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LOAN GUARANTEE PROGRAM

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

TO

RECEIVE TESTIMONY ON THE CURRENT STATE OF THE DEPARTMENT OF ENERGY LOAN GUARANTEE PROGRAM, AUTHORIZED UNDER TITLE 17 OF THE ENERGY POLICY ACT OF 2005, AND HOW THE DELIVERY OF SERVICES TO SUPPORT THE DEPLOYMENT OF CLEAN ENERGY TECHNOLOGIES MIGHT BE IMPROVED

FEBRUARY 12, 2009

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LOAN GUARANTEE PROGRAM

THURSDAY, FEBRUARY 12, 2009

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 10:03 a.m. in room SD–366, Dirksen Senate Office Building, Hon. Jeff Bingaman, chairman, presiding.

OPENING STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

The CHAIRMAN. Ok, why don't we get started with the hearing? Thank you all for being here. The purpose of this hearing is to focus on the Department of Energy's Loan Guarantee Program.

This is an exceptionally busy time for all of you. I appreciate you making the effort to be here and help us understand the challenges we face in getting these critical energy related technologies deployed and the role that the Loan Guarantee Program may play in that effort. Particularly I'd like to thank David Frantz for coming here today and to give us the views from the Department, particularly as those views have shifted in the last month or two.

It's a bit unfair to ask the new administration to address the implementation problems of this program since they obviously just came to town and took charge in the last month. But I believe this is a powerful tool for meeting our energy security needs. I think it would be a mistake for us to postpone making needed adjustments any longer than necessary.

Senator Murkowski and I had a chance to speak with Secretary Chu yesterday. I believe he shares that view. He indicated that the Department is going to do all it can to move ahead with a generation of green jobs and beginning the re-orienting of the economy to fit our national needs as they see it better. This program is vital to that.

It was an encouraging meeting. I'm satisfied that the Secretary understands the difficult task ahead and the urgency that will be required to address it. So we look forward to a constructive partnership between this committee and the Department of Energy in getting some of these problems resolved.

There are a lot of different challenges that we face related to our energy needs. Putting a price on CO_2 will help. I believe policy such as renewable electricity standard will help. But we need to explore every possible option. Clearly putting in place an effective Loan Guarantee Program is part of that.

We have many professionals in the Department of Energy who have seen any number of potentially world changing technologies both within our laboratories and other affiliated research institutions. The gap that seems to exist is in navigating those technologies through the so called Valley of Death to widespread commercial deployment. The Loan Guarantee Program we put in law in 2005 was designed to deal squarely with that problem. But somewhere along the way the guiding principle of speed and scale were lost.

I believe the President and Secretary Chu are bringing the necessary will and sense of urgency to the problem that I would. I think we need to still ask ourselves if the structure of the program is what it should be in order for it to succeed. Can the Department take the necessary risks? The risks that the private sector is unwilling to take or unable to effectively price in order to enable these technologies to get over these initial hurdles and become commercially useful in our economy.

Will they be able to act in a sufficient scale to reduce the deployment costs that keep these technologies from effectively competing with entrenched current technologies? So that's the challenge before us. I think it's an issue we want to address. If we're able to do an energy bill here in the next couple months in the Senate we clearly want to be sure that we are doing everything we can identify to do to make this a viable part of the solution.

So let me turn to Senator Murkowski for her comments.

STATEMENT OF HON. LISA MURKOWSKI, U.S. SENATOR FROM ALASKA

Senator MURKOWSKI. Thank you, Mr. Chairman. I had envisioned a standing room only crowd this morning on the topic of the Loan Guarantee Program. Everywhere I go people want to talk about it. They all have their opinions. I think you and I would agree that most of those opinions are not exactly favorable in terms of what has been happening.

We recognize the importance of this program. It certainly received a great deal of attention over this past year from the standpoint of global climate change. The Loan Guarantee Program is an excellent example of the do everything approach. It's going to help us develop the 21st century energy system that I think we all recognize our country needs.

The Loan Guarantee Program has been dismissed by some as merely a Loan Guarantee Program for the nuclear industry. But I don't believe that is the case. The title 17 program provides support for a broad portfolio of clean energy technologies, everything from energy efficiency, to renewables, to pollution control, vehicle technology, advanced nuclear and carbon capture projects, truly the whole gamut.

The Loan Guarantee Program was established 4 years ago. But I think we can see the benefits today as we are trying to rebuild our battered economy. This program supports the projects that promise stable, high paying energy sector jobs. Will help rebuild core infrastructure upon which our future prosperity depends.

I would state that we are not risking taxpayer dollars with this program. Instead the fees that are paid by loan guarantee recipi-

ents are designed to cover the costs of potential project defaults. The energy sector obviously needs this program as evidenced by just the voluminous number of requests that have been submitted to the Department of Energy.

We have got a limitation of $42 billion for the program. Yet DOE has received more than $120 billion in applications. The solicitations that have been closed so far have been oversubscribed by two to five times. I think that speaks to the interest to the demand.

I am hopeful that the renewable energy solicitation will receive similar interest. I think we have good reason to believe that it will. Certainly the financial crisis that is facing the country at this time will only increase the demand for credit access under this program.

We are here today to discuss the deployment of the Loan Guarantee Program along with the possible ways to improve upon it. As the chairman mentioned in our conversation yesterday with Secretary Chu, when the question was asked, "What would you like to hear from the Loan Guarantee hearing?" He wants to hear the suggestions from the consuming perspective out there.

Secretary Chu wants to know what it is that we can do better. This is our opportunity. I would hope that the witnesses who have been asked to testify here today will be free with your comments and your suggestions and your criticisms as well. We should let this be a constructive use of everyone's time here.

I think there are two points that we need to keep in mind as we move forward.

First, as I mentioned there is an urgent need for these services, particularly in light of the credit crisis as we face. We should ensure that the current programs proceed as expeditiously as possible. If there are road blocks present, we need to remove them.

Where the rules are ambiguous we need to clarify them. If there is a desire to broaden the current program to provide additional services or achieve policy objectives than it should be done in a way that does not cause delays in the disposition of the current applications. We have much invested in the pipeline. If we're going to be looking to something else, we should not cause further delay for those that have already applied.

Second, we have to ensure equitable treatment of the entire portfolio of clean energy technologies. We shouldn't be sitting here now determining who the winners and the losers are. We all have our personal visions of the future and preconception of what is possible. But it's the complex interaction of market forces and research and innovation that will determine the details of our energy future. Our job is to encourage the pursuit of the greatest diversity of options that are out there.

Again, Mr. Chairman I want to thank you for calling this hearing this morning. I look forward to the comments from the witnesses.

I know that Mr. Asselstine has given testimony before this committee before. I thank you for that.

Mr. Book and certainly Mr. Karsner have been frequent guests before the committee. We welcome you back.

Mr. Frantz, it's kind of surprising that this is just your first testimony before the committee. But I welcome you as well and look forward to your comments and suggestions as we move forward. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much. Let me just briefly introduce again the panelists. Then we'll take six or 8 minutes and have each of you summarize the main points you think we need to understand. Then we'll have questions.

David Frantz is the Director of the Loan Guarantee Program at the Department of Energy. He will lead off.

Andy Karsner is beside him. He's now a distinguished fellow with the Council on Competitiveness. But formerly was Assistant Secretary of Energy for Efficiency and Renewable Energy and a frequent testifier at our committee which we appreciate.

Kevin Book is Senior Vice President and Senior Analyst on energy policy issues with Friedman Billings Ramsey and Company in Arlington, Virginia.

James Asselstine is the Managing Director of Barclays Capital in New York.

Thank you all very much for being here. David, why don't you just go ahead and start. We'll just go across the table there.

STATEMENT OF DAVID G. FRANTZ, DIRECTOR, LOAN GUARANTEE PROGRAM, DEPARTMENT OF ENERGY

Mr. FRANTZ. Thank you very much, Mr. Chairman and members of the committee for inviting us here today to speak to you and bring you up to date on the current status of the title 17 Loan Guarantee Program of the Department of Energy.

Mr. Chairman, before I start I would like to extend to you a personal thanks for your continued involvement and constructive suggestions as well as the other members of the committee. Your help has been very instrumental as we have mobilized and worked to stand up this exciting program for the U.S. Government. I also would like to just mention parenthetically that I'll devote my oral comments principally to bringing you up to date on the program. I would be happy to discuss specific suggestions for improvement or changes in the question and answer period to be more responsive and direct to your interests.

I do want to ensure you, this program is an urgent priority for Secretary Chu, as you know from your meeting yesterday, as we face an unprecedented economic crisis that demands unprecedented action. Secretary Chu is personally reviewing the program, and has committed to giving this program the attention, departmental resources and oversight it needs to succeed.

The Loan Guarantee Program has made progress over this past year. Nevertheless, Secretary Chu has directed us to accelerate the process significantly. One immediate priority for Secretary Chu is simplifying and streamlining the existing application and evaluation systems. There is every reason to believe we can do so in order to process loans in less time while still insisting on a high standard of accountability and protecting the taxpayers interests.

To make this transformation, Secretary Chu has tasked us to draw on the experience and success of the private sector as well as other similar agencies in the U.S. Government who have administered similar programs. As you well know, the Department of Energy Loan Guarantee Program can be divided into five parts representing the five issued solicitations. I'll review those just very briefly for you here.

The 2006 Mixed Technologies Solicitation closed on November 19, 2008, and we are currently evaluating 11 projects. Getting these loans funded quickly represents the No. 1 priority of our program.

The Front-End Nuclear Power Facilities Solicitation closed on December 2, 2008, with the receipt of two applications.

The Nuclear Power Facilities Solicitation closed on December 19, 2008, and we are currently evaluating 15 applications for ten specific projects in this area.

The Part One applications for the Fossil Energy Solicitation were due on December 22, 2008. We received eight applications under that solicitation. We have, just as of yesterday, completed our first consultations with each of those eight applicants.

Finally, the Part One applications for the Advanced Renewable Solicitation are due on February 26, 2009. Senator Murkowski referred to that in her comments. We are yet to see the results of that. I can comment on what we do know at this stage. But the applications are not in. So that will be of great interest to us when we close at the end of this month.

I would like to briefly comment on the status of the FY 2006 solicitation because they are our highest priority, and to hopefully clarify some misinformation that has been in the public domain.

The LGPO issued a solicitation in August 2006 for pre-applications only, not full applications. The solicitation was issued under total loan authority for $4 billion which remains available until used, essentially for us no year funding. This was done to determine market interest, although the program had not yet received an appropriation for standing up the program office.

In April 2007, administrative funds were appropriated, and I was hired shortly thereafter from the Overseas Private Investment Corporation. In October 2007, we issued the final rulemaking and selected 16 projects deemed financially and technically qualified from a field of 143 pre-applicants. We invited those 16 to submit full applications in accordance with our Final Rule which was published in October of 2007. Consultations were conducted with each of these applicants to assist in the application requirements and as well to introduce them to our policies and procedures for going forward.

Applications from this group of 16 were not immediately forthcoming. Therefore, the Loan Guarantee Program was compelled to establish a closing date of November 19, 2008, for submitting completed applications. As of the closing date we have received 11 applications out of the 16 that were invited to apply. So for us essentially, the program went live on November 19, 2008.

To date, these applications have been reviewed for completeness, including National Environmental Policy Act (NEPA compliance issues, and priority due diligence has commenced on several of these projects identified as our potential early movers. The LGP is placing the highest priority on these projects through the due diligence and decision process to issue loan guarantees this year. The remaining projects require Environmental Impact Statements, and I think as everyone in the room is aware, that is going to take a considerable amount of time. So we are looking for those projects to be closing some time during the year of 2010.

In the interest of time, I will not go into further discussion of the FY 2008 Solicitations as I would prefer to answer or respond to questions that the committee may have with respect to those specific solicitations and your interest in each of those.

I would like now to turn very briefly to the staffing because I think this is a great concern and interest to the committee. As of today, a cadre of seasoned professionals with extensive energy experience, principally in project finance, have been hired. Currently, we have 18 full-time equivalent Federal employees on board and they are augmented by a seasoned group of 11 contractors for a total of 29 people. As of yesterday, a graduate engineer joined us from within the Department of Energy. So we are fully now at 30 people on the permanent staff. The Loan Guarantee Program is continuing to recruit and hire qualified personnel of the highest caliber, as expeditiously as possible. I might note that while operating under the terms and conditions of the FY 2009 Continuing Resolution, the Loan Guarantee Program is constrained in its ability to achieve the necessary staffing requirements to complete the due diligence and credit underwriting for those applicants that we are currently working on. We are hopeful that the requested funding will be appropriated by March so that we can avoid any delay in our activities.

I am very proud of the staff as it has accomplished a prodigious amount of work in a relatively short period of time while certainly keeping within the "best practices" of our industry. I would also emphasize, as in any organization, we have learned much and desire to increasingly do better.

We know the industry is anxious for us to approve the initial loan guarantees. We are committed to an effort that produces quality loan guarantees while being mindful of responsible due diligence efforts throughout the vetting process. We are particularly mindful of the earlier experience of the Department of Energy's Loan Guarantee Program in the latter 1970s and to learn from those experiences. Then as now, the economic uncertainty requires us to be very diligent and careful in our credit underwriting activities.

In conclusion, we will move as quickly as possible to implement the program understanding the importance of scrupulously following the plan established by Congress. While the Loan Guarantee Program faced significant challenges in the first few years, clearly today we are facing new circumstances with a new administration. There certainly is a new sense of urgency to make these investments.

We are profoundly aware that we are in a position to make an immediate contribution to assist in the current economic crisis.

Thank you very much for this opportunity to appear before you. I will defer to answer questions as appropriate.

[The prepared statement of Mr. Frantz follows:]

PREPARED STATEMENT OF DAVID G. FRANTZ, DIRECTOR, LOAN GUARANTEE PROGRAM, DEPARTMENT OF ENERGY

Mr. Chairman and members of the Committee, thank you for this opportunity to be before you today to discuss the Department of Energy's Title XVII Loan Guarantee Program and to provide you with the current status of the program and the progress we have made to date.

First, I would like extend my appreciation to you Mr. Chairman and the other members of the Committee for your continued support and interest in the effective development of the Title XVII Loan Guarantee Program.

INTRODUCTORY STATEMENT

This program is an urgent priority for Secretary Chu as we face an unprecedented economic crisis that demands action. Secretary Chu is personally reviewing the program, and has committed to giving this program the attention, departmental resources and oversight it needs to succeed while ensuring that taxpayer interests are protected.

This is consistent with President Obama's commitment to acting boldly and urgently to put Americans back to work and reinvest in our economy. With more than 600,000 workers losing their jobs last month alone, Secretary Chu is committed to making this program work better and faster for the American people. And he is determined to move just as quickly to implement the important new energy investments included in the President's economic recovery plan.

The Loan Guarantee Program (LGP) has made progress over this past year. Nevertheless, Secretary Chu has directed us to accelerate the process significantly while maintaining appropriate evaluation and due diligence to protect taxpayer interests. We are moving to significantly shorten the cycle time from application to loan guarantee to ensure good projects get funded quickly. We also want to increase the transparency in the process to attract more good projects and to ensure the American people that the federal loan guarantees create jobs and contribute to long-term economic growth and competitiveness.

One immediate priority for Secretary Chu is automating, simplifying and streamlining the existing application and evaluation systems. There is every reason to believe we can so that we can process loans in less time while still insisting on a high standard of accountability, and protecting taxpayer interests. To make this transformation, Secretary Chu has tasked us to draw on the experience and success of the private sector and other agencies who have administered similar loan guarantees.

Let me quickly review with you the current status of the loan programs. DOE will provide additional information as warranted as we implement the program.

As you well know, the DOE Title XVII Loan Guarantee Program can be divided into five competitive solicitations. The 2006 mixed technologies solicitation closed in November 2008. We are currently evaluating 11 projects for $4.0 billion in loan authority. Determining which of these projects represents a good federal investment and moving forward to closing on those good projects quickly represents our number one priority. The front-end nuclear power facilities solicitation closed in December 2008. We are currently evaluating two proposals for $2 billion in loan authority. The first nuclear power facilities solicitation also closed in December 2008. Here we are evaluating 15 proposals for $18.5 billion in loan guarantee authority. The fossil energy advanced technologies solicitation Part I applications were due on December 22, 2008. We are evaluating eight projects for $8 billion in loan guarantee authority. The advanced renewables solicitation currently has $10B in loan guarantee authority and is scheduled to close in February 2009 with the exception of the large scale renewable projects which will close in April 2009. We are putting in place processes to evaluate and fund acceptable projects on an expedited basis, while ensuring that taxpayer interests are protected. To expedite these loans, we are working expeditiously on the credit self-pay process, to reduce the paper work required, to automate the application process. The LGP is also working to expedite the NEPA review for these projects by coordinating with the applicants early in the process to ensure they submit the necessary information which allows for early determinations regarding the level of NEPA review required. We are also dependent on the continuing resolution to fund project evaluation, so we will monitor the upcoming 2009 appropriation action closely.

STATUS OF FY 2006 SOLICITATION (DE-PS01-06LG00001)

The LGP issued a solicitation in August 2006 for pre-applications only. The solicitation was issued under a total loan authority for $4.0 billion which remains available until used. This was done to determine market interest although the program had not yet received an appropriation for standing up the program office or appropriation authority to issue loan guarantees. On February 15, 2007, the Continuing Appropriations Act for 2007 was signed into law. This law provided the final necessary authority, under the Federal Credit Reform Act, for DOE to implement the Program (including administrative expense funding). In this Act, Congress also prohibited DOE from entering into any loan guarantee agreements before program reg-

ulations had been published. I was hired shortly thereafter from the Overseas Private Investment Corporation. Two months after I arrived, we issued the final rulemaking and selected 16 projects deemed financially and technically qualified from 143 pre-applicants and invited those 16 to submit full applications in accordance with the Final Rule. Consultations were conducted with each applicant to assist in the application requirements as well as policies and procedures to be followed.

