily apparent. However, a careful look at statutes passed in the Democrat controlled 110th and 111th Congresses reveal that unions stand to benefit from many of the so-called green programs because these programs have "strings attached … that require paying union-level wages, hampering lower cost, nonunion firms from competing for the jobs produced by the grants."[28] The left-wing magazine, *The American Prospect*, noted in September of 2007 that Leo Gerard, the President of the United Steelworkers, has played a major role in the development of the Apollo Alliance and its political influence:

> In creating a new progressive gospel that links labor and enviro[nmentalists], Gerard has built an alliance of genuine strategic importance to the Democrats—most especially because the two constituencies' current disagreement over congressional efforts to mandate fuel-efficiency standards could drive them farther apart. Long a force for labor solidarity, Gerard has become a force for Democratic solidarity as well.[29]

Another reason why Gerard and the United Steelworkers, in particular, are drawn to this coalition is the amount of steel required to manufacturer green energy products, such as wind

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[25] Apollo Alliance: Clean Energy & Good Jobs, Endorsers, http://apolloalliance.org/about/endorsers/ (last visited Sept. 19, 2011).
[26] BlueGreen Alliance About Us, http://www.bluegreenalliance.org/about_us (last visited Sept. 20, 2011).
[27] Claire McNeil & Hanna Thomas, *Green Expectations: Lessons from the US green jobs market*, 6, (Institute for Public Policy Research 2011), available at http://www.ippr.org/images/media/files/publication/2011/07/green-expectations_July2011_7756.pdf.
[28] MORRISS, *supra* note 22, at 198.
[29] Jim Grossfeld, *Leo the Linchpin*, THE AMERICAN PROSPECT, Sept. 24, 2007, *available at* http://prospect.org/cs/articles?article=leo_the_linchpin.

turbines. To the extent that manufacturers use American steel, the assumption is that the government subsidies and regulations would benefit their membership as well. As Gerard has stated, arguing for steel protections, "If we are not going to do solar panels and fluorescent bulbs and wind turbines here, the next generation of R and D will not be here."[30]

Codifying the "Green Jobs" Construct - The Role of the Department of Labor in Green Job Promotion

The Bureau of Labor Statistics (BLS), a division of the Department of Labor, is arguably the most rigorous and well-respected data collection agency in the world. Its numbers are the gold standard for understanding employment in the United States. [31] These statistics are then used by policy makers, investors, and others to make decisions that will greatly impact the economy. Accordingly, evidence suggesting that the BLS is being subject to undue political influence to advance the political agenda of the President is deeply troubling. The Green Jobs Act of 2007, sponsored by then-Congresswoman Hilda Solis (now Secretary of Labor) included a provision that directed the BLS to begin counting "green jobs."[32] Because the concept of a "green job" is so vague and not easily defined, counting these jobs this is an inherently flawed task. It is also a task vulnerable to manipulation and misrepresentation.

In recent guidance, the BLS has determined that the following jobs could be counted as "green":

1. Jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources.

2. Jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources.[33]

While this definition may appear to be facially reasonable, the details of the BLS guidance reveal that there is little relationship between jobs classified as green and actual environmental benefit. For instance, the BLS guidance indicates that jobs which "[i]ncrease public awareness of environmental issues" are green jobs.[34] College professors that teach classes related to ecology, reporters that write about environmental issues, and policy experts at think tanks discussing environmental policy all would seem to meet this criteria and be considered green jobs. Those who "[e]nforce environmental regulations" will also count – in other words, any bureaucrat that

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[30] Howard Schneider, *U.S. Steelworks Target China,* WASH. POST, Sept. 10., 2010.
[31] U.S. Bureau of Labor Statistics Home Page, *available at* http://www.bls.gov/jobs/aboutbls.htm (last visited Sept. 21, 2011).
[32] *Obama Taps Green Jobs Champion Hilda Solis as Labor Secretary*, THE DAILY KOS, Dec. 18, 2008, http://www.dailykos.com/story/2008/12/18/674657/-Obama-Taps-Green-Jobs-Champion-Hilda-Solis-as-Labor-Secretary.
[33] Bureau of Labor Statistics, Definition of Green Jobs, http://www.bls.gov/green/green_definition.pdf (last visited Sept, 21, 2011).
[34] *Id.*

works on issues related to the environment.[35] Accordingly, it appears the BLS metric is geared towards maximizing the number of jobs classified as green.

To be fair, many outside groups have attempted to come up with a definition of "green jobs" without much success. For example, the Brookings Institution ("Brookings") recently attempted to provide a workable definition.[36] However, Ken Green, a senior fellow at the American Enterprise Institute, has observed the multitude of problems with defining green jobs. Using the Brookings definition as an example, he observed:

> Brookings doesn't count people who work inside companies in environmental compliance or environmental impact reduction, but they throw in a very large number of mass transit workers.
>
> Yet whether or not mass transit is green depends on ridership levels, the power source, the age of the vehicles, which emissions you're focused on and so on.[37]

The United Nations Environment Programme and the Conference of Mayors have both put out reports attempting to define green jobs.[38] With each group's attempt at coming up with a definition, however, there is significant conflict that reveals the impossibility of this task. [39]

In addition to the challenges associated with defining a "green job," it is important to note that many of the newly defined jobs are not jobs that have been recently "created," as the Administration's rhetoric would lead one to believe, but rather "re-labeled" as green by the BLS. Marc Anderberg of the Texas Workforce Commission has observed:

> For workforce planning and development purposes, there is no point in generating nonsensical data on green collar workers merely to satisfy the media's thirst for numbers to make oversimplified reports sound credible or to provide good news that an economic development agent can paste on a bumper sticker.[40]

The reality is that pre-existing jobs are merely being counted as green-collar; they are not "new," they are simply grouped and counted with the meta-label "green."[41] In addition to the illusion that these so-called green jobs are new, the BLS admits that "the planned BLS surveys may

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[35] *Id.*
[36] Mark Muro, *Sizing the Clean Economy: A National and Regional Green Jobs Assessment*, BROOKINGS, Jul. 13, 2011, *available at* http://www.brookings.edu/reports/2011/0713_clean_economy.aspx.
[37] *Building the Ladder of Opportunity: What's Working to Make the American Dream a Reality for the Middle Class, before the Senate Committee on Health, Education, Labor, and Pensions,* 112th Cong. (2011) (statement of Dr. Kenneth P. Green, Resident Scholar, American Enterprise Institute).
[38] MORRISS, *supra* note 22, at 73-5.
[39] *Id.*
[40] Texas Study, *supra* note 20, at 2.
[41] *See id.*

identify and count some jobs twice."[42] In other words, these jobs are not putting Americans *back* to work; they are simply counting Americans already at work and sometimes counting them twice.

While the definition has very little economic meaning, by creating a "green jobs" metric in BLS's data, DOL is attempting to provide legitimacy to a political construct. It is likely that this designation will play a large role in determining eligibility for federal funds. Accordingly it will distort the market by incentivizing companies to change their currently successful business model in the hopes of garnering government favoritism. Moreover, proponents will likely point to these new, yet meaningless, statistics to claim the green economy is more viable than it actually is. Ultimately, counting green jobs jeopardizes the credibility of the BLS and makes them subject to political influence.

The Obama Administration's Green Energy Agenda Has been Driven by Political Favoritism

The Obama Administration's aggressive pursuit of its green energy agenda has raised significant questions about possible pay-to-play relationships between the Administration and green energy company officials and investors. The green energy industry's reliance on the federal government for financial backing has created a situation that places the Department of Energy in the position of picking winners and losers among different green energy firms. In several situations, companies with close financial ties to the Obama Administration have won government loans and grants despite having questionable financial strength.

The most obvious example of this favoritism comes from Solyndra, a California based solar company. President George W. Bush signed the Energy Policy Act of 2005, which created a loan guarantee program for green technology. President Obama's campaign had made green energy a priority, and the new Administration decided to place a new focus on the loan guarantee program. The Energy Policy Act's loan guarantee program was changed by The Recovery Act, and a new section was created (Section 1705) that was "a temporary program designed to address the current economic conditions of the nation. It authorizes loan guarantees for certain renewable energy systems, electric power transmission systems and leading edge biofuels projects that commence construction no later than September 20, 2011."[43] The Obama Administration moved quickly to use the loan guarantee program to fund green energy projects.

Solyndra had applied for a loan guarantee under the Bush Administration and had not received it. In fact, only days before the Obama Administration took office, the DOE under President Bush refused to approve the Solyndra application.[44] One official at the DOE worried that Solyndra would fail because even based upon Solyndra's own numbers the company would

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[42] Bureau of Labor Statistics, Green Jobs, Measuring Green Jobs, http://www.bls.gov/green/ (last visited July 13, 2011).

[43] U.S. Department of Energy, Loan Programs Office, 1705, https://lpo.energy.gov/?page_id=41 (last visited Sept. 21, 2011).

[44] Matthew Mosk et al., Emails: Obama White House Monitored Huge Loan to 'Connected' Firm, ABC NEWS, Sept. 13, 2011, *available at* http://abcnews.go.com/Blotter/emails-obama-white-house-monitored-huge-loan-connected/story?id=14508865.

no longer have any money by September 2011.[45] Despite objections from analysts at DOE and the Office of Management and Budget, the Obama Administration reconsidered Solyndra's application.

In March 2009, Energy Secretary Chu announced that the Department had approved a $535 million conditional loan for Solyndra.[46] DOE and OMB officials continued to worry about Solyndra and the government investing in the company.[47] The Obama Administration ignored the concerns and completed the loan. In September 2009, Vice President Biden announced at the groundbreaking ceremony for Solyndra that the company was approved to become the first recipient of a 1705 loan guarantee.[48] When announcing the loan guarantee, Vice President Biden claimed that "this announcement today is part of the unprecedented investment this Administration is making in renewable energy and exactly what the Recovery Act is all about."[49]

Despite the support of taxpayer funds, Solyndra continued to experience financial difficulties. Even so, the Obama Administration continued to advertise it as a success story. In March 2010, PriceWaterhouseCoopers audited Solyndra and questioned whether the company could continue due to financial problems.[50] Yet, the Administration ignored this warning and instead participated in an elaborate public relations event, where President Obama spoke at the plant and the White House released a video on its website to highlight all of the economic benefits of Solyndra.[51] The President claimed that "companies like Solyndra are leading the way toward a brighter and more prosperous future ... [T]he true engine of economic growth will always be companies like Solyndra."[52]

By the end of 2010, Solyndra needed serious help to avoid financial disaster. Government documents indicate that in December 2010 "Solyndra had only about a month of cash on hand and faced bankruptcy absent continued funding."[53] Solyndra refinanced in January 2011 with the help of DOE. This arrangement subordinated the Federal loan to the interest of a private investor.[54] This arrangement made taxpayer funds more vulnerable in the event that Solyndra were to enter into Bankruptcy protection because the private investors would receive their money before the taxpayers received a dime.

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[45] *Id.*
[46] *Id.*; *see also A History of Solyndra*, WASH. POST, Sept. 13, 2011, *available at:* http://www.washingtonpost.com/politics/a-history-of-solyndra/2011/09/13/gIQA1r5qQK_story.html.
[47] House Committee on Energy and Commerce, *available at* http://republicans.energycommerce.house.gov/Media/file/Hearings/Oversight/091411/SolyndraSlides.pdf (DOE emails from August 2009 reveal the continued concerns of DOE officials about the loan to Solyndra).
[48] Office of the Vice President, Press Release, The White House, *Vice President Biden Announces Finalized $535 Million Loan Guarantee for Solyndra*, Sept. 4, 2009.
[49] *Id.*
[50] *Emails Show White House Pressure Ahead of Solar Company Loan Approval*, FOX NEWS, Sept. 14, 2011, *available at* http://www.foxnews.com/politics/2011/09/13/gop-to-hold-hearing-on-now-bankrupt-solar-company-that-obama-once-touted/.
[51] McGrew *supra* note 16.
[52] President Barack Obama, Address at Solyndra, Inc. (May 26, 2010).
[53] William McQuillen, *Taxpayers Rank Behind Solyndra Investors Under Obama's Refinancing Deal*, BLOOMBERG, Sept. 3, 2011.
[54] *Id.*

The refinancing deal kept Solyndra functioning for only a few months before it completely collapsed. On August 31, 2011, Solyndra declared bankruptcy and dismissed over 1,000 workers.[55] Solyndra's bankruptcy will now be handled by a bankruptcy court, but the federal government could potentially lose half a billion dollars on an "investment" that produced no permanent jobs.

Solyndra's failure clearly raises questions about the administration of DOE's Section 1705 loan guarantees program. However, it appears that the mismanagement might extend beyond DOE. Solyndra was partially owned (35.7%) by the George Kaiser Family Foundation.[56] George Kaiser bundled over $50,000 for the Obama campaign in 2008.[57] Kaiser's influence with the Obama Administration enabled him to have 16 meetings with White House officials, including several immediately before DOE's decision to issue the $535 million loan.[58] Kaiser's financial ties to the Obama Administration and his White House meetings raise important questions about whether his political connections helped Solyndra secure its $535 billion loan. Especially in light of emails indicating that DOE was concerned about the loan, the Administration's decision to go ahead with the potentially risky loan that could now cost taxpayers hundreds of millions of dollars seems suspect and raises the possibility that the Administration placed political connections ahead of financial soundness.

Furthermore, DOE has funneled billions of taxpayer funds to other companies with political ties to the White House, even in the weeks after Solyndra went bankrupt. For example, DOE awarded a $275 million loan guarantee to SolarCity on September 7, 2011. SolarCity's chairman, Elon Musk, was a major donor, having donated over $40,000 to the Obama campaign. Mr. Musk has visited the White House at least four times for high level meetings.[59] DOE awarded $13 million to Solexel on September 2, 2011. Steve Westly, a major investor in Solexel, has bundled over $600,000 for Obama in the 2008 and 2012 cycles combined.[60] It remains possible that the political connection to the White House and the award of stimulus funds is entirely coincidental. However, in light of the Solyndra scandal, these ties have become significantly more questionable.

In addition to the possibility of an overt pay-to-play scheme, the Obama Administration's energy agenda has enriched scores of businesses and trade associations from government subsidization of green initiatives.[61] Bjorn Lomberg, director of the Copenhagen Consensus, describes the rise of companies angling for government assistance as the "Climate-Industrial Complex."[62] Lomberg observes:

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[55] *History of Solyndra supra* note 46.
[56] William McQuillen, *Taxpayers Rank Behind Solyndra Investors Under Obama's Refinancing Deal*, BLOOMBERG, Sept. 3, 2011.
[57] Bundlers, Center for Responsive Politics, http://www.opensecrets.org/pres08/bundlers.php?id=N00009638 (last visited Sept. 21, 2011).
[58] Carey *supra* note 18.
[59] Amanda Carey, *New DOE Loans Support Green Obama-Backers*, THE DAILY CALLER, Sept. 12, 2011, *available at* http://dailycaller.com/2011/09/12/new-doe-loans-support-green-obama-backers/.
[60] *Id.*
[61] Apollo Alliance: Clean Energy & Good Jobs, Endorsers, http://apolloalliance.org/about/endorsers/ (last visited Sept. 19, 2011).
[62] Bjorn Lomborg, *The Climate-Industrial Complex*, WALL ST. J., May 22, 2009.

> The cozy corporate-climate relationship was pioneered by Enron, which bought up renewable energy companies and credit-trading outfits while boasting of its relationship with green interest groups. When the Kyoto Protocol was signed, an internal memo was sent within Enron that stated, "If implemented, [the Kyoto Protocol] will do more to promote Enron's business than almost any other regulatory business."[63]

Lomberg also notes, "U.S. companies and interest groups involved with climate change hired 2,430 lobbyists [in 2008], up 300% from five years [prior]." A contemporary example can be found in General Electric (GE). In their recent book, *The False Promise of Green Energy,* economists Andrew Morriss, William Bogart, Roger Meiners, and Andrew Dorchak note that GE has shaped its business model to profit from government subsidies.[64] GE feels it could "bring in as much as $192 billion from projects funded by governments around the globe, such as electric grid modernization [and] renewable-energy generation."[65] GE's CEO has even stated, "The government has moved in next door, and it ain't leaving."[66]

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[63] *Id.*
[64] Morriss *supra* note 22 at 198.
[65] *Id.*
[66] *Id.*

PART II: THE OBAMA ADMINISTRATION PURSUES ITS GREEN ENERGY AGENDA DESPITE OVERWHELMING EVIDENCE THAT IT WILL RESULT IN ECONOMIC DAMAGE

The Green War on Traditional Energy

America's reserves of carbon-based energy are amongst the largest on earth. "They eclipse Saudi Arabia (3rd), China (4th) and Canada (6th) combined — and that's without including America's shale oil deposits."[67] U.S. proven reserves of oil total 19.1 billion barrels, reserves of natural gas total 244.7 trillion cubic feet, and natural gas liquids reserves total 9.3 billion barrels.[68] "That's enough oil to maintain America's current rates of production and replace imports from the Persian Gulf for more than 50 years."[69] Technically recoverable "oil in the United States is 145.5 billion barrels, and undiscovered technically recoverable natural gas is 1,162.7 trillion cubic feet."[70]

However, despite these resources, the Obama Administration seeks to fundamentally alter the American economy by forcing a transition to "green" energy. Because most alternative energy sources are significantly more expensive than traditional sources of energy, such a transition requires the Administration to raise the price of fossil fuels, while at the same time subsidizing "green energy." Only when the cost of green energy is close to the price of fossil fuels will the market sustain these technologies. The Administration has been busy pursuing these twin policies in an effort to force a "green" revolution.