Applications from this group of 16 were not immediately forthcoming. Therefore, the LGP was compelled to establish a closing date of November 19, 2008, for submitting completed applications. As of the closing date, the LGP received 11 applications out of the 16 that were invited to apply. These applications represent projects using renewable energy, fossil energy, and energy efficiency and reliability technologies.

To date, the applications have been reviewed for completeness, including NEPA compliance issues, and priority due diligence has commenced on a total of seven projects identified as potential early movers. The LGP is placing the highest priority on these projects through the due diligence and decision process for an ultimate recommendation to the Secretary on these applications this year. Due to the size, complexity, and likelihood of significant environmental effects, the remaining projects require Environmental Impact Statements (EIS) which means the projects would not reach a final decision until 2010.

FY 2008 SOLICITATIONS

Pursuant to the requirements of the Consolidated Appropriations Act, 2008, the LGP submitted a "FY 2008 Implementation Plan" to the Congressional Appropriations Committees in April 2008, allocating $38.5 billion loan guarantee authorization consistent with Congress's explanatory statement in report language accompanying the Act and with the President's FY 2009 Budget. This authorization presently expires on September 30, 2009. When the mandated 45 day Congressional review period ended, the LGP issued three solicitations on June 30, 2008 covering (1) nuclear facilities for the "front-end" of the nuclear fuel cycle, (2) nuclear power facilities, and (3) energy efficiency, renewable energy, and advanced transmission and distribution technologies. On September 22, 2008, the LGP issued a subsequent solicitation for advanced fossil energy technologies. Given the complexity of the solicitations, a two part application process was followed to assist clients' responsiveness to the full application requirement as directed in the LGP Final Rule.

Let me briefly review the status of each of these solicitations and applications received to date.

FRONT-END NUCLEAR POWER FACILITIES SOLICITATION (DE-FOA-0000007)

As of the Part II submission deadline of December 2, 2008 for applications supporting Front-End Nuclear Facility projects, the LGP has received two Part II applications to support two different Front-End Nuclear Facility Projects. The LGP is in the process of completing its due diligence on both projects with the expectation of having a final determination in the near future.

NUCLEAR POWER FACILITIES SOLICITATION (DE-FOA-0000006)

As of the Part II submission deadline of December 19, 2008 for applications supporting Nuclear Power Facilities, the LGP has received 15 Part II applications for 10 specific projects for federal loan guarantees.

In processing the Nuclear Power Facilities applications, DOE has applied a "self-determinant" system largely predicated upon each applicant's "readiness to proceed" as well as the overall financial strength of the candidates. Throughout the process, we have been in communication with the applicants, sharing their strengths and weaknesses as well as identifying a relative ranking compared to other applicants. After two ranking reviews we are focusing our efforts among those applicants most qualified to proceed. We are initiating full due diligence among a selected number of the applications.

It is important to note that we cannot enter into loan guarantee agreements relative to any of the projects until the Nuclear Regulatory Commission has issued the Construction and Operating Licenses (COL) which are expected to begin being issued in 2011.

FOSSIL ENERGY ADVANCED TECHNOLOGIES SOLICITATION (DE-FOA-0000008)

As of the application submission deadline of December 22, 2008 for fossil energy advanced technologies, the LGP received eight Part I applications supporting eight different projects. Two of the projects are advanced coal based power generation and

the balance are industrial gasification projects focusing on coal to liquids, petcoke to liquids, petcoke to synthetic natural gas (SNG) and coal to SNG.

Part II application submissions are due March 23, 2009. In the meantime, the LGP is in active consultations with the applicants to determine overall credit worthiness, "readiness to proceed", and environmental benefits.

ENERGY EFFICIENCY, RENEWABLE ENERGY, AND ADVANCED TRANSMISSION AND DISTRIBUTION TECHNOLOGIES SOLICITATION (DE-FOA-0000005)

The application deadline submission date for the energy efficiency, renewable energy and advanced transmission and distribution technologies solicitation is February 26, 2009. The deadline for Part II applications for large-scale integrated renewable projects is April 30, 2009. The LGP is fully prepared to move expeditiously as possible yet in a careful deliberate fashion to bring those projects identified as early movers to the due diligence and approval process.

STAFFING

As of today, a cadre of seasoned professionals with extensive energy experience, principally in project finance, have been hired. Currently, 18 full-time equivalent employees are on board and they are augmented by 11 contractors for a total of 29 people. The LGP is continuing to recruit and hire qualified personnel of the highest caliber, as expeditiously as possible, to complete the project evaluation, environmental compliance with a focus on NEPA, due diligence, credit underwriting and monitoring and oversight activities. I might note that while operating under the terms and conditions of the FY 2009 Continuing Resolution, the Loan Guarantee Program is constrained in its ability to achieve the necessary staffing requirements to complete the due diligence and credit underwriting for those applicants from the 2008 solicitations. We are hopeful that the requested funding will be appropriated by March so that we can avoid delaying the evaluation efforts.

I am very proud of the staff as it has accomplished a prodigious amount of work in a relatively short period of time while certainly keeping within the "best practices" of our industry.

I would like to emphasize to the Committee that we represent entirely new skill sets, including project financing, credit underwriting and risk analysis to the Department's personnel force. We have striven to assimilate ourselves efficiently within the Department. In addition, we have aggressively reached out to establish interagency working relationships as we have broken new ground in the implementation of this important program.

As in any new organization, we have learned much and desire to increasingly do better. We know the industry is anxious for us to approve the initial loan guarantees. We are committed to an effort that produces quality loan guarantees while being mindful of responsible due diligence efforts throughout the vetting process. We are particularly mindful of the earlier experience of the Department's Loan Guarantee Program in the latter 1970's and to learn from those experiences. Then as now, the economic uncertainty and the significant risk to taxpayers require us to be very diligent and careful in our credit underwriting activities.

Since the receipt of completed applications in November 2008, the LGP staff has focused on expediting necessary and essential processes with the objective of issuing well structured loan guarantees to technically and financially sound projects.

CONCLUSION

In conclusion, we recognize the sense of urgency and will move as quickly as possible to implement the program while ensuring that the taxpayer's interests are protected. We also understand the importance of following the Congressional report language in the Consolidated Appropriations Act of 2008 requiring an Implementation Plan as well as the conduct of an open and transparent competitive process for the solicited sectors.

I appreciate the opportunity to appear before you to present these comments. I will be happy to take any questions that the members of the Committee may have.

The CHAIRMAN. Thank you very much.

Mr. Karsner, go right ahead.

STATEMENT OF ANDY KARSNER, DISTINGUISHED FELLOW, COUNCIL ON COMPETITIVENESS, FORMER ASSISTANT SECRETARY OF ENERGY EFFICIENCY AND RENEWABLE ENERGY, DEPARTMENT OF ENERGY

Mr. KARSNER. Thank you, Mr. Chairman, Senator Murkowski, distinguished members of the committee. It's a privilege to have the opportunity to appear before you today to discuss the critical need to rationalize Federal Government support for deployment of clean energy technologies. As a former Assistant Secretary of Energy I had the honor of appearing before this committee on numerous occasions and working closely with the members and their staff to craft meaningful and enduring bipartisan legislation. So I'm especially pleased and honored to return to testify on this important matter.

Mr. Chairman, the intent of the hearing is to examine the progress of DOE's Loan Program. My former colleagues at DOE including this fine gentleman who just testified, Director David Frantz, are dedicated, patriotic, public servants who've invested very long hours away from their families and friends. Are sincerely and personally committed to standing up this program under enormous constraints and very long odds.

I believe that the painfully slow and unacceptable rate of progress in issuing the loan guarantees substantially reflects institutional barriers, organizational intransigence and interagency, bureaucratic dysfunction that can only be overcome by a new entity that permanently leaves behind the existing legacy management systems. However even as the new and important energy title begins to take shape this year I would strongly encourage Congress to do whatever is necessary to immediately jump start the existing program. Give Secretary Chu and Director Frantz the necessary tools to strengthen their hand in reforming the rules of implementation and the statute if necessary.

Such reforms would immediately include eliminating the upfront fees, lifting the arbitrary deadlines of application submissions and addressing regulatory barriers to project development. Loan guarantees should be offered through an open window with rolling applications based upon available capacity to fund on a timely basis.

Second, the fees placed upon renewable energy projects, in particular, are artificially high, disproportionate and unreasonable. The title 17 program was elegantly written to allow either appropriations to cover the credit subsidy cost or for applicants to self pay their own cost in relation to the project. Conventionally to encourage competition amongst the larger pool of applicants and to stimulate greater interest in the energy industry and the participants these fees would be collectable upon closing of the transactions and simply rolled into the project cost. The present method of asking applicants to pay exorbitant sums for the privilege of filing applications that empirically linger for years with no predictable pathway or time table to a financial closing is unacceptable at best and attracts the wrong applicants at worst.

Finally, in order for clean energy projects to be successfully brought online in a timeframe that supports the President's stated goals. DOE will need policy and expanded statutory tools to expedite citing, permitting and grid integration that is deemed to be in

the national interest. Even if we are able to disperse financing from Federal loan guarantees on a timely basis, we will likely fall short of our national objectives if we fail to substantially reform Federal eminent domain authority and establish environmental review waivers over transmission and clean energy generating facilities that enable the reduction of greenhouse gas emissions under the terms of the statute.

All of the effort to undertake and accelerate the Loan Guarantee Program may be rendered mute if we fail to comprehensively deal with the protracted and litigious citing and permitting obstacle courses that these projects face. Ultimately undermine America's best interest. Even if it requires modification of the existing statute itself or FICRA, DOE must be empowered to rectify on an emergency basis the obvious deficiencies that are barriers to disbursement funds and new construction even as a clean energy bank is established in parallel.

Mr. Chairman, in the last Congress you introduced legislation to address this issue. I applaud your strong, bipartisan leadership along with that of Senator Murkowski in identifying the need for systemic change and making it a priority for this committee and this Congress. In addition I also want to thank Senators Dorgan and Bennett who've been at the forefront, working hard to expand an enhanced loan guarantees in the current stimulus package.

Despite the continued bureaucratic obstacles placed in front of the program and the good people that run it, it undoubtedly remains one of the most transformative, cost effective and immediate ways to stimulate domestic, clean energy development. This committee's bipartisan leadership on the matter is deeply appreciated by all those in the clean energy community. I look forward to continue to support these efforts as drafts are promulgated.

In September the Council on Competitiveness explicitly endorsed the creation of a clean energy bank to provide debt financing and drive private investment in the development of sustainable energy solutions and their supporting infrastructure. Then Secretary Chu was a council member and was a key voice in putting forward these recommendations. I should also note that while serving as Assistant Secretary I met with many groups across the political spectrum who are pursuing institutional reform of DOE's outdated capacities through a clean energy bank.

Prominently amongst these are the Center for American Progress, led by John Deutsch and John Podesta.

The MIT Energy Task Force, led by Dr. Ernie Moniz and Melanie Kenderline.

The United States Chamber of Commerce, led by now National Security Advisor General James Jones and my former colleague Assistant Secretary Karen Harbert.

The Secure America's Future Energy Group, led by CEO of FedEx Fred Smith and General P.X. Kelley.

It's notable that all these individuals have served in appointed positions directly impacting energy technology and national security.

I am here testifying today before the committee because of my strong belief that our current energy institutions are not sufficiently agile or equipped with the capability to promulgate. To de-

ploy solutions at a pace or a scale commensurate with the magnitude of the challenges that we currently face. Let me be perfectly clear. The United States Department of Energy, under its present constraints in its present form, is inadequate to satisfy the mission of national security for which it originated and for which we now aspire it to perform.

The proposal of a quasi-governmental agency focused on clean energy financing rather than clean energy research and development would be a transformational change. But it is not a novel one across the U.S. Government. Indeed our government is already doing this for other priorities that we have be it export, trade, student loans or development of the Third World.

As many of you know before entering government service I was in energy infrastructure developer, as I am now, then specializing in emerging markets project finance. I can tell you from personal experience, as Director Frantz can from his background at OPEC. That if I wanted to build a renewable project using the balance sheet of the Federal Government that the taxpayer is already on the hook, on a revolving basis for any of the technologies under the portfolio that I recently managed.

Meaning that if I wanted to go into the EX–IM bank on any day of the week and get a loan guarantee up to 105 percent to project finance a biomass project, for example in North Africa, I could do that, or if I wanted to co-fund or arrange equity with David, when he was at OPEC or a direct loan, I could do that. If I wanted walking around money for a feasibility study up to $500,000 I could go to the Trade Development Agency and do that. All for the same technology projects with the one caveat, that they not be built within the borders of the United States of America.

We have got to align our priorities. Reorganize our institutions to face down these problems. Because our problems are not merely qualitative, they are quantitative. We have to establish credible metrics and milestones to move forward and heighten the probability of achieving these goals.

This administration's plan to double renewable energy in the next 36 months, for example, is ambitious. But I believe it is achievable. I would go further and say it is doable. It is desirable if we move with urgency in orienting the government's nexus with the private sector in a manner that can catalyze unprecedented, continuous, consistent, capital formation.

This concludes my comments, Mr. Chairman. I'd be pleased to answer any questions you may have.

[The prepared statement of Mr. Karsner follows:]

PREPARED STATEMENT OF ANDY KARSNER, DISTINGUISHED FELLOW, COUNCIL ON COMPETITIVENESS, FORMER ASSISTANT SECRETARY OF ENERGY EFFICIENCY AND RENEWABLE ENERGY, DEPARTMENT OF ENERGY

Mr. Chairman, Senator Murkowski, and Members of the Committee, it is a privilege to have the opportunity to appear before you this morning to discuss the critical need for rational federal government support for the deployment of clean energy technologies. As the former Assistant Secretary of Energy Efficiency and Renewable Energy at the Department of Energy, I had the honor of appearing before this committee on numerous occasions and working closely with members and their staffs to craft meaningful bipartisan legislation. I am pleased and honored to be returning to testify on this important matter.

Since leaving government service, I have been named a Distinguished Fellow for the Council on Competitiveness. The Council is the only place where CEO's, labor leaders, National Laboratory directors, and university presidents are working together to ensure that Americans prosper in an increasingly challenging global economy. Because energy transformation is fundamental to the mission of economic development and competitveness, the Council has launched an Energy Security, Innovation & Sustainability Initiative (ESISI) designed to enhance the business case for sustainable energy solutions, and ultimately harness market forces to transform our nation's energy production and use.

Mr. Chairman, the intent of this hearing is to examine the progress of DOE's loan guarantee program. I would venture a guess that the examination is not a lengthy one. Despite the need for a bridge between private capital and public priorities, despite the importance of accelerating market penetration for clean energy technologies, despite the clear emphasis that Congress has placed on loan guarantees, very little progress has been made since the Energy Policy Act was signed into law in almost four years ago. Not a penny of the more than $42 billion in authority has been used. It is not my intent to name names, or to blame individuals. My former colleagues at DOE are dedicated public servants who have invested long hours and are sincerely committed to standing up this program. Rather, I believe that the painfully slow and unacceptable rate of progress on loan guarantees substantially reflects institutional barriers, organizational intransigence, and bureaucratic dysfunction. The present artificial and unfortunate barriers to successfully administering the program in a predictable, transparent, objective, and timely manner, as Congress and this Committee had originally intended when it authored Title XVII into law, are a direct result of these deficiencies, but they are correctable. Accordingly, even as a new and important Energy Title begins to take shape this year and looks to create a Clean Energy Bank reporting to the Energy Secretary to succeed and supplant the present program, I would strongly encourage Congress to do what is necessary immediately to jump start the existing program and give Secretary Chu necessary tools that strengthen his hand in reforming the rules of implementation.

Such reform would immediately include eliminating the upfront fees and lifting the arbitrary deadlines of application submissions. A loan guarantee program that is conducted through random, discrete solicitations in no way correlates to the ongoing development of technology. Rather, the federal financing mechanisms for explicit policy purposes should be offered through an open window with rolling applications based upon available capacity to fund on a timely basis. The fees placed upon renewable energy projects are artificially high and unreasonable, and are unduly high hurdles that prevent the good projects from coming forward. The statute was elegantly written to allow either appropriations to cover credit subsidy costs or for applicants to self-pay the costs in relation to their project. Conventionally, were DOE operating in a user-friendly mode, seeking to encourage competition among a larger pool of applicants with greater interest in the energy industry, these fees would be collectible upon closing of the transactions and rolled into the project costs. The present method of asking applicants to pay exorbitant sums for the privilege of filing applications that empirically linger for years with no predictable pathway or timetable to closing is unacceptable at best and attracts the wrong applicants at worst.

In order for clean energy projects to be funded, constructed and successfully brought online in a timeframe that supports the President's stated goals, DOE will need new policy and expanded statutory tools to expedite siting, permitting and grid integration that is deemed to be in the national interest. Even if we are able to disburse financing from federal loan guarantees on a timely basis, we will likely fall short of our national objectives if we fail to substantially reform federal eminent domain authority and establish environmental review waivers over transmission and clean energy generating facilities that enable reductions in greenhouse gas emissions under the terms of the statue.

All of the efforts undertaken to accelerate the loan guarantee program may be rendered moot if we fail to comprehensive deal with the protracted and litigious sitting and permitting obstacle course that undermine American com in modernizing its national grid aspirations for a robust clean energy marketplace. The sighting and permitting process for new, greenfield projects of any kind in the United States, and particularly for large scale clean energy projects, presently and unattractively inhibits the development process beyond norms seen anywhere in the world. DOE must be empowered to rectify, on an emergency basis, the obvious deficiencies that are barriers to disbursement of funds and new construction even as institutional and organizational changes enable the establishment of a Clean Energy Bank in parallel.