This strategy should not be a surprise to the American public. During the campaign, then-Senator Obama openly declared that as part of his plan, "electricity rates would necessarily skyrocket ... that will cost money. They [businesses] will pass that cost on to consumers ...."[71] His Secretary of Energy, Steven Chu, has argued that the price of gasoline ought to be raised to encourage the sale of more-efficient cars: "[s]omehow we have to figure out how to boost the price of gasoline to the levels in Europe."[72]

While such statements seem radical, increasing the price of energy obtained from fossil fuels helps the Administration make the case for "green" energy. Substantially higher prices for fossil fuels would incentivize investment in alternative sources of energy. To this end, there is a pattern of increased enforcement, regulatory delay and new hurdles to the development of carbon-based energy across numerous agencies and approval processes.[73] The Administration's assault on traditional sources of energy is detailed in the Committee report, "Pain at the Pump:

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[67] Peter C. Glover, *U.S. Has Earth's Largest Energy Resources*, ENERGY TRIBUNE, Mar. 24, 2011.
[68] Gene Whitney et al., *U.S. Fossil Fuel Resources: Terminology, Reporting and Summary*, CRS REPORT FOR CONGRESS, Nov. 20, 2010.
[69] Press Release, U.S. Senate Comm. on Env't. and Public Works, Government Report: America's Combined Energy Resources Largest on Earth (Mar. 11, 2011).
[70] *Id.*
[71] Senator Barack Obama, Meeting with the Editorial Board of the San Francisco Chronicle (Jan. 2008).
[72] Neil King Jr. and Stephen Power, *Times Tough for Energy Overhaul*, WALL ST. J., Dec. 12, 2008.
[73] *See* STAFF OF H. COMM. ON OVERSIGHT AND GOV'T REFORM, 112TH CONG., REPORT ON RISING ENERGY COSTS: AN INTENTIONAL RESULT OF GOVERNMENT ACTION, May 23, 2011 [hereinafter Committee Report].

Policies that Suppress Domestic Production of Oil and Gas."[74] The result of these government actions are artificially constrained production of fossil fuels and energy that is more expensive for everyone.[75]

Expensive Energy is Economically Destructive

Energy is the so-called "master resource;"[76] it is pervasive and essential at every stage in the production process.[77] According to economists, "[e]nergy consumption is often used as a proxy for economic growth,"[78] and — where economists have studied the relationship empirically — they often conclude that the channel from energy use to economic growth is two directional.[79] In other words, increased energy usage is correlated with more economic growth, and vice versa. As a country's economy grows, industries develop and expand, and — as a consequence — producers demand more energy to facilitate expansion.

Economists of all stripes acknowledge the pernicious effects higher energy prices will have on Americans. Among them is Federal Reserve Chairman Ben Bernanke, who stated, "rising energy prices pose a risk to both economic activity and inflation."[80] According to the International Energy Agency's chief economist, high and increasing energy prices will threaten the fragile economic recovery.[81] The American Public Power Association (APPA) has reported green energy regulations "will set in motion a chain of events that will lead to high electricity prices, plant closures, and job losses at a time when the economy is hurting."[82] Furthermore, the Consumer Energy Alliance (CEA) released a report entitled "Energy, Jobs & the Economy: Powering America's Future," in June 2011, which found an alarming connection between high energy costs and restrictions of new economic activity.[83]

Capital that would have been invested in job creation has been siphoned off by higher energy bills. CEA found "that blockages of American energy development could cost the U.S. economy more than 500,000 jobs, and rising energy prices will cost the transportation sector $51 billion more in 2011, as compared to just one year ago."[84] CEA is suggesting that the impact of high energy prices is reflected in more than the just pain-at-the-pump. High energy prices also dampen market activity and thereby job creation.

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[74] *Id.*
[75] *Id.*
[76] ROBERT BRADLEY, *ENERGY:* THE MASTER RESOURCE (2004).
[77] Marcelo Arbex & Fernando S. Perobelli, *Solow meets Leontief: Economic Growth and Energy Consumption*, ENERGY ECONOMICS 32, 44, (2010).
[78] *Id.*
[79] *Id.*
[80] *Fed Chief Warns Energy Prices a Danger*, CBS NEWS (Apr. 14, 2009) *available at* http://www.cbsnews.com/8301-500395_162-1551995.html.
[81] International Energy Agency, *High Oil Prices Pose Threat to Global Economic Recovery* (Jan. 5, 2011) *available at* http://www.iea.org/index_info.asp?id=1737.
[82] Press Release, *CEA Report: America Needs More Domestic Energy Supplies* (June 29, 2011) *available at* http://consumerenergyalliance.org/2011/06/cea-report-america-needs-more-domestic-energy-supplies/.
[83] *Id.*
[84] *Id.*

Fossil Fuel Use Has Been a Major Driver of American Prosperity

The positive relationship between access to affordable energy sources and economic growth is undeniable; fossil fuels have been the backbone of American prosperity. As an essential factor of production, energy is, by definition, a key component of economic output.[85] By extension, the quality of life that a society achieves is proportional to the amount of energy that a country consumes, along with the efficient use of that energy.[86] Overall, countries that use more energy are also countries that are more prosperous. Although other factors — such as geography, political institutions, and natural resources — are also important in determining a society's overall prosperity, there is no doubt that energy use boosts "productivity, which boosts wealth." The development and use of traditional energy sources in the United States — which has spurred tremendous economic growth and job creation — may be the quintessential example of this strong correlation.

Carbon-based energy, or fossil fuels, are defined broadly as coal, petroleum (or crude oil) and natural gas. Since emerging in the modern era as "far more concentrated, portable, reliable and cost-effective energy carriers" than alternatives, fossil fuels have fostered economic growth in the U.S. and around the world.[87] The U.S. Energy Information Administration (EIA) credits carbon-based energy with spawning "one of the most profound social transformations in history."[88] Fossil fuels currently meet more than 80% of U.S. energy demand, with petroleum satisfying half of that demand.[89]

The expanded use of fossil fuels throughout history has facilitated the development of some of our nation's most productive industries. For example, the expanded use of coal fostered industrialization in the second half of the 19th century,[90] shifting a chiefly agricultural economy to one "based predominately on factory-based manufacturing industry...."[91] As technology improved, oil, and, to a lesser extent, natural gas, eventually surpassed coal as the biggest source of primary U.S. energy in the mid 20th Century.[92] Oil is credited with "the rise and development of capitalism and modern business" itself.[93] Today, coal, oil and natural gas form the backbone that supports the American economy.

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[85] David I. Stern, *Energy and Economic Growth*, (Apr. 2003), *available at* http://www.localenergy.org/pdfs/Document%20Library/Stern%20Energy%20and%20Economic%20Growth.pdf.
[86] James C. Williams, *History of Energy*, THE FRANKLIN INSTITUTE, (Apr. 25, 2006), *available at* http://www.fi.edu/learn/case-files/energy.html.
[87] BRADLEY, *supra* note 76.
[88] Institute for Energy Research (IER), Fossil Fuels, http://www.instituteforenergyresearch.org/energy-overview/fossil-fuels/ (last visited Sept. 20, 2011).
[89] Energy Information Administration (EIA), *Energy in Brief*, (Updated: Oct 28, 2010), *available at* http://www.eia.doe.gov/energy_in_brief/major_energy_sources_and_users.cfm.
[90] U.S. Department of Energy, A Brief History of Coal Use, http://fossil.energy.gov/education/energylessons/coal/coal_history.html (last visited Sept. 21, 2011).
[91] TIM JACKSON, MATERIAL CONCERNS: POLLUTION, PROFIT AND QUALITY OF LIFE, 24, 1996.
[92] *See* EIA, *Annual Energy Review 2009*, (Aug. 2010), *available at* http://www.eia.gov/totalenergy/data/annual/pdf/aer.pdf.
[93] DANIEL YERGIN, THE PRIZE: THE EPIC QUEST FOR OIL, MONEY & POWER, 13, 1992.

Businesses Don't Need the Federal Government to tell them to Use Energy Efficiently

Because energy is a "master resource," and usually comprises one of the largest input costs for the manufacturing industry, there is a built-in market incentive to use energy efficiently. History has proven this theory to be correct. Since 1970, the amount of energy needed to produce a dollar's worth of output in the U.S. has decreased dramatically.[94] More specifically, the quantity of energy needed to produce $1 of GDP today is about half the amount needed in 1970, adjusted for inflation.[95] Similarly, carbon emissions per dollar of GDP in the U.S. have fallen in half since 1970 and are nearly a third of what they were in 1950.[96] In fact, energy efficiency in the U.S. has steadily risen for at least the last two centuries.[97] This has been a result of businesses responding to market incentives to use energy as efficiently as possible.