It is my view, having worked meticulously in support of every effort to successfully stand up and make effective the DOE Loan Guarantee Program, that this mission can only be solved by modernizing and reorienting the government's energy financing efforts to interact with private markets using successful quasi-governmental models already deployed by the federal government with great impact and positive effect. Tinkering around the edges and incremental reforms may only prolong the inevitable and ultimately risk politicizing the administration of such large volumes of capital, meant to be directed towards technology diffusion. I recognize that prioritizing the enablement of private sector investment is not necessarily the center of Congress' immediate focus, but as I have testified on many occasions, the fact remains that achieving transformational change in the way we solve our energy and environmental dilemmas will require the involvement of both the public and private sector, if we are going to attain our goals in the near-term.

Although no single technology solution exists to address our nation's energy security and environmental responsibilities, all elements of the solution share a common basis: increased market penetration, diffusion of clean energy technology, and accelerated, continuous and consistent capital formation.

While the private sector is the appropriate and most efficient means of delivering the solutions to the market at scale, only the government can play the indispensable role of availing the federal balance sheet and bridging market inefficiencies and imperfections. I believe that an independent, non-partisan, quasi-governmental entity, like a clean energy bank, should play an essential role of helping to achieve our national energy goals and fulfill the national security mission of DOE.

Mr. Chairman, in the last Congress, you introduced legislation to address this issue, and I applaud your strong bipartisan leadership, along with that of Sen. Murkowski, in identifying the need for systemic change and making it a priority for this Committee and Congress. As you know, this is a matter the Department of Energy fully embraced and sought to push forward in the course of the last Administration, though unfortunately we were unable to convince others in the interagency process of its urgency. I am hopeful that legislation establishing a new, nimble Clean Energy Bank will be enacted this year, with a broad grant of authority that allows clean energy financing transactions to take place as a regularized and routine course of business. Ideally, this would be an entity that is net-positive to the Treasury, or at least be self-sustaining.

In addition, I also want to thank of Senators Dorgan and Bennett, working to expand and enhance loan guarantees in the stimulus package. Despite the continued bureaucratic obstacles placed in front of the program, it undoubtedly remains one of the most cost-effective and immediate ways to stimulate domestic clean energy development. Their leadership on this matter, and many similar issues of paramount importance to our energy future, is deeply appreciated by the clean energy community and I look forward to continuing to support these efforts.

In September, the Council on Competitiveness explicitly endorsed the creation of a Clean Energy Bank to provide debt financing and drive private investment in the development of sustainable energy solutions and supporting infrastructure. The Council recommended that it be modeled on the U.S. Export-Import Bank and Overseas Private Investment Corporation, to provide long-term financing—including loan guarantees, lines of credit, equity investments and insurance—for the market deployment of breakthrough energy efficiency and clean energy products, technologies, services and projects that reduce, avoid or sequester carbon. This recommendation was part of the Council's 100-Day Energy Action plan, which I strongly endorse and would ask for its inclusion in the record. I should also note that then-Council Member, Secretary Steven Chu, was instrumental participant and leader in guiding the Council's recommendations.

Additionally, I have also been advising Securing America's Future Energy and its Energy Security Leadership Council—a distinguished group of business executives and national security leaders led by General P.X. Kelley (Ret.), 28th Commandant of the Marine Corps, and Frederick W. Smith, Chairman, President and CEO of FedEx Corporation—as they advocate a comprehensive solution to our nation's energy security challenges.

The Council's recommendations include a wide range of policies to fundamentally reform and expand both public and private research, development, and deployment. Included in those recommendations is the establishment of an Energy Technology Authority, or ETA, of the United States: a market-driven source of private financing and public-private partnering for the most promising energy technology innovations, similar to quasi-governmental investment organizations such as the Overseas Private Investment Corporation and U.S. Export-Import Bank. The ETA is fundamentally similar to the Clean Energy Investment Bank under discussion here today. It would possess the full backing of the United States government, but would be man-

aged and organized like a private corporation. After an initial capitalization, the corporation would be self-sustaining, generating revenue through projects, interest, and fees, thereby minimizing future appropriations. The ETA's core mission would be to accelerate and scale capital formation for clean and renewable energy production and distribution.

I should also note that, while serving as Assistant Secretary, I met with many groups who are pursuing institutional reform of DOE's capacities to accelerate and scale the diffusion and immersion of clean energy technology. Prominently among these are the Center for American Progress, led by John Deutsch; the MIT Energy Task Force, led by Dr. Ernie Moniz and Melanie Kenderdine. It is notable that all of these individuals have served in senior appointed positions directly impacting energy technology. Given that at all these credible voices are all saying that a different structure for clean energy diffusion at scale is necessary, the time for action is here.

For the past 30 years, DOE has successfully decreased the price of clean energy through research and development, but these national energy goals inherently demand accelerated market penetration and significant capital formation and growth in a new and risky technology arena. Meeting these ambitious goals will require tremendous investment in emerging technologies. A Booz Allen Hamilton analysis concluded that approximately $1.4 trillion of capital investment is needed through 2030 for clean energy to meet our goals. This is based on reaching pre-stimulus government goals in the areas of electric generation, transmission, renewable fuels, and alternative fuel vehicles. The International Energy Agency estimates this number to be $1.5 trillion, McKinsey Global Institute is $1.1 billion, net of savings from efficiency, and American Society of Civil Engineers estimate is $1.6 trillion. Some estimates indicate that achieving the President's stated objectives of doubling renewable energy in the next 36 months, $134 billion of new capital investment will be required by 2011, and $217 billion by 2012. No matter which estimate one uses, there's little argument that it will take an unprecedented amount of capital to address our national energy goals.

Additionally, while the need for clean energy investment is on the order of $80 billion per year between now and 2030, 2007 the U.S. only saw $15 billion in clean energy asset investment according to New Energy Finance. Clearly, a significant gap exists. These numbers underscore the need for every public dollar appropriated to have a multiplier of private investment.

Congress has sought to incentivize deployment of clean energy technologies through tax incentives, which is an important, but limited, lever to influence financial decisions. Tax incentives can only be used by entities with regular tax liability, reducing the number of players who can participate. Many financial institutions and utilities have limited capacity to use tax incentives. While tax policy continues to play an essential, if outsized, role in encouraging domestic clean energy development, a wholly different approach is be needed to ensure that vital investments are made now, and in the coming months, to significantly accelerate the rate and scale of clean energy project development, enabling critical policy goals and the President's stated objectives to be met.

Of course, clean energy development may persist at the present growth rates in the United States in a business as usual scenario. The key issue for this Committee, and the Congress, is realizing the benefits of timeframe. How quickly does the United States want to build up and solidify clean energy development? How soon do we want those jobs and that manufacturing here, in America? How quickly do we want to start avoiding greenhouse gas emissions and changing the profile of energy generation in the U.S.? I believe the answer to those questions is: Now. We can not wait any longer, and we should avoid a paradigm in which investment happens only because the cost of energy is so exorbitantly high. We know that we, as a nation, want cleaner energy and the economic growth that comes with those new industries. The private sector is ready to invest, if those investments can be rationalized, replicated, and scaled. The Federal government can provide the vital bridge between public policy and private capital, if it is properly organized and empowered to conduct business in a substantially different way.

Real change only comes with systemic change. Our institutions, and DOE in particular, have a mid-20th Century Cold War posture—all of its systems are focused on fighting the last war, overcoming the last energy crisis, and short-term firefighting, rather than a managed transition that develops domestic energy in a sustainable manner, while ensuring our national security. Our current energy institutions are not sufficiently agile or equipped with the capability to promulgate and deploy solutions at a pace or scale commensurate with magnitude of the challenges we face. This is true of energy security and it certainly true of economic development and environmental mitigation. Let me underscore the point. The Department

of Energy is inadequate in its present form to satisfy the mission of energy security for which we aspire for it to perform.

The proposal of a quasi-government agency focused on clean energy financing, rather than energy research and development, would be a transformational change—but not a novel one. Indeed, our government is already doing this. Before entering government service, as many of you know, I was an energy infrastructure developer in the private sector, specializing in emerging markets project finance. I can tell you, from personal experience, that if I wanted to build a renewable energy project using any of the technologies that emerged from my portfolio at DOE, the United States Government already has a basket of tools to assist me, and the taxpayer is already on the hook to extend the full faith and credit of the Treasury in support of my project. For example, it has been my experience that if I want government-backed loan guarantees, insurance, or even funding for feasibility and siting studies necessary to build a commercial scale clean energy project, I could do so through multiple institutions with a constantly open door across Washington—with one condition. I must build that project outside the borders of our country. Right now, the Federal balance sheet is available to support project development all over the world, but not within our own borders. I say that not to criticize the Export-Import Bank or the Overseas Private Development Corporation. Rather, those entities are models that demonstrate the opportunity to significantly alter the government's ability to accelerate the rate and scale of clean energy investment in the U.S., bringing those jobs and those benefits to our citizenry.

Traditional federal agencies, however, are not designed to effectively manage complex financial transactions involving such large sums of money, particularly on a fixed timetable. However, by reducing investment risk and lowering the cost of capital, the Federal Government can leverage private capital to multiply its impact and achieve our national goals. A clean energy quasi-governmental entity fills these gaps by offering professional risk management of debt and securitization products, and potentially a full suite of financial services, in support of a robust national energy policy based upon national security, environmental stewardship, and global economic competitiveness.

Our problems are not merely qualitative, they are quantitative, and we must establish credible metrics and milestones to heighten the probability of achieving our goals. The Administration's plans to double renewable energy, for example, are ambitious, but they are achievable, if we move with urgency in orienting the government's nexus with the private sector in a manner that can catalyze unprecedented, continuous, consistent capital formation. In order to understand the need for such a quasi-governmental entity focused on clean energy development, I'd like to discuss the unique obstacles that clean energy technologies face in securing private financing, as well as the particular role that a Clean Energy Bank could fulfill.

CLEAN ENERGY INVESTMENT CHALLENGES

Before achieving any impact on our national energy goals, an advanced energy technology must evolve from a laboratory experiment, to a technology venture, to an infrastructure development project. The transitions between these stages present unique challenges that the private sector often struggles to overcome. Incremental research and development funding improves the quantity and quality of technologies coming off the lab bench, but does not address the economic, political and technological risks between a technology venture and a large-scale infrastructure project.

On the positive side, however, free access to abundant sun, wind, hydro, biomass, and geothermal heat has a fundamental economic advantage over traditional energy sources. While clean energy assets currently cost more per unit of production capacity, the larger future profits realized by lower operating and production costs and zero exposure to fuel price volatility economically justify the investment if appropriate financing is readily available. On the security front, clean energy—with the exception of biofuels imports—is generated from domestic resources which reduces geopolitical leverage surrounding strategic energy commodities and shields the U.S. economy from the detrimental impact of global commodity price volatility and accumulating trade deficits.

Large-scale development of energy infrastructure of any type is a capital intensive business to begin with, requiring debt and stable or predictable cash flows. As indicated earlier, clean energy solutions bear significant risks unique to the infancy of the industry. Overcoming these risks is critical to access to the finance markets. Financial mechanisms are in place to accelerate research and development and project implementation for established technologies, but financing for commercialization of new technologies often falls short based upon risk perception. Many of these risks

may be resolved by time, but the urgency of our energy challenges does not grant us the luxury to wait and see.

WHY A CLEAN ENERGY QUASI-GOVERNMENTAL ENTITY MAKES SENSE

Familiarity with the magnitude and complexity of the challenges associated with emerging energy technologies is needed to devise an appropriate investment strategy. While investment in clean energy technologies is wholly consistent with DOE's mission, the strictures of federal agencies inhibit the flexibility and acquisition of skills necessary to effectively manage the complex financial transactions involved in accelerating capital formation at such a large scale and in a consequential timeframe. An independent, quasi-governmental agency would be able to more effectively administer financial services, and would avoid the improbable task of reforming an existing Federal entity.

Existing quasi-governmental agencies possess sophisticated capital risk management expertise, and have established a strong track record for an entity of this type furthering national goals. However, existing administrative entities would need substantial changes to their charters to accommodate the task of domestic energy investment and lack the deep domain expertise for managing energy security. A new quasi-governmental agency modeled after successful examples could combine a domestic energy focus with capital formation skills and investment flexibility allowing the Federal Government to work effectively with the financial community to develop profitable investment-grade projects that further U.S. energy goals.

POTENTIAL ROLES AND ACTIVITIES OF A CLEAN ENERGY QUASI-GOVERNMENTAL ENTITY

The venture capital community invests relatively small amounts of money (almost exclusively specialized in early stage equity) into companies in anticipation of where the market is headed. Private equity and capital markets (both equity and debt) investors fund much larger projects where the market is presently active. Through a Clean Energy Bank, the Federal Government would be able to accelerate the transition from venture capital funding to large-scale private and public equity by managing the early-stage and scale-up risks on a macro basis, and thus lowering the cost of capital. By seeking to catalyze investment rather than maximize profit on a micro basis, the entity could dramatically accelerate the market penetration of clean energy technologies.

A clean energy quasi-governmental entity could accomplish three main policy goals: 1) consistently, continuously and transparently accelerate and scale capital formation for clean, domestic energy projects; 2) provide management stability, flexibility, agility, expertise, and experience to ensure maximum efficiency and leveraging of taxpayer investments; and 3) rationalize the Federal portfolio by availing time tested tools to today's critical national need for clean energy.

To fulfill its capital formation role, such an entity would mitigate risks facing investors in the production and distribution of clean energy, and increase the amount and rate of private capital deployed in a time frame that is consequential to addressing climate change and our overdependence on foreign oil.

In the area of management agility and experience, the entity could provide the effective capital risk management—largely unavailable in Federal Agencies—necessary for rapid commercialization of clean energy technologies.

Finally, the entity's activities would rationalize the Federal portfolio by applying to clean energy development the policy priorities and tools presently used to support robust US exports, third world development goals and student loans.

A quasi-governmental entity could invest in the full breadth of clean energy technologies, including both renewable generation and energy efficient technologies. These include but are not limited to biofuels, solar (photovoltaic and concentrating solar power), wind, geothermal, nuclear, clean coal, hydrogen, and energy efficient technologies for vehicles, industry, and buildings. Different from DOE's historical focus on lowering the cost of energy technology, the entity could focus on increased market penetration and driving economies of scale in the private sector. To this end, the entity could offer a variety of debt and risk management products, potentially including direct loans, loan guarantees, working capital loans, lines of credit, delayed payment project financing, insurance, securitization, and innovative financial products designed to accurately capture life-cycle costs. The portfolio of financial services could extend across a number of market segments, to meet the specific needs of power generation, alternative fuels, distributed generation, transmission, and manufacturing, among others.

The market has begun to respond to the need for clean energy capital investment, with worldwide investment more than doubling in recent years, but the baseline is small and unprecedented growth is required. A clean energy quasi-governmental en-

tity could offer mechanisms aimed at catalyzing the private markets and thus accelerate the maturity of the clean energy industry to achieve these goals. The impact of the earlier investment would be similar to the growth effect of compound interest with far greater paybacks for the nation. Considering that all of this can be achieved in a manner that is consistently net positive revenue to Treasury, rather than an annualized cost sink, it is important to commence the effort to organize, even a preliminary pilot running in parallel to DOE's Loan Guarantee Program Office to hedge our efforts to efficiently stimulate the economy.

CONCLUSION

National security, environmental stewardship, and economic growth goals form the basis of robust U.S. energy policy. National security is enhanced through diversifying our energy mix and reducing dependence on petroleum. Environmental stewardship is maintained through the mitigation of greenhouse gas emissions and other negative environmental impacts. Achieving global economic competitiveness entails creating a more flexible, more reliable, and higher capacity national energy infrastructure, as well as improving the energy productivity of the U.S. economy and industry.

Independent, quasi-governmental agencies have furthered national priorities in the past and successfully carried out important roles that traditional Federal Agencies are not designed to fulfill. The urgency and scale of energy security and greenhouse gas reduction requires full access to the federal policy portfolio to accelerate the immense clean energy investment necessary to meet our nation's goals. A clean energy quasi-governmental entity combines a domestic energy mission with capital formation skills to bring emerging clean energy technologies to market much faster than would occur under traditional market conditions and put us on track to achieve these objectives.

I look forward to supporting the bipartisan and seasoned leadership of this Committee in organizing and modernizing our governmental approaches to our energy challenges in such a way as to reverse decades of failed expectations and realistically maximize the probability that America's succeeds in realizing our national aspirations.

The CHAIRMAN. Thank you very much for that excellent testimony.

Mr. Book, go right ahead.

STATEMENT OF KEVIN BOOK, SENIOR VICE PRESIDENT, ENERGY POLICY, OIL & ALTERNATIVE ENERGY, FRIEDMAN, BILLINGS, RAMSEY & COMPANY, INC.

Mr. BOOK. Thank you, Chairman Bingaman, Ranking Member Murkowski and distinguished members of this committee for the privilege of contributing to the discussion today. The views I present are my own. Do not necessarily represent those of my employer.

I'd actually like to start with sort of a bold statement. I think that this being number 17 in a list of things in the Energy Policy Act of 2005 either suggests that there were 16 really, really visionary ideas or maybe there's something lucky about the number 17. Because I think this is the most visionary energy policy proposal I've seen in a long time and I look at them professionally.

What I think is most important about this is actually written in two very elegant lines of the statute which I'd like to read. You're offering incentives to:

One, avoid reduced or sequester air pollutants or at the anthropogenic emissions of greenhouse gases.

Two, employ new or significantly improved technologies as compared to the commercial technologies in service in the United States at the time the guarantee is issued.

This perfectly summarizes thousands of pages of research I forced my clients to read over the years. This is the energy and en-

vironmental challenge the United States faces. I'd like to suggest that considering a diversity of fuels as this committee has done in providing a list of ten clean fuels in title 17 is also very sensible, very visionary solution. Because it looks not just at what's not just in existence anywhere today, but what's not commercially in existence here.

Finally, there is actually something going on here that sounds an awful lot like economic stimulus. You think about it for what it is. Because effectively if what you're doing is innovating to make better use of our natural resources including process efficiency and end user behavior efficiency gains than you're making much better use of essentially every input. You're delivering more output at each input unit. The more efficiently and expanding the economy can fuel its vehicles, power its factories and heat and cool its buildings, the more competitive that economy will be in a global market.

Now what's interesting is why this is such an important policy tool. A lot of the time I think the Federal Government gets accused of being in a position of picking winners. This is much more about making winning picks and giving the people who implement technologies the opportunity to make a winning pick and in fact, to make that pick, win.

I'll explain that in a little bit of detail in as simple terms as I can. Going off my script in avoiding the economist talk seems to be a very useful tool. So I'm going to do that.

If you give a rebate or a subsidy you're generally affecting something in sort of the numerator. You're talking about how much something costs. You're making it cheaper.

If you change the interest rate that you charge for a big investment and these are enormous investments in many cases, what you're doing is you're changing the pro rata per unit cost, the fixed cost of that investment over its equipment life. This is actually very, very important when it comes right down to what energy is. Let's go back to the script so I don't make a mistake.

This has a lot to do with the fact that energy is a commodity. No matter what technology one employs to convert raw materials into electrons or finished fuels, the prices buyers pay for the resulting products are almost always the same or very close to competitive prices. Prices are typically set by broader markets rather than any individual project sponsor.

My clients, the financial sponsors who buy equity and debt in these projects, they don't tend to reward people who come up with very expensive ways to sell commodities. So what can you do? Well if you make the interest rate lower, you make the fixed cost of generation cheaper. You've just given a project a chance to succeed.

You haven't yet picked a winner because you've got a diversity of different options. You've set yourself in the place where you actually can go through a variety of other incentives. On top of this, as needed, to accelerate or decelerate as some countries have seen, the pace of adoption.

Why debt? Why interest rate? I think there's a couple things that are probably worth noting here too.

These are enormously expensive projects. At sort of the high end of the range, we're talking about nuclear and clean coal technology projects that there's only a couple of companies in the world right

now who are in a position to fund this out of their cash. Very few who can do it on the equity on their balance sheet.

So you have to go to the debt market. Therefore this interest rate self fulfilling prophesy operates. Actually perhaps the most important thing that I can offer today is that this is a low cost mechanism for the government provided that there is, of course, good through diligence done. But maybe not overly exhaustive diligence because the first word, I believe, in the description of these technologies is innovative.

Innovation requires an appetite for risk which accepts failure. It accepts that if you swing for the fences every time and you get one home run, you have a home run on the board. But if you strike out looking each time, well, you probably don't have anything to show for it.

This innovation, this incentive is the very essence of how we've run our energy industry essentially since it began. I mean, the oil industry is 150 years old today. We still don't have a national oil company.

We give private companies incentives to do correct economic choices, to make rational economic choices. So at the end of the day, delays are a hindrance. Time is money, after all.

I think it's probably fair. Senator Murkowski, you mentioned that there have been some strong opinions given about this program since its inception. I've certainly heard them from my clients.

I think it's fair to say that this is a very challenging task. I'll go back on the script again to make sure that I'm appropriately delicate here. But a Department of Energy that is a preeminent source of research science has a $24 billion annual budget for everything including the world's best national laboratories.

Is expected to give out between now and September 30, $38.5 billion of appropriated funds which add up to about $48 billion in net project value. That's a very, very, difficult responsibility. They have shown at a disposition to weight risk and credit worthiness differently in their different solicitations.

I think it's very important to see that if you're a more mature technology, credit worthiness is 50 percent of the solicitation's initial assessment goals. Then if you're a newer technology or a riskier technology, perhaps you're not as mature a company. Therefore a 30 percent weight makes a great deal of sense.

But I think the question we should probably ask is really whether or not the world's preeminent research science agency is the best position to become the world's preeminent loan administration and credit assurance agency. At the end of the day it may be prudent to allocate the responsibilities for execution and portfolio strategy to a new agency or differently structured entity where lending and risk assessment are already core competencies. Since I'm an analyst and since analyzing is sort of what I do, I want just offer a moment of analysis.

I just listened to these two gentlemen. Both of whom I respect very highly, very gifted public servants who just said two very different things about the exact same program that everyone here believes is very important. I apparently believe is mostimportant.

One of them said, and forgive me for paraphrasing, we are going to be diligent. We're going to use a rigorous methodology. We're going to remember what happened in the 1970s.

The other one said, I can walk into the export bank on any day of the week. So there's solicitation dates and any day of the week. There's prudence and caution. There's the necessary disposition for risk and innovation.

Balance here is obviously very important. I don't think you want government dollars going all the way one way at a time when energy is such an important national issue. You probably don't want them going all the way the other way.

So having gone totally off script, probably to the detriment of my career to the improvement of this audience's attention span, I will now look forward to any further questions. Thank you.

[The prepared statement of Mr. Book follows:]

PREPARED STATEMENT OF KEVIN BOOK, SENIOR VICE PRESIDENT, ENERGY POLICY, OIL & ALTERNATIVE ENERGY, FRIEDMAN, BILLINGS, RAMSEY & COMPANY, INC.

Thank you, Chairman Bingaman, Ranking Member Murkowski, and distinguished members of this Committee for the privilege of contributing to your discussion concerning loan guarantees for innovative energy technologies.

As a macro-level energy analyst for an investment bank, I interpret domestic and global economic and policy trends for institutional investors, including crude oil prices, alternative energy economics, climate mitigation costs, and the energy policy decisions taken by governments. My testimony today reflects lessons learned in this capacity, as well as observations drawn from ongoing discussions with industry contacts and financial investors. The views I will present today, however, are my own and do not necessarily represent those of my employer.

A BIG VISION

Let me begin, if I might, with a bold statement. I would suggest that the innovative energy technology loan incentive program created by Title XVII of the Energy Policy Act of 2005 (EPAct05) could be the greatest energy policy achievement in modern American history since the creation of the Strategic Petroleum Reserve within the Energy Policy and Conservation Act of 1975 (EPCA).

As this Committee is well aware, Title XVII charges the U.S. Department of Energy with administration of an incentives program for 10 classes of what are commonly referred to as "clean" energy projects, defined in section 1703 of EPAct05 as projects that:

> (1) avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and
>
> (2) employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued.
>
> *Source: U.S. Library of Congress*

These two introductory lines of the statute perfectly summarize, in my view, the long-run strategic challenge that confronts the United States and all industrial (and industrializing) economies: the imperative to develop secure, affordable sources of environmentally friendly power and transportation fuels.

Moreover, I would suggest that this Committee has shown great vision in outlining a diversity of potential technology solutions and fuel sources—inclusive of those already in existence, but not yet commercially viable within the U.S.—as this reflects the ways in which global trade flows and overseas innovation clusters can enable new investment opportunities that benefit energy use and resource management goals here at home.

Last, I would suggest that the chartered goals of Title XVII reflect not just an energy or environmental policy so much as a strategy for sustainable, long-term economic growth. Innovations that enable us to make better use of available natural resources, including those that improve our process efficiency and facilitate end-user efficiency behaviors, are the very definition of economic stimulus, because they will increase economic output per unit of input. The more efficiently an expanding econ-

omy can fuel its vehicles, power its factories, and heat and cool its buildings, the more competitive that economy will be in a global market.

BIG NUMBERS

This government prosecutes its energy policy largely through market mechanisms that encourage private investment, including direct subsidies, tax credits, cost-sharing, and rebates. All of these can be successful in encouraging adoption and commercialization of clean energy technologies, but the daunting scale of energy investments requires most project sponsors to raise money to expand their operations. New projects require funding for infrastructure, legal and permitting costs and, in some cases, advance purchases of fuel. Even when credit markets are functioning properly, this may not be as easy as it sounds.

This has a lot to do with the fact that energy is a commodity. No matter what technology one employs to convert raw materials into electrons or finished fuels, the prices buyers pay for the resulting products are almost always the same, or very close to competitive prices. These prices are typically set by broader markets, rather than any individual project sponsor. As a result, the financial investors who purchase debt and equity in energy projects are not typically eager to provide financing to entrepreneurs who propose expensive ways to manufacture commodities. It can be especially difficult for project sponsors to convince the men and women who manage other people's money to invest in risky, expensive ways to manufacture commodities.

The energy industry is a world of big numbers where a single unit of infrastructure can carry an eye-popping price tag. Consider nuclear power. We will not have hard data until a new nuclear power plant is actually built in this country, but recent applications to local regulators for new reactors have presented project cost estimates that range between $7,000 and $10,000 per kilowatt of capacity. For a 1,000 megawatt plant, that comes to between $7 and $10 billion. There aren't very many companies in the world that have enough cash on their balance sheets to sponsor multi-billion-dollar projects. Quite frankly, there aren't that many companies in the world with public equity valuations sufficient to finance projects at this scale by issuing new or repurchased shares of stock. Moreover, even when equity valuations might be sufficient to cover project costs, it is not always financially efficient for mature or diversified businesses to cede disproportionate shares of equity ownership or to fund operations without the tax shield conferred by debt. Project sponsors tend, as a result, to rely on debt financing for energy infrastructure.

Reliance on debt financing creates an unfortunate irony: interest rates can be self-fulfilling prophesies. Commercial lenders typically demand higher rates of return for projects that are less creditworthy or characterized by higher-than-average technology and execution risks. But high interest rates increase an innovative project's fixed cost burden, diminishing its competitiveness relative to incumbent technologies on a per-unit basis.

Figure 1, below, offers a simple representation of the difference in the fixed cost component of clean energy production that results for interest rate differentials. (In the interest of simplicity, Figure 1 does not take into account debt tax shields, depreciation, amortization, and consolidated enterprise impacts.)

Figure 1 – Low-Cost Financing Can Make the Difference Between In and Out of the Money

High cost of debt		
Nameplate		1,000 MW
Useful life		25 Years
Capacity factor		90%
Power generated		197,100,000 MWh
Financing life		20 Years
Project cost		$2,500 per kW
Total cost		$2,500,000,000
Equity	20%	$500,000,000
Debt	80%	$2,000,000,000
Equity cost	15%	$75,000,000
Debt cost	10%	$2,593,822,046
Total fixed costs		$7,668,822,046
Fixed generation cost		$39 per MWh

Low cost of debt		
Nameplate		1,000 MW
Useful life		25 Years
Capacity factor		90%
Power generated		197,100,000 MWh
Financing life		20 Years
Project cost		$2,500 per kW
Total cost		$2,500,000,000
Equity	20%	$500,000,000
Debt	80%	$2,000,000,000
Equity cost	15%	$75,000,000
Debt cost	5%	$1,154,643,202
Total fixed costs		$6,229,643,202
Fixed generation cost		$32 per MWh

Source: FBR Research

Although a real-world generation cost model would also consider variable costs like rent, operations, maintenance, fuel, and insurance, the foregoing example should be adequate to illustrate how a 5% interest rate differential can mushroom into a 23% competitive disadvantage over a 25-year operating life, even when variable costs are exactly the same. High debt costs may prove particularly burdensome to the competitive viability of clean energy technologies that do not require significant variable cost inputs, either because they rely on renewable sources (like wind and sun) or employ high-efficiency technologies that minimize the proportional impact of fuel and environmental compliance costs.

TIME IS MONEY, BUT THIS IS A LOT OF MONEY

Loan guarantees offer the federal government a low-cost mechanism for giving incentives to clean energy technology projects at the same time that the government improves those projects' chances of successful competition with incumbent infrastructure and processes, but this theoretically low execution cost profile carries with it a daunting obligation: adequate due diligence to minimize the risk that a project fails and the debt burden falls on the U.S. taxpayer.

Time, as the saying goes, is money for project developers who have already undertaken debt obligations but require further financing to reach the point of commercial execution. Injecting a three-year delay into the simple example above increases the fixed cost of generation by between 3% and 6%. Unsurprisingly, some would-be project sponsors have expressed their frustration with the latency associated with a process that began with the August 2005 passage of EPAct05, continued with an initial solicitation in August 2006, followed by invitations in October 2007 and further solicitations in June, September, and October of 2008, but has yet to provide assurance for a single commercial loan to a clean energy project sponsor.

On the other hand, it seems reasonable that an agency like the Department of Energy, which operates on a $24 billion annual budget, might be cautious about awarding $38.5 billion in taxpayer-backed debt obligations for projects that theoretically cost an aggregated $48.2 billion (assuming 80% debt financing), particularly when annual funding for the entire USDA Business & Industry Guaranteed Loan Program, the largest comparable program operated within a nonfinancial government agency, totals $1 billion per year. It may not actually be feasible to expect the Department of Energy, the world's preeminent source for precompetitive research science, to deliver comparable excellence in administering loans and credit assurance at the scale required by clean energy projects.

More importantly, despite a clear recognition by the Department that some innovations require risk (as evidenced by solicitations that assign greater weighting to project sponsors' creditworthiness for technologies that are more mature), it may be difficult for any responsible steward of appropriations-based spending to properly structure a portfolio of investments that balances execution risk with innovation rewards by accepting a minimum failure rate. This suggests that it may be prudent to allocate the responsibility for execution and portfolio strategy to an agency or a new entity where lending and risk assessment are already a core competency.

Mr. Chairman, this concludes my prepared testimony. I will look forward to any questions at the appropriate time.

The CHAIRMAN. Thank you very much.

Mr. Asselstine, please go right ahead.

STATEMENT OF JAMES K. ASSELSTINE, MANAGING DIRECTOR, BARCLAYS CAPITAL

Mr. ASSELSTINE. Chairman Bingaman, Ranking Member Murkowski, members of the committee, thank you for the opportunity to appear before you today.

Mr. Chairman, in my view the U.S. electric power sector faces three major imperatives.

First, it must reduce the growth in electricity demand by improving efficiency and by promoting conservation and demand side management.

Second, it must reduce its carbon footprint by developing and deploying low carbon and zero carbon technologies.

Third, it must build significant amounts of new generating capacity to meet the growth in electricity demand and to replace

older, less efficient generating capacity as well as new transmission to bring that electricity particularly from intermittent renewable resources to market.

Meeting these three imperatives will likely require a broad based portfolio of technologies. The portfolio should include, in my view, aggressive energy efficiency programs, major expansion of zero carbon renewable and nuclear generating capacity, widespread deployment of carbon capture and storage technologies when they are available, improvements in the efficiency of existing coal fired power plants, large scale use of plug in hybrid electric vehicles, development and use of SMART transmission and distribution technologies and expanded use of smaller scale distributed power generation. In my view no single technology provides a complete solution to the challenges that we face, rather all the elements in the portfolio are needed given the inherent risks, challenges and uncertainties with the individual technologies.

Developing and deploying this portfolio of technologies will require a sustained capital investment over at least the next 20 years on a level that is unprecedented for the electric power industry. One study estimates that approximately $1.5 to $2 trillion in new investment will be required by 2030 for new generating capacity, new transmission and distribution, efficiency programs and environmental controls on operating plants. To place this estimate in perspective, the current book value of the entire U.S. electric supply system built up over approximately the last 60 years is only $750 billion.

The electric power industry will be challenged to manage investment on this scale, particularly in today's more constrained and difficult credit markets. The electric sector is already showing some signs of stress. The investor owned utilities have already reduced capital spending for 2009 by about 10 percent on average.

There is also downward pressure on equity returns, largely because rate increases have not kept pace with rising costs. Bond spreads are also wider, in some cases significantly wider. Although all in debt costs are not dramatically higher today because yields on treasury securities are so low, the cost of debt will likely be significantly higher tha historical norms when treasury yields recover if bond spreads remain at their current levels.

Industry leverage is also beginning to rise. Not to the level seen in 2003 when debt represented about 61 percent of the investor owned utilities capital structure. But it has increased somewhat over the last 3 years. Debt now represents about 56 percent of the industry's capital structure.

This of course exerts downward pressure on credit ratings. Only about 40 percent of credit rating actions last year by the three major agencies were upgrades. The first year since 2004 that credit rating downgrades exceeded or outpaced the rate of upgrades.

In summary the electric power sector is in the early stages of a major 20 year capital investment program. Is not as well positioned for these capital expenditures as it was in the 1970s and 1980s when it last undertook a major capital expansion. At that time the average electric utility had a solid single A credit rating. Today the average electric utility credit rating is in the triple B range.

It seems clear therefore that there is a critical need for an effective, long term financing platform to ensure deployment of clean energy technologies and the numbers required and to accelerate the flow of private capital to achieve a sound energy and environmental policy. It also seems clear that this financing authority whether it resides within the Department of Energy or is constituted as a separate entity must have an array of tools at its disposal given that the different technologies present very different financing challenges and have very different needs.

The Loan Guarantee Program authorized by the 2005 Energy Policy Act was an important step in the right direction. Loan Guarantees are a powerful tool and a highly efficient way to expand the availability of private capital. I believe that an efficient, timely, workable and appropriately funded Loan Guarantee Program is essential.

In that regard, Mr. Chairman, my written testimony includes some suggestions to help improve the effectiveness of the existing Loan Guarantee Program. In addition, I support the efforts in the Stimulus Bill to increase funding for the Loan Guarantee Program to better match the available resources to the financing demand. But an effective financing platform may also need the authority to make direct loans, to take an equity position, to provide insurance against certain project or technology risks and to provide financing to bridge the gap between small scale technology demonstration and large scale technology deployment.