According to the International Energy Agency (IEA), energy efficiency "can reduce the need for investment in energy infrastructure, cut fuel costs, increase competitiveness and improve consumer welfare."[98] In short, "energy efficiency investment is a sound business strategy in today's manufacturing environment."[99] Industry wide energy efficient improvements that are applied to traditional fossil fuel sources have turned America into possibly "the most energy-efficient society in human history."[100]

The correlation between energy consumption and economic activity runs in the opposite direction as well. For instance, during the economic recession from late 2007 to 2009 — the longest and most severe contraction since World War II — U.S. demand for oil shrunk 8.1% from its December 2007 peak to March 2009.[101] In total, "world ... energy consumption contracted by 1.2 percent in 2008 and by an estimated 2.2 percent in 2009, as manufacturing and consumer demand for goods and serviced declined."[102] Though U.S. energy consumption has since rebounded, it is still below long-term trends, but the U.S. EIA expects "energy intensity" will decline by an average of 1.9 percent per year from 2009 to 2035 as recovery continues.[103]

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[94] U.S. Energy Information Administration, *Annual Energy Review,* 21, (Aug. 2010), *available at* http://www.eia.gov/totalenergy/data/annual/#consumption.
[95] *See id.* (Discussing how energy consumption per dollar of GDP actually decreased from 15.89 in 1970 to 7.28 in 2009).
[96] U.S. Energy Information Administration, Table 1.5 Energy Consumption, Expenditures, and Emissions Indicators, 1949- 2009, http://205.254.135.24/totalenergy/data/annual/txt/ptb0105.html (last visited Sept. 20, 2011).
[97] Lewis E. Lehrman, *Energetic America: The Energy Policy the U.S. Needs*, THE WEEKLY STANDARD, (Sep. 29, 2003).
[98] International Energy Agency (IEA), Energy Efficiency, http://www.iea.org/subjectqueries/keyresult.asp?keyword_id=4122 (last visited Sept. 20, 2011).
[99] Christina Galitsky & Ernst Worrell, *Energy Efficiency Improvement and Cost Saving Opportunities for the Vehicle Assembly Industry,* ERNST ORLANDO LAWRENCE BERKELEY NAT'L LAB. 1 (March 2008), *available at* http://ies.lbl.gov/iespubs/energystar/vehicleassembly.pdf.
[100] STEPHEN MOORE & JULIAN L. SIMON, IT'S GETTING BETTER ALL THE TIME: GREATEST TRENDS OF THE LAST 100 YEARS 100 (2010).
[101] Steve Kopits, *Recession and Oil Demand: Looking to Recovery*, CUTTING EDGE Aug. 10, 2009.
[102] U.S. Energy Info. Admin., International Energy Outlook 2010- Highlights http://205.254.135.24/oiaf/ieo/pdf/highlights.pdf (last visited Sept. 21, 2011).
[103] U.S. Energy Info. Admin., *Annual Energy Outlook 2011with Projections to 2035*, 62, http://www.eia.gov/forecasts/aeo/ (last visited Sept. 21, 2011).

Traditional Energy Industries Have Generated Countless Jobs

In addition to this relationship between energy use and job growth, the energy sector itself is a significant source of job creation in the U.S. Today the oil and natural gas industry has grown to one of the largest employers in the country — with the amount of workers it employs larger than the populations of 15 states.[104] Most recent studies estimate that the U.S. oil and natural gas industry's total employment contribution to the national economy amounts to 9.2 million full-time and part-time jobs — 5.3% of the total employment in the country.[105]

In 2008 and 2009, industry salaries in the exploration and production sectors were more than twice the national average for all U.S. jobs.[106] The total income generated from all of these jobs adds up to $534 billion, or 6% of the nation's total labor income.[107] Each direct job in this industry also supports about three jobs elsewhere in the U.S. economy.[108] In all, the industry's total value-added contribution to the economy amounts for over $1 trillion,[109] about 7% of U.S. GDP in calendar year 2010.[110]

These job opportunities could be increasingly plentiful because of the discovery of large oil and natural gas deposits in the U.S. As highlighted in the Committee's May 2011 report,[111] the development of the shale and natural gas industry is a valuable source of this job growth.[112]

Oil and gas jobs have typically attracted new residents to the states that are fostering a climate for business investment in fossil fuels development. According to the 2010 Census, for instance, natural gas development jobs raised the population in Wyoming by 14.1% to 563,626.[113] A senior economist at the state's Economic Analysis Division confirms the increase is "a completely employment-driven population change."[114]

There is a similarly favorable outlook on job growth in North Dakota as a result of the oil available in the Williston Basin. According to one report, "North Dakota is booming. Its unemployment rate is the lowest in the country, 3.7 percent, and so many people have moved there for jobs that last year local housing officials declared a housing crisis."[115]

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[104] U.S. Census Bureau, *Annual Estimates of the Resident Population for the United States, Regions, States and Puerto Rico: April 1, 2000 to July 1, 2009*, (Dec. 2009), *available at* http://www.census.gov/popest/states/NST-ann-est.html.
[105] PricewaterhouseCoopers, LLC, *The Economic Impacts of the Oil and Natural Gas Industry and the U.S. Economy in 2009:Employment, Labor Income and Value Added*, (May 2011) [hereinafter PWC Study].
[106] Jonah Goldberg, *Drill, Obama, Drill: How to Really Create Jobs*, N.Y. POST, (Jan. 22, 2011).
[107] *See* PWC Study *supra* note 106.
[108] *Id.*
[109] *Id.*
[110] $1 Trillion is about 7% of $14.66 Trillion (GDP in 2010).
[111] *See* Committee Report *supra* note 73.
[112] Am. Chemistry Couns., *Shale Gas and New Petrochemicals Investment: Benefits for the Economy, Jobs, and US Manufacturing*, 21 (Mar. 2011), *available at* http://www.americanchemistry.com/ACC-Shale-Report.
[113] Melanie Eversley, *Natural Gas Jobs Fuel Wyoming's Population Growth*, USA TODAY, Mar. 3, 2011.
[114] *Id.*
[115] Eric Konigsberg, *Kuwait on the Prairie: Can North Dakota Solve the Energy Problem?*, NEW YORKER, Apr. 25, 2011 at 43.

A new study by Penn State University projects that, for the state of Pennsylvania alone, "the number of workers supported by the gas industry would likely hit 156,000 this year, up from 60,000 in 2009 and 140,000 last year."[116] These increased opportunities have allowed many to realize the American dream. According to recent reports, increased production of the Marcellus Shale in West Virgina has lead to a shortage of school bus drivers. Truck drivers on Marcellus shale crews are earning between $45,000- $100,000 compared to the $17,000 they used to make for driving school buses.[117] One resident attested that that at "church he's met new members recently arrived from Montana and New Mexico to make $20 an hour on Marcellus shale crews in the region."[118] However, these jobs are being threatened by bureaucratic overreach as the U.S. Environmental Protection Agency, the Department of Interior, and the Department of Energy are in a race to see which agency can regulate the process known as hydraulic fracturing the fastest.[119]

Coal mining also has the potential to generate more employment opportunities in the U.S. In 2010, the surface and underground coal mining industry supported almost 90,000 jobs across the country, the vast majority of which are located in the Appalachian region.[120] (The Appalachia region had 1,639 mining operations as of 2009, which employed 57, 979 workers).[121] Moreover, a recent study finds that every job in coal mining supports about three other jobs indirectly in the local community — from truckers and railroad workers to equipment suppliers,[122] suggesting the industry could have indirectly fostered around 300,000 jobs across the country last year.

Unfortunately, job opportunities in coal mining are less promising today due to recent regulatory overreaches by the U.S. Environmental Protection Agency (EPA) regarding its authority to oversee coal mining site permits under the Clean Water Act (CWA).[123]

At a hearing in July of this year, the Committee's Subcommittee on Regulatory Affairs, Stimulus Oversight, and Government Spending found that the EPA has enacted a de facto permitorium on CWA permits in the Appalachia region through its "enhanced review" process.[124] The 79 permits flagged for "enhanced review" are expected to produce over two billion tons of coal through operations and support 17,806 existing and new jobs and 81 small

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[116] Fredric U. Dicker, *It's a ga$! New study fuels fracking backing*, N.Y. POST, July 22, 2011.
[117] Jim Bissett, *Bus Driver: 'We Have a Crisis,'* ASSOCIATED PRESS, Dec. 12, 2010.
[118] *Id.*
[119] See Committee Report *supra* note 73.
[120] Nat'l Mining Ass'n, *Trends in U.S. Coal Mining 1923- 2010*, (June 28, 2011), *available at* http://www.nma.org/pdf/c_trends_mining.pdf.
[121] Nat'l Mining Ass'n, *U.S. Coal Mine Employment by State, Region and Method of Mining-2009*, (Oct. 29, 2010), available at http://www.nma.org/pdf/c_employment_state_region_method.pdf.
[122] Kentucky Coal Association, *Kentucky Coal Facts: Kentucky Coal Provides Jobs, Energy, Tax Revenue, and Economic Growth*, (11th ed. 2011), *available at* http://www.kentuckycoal.org/documents/Coal%20Facts%202010--11th%20Edition.pub.pdf.
[123] *Improving EPA Review of Appalachian Surface Coal Mining Operations Under the Clean Water Act, National Environmental Policy Act, and the Environmental Justice Executive Order*, U.S. Environmental Protection Agency, Apr. 1, 2010.
[124] *EPA's Appalachian Energy Permitorium Job Killer or Job Creator? Hearing Before the Subcomm. On Regulatory Affairs, Gov't Spending, and Stimulus Oversight*, 112th Cong. (2011).

businesses.[125] EPA's actions are creating massive uncertainty in the coal mining industry, putting jobs in Appalachia at risk, and threatening our domestic energy security in the process.

Other Countries Realize the Benefits of Cheap Traditional Energy

President Obama's quixotic crusade to replace energy produced by fossil fuels with energy produced from green technologies occurs as fossil fuels establish their dominant position on the worldwide stage. According to energy experts, growing global demand for energy will "secure the dominant position of fossil fuels for at least the next several decades."[126] Pursuit of the President's vision may result in slightly increased use of alternative resources, but, it will likely prevent America's entrepreneurs from successfully competing against foreign rivals who benefit from relatively inexpensive and widely available fossil fuels. Ultimately, the President's green economy makes us a less competitive nation.