Members of this committee deserve great credit for having already recognized this need for a broader financing platform. In 2008, Mr. Chairman, you introduced legislation to create a 21st century energy deployment corporation. Senator Domenici, formerly the ranking minority member of this committee, introduced legislation to create a clean energy bank.

Both proposals, in my view, have considerable merit and address various aspects of the financing challenges facing the United States and its electric power industry. The two proposals certainly serve as a good starting point to create the institutional capability needed to facilitate the financing of our new electricity infrastructure. Thank you, Mr. Chairman, that completes my testimony.

[The prepared statement of Mr. Asselstine follows:]

PREPARED STATEMENT OF JAMES K. ASSELSTINE, MANAGING DIRECTOR, BARCLAYS CAPITAL

Chairman Bingaman, Ranking Member Murkowski, and members of the committee, thank you for the opportunity to appear before you today.

My name is Jim Asselstine. I am a Managing Director at Barclays Capital, where I serve as the senior fixed income research analyst responsible for covering the U.S. electric utility and independent power sector. In that capacity, I provide fixed income research coverage for more than 100 U.S. electric utility companies, independent power producers, and power projects. I also work closely with the large institutional investors who have traditionally been a principal source of debt financing for the power industry.

Mr. Chairman, I appreciate your invitation to testify at today's hearing to discuss the current state of the Department of Energy loan guarantee program, authorized under Title XVII of the Energy Policy Act of 2005, and how the delivery of services to support the deployment of clean energy technologies might be improved.

My testimony will provide a financial community perspective on three topics:

1. the scope of the challenge facing the United States in building and modernizing its electricity supply and delivery infrastructure to meet future electricity

needs, sustain economic growth, and reduce the environmental impact—particularly the carbon footprint—of electric power production;

2. the scale of the investment required to rebuild and modernize America's electric power infrastructure, and the associated financing challenges this investment poses for the industry; and

3. how the DOE loan guarantee program might be enhanced to help the industry meet these financing challenges.

Mr. Chairman, in my view, the U.S. electric power sector faces three major imperatives. It must reduce the growth in electricity demand by improving efficiency and by promoting conservation and demand side management. It must reduce its carbon footprint by developing and deploying low-carbon and zero-carbon technologies. And, it must build significant amounts of new generating capacity—to meet growth in electricity demand and to replace older, less efficient generating capacity—as well as new transmission to bring that electricity, particularly from intermittent renewable sources, to market.

Meeting these three imperatives will likely require a broad-based portfolio of technologies. The portfolio should include: aggressive energy efficiency programs; major expansion of zero-carbon renewable and nuclear generating capacity; widespread deployment of carbon capture and storage technologies, when they are available; improvements in the efficiency of existing coal-fired power plants; large-scale use of plug-in hybrid electric vehicles; development and use of "smart" transmission and distribution technologies, and expanded use of smaller scale, distributed power generation. In my view, no single technology provides a complete solution to the challenges that we face. Rather, all the elements in the portfolio are needed given the inherent risks, challenges and uncertainties with the individual technologies.

Developing and deploying this portfolio of technologies will require a sustained capital investment over at least the next 20 years on a level that is unprecedented for the electric power industry. Complying with state or federal requirements to reduce carbon emissions and mandate renewable portfolio standards will require that we address the major investment challenge facing the electric power sector. An enhanced and stable financing framework is essential both to conduct research, development and demonstration of the technologies in the portfolio, and to enable large-scale deployment of the new technologies when they have been developed and demonstrated.

Mr. Chairman, as I discuss more fully below, I do not believe that our traditional financing tools, techniques, and resources will be sufficient in themselves to expand reliance on renewables and zero-carbon technologies and to achieve the necessary reductions in carbon emissions. The scale of the needed capital investment will require a joint and coordinated effort by industry, the federal government and state governments to enhance and expand our existing sources of financing, including an efficient, timely, workable, and appropriately funded loan guarantee program.

THE CHALLENGE FACING THE U.S. ELECTRIC POWER SECTOR

Current Situation.—The U.S. electric grid consists of approximately one million megawatts of electric generating capacity. Approximately 45 percent of that capacity is more than 30 years old, and 20 percent is more than 40 years old.

Of the current one million megawatts (MW) of generation, about 315,000 MW is coal-fired capacity. Two-thirds of that coal-fired capacity is 30 years old or older; one-third is 40 years old or older. Approximately 125,000 MW of U.S. generating capacity consists of oil-and gas-fired power plants, many of which were built in the 1960s and 1970s, and that are inefficient by today's standards.[1] Much of this older fossil-fueled generating capacity is not equipped with modern environmental control technology. Continuing to rely on older, less efficient generation, which represents one-quarter to one-third of U.S. generating capacity, frustrates our ability to achieve cleaner air and reduce carbon emissions.

This dependence on older, less efficient generating capacity reflects the fact that the United States has deferred investment in new, more efficient, cleaner high-capital-cost renewable, nuclear, and coal-fired baseload power plants. The core problem—inadequate investment—extends beyond generating capacity. Transmission investment started to decline in the late-1970s. By the mid-1990s, the United States was investing about one-half what it was investing in the 1970s—even though elec-

[1] Power plant efficiency is measured by heat rate—the amount of heat input required to produce a kilowatt-hour (kWh) of electricity. Older oil-and gas-fired plants typically have heat rates as high as 11,000-12,000 Btu/kWh. New gas-fired combined cycle plants have heat rates in the range of 7,000 Btu/kWh. In other words, the older plants burn almost twice as much fuel (and produce almost twice the emissions) as the newer, high-efficiency plants.

tricity demand and the strain on transmission capacity increased substantially during that time. Transmission investment has increased in the last several years (due to tax treatment changes in the Energy Policy Act of 2005 and higher returns allowed by the Federal Energy Regulatory Commission), and is now approaching $8-9 billion a year, as the electric utilities work to catch up with the demands being placed on the electric grid.

Since the early 1990s, the United States has built a relatively small amount—approximately 11,000-12,000 megawatts—of new baseload coal-fired and nuclear generating capacity, and a very large amount of new gas-fired capacity—approximately 300,000 megawatts. The industry built gas-fired plants because they represented the lowest investment risk at a time of major uncertainty in the power business, brought on by restructuring and deregulation, and at a time in which natural gas prices were relatively low and stable. However, coal-fired and nuclear power plants still represent about 70 percent of U.S. electricity supply and provide the greatest forward price stability. Gas-fired power plants, on the other hand, have exposed consumers periodically to higher volatility in electricity prices.

Future Outlook.—In its annual forecast of U.S. energy supply and demand trends, the U.S. Energy Information Administration (EIA) forecasts a need for approximately 263,000 MW of new generating capacity by 2030 to meet growth in electricity demand and to replace older power plants that are no longer economic. EIA's 2008 Annual Energy Outlook incorporates the energy efficiency and demand-side impacts of the Energy Independence and Security Act of 2007. (For example, EIA's 2008 outlook projects electric demand growth of 1.05% per year through 2030, a reduction from the 1.5% per year demand growth forecasted in their 2007 outlook. For reference, growth in electricity demand between 1998 and 2007 averaged 1.8%/year.)

Even with more aggressive efficiency programs and lower growth rates in electricity demand than forecast by EIA, the United States will likely need substantial new generating capacity. In a recent analysis for the Edison Foundation,[2] The Brattle Group forecast a need for 133,000 megawatts of new capacity by 2030 assuming no mandatory controls on carbon emissions, and 216,000 megawatts by 2030 with carbon limits. (The Brattle Group analysis assumes 0.7 percent per year growth in peak load, which determines the amount of generating capacity required. For reference, the Energy Information Administration's forecast to 2030 is 1.5 percent annual growth in peak load. Even this is a large drop from historical performance: Annual growth in peak load between 1996 and 2006 was 2.1 percent.[3]) With the introduction of carbon controls, the need for new generating capacity will likely increase: Companies must build more new capacity to meet demand growth and to replace older coal-, oil-and gas-fired steam capacity that will be shut down because it will not survive the transition to a carbon-constrained world.

Assessments of how to reduce U.S. electric sector carbon emissions show that there is no single technology that can, by itself, slow and reverse increases in carbon emissions. Rather, as a recent analysis[4] by the Electric Power Research Institute (EPRI) shows, a portfolio of technologies and approaches will likely be required. The EPRI analysis starts with the EIA forecast of electric sector carbon emissions in 2030 (2.9 billion tons), then assembles a portfolio of technologies and approaches that could reduce the sector's carbon emissions to 1990 levels (1.8 billion tons) by 2030.

The portfolio necessary to achieve the 1990 level of carbon emissions includes:

1. aggressive efficiency programs to reduce electricity demand growth from 1.05 percent per year to 0.75 percent per year;
2. 100,000 MW of new renewable energy capacity (instead of the 55,000 MW in EIA's reference case);

[2] Transforming America's Electric Power Industry: The Investment Challenge 2010-2030, The Brattle Group, November 2008. http://www.brattle.com/__documents/UploadLibrary/Upload725.pdf.

[3] Recent analysis demonstrates that electricity demand growth can be reduced significantly from historical levels. In a recent analysis (Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S. 2010—2030), the Electric Power Research Institute estimates that energy efficiency and demand response programs could reduce growth in peak load to 0.83 percent per year. Under conditions ideally conducive to energy efficiency and demand response programs, this growth rate might be reduced to as low as 0.53 percent per year. The same analysis estimates that growth in electricity consumption could be realistically reduced to 0.83 percent per year through 2030. Under conditions ideally conducive to energy efficiency programs, this growth rate might be reduced 0.68 percent per year. This report is available on the EPRI website at www.epri.com

[4] The Power to Reduce CO_2 Emissions: the Full Portfolio—2008 Economic Sensitivity Studies, available on the EPRI website at www.epri.com

3. 64,000 MW of new nuclear generating capacity, in addition to the 100,000 MW now operating;

4. significant improvements in the efficiency of existing coal-fired power plants and widespread deployment of carbon capture and storage beyond 2020;

5. significant penetration of plug-in hybrid electric vehicles,[5] and

6. increased use of smaller scale, distributed generation, in place of large central station power plants.

Each of the elements in the portfolio represents maximum feasible deployment, so failure to develop and deploy the full portfolio would place unsustainable stress on the other technologies in the portfolio.

INVESTMENT REQUIREMENTS IN THE ELECTRIC POWER INDUSTRY

Although each technology has its own challenges, the largest single challenge across all technologies is financing. Sufficient financing is an essential enabling requirement, both to conduct research, development and demonstration of the technologies in the portfolio, and to finance large-scale deployment of the new technologies when they have been developed and demonstrated.

Research, Development and Demonstration (R,D&D).—Substantial increases in energy R,D&D investment will be needed in the years ahead to create a sustainable electric supply infrastructure. Unfortunately, recent trends are in the opposite direction. In a February 2007 analysis, the Government Accountability Office found that DOE's budget authority for renewable, fossil and nuclear energy R&D declined by over 85 percent (in inflation-adjusted terms) from 1978 through 2005. The need for new technologies to address critical energy needs has not diminished over the same time period, however, nor have the energy and environmental imperatives facing the United States become any less urgent.

EPRI has estimated that the United States must increase investment in energy R,D&D by $1.4 billion annually between now and 2030 to develop and demonstrate the technology portfolio necessary to bring electric sector carbon emissions back to 1990 levels by 2030. That additional cumulative investment of approximately $32 billion in R,D&D would reduce by $1 trillion the cost to the U.S. economy of bringing electric sector emissions back to 1990 levels, according to EPRI's analysis.

Technology Deployment.—America's electric power industry faces a daunting investment challenge. Approximately $1.5-2.0 trillion[6] in new investment will be required by 2030 for new generating capacity, new transmission and distribution, efficiency programs, and environmental controls on operating plants. To place this estimate in perspective, the current book value of the entire U.S. electricity supply system, built up over approximately the last 60 years, is only $750 billion. The electric power industry will be challenged to manage investment on this scale, particularly in today's more constrained and challenging credit markets.

The electric sector is already showing some signs of stress. The investor-owned utilities have already cut capital spending for 2009 by approximately 10 percent, on average. There is also downward pressure on equity returns, largely because rate increases have not kept pace with rising costs. Bond spreads are also wider (in some cases, significantly wider) and, although all-in debt costs are not dramatically higher because yields on Treasuries are so low, the cost of debt will be significantly higher than historical norms when Treasury yields recover if bond spreads remain at current levels. Industry leverage is beginning to rise—not to the levels seen in 2003, when debt represented about 61 percent of the investor-owned utilities' capital structure—but it has increased somewhat over the last three years and debt now represents about 56 percent of industry capital structure. This, of course, exerts downward pressure on credit ratings. Only about 40 percent of rating actions by the three rating agencies last year were upgrades—the first year since 2004 that downgrades outpaced upgrades.

In summary, the electric power sector is in the early stages of a major, 20-year capital investment program, and is not as well-positioned for these capital expenditures as it was in the 1970s and 1980s when it last undertook a major capital ex-

[5] The transportation sector represents 31 percent (1.9 billion tons/year) of U.S. carbon emissions. Increased deployment of plug-in hybrid electric vehicles would reduce the transportation sector's carbon footprint and U.S. oil demand, but would increase electricity requirements. In terms of carbon policy, this strategy would make sense only if the additional electricity were supplied from carbon-free sources. Otherwise, PHEVs would reduce the transportation sector's carbon footprint but increase carbon emissions from the electric sector.

[6] The Brattle Group, Transforming America's Power Industry: The Investment Challenge, 2010-2030, November 2008.

pansion program. At that time, the average electric utility had a solid A credit rating. Today, the average electric utility credit rating is BBB.

ADDRESSING THE INVESTMENT CHALLENGE

Addressing this investment challenge will require innovative approaches to financing. Meeting these investment needs will require a partnership between the private sector and the public sector, combining all the financing capabilities and tools available to the private sector, the federal government and state governments.

The financing challenges differ somewhat from technology to technology, depending on the nature of the risk being managed, the size of the financings, the maturity of the technology, and other factors.

For renewable energy resources, including wind and solar energy projects, financing challenges include the availability of both debt and equity financing to support large-scale project development. In addition, financial returns are heavily influenced by the availability of tax benefits in the form of Production Tax Credits, Investment Tax Credits, and accelerated depreciation. Because many of the renewable project developers are smaller companies or European utilities, the ability of these companies to use the tax credits being generated by the projects is constrained. In addition, the availability of Production Tax Credits is limited to entities who are owners and producers of the project and its power output. As a consequence of these limitations, renewable project developers have increasingly utilized structured tax partnerships or lease structures, which allow developers to raise capital from one or more financial partners who have the capacity to use the tax benefits. The market for these financing structures has grown rapidly over the past three to four years, from about $2 billion per year initially, to about $4-5 billion last year. During this period, a core group of about 10-20 large financial investors, which include large banks, insurance companies, and structured finance investors, has developed a detailed understanding of the technology, structure, and analysis of these transactions. Unfortunately, as a result of the credit crisis, most of these financial investors no longer have the capacity to use the tax benefits from these projects at present. This lack of "tax equity" in the current environment provides a significant constraint on the ability to finance new renewable energy projects or to refinance existing projects where construction is nearing completion. Certain changes being considered in the stimulus bill, such as extending the availability of tax credits for renewables, allowing a wind project developer to claim an Investment Tax Credit instead of a Production Tax Credit, and allowing a five-year carry-back for tax benefits, would be helpful, as would a provision allowing a renewable project developer to apply for an equivalent grant from the government in lieu of the tax benefits. In addition, a principal source of debt financing for these projects has been several of the large European banks that have developed expertise in renewable energy project financing, and the lending capacity of these banks is also somewhat constrained in the current environment.

The electric utilities and utility holding companies are much larger entities, and therefore have greater capacity to make use of the tax credits generated by renewable energy projects. In addition, recent changes to the tax laws have given the electric utilities greater flexibility to make use of the Production Tax Credits from renewable energy projects. These factors, together with the growth of renewable portfolio standards, are likely to lead to further expansion in renewable energy development by the utilities, although these projects will add to the utilities' burden to raise debt and equity financing to meet their growing capital expenditure needs. The DOE loan guarantee program can help provide the debt financing needed for these renewable energy projects, and expanding the available funding under the loan guarantee program for renewable energy projects, as is being considered in the stimulus bill, would be useful.

For advanced, high-efficiency coal-based technologies, like integrated gasification combined cycle (IGCC), which appear to offer the greatest potential for carbon capture, the risk is largely technological: The question that most project developers and investors are considering is, "will the plant meet performance targets for reliable commercial operation and, if so, how long will it take to reach them?" IGCC plants include a gasifier, a clean-up train, a gas turbine and a steam turbine. All four technologies must be integrated and operate together, including the ability to follow load, at high levels of reliability. Smaller-scale IGCC plants have demonstrated that the technology can operate at these performance levels, but broad commercial deployment has yet to occur. Continued federal funding for research, development and demonstration is likely necessary, and federal loan guarantees may be necessary to offset the technology risk, which investors may be unwilling to take.

For advanced nuclear power plants, the financing challenge is not technology. The advanced light water reactors now being licensed are evolutionary improvements on today's light water reactors, which have operated on a sustained basis at high levels of reliability (e.g., capacity factors in the 90 percent range) for the last decade. Rather, the challenge for new nuclear plant financing is one of scale: these are large capital investments—likely $6-8 billion for a new reactor—being built by relatively small companies.[7] The U.S. electric power sector consists of many relatively small companies, which do not have the size, financing capability or financial strength to finance power projects of this scale on their own, in the numbers required—particularly since the same companies will also be investing in other forms of generating capacity, transmission and distribution, efficiency and demand response programs, and environmental controls. New nuclear projects will likely require financing support to offset the disparity in scale between project size and company size, and this is especially true for the plants that would be built by unregulated generation companies. For nuclear projects, like other capital-intensive baseload facilities, federal loan guarantees appear to be an effective financing technique. Loan guarantees allow the companies to use project-finance-type structures, to employ higher leverage in the project's capital structure, and to fence off the project's credit risk from the project sponsor's balance sheet, in whole or in part.