In today's global economy, job creators in the U.S. must compete against manufacturers in China, Brazil, and India just to name a few. While U.S. energy consumption has remained relatively stable since 1990, [127] largely due to increased energy efficiency, our competitors have greatly expanded their consumption of fossil fuels. For example, between 1990 and 2008, China, Indonesia, and Malaysian energy consumption grew by 300 percent, due almost entirely to expanded use of fossil fuels. [128] Brazilian oil production has also increased by 300 percent over that same time period.[129] Overall, total electricity generation worldwide increased by 70 percent, while U.S. generation increased by only 35.5 percent.[130]

As noted, a shift to a green economy necessitates a shift away from traditional affordable sources of energy. Meanwhile, China is one of the best examples of a country taking advantage of this cheap energy as part of its plan to fuel rapid economic expansion. While the U.S. economy is expanding at anemic rates, China, a major U.S. competitor, has one of the fastest growing economies in the world, with 9.8 percent annual growth.[131] While news reports frequently discuss China's commitment to developing green energy, in reality the bulk of China's supply comes from traditional sources.[132] In 2007, 70 percent of Chinese energy came from coal.[133] Moreover, in order to sustain the economic growth and job creation that comes with its expansion, China plans to build 500 coal-fired power plants in the next decade.[134] That

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[125] STAFF OF S. COMM. ON ENVIRONMENT AND PUBLIC WORKS, 111TH CONG., REPORT ON THE OBAMA ADMINISTRATION'S OBSTRUCTION OF COAL MINING PERMITS IN APPALACHIA, May 21, 2010.
[126] Fossil Fuels *supra* note 89.
[127] ROBERT BRYCE, POWER HUNGRY: THE MYTHS OF "GREEN" ENERGY AND THE REAL FUELS OF THE FUTURE 60 (2010).
[128] *Id.*
[129] Brazil Crude Oil Production By Year, http://www.indexmundi.com/energy.aspx?country=br&product=oil&graph=production (last visited Sept. 14, 2011).
[130] BRYCE *supra* note 128.
[131] RICHARD J. CAMPBELL, CHINA AND THE UNITED STATES – A COMPARISON OF GREEN ENERGY PROGRAMS AND POLICIES, Congressional Research Service, Mar. 30, 2011.
[132] *Id.*
[133] Louisa Lim, *China's Coal-Fueled Boom Has Costs*, NATIONAL PUBLIC RADIO, May 2, 2007; U.S. Energy Information Administration, China Energy Data and Statistics, July 2009, http://www.eia.gov/emeu/cabs/China/Background.html (last visited Sept. 14, 2011).
[134] Louisa Lim, *China's Coal-Fueled Boom Has Costs*, National Public Radio, May 2, 2007.

is roughly one coal-fired power plant per week. These coal-fired power plants will allow China to increase its energy generating capacity by approximately 53 gigawatts a year, enough energy to power approximately 50 million homes.[135]

Green Energy Offers Only the False Hope of Energy Independence

The President often argues that green energy development is necessary because America cannot rely on foreign sources of energy. At a Georgetown University speech in March 2011, he lamented, "Presidents and politicians of every stripe have promised energy independence, but that promise has so far gone unmet"[136] and stated he has a plan, namely the green energy agenda, to decrease dependence on foreign sources of energy. However, the President's argument rests on the mistaken belief that America is necessarily beholden to foreign nations. According to energy expert Robert Bryce:

> In all, the United States produces about 74 percent of the primary energy it consumes, a fact seldom mentioned by the many neoconservatives and energy posers who have been sounding the alarm about the evils of foreign energy .... And it's that power availability that has turbocharged the American economy and made it into a powerhouse.[137]

Moreover, the Congressional Research Service reports that the U.S. now has the largest energy resources of any country on the planet.[138] Accordingly, it appears that another path towards energy independence is to utilize our abundant domestic resources to their fullest capacity. Such an approach would eliminate the false need to completely overhaul our energy sector, as advocated by the President. Unfortunately, in addition to advocating for green energy, the Obama Administration has put in place barriers that prevent the expeditious development and utilization that is essential to the extraction and commoditization of these domestic resources.[139] As detailed in the Committee's May 2011 report, red tape, regulatory barriers, and permitoriums on production have effectively prevented the United States from moving toward energy independence.[140] Ironically, the State Department and other federal agencies are actively promoting the development of traditional energy sources in foreign countries.[141]

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[135] CAMPBELL *supra* note 132.
[136] President Barack Obama, Address at Georgetown University A Secure Energy Future (Mar. 30, 2011).
[137] BRYCE *supra* note 128 at 78.
[138] Glover *supra* note 67.
[139] *Supra* Section II.
[140] Committee Report *supra* note 73.
[141] *See e.g.* Global Shale Gas Initiative (GSGI) http://www.state.gov/s/ciea/gsgi/index.htm (last visited Sept. 14, 2011).

China Benefits From U.S. Pursuit of Green Energy

Despite the dominance of fossil fuels in China's energy mix, China does have a healthy renewable energy industry.[142] This industry is aided by the fact that China has a near monopoly on rare earth minerals, which gives the country a significant incentive to invest in and promote the widespread utilization of green technologies.[143] Rare earth metals are essential components of the most popular green technologies like hybrid and electric cars, wind turbines, and solar panels. For example, Neodymium is used in magnets for wind turbines and Lanthanum is used in hybrid automobile batteries.[144] Not surprisingly, China is well aware of its strategic position in this arena and recently instituted a policy restricting the ability of foreign technology companies to obtain rare earth metals.[145] There is some concern that this policy could essentially force U.S. manufacturers of green technologies to locate in China so that they may gain access to these resources.[146]

Access to rare earth metals is not the only competitive advantage that China holds over green technology. Cheap labor and production costs make China the top green technology producer. In an effort to compete with these companies and foster domestic manufacturing of green technologies, the Obama Administration has heavily subsidized manufacturers of wind and solar technology. The failure of green manufacturers to compete even when heavily subsidized, raises questions as to whether the solar industry in the United States could ever be self sustaining.

While it is clear why China, which controls 90 percent of the world market for these rare earth materials, would promote the use of green technologies, it is not clear why President Obama would, effectively, encourage reliance on China for access to these materials, in lieu of using domestically available and affordable resources. In short, a forced movement toward green energy will not lead to a new era of energy independence, but rather will make our country more reliant on China and could also encourage the off-shoring of green jobs.

The Obama Energy Hypocrisy: While Discouraging Fossil Fuel Use Domestically, the Administration Invests in Traditional Energy Sources Abroad

Despite having access to vast supplies of domestic natural gas reserves, the Obama Administration continues to create uncertainty about U.S. natural gas production while aggressively promoting its production abroad. The U.S. Environmental Protection Agency (EPA), Department of Energy (DOE), and the Department of the Interior, as well as their allies in the environmental lobby, have taken aim at the natural gas industry and more specifically the practice of hydraulic fracturing (fracking).[147] These agencies have signaled their respective interest in regulating fracking and are working on policies that will constrain the domestic industry.[148]

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[142] CAMPBELL *supra* note 132.
[143] Tatyana Shumsky, *Testing Their Metals*, WALL ST. J., Sept. 12, 2011.
[144] *Id.*
[145] Keith Bradsher, *Chasing Rare Earths, Foreign Companies Expand in China*, N.Y. TIMES, Aug, 24, 2011.
[146] *Id.*
[147] *See* Committee Report *supra* note 73.
[148] *Id.*

Meanwhile, the State Department actively promotes the process of hydraulic fracturing as a ground-breaking technology through the Global Shale Gas Initiative (GSGI). The GSGI helps "countries seeking to utilize their unconventional natural gas resources to identify and develop them safely and economically."[149] To date, countries such as China and India use the program to promote natural gas exploration.[150] Accordingly, through this initiative, the U.S. is helping our competitors expand their domestic production of natural gas, while other federal bureaucrats in the Obama Administration work to hinder our own ability to do the same.

In addition to the GSGI program, other federal agencies are working to promote expanded international use of fossil fuels. On April 18, 2011, the U.S. Export-Import Bank, an independent agency of the federal government, announced a $2.84 billion loan for a project to expand and upgrade an oil refinery[151] in Cartagena, Colombia.[152] The money would go to Reficar, the Colombian national oil company.[153] This is the second largest project that the U.S. Export-Import Bank has ever financed.[154] Previously, the bank loaned $3 billion to finance a liquid natural gas project in Papua, New Guinea.[155]

Other entities within the Obama administration have also promoted the extraction of traditional energy sources in foreign countries. For example, in August 2009, the U.S. loaned $2 billion to Brazil's state-owned oil company, Petrobras, to finance exploration of offshore oil reserves.[156] On March 19, 2011, President Obama reiterated his commitment to Brazilian offshore drilling. He stated, "We want to help with technology and support to develop these oil reserves safely, and when you're ready to start selling, we want to be one of your best customers."[157] The assistance to Brazil occurred while the Bureau of Ocean Energy Management (BOEMRE) was imposing first a moratorium, followed by a permitorium on the domestic oil industry.[158]

It appears that when presented with the option of promoting domestic energy to create American jobs and foreign investment in these sources, the Obama Administration would rather choose to assist foreign economies than our own.