It seems clear, therefore, that there is a critical need for an effective, long-term financing platform to ensure deployment of clean energy technologies in the numbers required and to accelerate the flow of private capital to achieve a sound energy and environmental policy. It also seems clear that this financing authority, whether it resides within the Department of Energy or is constituted as a separate entity, must have an array of tools at its disposal, given that different technologies present very different financing challenges and have very different needs.

The loan guarantee program authorized by the 2005 Energy Policy Act was an important step in the right direction, but perhaps only a first step. Loan guarantees are a powerful tool and a highly efficient way to expand the availability of private capital, but an effective financing platform may also need the authority to make direct loans, to take an equity position, to provide insurance against certain project or technology risks, and to provide financing to bridge the gap between small-scale technology demonstration and large-scale technology deployment.

The Title XVII Loan Guarantee Program.—Although tax stimulus—either in the form of tax credits or more favorable depreciation terms—can play an important role in encouraging investment, loan guarantees can be a very efficient way to mobilize private capital. Tax benefits have a direct, dollar-for-dollar impact on the federal budget. Even if the credit subsidy cost associated with a loan guarantee is appropriated, loan guarantees provide substantial leverage. Tens of millions of dollars in appropriations to support a loan guarantee program can leverage tens of billions of dollars in private sector investment.

For this reason, federal loan guarantees are widely used by the federal government to support financing of projects that have substantial public value, and would not otherwise be able to secure financing on reasonable terms. Federal loan guarantees are used for ongoing programs—to support rural electrification, development of transportation infrastructure, shipbuilding, low-income housing and, through agencies like the Export-Import Bank and the Overseas Private Investment Corporation, to support U.S. companies developing projects overseas. Federal loan guarantees are also periodically used in specific emergency situations—as they were after the September 11, 2001, terrorist attacks to support the U.S. airline industry. Title XVII of the 2005 Energy Policy Act authorizes the Secretary of Energy to provide guarantees for up to 80 percent of project cost for projects that (i) avoid, reduce or sequester air pollutants or greenhouse gases, and (ii) employ new or significantly improved technologies.

Under the Federal Credit Reform Act (FCRA) of 1990, loan guarantees are scored in the federal budget on a risk-adjusted basis, based on the budget subsidy cost methodology specified in FCRA. The budget subsidy cost represents the net present value of the risk-adjusted cost to the government of the loan guarantee at the time it is issued. In simple terms, that "cost" is the expected payments by the federal government less expected revenues received by the federal government. Federal agencies have considerable experience in calculating loan guarantee costs, and well-established protocols and analytical models for doing so.

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[7] The largest U.S. investor-owned power company has a market value of approximately $40 billion and a book capitalization of about $10 billion. The other companies in the sector are significantly smaller. In comparison, the larger European electric companies are two or three times larger, and are better able to finance large-scale projects on balance sheet.

The Title XVII loan guarantee program is unique among federal loan guarantee programs in that project developers are expected to pay the budget subsidy cost of the loan guarantee. This "self-pay" or "user-financing" feature offsets the risk-adjusted cost to the government of providing the guarantee. The self-pay amount is retained by the government regardless of whether the project defaults or not. If there is no default, the self-pay amount represents a financial return to the Treasury for agreeing to assume the risk during the period that the guarantee was in effect. Given a rational approach to implementation, in which projects are selected based on a high likelihood of commercial success with the loan guarantees, there should be minimal risk of default and therefore minimal risk to the taxpayer.

As this Committee is aware from previous hearings, there have been some implementation difficulties with the Title XVII loan guarantee program, many of which predate the formation of the Loan Guarantee Program Office in 2007. For example, this Committee will no doubt remember, before the loan guarantee office was created, when the Department of Energy published the proposed rule governing the loan guarantee program, and the debate over whether DOE would guarantee 100 percent of the debt obligation or only 80 percent. Going forward, given the importance of the loan guarantee program and the likely volume of guarantee requests for a wide range of qualifying projects, it will be important for the Loan Guarantee Program Office, whether it resides as an independent entity within the Department or as a new institution outside DOE, to have the dedicated resources it needs to operate effectively and efficiently. These resources should include its own legal and financial advisors, who would be better equipped through their experience and training to interpret the statute and develop workable regulations. This should reduce the implementation risk going forward.

CONCLUSION

In conclusion, it appears that the Title XVII program represents a sound starting point from which to design a broader financing platform, with additional financing tools, to support the large-scale deployment of the advanced technologies needed to maintain reliable levels of electric service and to meet the nation's environmental goals.

Members of this committee deserve great credit for having already recognized this need. In 2008, Senator Bingaman introduced legislation to create a 21st Century Energy Deployment Corporation. Senator Domenici, formerly ranking member of this committee, introduced legislation to create a Clean Energy Bank. Both proposals have considerable merit and address various aspects of the financing challenge facing the United States and its electric power industry. The two proposals certainly serve as a good starting point to create the institutional capability needed to facilitate the financing of our new electricity infrastructure.

Mr. Chairman, again thank you for the opportunity to testify, and this completes my testimony.

The CHAIRMAN. Thank you very much. Thank you all for your excellent testimony. Let me start with 5 minutes of questions. Then I'm sure all members will have questions.

One obvious question that arises hearing your testimony is whether we should see it as our job in this committee and here in this Congress to take on the problem of how we improve the effectiveness of the existing Loan Guarantee Program or whether we should pursue the creation of an entirely new lending authority, financing authority, along the lines that Andy Karsner was talking about in the nature of a clean energy bank or should we do both? Is it possible to do both? I think we've had some discussion about the subject.

My own view is we do not want to be legislating in a way that impedes the functioning of what currently exists. At the same time we don't to pass up the opportunity to take on a broader objective. enact a broader solution if that's what required.

So let me ask David Frantz and then Andy and any of the rest of you to comment on how you come down on that question.

Mr. FRANTZ. Thank you very much, Mr. Chairman. It is probably the question to the core of the problem. I think your question really is in two parts.

In terms of the first part there are clearly some things that Congress can do that would help us facilitate our activity as it now stands with frankly, very simple and small changes to the existing law. The first one Andy alluded to it in his comments. We are now aware that the self-pay feature for the credit subsidy cost is an enormous impediment, particularly to those medium sized and smaller company applicants that we are dealing with.

So the first suggestion is that this probably should be removed and we should return to the credit subsidy mechanisms that are more universally applied to virtually all Federal programs. That is the credit subsidy cost is appropriated. Therefore, it is not punitive nor redundant.

The second issue is that we have encountered in our initial negotiations, particularly with a larger projects in the nuclear field as well as the larger fossil fuels, that the superiority of liens in the current law precludes us from bringing to the table as participants in these projects for shared cost and shared risk. This includes the Export Credit agencies throughout the world who are supporting these projects and are willing to finance and be participants.

Another issue concerns undivided interest which involves utility participation municipality participation in each of our projects. A simple fix can be to make the superiority of liens one of equal participation or what we call in the trade, pari-passu. Rather than requiring the U.S. Government to have a superior lien which can preclude these other financing techniques.

I certainly have not been a detailed student to the extent that Andy and some others have been in the initiatives for the much more independent approach. Let me make one important comment I think that you and I have discussed, Mr. Chairman, and that is that today, given the urgency of circumstances, I think it is very important that the existing program must remain in operation where it currently resides in the Department of Energy.

Under the circumstances, it is with the number of the improvements that Andy has suggested in his testimony that we rely very heavily, particularly as it pertains to ascertaining risk associated with new and innovative technologies, on the technical expertise of the Department of Energy. This includes all the program offices of the Department of Energy. We rely on their technical advice and consult with them regularly as well because this is an enormous asset. It is decidedly different from normal project financings and in contradistinction to commercial applications. So in the immediate term, the access to that expertise is very important to us as we try to expedite this program.

Now, that said, I do believe certainly, that there is room to consider a separate organization. As I am the only sitting U.S. Government officer on this panel, I have to be careful because I do not believe that either the previous administration or the current administration, as you suggest Mr. Chairman, has given attention to this consideration.

As you alluded to, I am an alumni of the Overseas Private Investment Corporation which is probably a model for such a type of

activity. The important aspect is it does indeed provide a great deal more flexibility and the ability to be more responsive, no question about it. But as you may be aware, the Overseas Private Investment Corporation (OPIC) and some of these other institutions, were founded as a part of the Marshall Plan of 1949. OPIC was not established as an independent agency until 1972.

So there clearly is a logical progression. I certainly do not suggest it has to be that long in the cases that are under consideration. I do agree with you, to do something that would be an abrupt change at this point could be in fact, disruptive or counterproductive to the attention of the current office.

The CHAIRMAN. Let me just ask. I know my time is expired here, but Andy why don't you just give us a short response to whether you think we should concentrate on improving what exists, starting something new or can we do both in your opinion?

Mr. KARSNER. Sir, I think you have to do both. I do not think that there is any amount of tweaks around the fringes around the current system and the status quo constraints that would enable it to ultimately mobilize capital and serve the function for which the statute is intended. Achieve the metrics that either the President is talking about or that have been put forward by Congress in terms of anti-projected greenhouse gas emissions.

So Marshall Plan is an apt reference here. If we state out that these are what we must do. Now Congress has gone so far as to commit the National Treasury in unprecedented numbers. It is really a question of not how much do we spend, but how do we manage that which we are spending to achieve stated goals.

It cannot be done in the current system. But you have to go with the tweaks with the mediacy. Whether that is statutory change, through an amendment. There may be some particularly with these questions of first leans that were put into title 17 or things that imply the arguments that you may have heard about on stripping and some of the arguments about lack of clarity on what, 80 percent of total project.

So clarity verses ambiguity is important. But I would think that there's a historic opportunity to convene on a bipartisan basis this committee with senior folks around Secretary Chu and involve OMB and Treasury to get them all talking together for a common purpose which is not been the record to date.

The CHAIRMAN. Ok. Let me defer to Senator Murkowski. I'll come back on a future question if others want to comment on this.

Senator MURKOWSKI. I will follow up with your question, Mr. Chairman because I think this is what we really want to know. We recognize that there are flaws within the program. Mr. Karsner, you said it needs to be institutional reform.

I agree with you. I am not quite sure if the clean energy bank is the way to go whether we have this quasi agency out there or not. But I'm concerned that if we just do some tweaks we will not be really providing what is needed out there to provide for the level of loan guarantees that we are all looking for here.

Mr. Book and Mr. Asselstine, I would like for you both to address whether you feel we should be moving to a different approach in terms of a quasi agency, clean energy bank. If possible, to simulta-

neously make the necessary reforms within the Department of Energy.

I will state the obvious. We have a stimulus package that is likely going to be agreed to this week that puts even greater demands on the Agency, even greater demands on the 30 full-time employees that we have. What is the best path forward?

Mr. Book, first. Then if we can come back to you at the end, Mr. Karsner, I would appreciate it.

Mr. BOOK. Thank you, Senator Murkowski. There seems to be almost thundering agreement that doing both at once is possible. It seems like it's the best way to go.

This is the situation where anything that gets the in process work done faster is good. Anything that slows it down is probably bad.

Senator MURKOWSKI. Right.

Mr. BOOK. At the same time the long term strategy, the strategic framework has to be about solving a problem that you've defined. If the problem is just to do a little something around the edges of our clean energy goals than we should probably continue to keep this around the edges. Otherwise you may want to make it a central entity that has its own autonomy. Maybe doesn't have to keep thinking about the next appropriations line item and become self financing because then you actually will begin to see the sort of behaviors that begin to maximize the diffusion of capital.

Senator MURKOWSKI. Mr. Asselstine.

Mr. ASSELSTINE. Senator Murkowski, I'd have to agree that we should pursue both alternatives simultaneously. There are clearly some glaring problems with the existing program as it's being implemented. I would give great credit to Mr. Frantz and his colleagues in the Loan Guarantee Program Office.

I think they're working diligently to try to move the program forward. But there are clearly have been some problems. He's highlighted several of them.

The problem with superiority of leans. One of the companies that I follow has been very vocal in saying that they abandoned pursuing the Loan Guarantee Program because the Department would not be flexible around accommodating the lean that their existing mortgage bond holders had. So under the Department's approach, would basically have required that the utility refinance all of its existing debt in order to qualify for the Loan Guarantee Program. They threw up their hands. They basically abandoned the effort, clearly a problem that can be fixed consistent with protecting the interests of taxpayers in terms of the Loan Guarantee Program.

The problem of undivided interest participation clearly something that can and should be fixed immediately. Again, another utility is contemplating pursuing a project with partners. Under the Department's interpretation or approach, if there were a problem for any partner the Department would then take the entire facility rather than just take the interest of the undivided interest of the defaulting partner.

The utility looks at that and they basically say, we're now hostage to the performance of our partners. We could lose our investment in the project even though we would want to go forward with

it. This kind of inflexibility is a problem I think, within the existing structure within the Department.

I very much agree that the office itself ought to have its own legal and financial advisors to deal with some of these specific problems. But beyond that I do think that this program is sufficiently important. Will be critical enough given the magnitude of the investment that this industry has to make over time to look at the option or the alternative of a separate, independent entity that would have more flexibility and a greater ability to accommodate the needs of the industry going forward rather than leaving the entity within the Department of Energy.

But by all means fix the immediate problems at the same time. So that we can try to move the existing program forward.

Senator MURKOWSKI. I have a question for you, Mr. Frantz. But my time is expired, so I will wait until we come back for a second round.

The CHAIRMAN. Senator Shaheen.

Senator SHAHEEN. Thank you, Mr. Chairman. Thank you all for being here. Mr. Frantz, you point out in your testimony that you're working on putting in process in place to evaluate and fund projects to ensure that taxpayer interests are protected and to expedite applications.

As, I think, we all recognize there are a number of applicants who've been waiting for a very long time for the final outcome of the process. One of those companies is a New Hampshire company called Simichron. It subcontracts with Beacon Power in Massachusetts. It's one of 16 projects that has been deemed qualified.

Could you talk a little more about how you expect the process to play out? Help me better understand what your office uses when considering applications to achieve the most objective and beneficial outcome both for the taxpayer and for technology development?

Mr. FRANTZ. Certainly, thank you very much Senator for your question. Clearly what we do as expeditiously as possible, but very carefully, is to first evaluate the application for completeness against our Final rule. We actually, as I indicated or intimated in my comments, do in fact have an open consultative process so that the applicants are kept informed once their applications are filed.

We first look at the applications for completeness. Then, of course, as you might expect, we have to ascertain whether there is innovative technology employed. That takes just a matter of a few weeks.

Once that is completed, we condcut our financial and technical evaluations. I alluded to in my comments that we rely on the Department's National Laboratories, several of them are under Andy's former group as well as others, to evaluate the technology. They do an independent technical evaluation from us, and we do the financial evaluation.

We try to accomplish that within just a matter of a couple months. Once that is completed, we go to our Credit Review Board for the recommendation to proceed to full due diligence. The due diligence process is very difficult to put a timeframe on it because it varies decidedly with the complexity of the project as well as the size of the projects. The due diligence process can run from a mat-

ter of just a couple of months for these smaller projects. For the larger projects involving Environmental Impact Statements, for example, the process can take 18 months to 2 years. The point is that at every step of the way, we proceed as carefully as possible to ultimately reach a conclusion.

Now in the case that I alluded to in my comments, among the group of 11 projects you mentioned one of them, Senator. If in fact, a project is a manufacturing project and it does not require an Environment Impact Statement and it only requires an Environmental Assessment, it can move along much more quickly.

The point is that we effectively just started this process, as I mentioned, at the end of November and the beginning of December of 2008 on these projects. The project you mentioned happens to be in that group of projects. I mentioned a handful of projects that we now have on a very fast track. These projects can, in a few months, go through the due diligence process to an ultimate approval and issuance of a loan guarantee. Those are projects that are more manufacturing oriented rather than a large greenfields or stand up projects.

Senator SHAHEEN. Oh, good. So I can tell Simichron that they should expect to hear shortly.

Mr. FRANTZ. We are working with them actually.

Senator SHAHEEN. Good. Thank you.

The CHAIRMAN. Senator Bennett.

Senator BENNETT. Thank you very much, Mr. Chairman. Mr. Karsner, or Andy, I guess is the easier way to address it. You made reference to the effort that I made along with Senator Dorgan to try to get this amount of money available for this increased significantly in the stimulus. We were successful on the Senate side. It got dropped on in Conference.

The interesting thing to me was that the only opposition that erupted publicly was that I had somehow gone into the tank with the nuclear industry. The whole purpose of trying to get this loan guarantee was because I wanted major new nuclear plants. Under no circumstances could we do that.

I can deal with that. I don't want to raise that here. But simply the fact that the anti nuclear folks raised a significant political attack on the whole program comes into a discussion of what you're talking about here.

If we had the independent funding agency that has been talked about here, that strikes me as a good idea. Would that be more or less subject to the kind of political pressure generated by these groups, the kinds of television ads that were produced around in Utah attacking me for the circumstances I've described? Would it isolate the decision from this kind of political pressure or would the group be more subjected to this kind of political pressure in your view, anyone who wants to respond?

Mr. KARSNER. Sir I can only speculate on that. But this is what I would say is it is certainly meant to be the benefit that you are de-politicizing the process. There is no question that political pressure is part and parcel to why the process has thus far been delayed.

Had it been an objective task to interpret the statute by an independent quasi governmental agency, like OPEC or EX–IM, in a

regularized fashion then they could have moved very quickly to establish the appropriate capital risk mechanisms. Rather it has been a political discussion on risk aversion and philosophical elements. So that would be one of the chief benefits of removing this from the political process.