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[149] Global Shale Gas Initiative *supra* note 142.
[150] *Id.*
[151] A new oil refinery has not been built in the United States since 1995.
[152] Terence P. Jeffrey, *U.S. Gov't Agency Plans $2.84 Billion Loan for Oil Refinery – in Colombia*, CNSNEWS.COM Apr. 18, 2011.
[153] *Id.*
[154] *Id.*
[155] *Id.*
[156] Review and Outlook, *Obama Underwrites Offshore Drilling*, WALL ST. J., Aug. 18, 2009.
[157] President Barack Obama, Address at CEO Business Summit in Brasilia, Brazil (Mar. 19, 2011).
[158] *See* Committee Report *supra* note 73.

PART III: FORCING A GREEN ENERGY TRANSITION WAS ECONOMICALLY FLAWED FROM THE START

It is Counterproductive to use Green Energy Mandates as a Jobs Program

Proponents of green energy present it as a win-win situation: we can help the environment and create jobs. According to the President, using the government to force a transition to green energy will result in "creating untold numbers of new jobs and new businesses right here in the United States."[159] From a political perspective, it is easy to see why the President consistently emphasizes green jobs: the unemployment rate is still above 9 percent and, according to a June 2011 report from the Bureau of Labor Statistics, the percentage of working adults is now lower than at any other point during the recession at 58.2%. Moreover, the U.S. labor force is experiencing the longest average duration of unemployment in the nation's history.[160] However, it is not at all clear that a policy favoring "green jobs" of the future will help Americans get back to work today.

One characteristic of "green jobs" often touted by the Obama Administration is the fact that green industries rely heavily on manpower, a trait that "makes them especially alluring when it comes to government-led job creation" measured in terms of jobs "created or saved."[161] However, in studies boasting green job creation, there is a troubling and consistent preference for inefficiency.[162] This is contrary to the fundamental economic principal that high labor productivity is a measurement of an efficient and healthy economy.[163] A national policy that favors energy sources that are labor intensive and produce energy less efficiently essentially diverts resources away from investment and towards these low efficiency jobs. According to a leading expert, an economy based on "high paying, low-productivity jobs … would require an economic structure unknown in human history."[164]

While the energy sector is a very large source of employment (as noted above), it is a mistake to treat the energy industry as a government jobs program. Dr. David Montgomery, senior vice president at NERA Economic Consulting and a former CalTech professor, has explained:

> It is a fundamental error in policymaking and economics to design or justify federal support for new energy technologies as a jobs program. It subverts the entire purpose of government involvement

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[159] President Barack Obama, Remarks by the President on America's Energy Security (Mar. 30, 2011).
[160] Bureau of Labor Statistics, Employment Situation Summary, *Table A-1. Employment status of the civilian population by sex and age* (June 8, 2011) *available at* http://www.bls.gov/news.release/empsit.t01.htm.
[161] Liz Wolgemuth, *The Truth and Green Jobs*, U.S. NEWS AND WORLD REPORT, Mar. 25, 2009.
[162] *Witnesses Provide Various Definitions of Green Jobs Before House Workforce Panel*, DAILY LABOR REPORT, Apr. 4, 2009, 60.
[163] *Green Jobs and Red Tape: Assessing Federal Efforts to Encourage Employment: Hearing Before the Subcomm. On Investigations and Oversight of the H. Comm. on Science, Space, and Technology*, 112th Cong. (2011) (testimony of W. David Montgomery).
164 Andrew P. Morriss et. al., *7 Myths About Green Jobs*, PERC Policy Series, No. 44, 2009 *available at* http://www.perc.org/files/ps44.pdf.

> in R&D, and is the greatest single cause of the continued failure of energy technology programs.[165]

However, even accepting the premise that it is appropriate to base a jobs program on green energy development, the Administration fails at this objective.

The economic flaws in the theory undergirding green jobs is demonstrated in the failure of the effort to actually create a significant number of jobs. As a campaign promise, President Obama said he would help America create five million green jobs within ten years.[166] Evaluating this promise in July 2011, the Pulitzer Prize winning *Politifact* found that the President was far from fulfilling this goal.[167] Citing a White House estimate that 225,000 green jobs have been created or saved, *Politifact* states: "Even if the 225,000 number is accurate, it's clear that President Obama has a long way to go in fulfilling his pledge to create 5 million green jobs."[168]

Federal Subsidization Will Not "Spark" a Green Energy Industry in America

Advocates of subsidizing green energy often argue that high upfront costs and subsidization are necessary in order to assist a fledgling industry get started.[169] The President claims that green energy spending will "spark new jobs, industries and innovations," which will mean a "country that is safer, that is healthier, and that's more prosperous."[170] The implication in the use of the term "spark" is that we must invest in these companies now to help them become viable on their own. This implication, however, relies on the erroneous premise that the green energy sector is an "infant industry." That is, "there are infant industries that deserve protection so that they can grow up to become national champions."[171]

However, while the magnitude and ambition of the Obama administration's environmental agenda is unprecedented, the federal government has been subsidizing green energy for decades. Since 1948, taxpayers have expended billions on such projects in the form of research and development spending.[172] Professor Andrew Morriss of the University of Alabama explains: "We know the infant industries argument doesn't work because we've tried it for 200 years in different places around the world and it never works. The infants never grow up, they just get bigger and cry louder and demand more protection."[173] Furthermore, MIT professors Thomas H. Lee, Ben Ball, Jr., and Richard Tabors have noted that with regard to

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[165] Montgomery Testimony *supra* note 164.
[166] Create 5 million "green jobs," PolitiFact.com, http://www.politifact.com/truth-o-meter/promises/obameter/promise/439/create-5-million-green-jobs/ (last visited Sept. 20, 2011).
[167] *Id.*
[168] *Id.*
[169] David Sirota, *Green energy, the cost-efficient option*, SALON, Sept, 21, 2011 *available at* http://www.salon.com/news/david_sirota/2011/09/21/green_energy_truth.
[170] THE WHITE HOUSE, PLAYING TO WIN: THE GLOBAL CLEAN ENERGY RACE (2011) *available at* http://www.whitehouse.gov/ sites/ default/files/uploads/clean_energy_report_vpotus.pdf.
[171] The False Promise of Green Energy, Book Forum video, The Cato Institute, *available at* http://www.cato.org/event.php?eventid=7999.
[172] Deborah D. Stine, *The Manhattan Project, the Apollo Program, and Federal Energy Technology R&D Programs: A Comparative* Analysis, CRS REPORT FOR CONGRESS June 30, 2009, Table B-5 and B-6; *see also* Sissine *supra* note 8 at Table 1.
[173] The False Promise of Green Energy *supra* note 172.

government investment in energy, "the experience of the 1970s and 1980s taught us that if a technology is commercially viable, then government support is not needed, and if a technology is not commercially viable, no amount of government support will make it so."[174]

The Green Energy Experiment: Imprudent and Ill-Fated from the Beginning

In addition to raising energy prices, the President has directed a significant amount of taxpayer dollars to the subsidization of green technologies. On June 15, 2010, President Obama commented from the Oval Office: "the transition to clean energy has the potential to grow our economy and create millions of jobs – but only if we accelerate that transition. Only if we seize the moment."[175]

In an effort to seize this moment, the President's $825 billion[176] stimulus enacted in February 2009 heavily subsidized green initiatives, including both renewable energy and energy efficiency efforts. The stimulus included $90 billion[177] in clean energy investments with "more than $45 billion provided in appropriations for energy programs, mainly for energy efficiency and renewable energy."[178] The largest sum of stimulus money for green projects was allocated to the Department of Energy, which received at least $22.8 billion in funding for research and development, manufacturing grants, grants for state and local governments, and loan guarantees for renewable energy.[179]

Green stimulus appropriations were also provided to the Department of Defense, the General Services Administration, the Environmental Protection Agency, the Department of Labor, the Department of Transportation, the Department of Housing and Urban Development, and the Department of Education, among other Federal agencies.[180] The primary uses for this funding include green retrofitting of buildings, the procurement of green vehicles, training for green energy employees, and other efforts intended to "reduc[e] energy consumption or greenhouse gas emissions."[181] A large portion of the Federal funding for green energy initiatives comes in the form of tax breaks and credits, as the stimulus "also provides more than $21 billion in energy tax incentives, primarily for energy efficiency and renewable energy."[182] As we all know, these subsidies were all paid for by adding to our national debt, at a time when the solvency of the U.S. federal government is in peril.

In addition to instituting an institutional preference for green energy, the President has determined that the transition to the green economy take place in an expedited timeframe. The President's 2011 State of the Union Address set a goal that "by 2035, 80 percent of America's

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[174] THOMAS H. LEE, ENERGY AFTERMATH: HOW WE CAN LEARN FROM THE BLUNDER OF THE PAST TO CREATE A HOPEFUL ENERGY FUTURE, 167, 1990.
[175] President Barack Obama, Remarks by the President to the Nation on the BP Oil Spill (June 15, 2010).
[176] *See Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from April 2011 Through June 2011*, Congressional Budget Office, Aug. 2011.
[177] COUNCIL *supra* note 7.
[178] Sissine *supra* note 8.
[179] *Id.*
[180] *Id.*
[181] *Id.* at 16.
[182] *Id.* at Summary.

electricity will come from clean energy sources."[183] This goal is unrealistic based on pure technological feasibility.