I would add and this is strictly personal opinion. But goes to what Kevin has said with respect to title 17. What was so transformative and what gives it such great potential is that title 17, of all the titles written in all the energy legislation that has come out of the U.S. Congress, uniquely in many ways is not interest driven.

It is not for biofuels. It is not for nuclear. It is not for clean coal. It is attributes driven.

Senator BENNETT. Yes.

Mr. KARSNER. It is about reducing, avoiding and sequestering greenhouse gas emissions at a scale and at a rate that is consequential. So just alleviating all of the inputs and saying we are going to fund things that get us to the outcomes we seek is revolutionary. Now to give an independent objective, non-political institution the capacity to manage an attributes driven financing mechanism should achieve that purpose.

Mr. FRANTZ. Senator, if I may add.

Senator BENNETT. Certainly.

Mr. FRANTZ. Just based on my experience at the Overseas Private Investment Corporation (OPIC), and in no way contradicting Andy's comments, but having spent over 10½ years there, by being an independent agency of the U.S. Government in no way gives you any immunity from the distractions, as you might expect, from those who care to criticize or have some effect on what you are attempting to accomplish.

Senator BENNETT. I understand that. I'm just hoping that it would make it easier for the entity to make the decision on the basis of the science rather than the television ads.

Mr. KARSNER. There's a big difference between oversight and annualized appropriations that gate the decisions——

Senator BENNETT. Yes.

Mr. KARSNER [continuing]. Of the authority.

Senator BENNETT. Ok. Mr. Asselstine, you participated in many large financing and transactions during your career on Wall Street. How do you answer the critics who say that the loan guarantee, it's an inappropriate intervention of the Federal Government in financial markets and distorts the question of allocating capital?

Mr. ASSELSTINE. My answer Senator would be that given the magnitude of the investment that needs to be made we need to look at ways to make the most efficient use of private capital that's available. One thing that I think we all know today is that capital is going to be scarcer. It's going to be more expensive going forward than it certainly has been over the past 5 or 10 years.

So if you're looking at an industry that has to double its size over the next 20 years and an industry that actually faces some institutional challenges because we have many smaller utilities. We don't have the few very large utilities that you find for example, in Europe or in Asia. Then the question is how are we going to allow these companies to do the financing they need to add the generation that they will need over that period of time.

The Loan Guarantee Program, in my view, provides an effective way to enhance the availability of private capital. It does that because the government, being paid for the risk that the government is taking, provides credit support for these projects. Particularly new technologies where there are questions in investor's minds about the performance of those technologies at commercial scale or very large projects which an individual company has a great deal of difficulty financing on its own. Or for renewables where the companies are relatively small and don't have broad borrowing flexibility on their own as well.

In all of those areas the Loan Guarantee Program can provide the ability to access broader pools of capital. The reason for that is by the U.S. Government providing credit support. You access a broader range of investors.

The debt investors, for example in buying the securities with the loan guarantee are looking at a security that's backed by the full faith and credit of the Federal Government. That opens up an enormous pool of capital in terms of providing the debt financing for these projects. If you use project finance structures that are 80 percent debt and 20 percent equity it vastly enhances the ability of individual project sponsors to go forward with the kind of magnitude of investment that will be required.

So my answer would be it doesn't really distort capital deployment. Rather, it enhances the ability to tap into as broader range of investment capital as possible remembering that the project's sponsors or owners still have their own capital at risk. They will put in their own equity investment into the project.

Other lenders may also provide non-guaranteed debt for the project as well. So you tap into a broader range of available sources of capital.

Senator BENNETT. In other words it is the private investor who still makes the decision as to which technology gets backed rather than the government crowding that decision out.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much.

Senator Stabenow.

Senator STABENOW. Thank you very much, Mr. Chairman for this hearing. This is a very important issue both the Loan Guarantee Program and the other loan programs in energy. Also particularly interested in section 136, retooling, making sure those loans get out the door as quickly as possible as well.

I've had the same concerns, Mr. Chairman that you have and our Ranking Member about loan guarantees verses separate entities verses loans. Right now in Michigan I've been working with some companies that are qualifying for USDA loan guarantees for advanced biofuel facilities. But banks won't participate. So we've just not been able to use the loan guarantees.

Given the current situation, that we all know about in terms of capital the lack of availability it seems to me that we really do need to revisit both. Taking away the barriers on the Loan Guarantee Program but also focusing on direct loans. I find the idea of a clean energy bank very intriguing, very appealing to really look at how we can boldly move forward on all fronts because there's so many opportunities.

I did have a question, Mr. Frantz, for you that related specifically to the loan program and manufacturing and how you view manufacturing. You had mentioned to Senator Shaheen that manufacturing projects move more quickly. I wanted to explore what you view as eligible under the Loan Guarantee Program.

I've introduced a separate bill that would provide direct loans to DOE to administer for entities that invest in manufacturing facilities. The facilities would have to produce renewable energy products or invest in energy efficiency gains of 30 percent or more in their facilities. But it's focused on the actual manufacture, which where I believe so many of the jobs are for us in terms of economic boost.

Do you believe that the term in the current statute employing technology is the same as manufacturing it? Is that how you're viewing this?

Mr. FRANTZ. Senator, a very good question. The answer is perhaps no. When we are talking in the field of the title 17 Loan Guarantee Program, we are really preoccupied with new and innovative technologies. That is a huge gate in which Andy alluded to in his comments.

Our role really is bringing technologies from the Office of Science, for example, through Andy's previous group, through grants and startups, who have reached a pilot stage, but are moving into full-scale commercialization. We bridge the Valley of Death.

There are, interestingly enough, among our first group of applicants that are the high priority for us, several manufacturing companies which is very reassuring to us. These companies are employing new or innovative technologies against existing technologies in a more improved way. So the point that you are alluding to, I think, is do we affect on a broader sense manufacturing employment? That, I think, was addressed in section 136 of the Energy Independence and Security Act of 2007 which you mentioned the objective is just to refinance or help assist additional financing for commercially available technologies. So that, I think, is the big distinction between the two. Clearly, and I alluded to this in my comments too. One of the big impediments for us is in National Environmental Policy Act (NEPA) regulations. In that case, we are looking at such things as categorical exclusions. However, it is very difficult to obtain categorical exclusions for something that is an innovative technology.

Senator STABENOW. I appreciate what you're saying. I really believe there's a gap here. Because as I was very involved in helping to write section 136 and understand this is about retooling existing plans and those kinds of things.

But at the same time we have a whole set of new innovative technologies that we want made in America. I don't want to be helping to finance those plants or those facilities going overseas through import/export bank. We need those here.

When we look at the new plug in electric vehicles——

Mr. FRANTZ. Right.

Senator STABENOW [continuing]. For instance or solar panels or wind turbines or whatever, we find that we are losing manufacturing, not to low wage countries, high wage countries with very

specific manufacturing strategies. Germany, it's one of our major competitors. So I find that there is a hole here when we are deploying technologies, but somehow not counting the manufacturing of that new technology as part of it.

Mr. Chairman, I look forward to working with you on that. Thank you.

The CHAIRMAN. Very good. Thank you very much. I just note that we appreciate Locklar Seward who is here.

He's in charge of the 136 program. He's here in the front row. Thank you very much for being here and your good work on that program.

Let me ask a question. I think everybody who's here has had a chance to ask questions. So this will be a second round.

We have the 136 program which is a direct loan program. We have the Loan Guarantee Program that Mr. Frantz is in charge of. What I believe, Andy, you're advocating for is a separate entity that would have authority, not just to make loans, not just to guarantee loans, but to do a variety of other things to underwrite the financing of energy projects that need to be constructed and developed.

Could you elaborate a little bit on what are those other things that a so called clean energy bank or whatever, financing authority or whatever we called it? What are those other things that it's important somebody have the authority to do that the government needs to involve itself in? I'd ask Mr. Asselstine the same question, Mr. Book or any of the rest of you.

Mr. KARSNER. Senator, I'd almost refer back to Kevin's response a little bit when he really distinguished that the guts of what we do at the Department of Energy well is science and technology and R and D. We didn't actually commence that task 30 years ago with any anticipation of what we would do the day the things matured to the point of readiness for commercialization. So over time we have added on tools.

You have given us authorities that allow us to use the Federal balance sheet for fundamentally financial transactions whether they are equity or debt. The biorefineries for example, where we cost shared equity, 50/50 or 40/60 with a series of plants. Well, that was a nonreplicable, commercial model.

We did it to stand up and review the science and technology, but at great cost. There is great return for that, but it doesn't use that money efficiently or doesn't have the best oversight capabilities. Really you're dealing with a civil service agency that is handcuffed from everything outside of the realm that it does well which is science and technology.

So that's an array of financial products. It would really be up to the committee. I think with further hearings from the financial community as to which ones most efficiently use capital.

Because fundamentally all the use of the balance sheet comes down to the question of are you lowering the cost of capital? Are you offering access to the capital? Are you leveraging the capital enabling life cycle returns for new energy technologies that don't function on commodities, but instead function on capital cost and then the freedom of sun and wind and nuclear, you know, etcetera?

So you're dealing with these new technologies and you need to have competent financial authorities. David, himself, put it very well when he said, I'm up to 29 people after 4 years. Now you consider the hundreds of people that work at EX–IM bank managing a fraction of the money for an agency that is net positive to Treasury.

EX–IM bank and OPEC make money for the U.S. Treasury. They don't cost money. If you take them away you have to do something to fill that revenue.

Here we're talking about how high can we raise the cost to try to get the program moving with credit rate subsidies. Instead of saying why don't we add them like we do for student loans as origination fees, at the end of the path? So we can't make those determinations internally.

To be very specific about the problem we have about what we amend now verses what we ultimately want in a statute, so much that can be changed now is an interpretation of the rule. David and his shop are working under the constraints of a rule which is an interpretation of the statute. That rule took a long time to promulgate. You know, it took 30 days for Locke's rule to come out at the end of the administration. It took almost a year or more for the other rule.

It was very contentious. The interpretations in that rule, for example, that exclude manufacturing, I personally disagree with and fought with. The new administration has to look at the rule and the constraints at which David had no part creating that rule. Determine whether it is the correct interpretation of the statute. I would say you could do that with all parties convening in a way that has occurred through sequential communication in the past.

So it's not as arduous an exercise when you talk about the immediate things that could be done because the administration has a lot of power to interpret that statute and determine the rule set under which the Loan Guarantee Office would operate. But ultimately you need to have a lot more than 29 people hired over 4 years. That's going to remain a civil service bureaucracy problem whether you change the rules or not. He needs a lot more resources.

The CHAIRMAN. Mr. Asselstine, did you have a comment?

Mr. ASSELSTINE. Just briefly, Mr. Chairman. I agree very much with Andy's comments. I think that from a financial perspective having the flexibility to look at a variety of different financing tools would be advantageous, not just loan guarantee. But the ability to make direct loans, the ability to take an equity position, perhaps the ability to ensure particular technology.

If you look at the different greenhouse gas reducing technologies that clearly fit within the Loan Guarantee Program there are different financing challenges today for those different technologies. If you look at solar and wind, for example, right now there is an urgent problem in providing equity given the way that those projects have been financed. Those projects have typically been financed in tax advantage structures where financial investors participate to take advantage of the production tax credits and investment tax credits.

Right now the group of investors who have formed the core of that financing capability don't have the capability to use those tax benefits. So there's an urgent need for equity. The bankers in my firm who bank that industry tell me you can extend the production tax credits and investment tax credits, but unless you solve the equity component problem, there's a real problem in getting those projects financed today.

The same thing is true to a certain extent for wind projects. If you look at clean coal technology, I would argue the big issue there is the technology. Will it work reliably and on a commercial scale? That's the thing that investors are concerned about. It's the thing that the companies are concerned about as well.

So the ability to provide perhaps an insurance around the technology would be very helpful. You'd get that broader flexibility, I would argue in an independent organization rather than in the existing program.

The CHAIRMAN. Mr. Book, did you have a comment?

Mr. BOOK. Yes, thank you, Mr. Chairman. I think there's a couple of things that I can say, very simply, very quickly in addition to that.

First, there's a specialization of labor challenge here. I don't think anyone disputes that someone who spends 15 years in post graduate work to become a nuclear physicist or a molecular scientist is a specialist. You can't just have a rule for all those folks to suddenly become bankers. It would be a ridiculous thing to do.

You certainly can't have the bankers become the scientists. When you start a project finance career I believe you spend 2 years in a lot of the investment banks to begin to start your career. Two years just to get enough education to get started. It's a very specialized skill sets.

Getting 30 people together in 4 years is no small feat. It's actually fairly large practice group. It's nowhere near the size of the challenge I think that Andy and James have mentioned today.

The second thing is just that the difference in the financing challenge can be framed a little bit differently also than just the different types of financing. In terms of a very big, expensive project, clean coal, nuclear power, something that it requires billions of dollars potentially in deployment over the life of the project. The question is whether you do it at all.

If you can't get financing because you can't get the loan, you may not actually be able to do it. You will change the cost profile. But for a while the companies would be project sponsors. There may not be access to credit without the Federal Government providing a swift and efficient way of assuring that credit's worthiness.

Whereas for renewable fuels the promise of renewable fuel is that you don't have a lot of variable costs. You spend all the money up front. The wind and the sun and other natural forces give you energy for the rest of that equipment life.

That means the cost of the money you spend up front is the cost of the fuel. So again, it's a different type of financial problem to solve. Both of them are solved by title 17.

What I'm saying is what started out as visionary at a time of economic expansion has become vital at a time of economic contraction.

The CHAIRMAN. Ok.

Senator Murkowski.

Senator MURKOWSKI. Thank you, Mr. Chairman. Mr. Frantz, just a very quick question. I have learned that contained within the Stimulus package CBO had inserted language that puts some pretty severe restrictions on the application or the granting of the loan guarantees that would require the use of Federal property services or personnel. In taking another look, that language was included in the conference package.

I think this would very severely hamstring renewable projects that are cited on Federal lands or any project that required moving transmission across a Federal highway. To me, this is quite concerning. Within the department, have you talked about how we can work with CBO, OMB, and the general counsel to resolve this issue?

Mr. FRANTZ. Senator, I think it's a very good question, and it is upon our desks.

Senator MURKOWSKI. Ok.

Mr. FRANTZ. As you can well imagine and you alluded to the sectors, this would impact transmission projects.

Senator MURKOWSKI. Yes.

Mr. FRANTZ. Many of our consolidated solar panel applicants are associated with the Bureau of Land Management. So this is a very severe constraint. It is not certain how you would draw the lines on what may or may not be some relationship to the Federal Government on a citing issue.

It is clearly a very serious problem. I am not familiar with the specific language. But it is one we are aware of as it will be a very serious impediment to moving our program forward.

In actuality, Andy may have more experience in dealing with this issue than I do.

Senator MURKOWSKI. Do you have any comments, Mr. Karsner?

Mr. KARSNER. Yes, Senator. I don't have to tell you coming from the West and the big spaces what it means to exclude all of the Federal lands for citing when in fact those have the highest probability. It's really a case of how many ways can we shoot ourselves in our foot?

Senator MURKOWSKI. Right. Do we really want this Loan Guarantee Program or not. Some people would say no.

Mr. KARSNER. In addition we have put in the most recent statute, the Energy Independence Security Act, codified the Executive Orders that I believe the Obama administration will enforce. Reductions of 30 percent greenhouse gas emissions, 30 percent gains in efficiency, 7 percent mandate for renewables across the Federal Government. These are historic and unprecedented.

Now we're going to handicap the private market's ability to even co-locate with a Federal facility that it's meant to service. So, you know, we have got to have the managers managing the accountants. Otherwise the accountants are managing the management. This has been a chronic problem.

You know, I'm on the Board of Argon National Laboratory where, you know, we're just being informed that the National Laboratories who have done all of this critical, technical review work that David spoke of, and have been doing it for USDA with respect to clean

energy projects. There's an interpretation that they may be conflicted out. They're no longer able to service the Department of Energy as a client because they do R and D research with the car companies or with the renewable energy companies.

So we are in the land of the bizarre. It will take White House leadership at the NEC and OMB and Treasury level to engage with DOE and with this committee to identify these ambiguities and some of these bizarre accounting notions and say, what do we want to do with appropriated funds on what time table to empower David and his team to succeed? That conversation has not taken place in a holistic, integrated group method. If anything, I hopeful that this hearing can sort of induce that new behavior.

Senator MURKOWSKI. I would hope so. Unfortunately with this particular language there's nothing ambiguous about it.

Mr. KARSNER. Yes.

Senator MURKOWSKI. It just says you can't. Basically, it stops any opportunity that we are attempting to advance in terms of renewables. To inhibit access to public lands is just amazing to me.

Mr. Frantz, I have one final question for you. Just about everyone has suggested that you have done well to get 30 full-time people within the Department on this program. What do you really need in order to accomplish what we are expecting?

How many people do you need? Do you have the flexibility to bring them on and the caliber of individuals that we are looking for? We are not just looking for someone who has received a degree in accounting.

We need investment bankers. We need financial analysts. Are we able to get them? Do you have what you need to do the job?

Mr. FRANTZ. Senator, a very good question that speaks right to the heart of what some of the dilemmas that we're really dealing with. As Andy and the others have alluded to, it is very difficult for us to move people into Federal service on a permanent basis. What we have been very successfully in is to bring necessary expertise on board through a contractor basis. These are individuals that represent my experience and years in the industry. They are willing to come on board on a contracting basis, and we can do that relatively quickly, perhaps in a matter of just 2 or 3 weeks.

That is how we have been able to respond very quickly, particularly to the solicitations, especially the nuclear and large fossil solicitations, where we needed people with very detailed experience in those areas. But it is a real dilemma to get people into the Federal service because of the rules that apply. It takes a great deal of time, quite frankly in the magnitude of 4 to 6 months. The reason being primarily is the competitive nature of civil service employment. So you have put your finger on a major problem.