The Green revolution represents a fundamental departure from the way our economy has functioned since the industrial revolution. Energy Secretary Chu has opined that "shifts in energy supplies take decades, typically half a century."[184] The President is advocating for an even more ambitious timeframe. In addition to being unproven, green technology is also barely a factor in the nation's current energy mix. In contrast to the vast reserves of fossil fuels in the U.S., discussed in Part II,[185] the latest data demonstrates that renewable[186] energy only satisfies eight percent of total energy consumption.[187] When you subtract out hydroelectric energy and geothermal energy, wind and solar energy combined provide less than 1% of our nation's energy resources.[188]

Despite the inconsequential amount of energy now obtained from renewable sources, the Administration contends that a transition to "green" energy is possible and will be economically advantageous.

Lessons from Europe

European nations have been aggressively pushing green energy for years and the Obama Administration sought to use them as an example. On January 16, 2009, President Obama stated:

> And think of what's happening in countries like Spain, Germany and Japan, where they're making real investments in renewable energy. They're surging ahead of us, poised to take the lead in these new industries. This isn't because they're smarter than us, or work harder than us, or are more innovative than we are. It's because their governments have harnessed their people's hard work and ingenuity with bold investments – investments that are paying off in good, high-wage jobs – jobs they won't lose to other countries.[189]

This nationalistic appeal has come back to haunt the Obama Administration as the European experience with green energy initiatives has proven to be a failure.

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[183] President Barack Obama, State of the Union Address (Jan. 25, 2011).
[184] Chris Zwicke, *Energy Secretary Chu Fields Questions at ECO:nomics,* Erb Institute, Mar. 9, 2010, *available at* http://erb.umich.edu/erbperspective/2010/03/09/energy-secretary-chu-fields-questions-at-economics/.
[185] Committee Report *supra* note 73 at 7 (stating "U.S. proven reserves of oil total 19.1 billion barrels, reserves of natural gas total 244.7 trillion cubic feet, and natural gas liquids reserves of 9.3 billion barrels").
[186] Renewable & Alternative Fuels, U.S. Energy Information Administration, http://www.eia.gov/renewable/ (last visited Sept. 21, 2011) (defining renewable as Solar/PV, Geothermal, Waste, Wind, Biofuels, Wood, and Hydroelectric Power).
[187] Renewable Energy Consumption by Major Source, U.S. Energy Information Administration, http://www.eia.gov/totalenergy/data/annual/pdf/sec10_2.pdf (last visited Sept. 21, 2011).
[188] *Id.*
[189] Press Release, *President-elect Obama speaks on an American Recovery and Reinvestment Plan in Ohio,* Jan. 16, 2009.

A quick review of key countries demonstrates what the U.S. can expect if it is to continue to pursue the Obama Administration's green energy agenda. In every instance, government favoritism for the clean energy industry removes capital from other sectors of the economy that could have more effectively utilized it. This favoritism has meant a lack of resources to invest in more productive industries because it has been redirected toward green. The studies show what green jobs skeptics have long maintained: an increase in the number of green jobs is not indicative of a net increase in total jobs.[190]

Spain. A well-documented study of the Spanish government's green jobs experiment conducted by Gabriel Calzada Álvarez and his colleagues at the Universidad Rey Juan Carlos produced results that the Obama Administration should find alarming. Published in March 2009, the study found that because resources were being funneled into the green energy sector, other more profitable parts of the economy suffered. Professor Calzada's study calculated that, ultimately, there were "2.2 jobs destroyed for every "green job" created."[191] Due to the subsidies expended per worker in the renewable sector, government financing the creation of green jobs led to a reduction in overall employment opportunity at a rate of 9 jobs destroyed for every 4 added.[192]

Italy. The Bruno Leoni Institute's Luciano Lavecchia and Carlo Stagnaro conducted a study to understand the impact of government efforts to promote green jobs in Italy. Their findings indicate that the value of creating green jobs is low when the factors associated with government support of the green energy sector are taken into account. They cite three paradigmatic problems with governmental initiatives to advance green jobs: the inherent decline in the overall potential for job growth, the creation of jobs that are only temporary, and the inevitable corruption and fraud tied to an industry that exists almost entirely on government subsidies. They find "the same amount of capital that creates one job in the green sector, would create 6.9 or 4.8 if invested in the energy industry or in the economy in general, respectively."[193] So the government handouts used to create one green energy job could create 6.9 traditional energy jobs or 4.8 jobs across the economy in general. The low number of green jobs created in Italy is not limited to only those jobs that will provide Italians with regular income; it includes temporary work. The study has found that the vast majority of jobs created in the green sector are not permanent, but temporary; approximately 80% of green jobs created will disappear once a project is finished.[194] Rising costs of green incentives have led to recent reforms by the Italian government to scale back the subsidy program.[195] For example, as the price of solar panels decreases with a decrease in demand for the panels Italy has found that its experiment requires reform as the incentives have become too costly and have over subsidized the sector.[196]

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[190] MORRISS *supra* note 22 at 139.
[191] Gabriel Calzada Álvarez, et al., *Study of the effects on employment of public aid to renewable energy sources*, Universidad Rey Juan Carlos, Mar. 2009, 2.
[192] *Id.* at 1.
[193] Luciano Lavecchia and Carlo Stagnaro, *Are Green Jobs Real Jobs?*, Bruno Leoni Institute, May 2010, 40.
[194] *Id.* at 27.
[195] Marco Bertacche and Alessandra Migliaccio, *Italy's Renewable Energy Incentives Need Overhaul, Enel's Conti Says*, BLOOMBERG, Feb. 8, 2011.
[196] *Italy Reveals Plan for Solar Incentive Cap*, businessGreen, Apr. 14, 2011 *available at* http://www.businessgreen.com/bg/news/2043659/italy-reveals-plan-solar-incentive-cap.

Denmark. A study on wind energy done by the Center for Politiske Studier (CEPOS) shows that, as a direct result of the Danish government's green energy initiatives, its citizens pay the highest prices for electricity in the European Union. In fact, because of "taxes and charges on electricity for Danish household, consumers make their electricity by far the most expensive in the European Union (EU)" according to the OECD.[197] These high taxes and the high cost of energy for the average Danish consumer are caused by the interference of the Danish government and its efforts to promote the renewable energy industry.

The costs of Denmark's reliance on wind power extend beyond high electricity rates as well. As the U.K.'s *Telegraph* reports, the Danish people have had enough with their government's push towards renewables: "People are fed up with having their property devalued and sleep ruined by noise from large wind turbines …."[198] All the while, President Obama and the U.S. EIA have lauded Danes for their aggressive wind power program, claiming that the U.S. would do well to keep pace with their efforts.[199]

The economic reality in Denmark tells a much different story. Denmark's GDP is approximately US $270 million lower than it would be if the wind sector workforce was employed in other sectors of the Danish economy.[200] The subsidy per wind energy worker in Denmark is equal to between 175% and 250% of the average wages in the manufacturing industry.[201] Additional problems arise from this over-subsidization, as "in the long run, creating additional employment in one sector through subsidies will detract labor from other sectors, resulting in no increase in new employment but only in a shift from the non-subsidized sectors to the subsidized sector."[202]

Germany. A study from Germany's Rheinisch-Westfälisches Institut für Wirtschaftsforschung determined that the costs of green energy outweigh its benefits. According to the researchers, the German government's preference for green energy resulted in "massive expenditures that show little long-term promise for stimulating the economy, protecting the environment, or increasing energy security."[203] The study found that there is an average price mark-up of approximately 2.2 cents per kilowatt from subsidization. [204] As a direct result, consumers in Germany pay 19.4% more on average for their electricity. Government support for green energy through the implementation of wind and solar power incentives also caused household energy rates to increase by 7.5%.[205] Subsidies for on-shore wind power are now up to 300% higher than the per kilowatt hour cost of traditional forms of energy.[206] The German government subsidizes each worker in the German green energy sector by $240,000.[207] The cost

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[197] Hugh Sharman, *Wind Energy: The Case of Denmark*, Center for Politiske Studier, Sept. 2009, 2.
[198] Andrew Gilligan, *An Ill Wind Blows for Denmark's Green Energy Revolution*, THE TELEGRAPH, Sept. 12, 2010.
[199] Kenneth P. Green, *Rotten Wind in the State of Denmark*, THE AMERICAN, July 18, 2011.
[200] Sharman *supra* note 198 at 4.
[201] *Id.*
[202] *Id.*
[203] Manuel Frondel, et al., *Economic impacts from the promotion of renewable energies: The German experience*, Rheinisch-Westfälisches Institut für Wirtschaftsforschung, Oct. 2009, 4.
[204] *Id.* at 6.
[205] *Id.*
[206] *Id.* at 5.
[207] *Id.* at 7.

of maintaining a workforce in the green energy sector is incredibly expensive, the study finds, and cannot reasonably be said to be worth the price, as it "lowers the output potential of the economy and is hence counterproductive to net job creation."[208] Despite periods of rapid growth in the solar industry, German solar companies have begun to fail due to heavy losses from stark competition and over-subsidization.[209] The very expensive and heavily subsidized photovoltaic market in Germany is one of the most expensive forms of energy but produces only small amounts of energy surviving only on the billions of dollars it receives from the German government.[210]

The U.K. According to a study done by Verso Economics, as a result of government support of green energy initiatives and the implementation of the Renewables Obligation, taxpayers in the United Kingdom (U.K.) must pay for a large amount of subsidies that "effectively raise the market prices paid for electricity from renewable sources."[211] Despite this evidence to the contrary, and on the heels of a June analysis by the U.S. based Green Alliance in June[212] that emphasized the pitfalls of unabated gas use to power electricity, U.K. Energy Secretary Chris Huhne recently outlined plans that will actually increase the U.K.'s shift towards clean energy.[213] Reports claim that "[e]nergy bills are likely to double within five years…" in the U.K. as a result.[214]

In addition to raising prices of electricity to consumers, taxpayers are at a loss of approximately £1.1 billion in the UK and around £100 million in Scotland in particular for the 2009-10 year. According to these researchers, the UK's green subsidy policies have managed to cost approximately 10,000 direct jobs in the UK and 1,200 jobs in Scotland for the 2009-10 year.[215] There is a clear net loss in the job market as a result of the government supporting green energy: "for every job created in the UK in renewable energy, 3.7 jobs are lost" elsewhere in the economy.[216] With "no net benefit from government support for the sector," the study contends, there is no acceptable reason for the UK to continue such a program.[217]

The job losses cited in the European studies above are an example of what 19th century French economist Frederic Bastiat called the economic fallacy of "the seen and the unseen."[218] In each case, governments were able to point to jobs that are created as a result of diverting taxpayer funding to green energy; this effect of was readily seen. But in each instance, the

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[208] *Id.*
[209] Spiegel Staff, *German Solar Firms Eclipsed by Chinese Rivals*, SPIEGEL ONLINE, Sept. 7, 2011 *available at* http://www.spiegel.de/international/business/0,1518,784653,00.html.
[210] *Id.*
[211] Richard Marsh and Tom Miers, Executive Summary of *Worth the Candle? The Economic Impact of Renewable Energy Policy in Scotland and the UK*, Verso Economics, Mar. 2011, 1.
[212] Green Alliance, *Avoiding Gas Lock- In*, (June 22, 2011), *available at* http://www.green-alliance.org.uk/grea_p.aspx?id=5857.
[213] Shanta Barley, *Chris Huhne Unveils Plans for Reform of UK Energy Market*, THE GUARDIAN, Dec. 16, 2010.
[214] Sean Poutler, *Energy Bills 'to double in five years' as customers are hit by switch to green power*, MAIL ONLINE, July 11, 2011.
[215] Marsh & Miers *supra* note 212 at 2.
[216] *Id.* at 1.
[217] *Id.*
[218] Frederic Bastiat, *Selected Essays on Political Economy*, http://www.econlib.org/library/Bastiat/basEss1.html (last visited Sept. 20, 2011).

negative consequences that resulted were less observable because they rely on counterfactual occurrences; these events – job creation and investment that do not take place – are the unseen effects. As Bastiat explained, "What is not seen is the work and the profits that would come from this same amount of money if it were left in the hands of the taxpayers themselves."[219]

Christopher DeMuth, a senior fellow at the American Enterprise Institute, noted that it is hard to observe all of the ways in which green initiatives distort economic behavior and destroy jobs. DeMuth notes they are stealthy and are not in the form "of taxes or scary headlines about public spending, but rather of higher prices for private goods and services and foregone employment and other opportunities. And these costs … are usually invisible to citizens and voters."[220]

In sum, governments across the world have committed to public policy follies that defy economic common sense by burdening citizens with higher energy costs and displacing and destroying jobs. The way green jobs policies have worked in practice is analogous to a policy that would tear down two neighboring homes to build one inferior house on an empty lot. No one is better off but the government is able to point to the one house it built while ignoring the other two it tore down.

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[219] *Id.*

[220] *Environmental Regulations, the Economy, and Jobs: Hearing before the Subcomm.on Env. and the Economy of the H. Comm. on Energy and Commerce*, 112th Cong. (2011) (statement of Christopher DeMuth, D.C. Searle Senior Fellow, American Enterprise Institute for Public Policy Research).

CONCLUSION

With U.S. growth rates well below desirable levels and our unemployment rate at a staggering 9.2%, it is critical for policymakers to give serious consideration to increasing economic opportunities for Americans. The Obama Administration's green energy agenda has had the opposite effect – it has worsened the state of an already struggling economy by over-regulating industries that foster job creation and misdirecting resources towards industries destined for failure.

The United States cannot afford to allow the President's energy agenda to continue. By sacrificing domestic carbon-based resources upon the altar of an ill-fated "green energy" experiment, the President has put our economic security in jeopardy. Furthermore, this experiment has has wasted billions in taxpayer money at the expense of affordable, carbon-based energy sources today. This is a dangerous strategy that will drastically increase the price we pay for energy and harm economic recovery and job growth.

While there are clearly opportunities for green energy development, as pointed out in the Committee's May 2011 report,[221] the premature implementation of "green energy" technologies will come at too steep a price for our already-struggling economy.

To the extent that any "green jobs" have been created, this has only been accomplished by shifting resources that might have generated more productive jobs elsewhere in the economy. Many European countries have learned the hard way that propping up "green energy" industries comes at the expense of private sector growth and job creation, and we would be wise to learn from their mistakes.

With the right set of policies, we can create new jobs and help fuel an economic recovery benefiting all Americans. But the Administration's push to a "green energy" economy should not continue to be touted as a jobs program; it is a program that has destroyed jobs at a time when our economy needs them the most.

[221] Rising Energy Costs: An Intentional Result of Government Action, Staff Report, House Committee on Oversight and Government Reform, May 23, 2011.

About the Committee

The Committee on Oversight and Government Reform is the main investigative committee in the U.S. House of Representatives. It has authority to investigate the subjects within the Committee's legislative jurisdiction as well as "any matter" within the jurisdiction of the other standing House Committees. The Committee's mandate is to investigate and expose waste, fraud and abuse.

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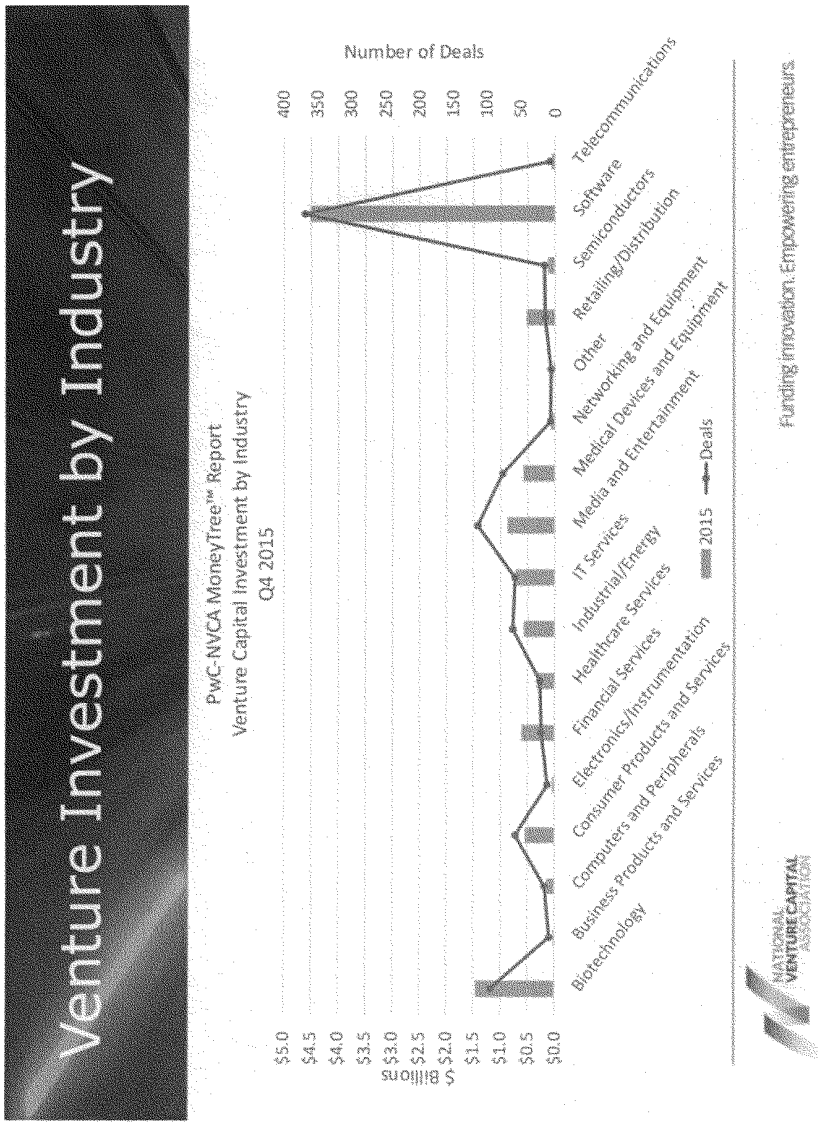

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