Back to a point that you have all alluded to and I think it is an important distinction, these are certainly areas that are addressed when you have an independent organization. There are greater flexibilities in an independent agency than being in the constraint of one of the larger Federal agencies in terms of things that you can do, and the speed with which you can do them.

In our case, I have had conversations with the chairman. Clearly, I think there is a very strong argument in the way of an immediate fix for us, would be to give us some independent integrity where

we can have our own legal counsel at our disposal as well as our own human resources and procurement staff would probably expedite the process for us.

But you have put your finger on a very serious impediment for speed and responsiveness.

Senator MURKOWSKI. Thank you, Mr. Chairman.

Mr. KARSNER. May I add something for the record that David can't say?

The CHAIRMAN. Yes, go right ahead.

[Laughter.]

Mr. KARSNER. The Department of Energy's human resource capacities are catastrophic. They are undermining every element of the Department's mission. I just finished a tenure of an excess of 30 months with 17 direct reports on a key portfolio with less than half of the managers in place. Constantly rotating heads to fill gaps because of an average, on best, reported 9-month process to bring someone in if you can believe there are people on the street that would wait 9 months to come into the Federal Government.

When we had to go after New Orleans with urgency, we had government special employees bulk up the SBA and brought in lawyers and financiers and other people with the appropriate acumen for a specific purpose. We have got to have war like, Marshall Plan, serious hats on. There's never, ever been a shortage anywhere I've ever gone of students, of MBAs, of bankers. Said how can I help? What can I do to join this effort?

We have devised more ways to keep them out and repel them along with the school of shooting ourselves in the foot. So that is what leads me to say, tweak what we can. But start with a clean slate. Ensure we have the flexible authorities to get it right.

The CHAIRMAN. Mr. Asselstine, you wanted to make a comment? Then Senator Bennett has some questions.

Mr. ASSELSTINE. Just a very brief comment, Mr. Chairman. I think one positive note here. This, as Kevin said, a very specialized field and a very specialized area in terms of project finance capabilities.

But given the challenges in my industry lots of those people are now available.

[Laughter.]

Mr. ASSELSTINE. The contractor approach that Mr. Frantz described is one that I think could really work to the benefit of this program. There are very talented, very capable people out there who are immediately available. I know, who have an active interest in this area. Who would add greatly to the capabilities.

Ideally longer term you'd like to move some of those people into the Federal Government and build this program because this program is going to have to be around for a long period of time. But there is an immediate solution to the staffing problem if we can get through the constraints.

The CHAIRMAN. Alright. Thank you.

Senator Bennett.

Senator BENNETT. Thank you, Mr. Chairman. Andy, having served, this is going to sound antediluvian, having served in the Nixon administration I can tell you that the HR problems has not changed very much.

[Laughter.]

Senator BENNETT. Over 40 years. Mr. Frantz, I understand that the solicitations have overwhelmed the available authority. The requests are there even with all of the problems we've discussed here this morning. If we go ahead and get all of the things done that we've talked about here this morning so that it becomes efficient and we've got the right people in place. They can examine everything.

You come back now to a fundamental decision that may be beyond the ability of the present office to deal with. That has to do with the allocation of where are we going to put our resources. Mr. Asselstine, you talked about the difficulties dealing with wind and solar. They survive only because of the tax credits.

If I were on the board of a company that was going to invest there, I would want to know can they survive if the tax credits ultimately go away. I had a conversation with someone in the United Kingdom that was producing alternative renewable energy. I sat there and listened to the presentation, took off my Senator's hat, and put on my businessman's hat and thought if I were a member of the board of his company there's no way in the world I would vote to proceed with this.

So finally I asked him, why are you doing this? He said, because we get paid for the carbon credits. It has little or nothing to do with the science. But we can make money off of the carbon credits. Now they have a cap and trade system over there that pays them the money. He said, that's why we're doing this.

Now if you had an independent agency that had authority. We clean up all of the impediments. Now the decision is made, we've got x amount of money for which we can make a loan guarantee.

We have an application from a wind farm. We have an application from solar. We have an application from a nuclear plant.

We have to make the decision or do we have to make the decision of which one do we put our resources in on the basis of which one will produce the energy we need on the scale we need. Because you have reinforced the fact that we're going to have to have major, major increase in our capacity, not only because the economy will demand it, but because or present facilities are getting older and have to be replaced. That requires money.

Now, Mr. Frantz, you are oversubscribed now. People want your money. Are you constricted by the statute from saying we're going to put some money here rather than there?

As I look at the requests, overwhelmingly it's in the nuclear field. Nnuclear has the best possibility of getting the scale that we need, maybe not the speed that we need. But over time if we're going to have to increase the energy output in this country by 30 percent, something in the next number of years, we're not going to do it with solar panels.

However much they may work, their addition to the overall energy demand is going to be in single digits. So we've given you everything you need. You're now the Tsar of this whole thing. Do you want a degree of flexibility to be able to say we're going to put a smaller amount into field A because we will get more energy if we allocate these loan guarantees in field B?

Mr. FRANTZ. A very good question, Senator. Thank you very much. As you know the allocations themselves are in the report language in the Energy and Water Development and Related Agencies Appropriations Act, 2008. It is in the report language, not in the law. However, the Department took the position and I happen to personally think it was a good decision, to respect the allocations that were presented to us from Congress because it reflected the intent of how Congress wanted the money to be spent.

Senator BENNETT. As one who writes report language I like that. [Laughter.]

Mr. FRANTZ. I think there are really not any surprises either on what ultimately happened. We all here are aware that the new nuclear power plants, and we are looking at five new innovative technologies to employ, represent at least $6 or $7 billion a project or more. That is the range that they are requesting from us in the process.

The other thing I think that is important, is maybe where serious consideration needs to be employed. That is the law requires the Department to evaluate those projects where there is a reasonable expectation that the Government will be repaid for the employed debt that the Government is provding a loan guarantee.

So to answer your question, on the other side of the ledger, we are working with these utilities who are sponsoring the nuclear projects. These are all the way up even today, in A rated categories. So clearly they represent the best bet from a risk point of view on where money should ultimately be employed.

Not only to Andy's point of what our overall objective is and that is purely clean technology, but also for the return on the invested capital and the most acceptable risk. So there are clearly elements here that from the standpoint of return that will drive you to specific sectors perhaps at the detriment of others. That is, where there is a much higher risk profile, particularly in Andy's former area of energy efficiency and renewable technologies, the risk is high compared to what we are looking at in fossil projects or some of the other technologies.

I think this is at the heart of one of the real decisions that has to be addressed. Now what I think the ideal situation would be is to have it both ways. Then, I think it would be to have specific guidance from Congress, as you did, with these allocations. It is very helpful to us, and frankly, we have welcomed it. It has helped in the discipline of the selection process. I think it was in discussions in the Recovery Bill at one point, but I do not know where it ended up.

Perhaps in cases where there would be an availability of a substantial amount of loan authority, the Secretary, at his discretion, could have the opportunity under certain circumstances, to actually move outside of each one of those allocations where there was a tremendous oversubscription versus another area where there might be an under subscription or a marginal break even subscription. I think it is at the heart of one of the big dilemmas we are dealing with.

Clearly with respect to nuclear, I think I've shared it with the chairman, the actual numbers of our over subscriptions. In that area it is astronomical. As you know, at $18.5 billion we are prob-

ably looking, without the correction that I talked about in the law permitting Export Credit Agency participation and undivided participation, the most you are going to get are three nuclear power plants. It is changing a little bit, from the enormous cost escalations in that sector, however these projects are still very expensive to construct.

Senator BENNETT. Yes. Thank you.

Mr. KARSNER. Senator, I'd like to give you a little bit of variation on that. Let me premise it by saying I'm a believer that nuclear has to be a part of the portfolio. That if we continue to let aging plants go toward retirement without replacement solutions we're going to have a big hole to fill.

But some of the commentary on the excessive risk of the renewable portfolio which is a constantly moving landscape. It is not very static. You know, I began my career as a conventional energy developer.

I can tell you when you talk about boilers and diesel engines and things that have been around for 100 years or reactors that have been around for 50 years, you're talking about relatively static cost curves with a variation coming through the commoditized through put. As Kevin alluded to with the renewables you're talking almost exclusively about the capital cost of the equipment. Now since this loan guarantee started in 2005 I'm on the board of one of the companies that is active in Utah, applied materials. We've sold 15 gigawatt scaled lines of solar manufacturing capacity in China, in India, around the world.

We can't do it because of a lack of predictability here in the United States with U.S. nano manufacturing technology. But the price of solar has plummeted. The trend is continuously pressurized downward based on scaling. That is not the case with conventional energy technologies.

So again, we should be technology agnostic going for the attributes. If it's emission free. If it's secure, if it can be made affordable or abundant or accessible, we should welcome it. That's what title 17 does.

But technical assessments by my Vin lab, the national renewable lab, for the Loan Guarantee Program by way of example, for the original 16 applicants, 3 or 4 years on are not current anymore. The technology is actually moving too fast. The commercial marketplace is changing too quickly.

That's a sign of the success in what we fund in R and D. That's our goal, continuously pushing those costs down. So it's a moving landscape.

The numbers in the marketplace of financed projects would indicate that. You know, wind has been 15, I think maybe approaching 20 gigawatts in the last decade. Or, sorry, that's just the last few years, whereas we've managed to fund about 11 gigawatts of coal over 15 years.

So there's a reason why these are coming into the marketplace faster because the costs are dramatically falling to cost competiveness. Now the associations won't say that cause they've got to come up here and tell you that they, you know, can't survive without a PTC. Because there's nothing else exists.

There's no carbon policy. There's no other externalities. You know, there's no continuity.

But the truth is when you start conforming to conventional project economics that the energy industry has known for years with conventional project finance with mechanisms like these loan guarantees. Some with pricing policy ultimately the tax credit policies should go away and be supplanted because these technologies are reaching maturity.

Senator BENNETT. Thank you.

Mr. ASSELSTINE. Senator Bennett.

The CHAIRMAN. Yes, go ahead.

Mr. ASSELSTINE. One quick comment. I think the Congress was probably right initially to say we want some money allocated to each of the different technology types. I think that was prudent and it made sense. But at this point we're at a stage where certainly by this spring, we'll have a good sense for what potential projects are available across different technologies.

Now I think the approach really needs to be, No. 1, provide sufficient resources to fund meritorious projects.

Two, have the flexibility to be able to allocate the funding toward projects that are likely to provide the greatest benefit at moderate risk to the Federal Government.

So having some flexibility to redirect those makes a lot of sense. I personally agree with you that I think the nuclear units do need to be part of the mix simply because the technology is relatively straight forward. Incremental development or change over what we have today. Those plants are likely to be built and operated by companies that are very creditworthy and it will do a good job in the process.

But I also think we need the other components as well. You're absolutely right about the renewables. If you watch the cycle of projects in this country when we have the production tax credits, investment tax credits available, the projects get built.

As soon as those expire then we don't build anymore until they're renewed. So you have that cyclicality for the renewables at the present time, as Andy said, without the support of a carbon trading program.

Senator BENNETT. Yes. Thank you very much.

The CHAIRMAN. Senator Murkowski, do you have additional questions?

Senator MURKOWSKI. No, I do not.

The CHAIRMAN. Mr. Bennett, do you have another?

Senator BENNETT. No.

The CHAIRMAN. Mr. Book, did you have another comment you wanted to make?

Mr. BOOK. Yes, very briefly.

The CHAIRMAN. Go ahead.

Mr. BOOK [continuing]. Between everyone and lunch. Just the part of the vision of title 17 that I most admire is the idea that innovation doesn't just include the first time you do something. It includes the first time you do something here. It can include the first time you use two somethings that you had before in a different way.

Shortly after I appeared before this committee in December, I think during that appearance, I spoke about pairing coal with wind. You could hear the crickets chirp. Then people said, did you say coal?

But actually the Department of Energy's National Energy Technology Laboratory or ENREL, one of the two, put out a recent analysis that said, this is a good way to do both things. That itself is an innovation. The idea that you have something as incrementally sequestering or reducing emissions, the idea that you're using resources that you have that are secure.

These are the kinds of innovations that are available when you don't start earmarking things. When you start sort of deciding what the limits are, I think you need a buffer zone to protect the technologies that might not otherwise get funded which is absolutely vital. You cannot ignore the future. But you also want to make sure that you don't restrict yourself out of making better use of the present.

The CHAIRMAN. Alright. I think this has been very useful testimony. We have a lot to try to understand here and hopefully act on.

But thank you all very much for coming. That will conclude our hearing.

[Whereupon, at 11:52 p.m. the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses to Additional Questions

RESPONSES OF JAMES K. ASSELSTINE TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. Your testimony gave a good sense of the scale of the challenge we face in this area and outlined the total investments that might be required. Assuming loan guarantees and other financial mechanisms were available to fill in the gaps and stimulate that investment, and assuming complementary regulatory policies like an RES can be enacted, do you have any thought as to the scale of the government investment that might be necessary to achieve what you outlined?

Answer. I believe that federal loan and loan guarantee authority in the amount of $200 billion would be sufficient to support the development and deployment of innovative technologies to reduce greenhouse gas emissions and to implement a renewable energy standard. This amount would represent about 10 percent of the total capital expenditures that are likely to be needed by the industry over the next 20 years to meet climate change and renewable energy objectives. I also believe that some thought should be given to alternative mechanisms that could permit this authority to be recycled into new projects over time, thus leveraging the effectiveness of the federal financial support. For example, it might make sense to use the federal loan guarantee during the critical construction period for a facility and then require that the guaranteed debt be refinanced using private financing after the project has completed an appropriate period of commercial operation. This would permit the redeployment of the loan guarantee capacity to multiple projects over time.

Question 2. You stated that loan guarantees are a powerful tool but not necessarily the only tool that should be available to leverage private investment. Can you give us any examples of alternative financial tools that might be applied more effectively for some technologies? Take efficiency or distributed generation, for example.

Answer. Other financial tools that might be appropriate for some investments would be the authority on the part of the federal government to make a preferred equity or a common equity investment in a particular venture. These tools might be particularly appropriate in the two areas you mention—energy efficiency and distributed generation. An equity investment may be more useful and effective than a loan guarantee to support the development of a new technology to improve energy efficiency or for a new distributed generation technology where the prototype equipment would not necessarily itself generate sufficient cash flow to repay the debt but where the development of the technology itself could lead to a viable and profitable business venture over the intermediate term. I believe this authority to use a variety of financial tools would be most appropriate if we move toward the concept of a clean energy investment fund approach.

RESPONSES OF JAMES K. ASSELSTINE TO QUESTIONS FROM SENATOR MURKOWSKI

Question 3. The industry and Congress have been waiting anxiously since 2005 for the current Title XVII Loan Guarantee Program to be stood up and to begin issuing guarantees. With the possible exception of Mr. Franz you have each argued for the establishment of some sort of new agency that would provide a broader array of financial tools to the clean energy industry. At the same time you have each underscored the need for government support for clean energy technology in the short term. While the idea of a new agency may have merit, how do we get from here to there? How do we avoid waiting another 3-4 years while the organization gets

established? Are there ways that we can facilitate the current Title XVII program in the near term while working to establish a broader capability for the future?

Answer. Senator Murkowski, I share your concern that the creation of a new and more flexible federal financing vehicle for clean energy technologies not delay either efforts to improve the existing Title XVII program or the much-needed award of loan guarantees under that program to worthy projects. To address this problem, I would make two suggestions. First, with respect to the existing DOE loan guarantee program, I believe that this Committee should continue its active oversight of the program to ensure that the Loan Guarantee Program Office works diligently to complete its reviews and execute term sheets to deploy its existing loan guarantee authority for renewable energy, clean coal, and advanced nuclear projects as soon as possible. This should include continued efforts to press DOE to correct the legal interpretations that have created conflicts with respect to utility mortgage bond indentures and joint ownership arrangements. Second, I would suggest that the Committee consider establishing the new federal financing vehicle within the Department of Energy, and folding the existing Loan Guarantee Program Office into the new entity. Creation of a clean energy investment fund within DOE that incorporates and builds upon the existing loan guarantee program but that has broader authority to use a variety of financial tools, the authority to hire its own internal financial experts and legal advisors, and autonomy from the rest of DOE would do much to correct the existing institutional barriers to an effective loan guarantee program without requiring years to set up a new agency.

Question 4. Is it possible for the Department of Energy to partner with the private sector to provide an efficient loan guarantee service while retaining control, or is it necessary to establish a private entity to make this work?

Answer. As I noted in my previous response, I do not believe it is necessary to establish a new, private entity to make this work. Instead, I believe that many of the problems of the existing structure could be corrected by creating a new financing vehicle within the Department with greater autonomy than the existing Loan Guarantee Program Office and with the authority to use a broader array of financial tools. This would allow the federal government to retain control of the program. But by creating a more autonomous and flexible funding vehicle, there may be somewhat greater opportunities for the government to partner with private lenders on a project-by-project basis.

Question 5. What legislative fixes are needed to the Title XVII program to make it function more smoothly? What fixes can be done administratively?

Answer. I believe that most, if not all, of the changes needed to make the loan guarantee program function more smoothly can be accomplished administratively. Thus, I believe that the Secretary of Energy has ample authority to ensure that the Loan Guarantee Program Office is staffed adequately, with a mix of full-time employees and consultants having the requisite project finance expertise, to hold the Office accountable for completing its reviews in a timely manner, and to allow the Office to retain its own financial and legal advisors. If these steps are not taken administratively to correct the existing problems with the program, then the Committee should consider addressing the problems legislatively.

Question 6. Is it more important to get the loan guarantee funds out to a multitude of projects that could be successful, or concentrate the money on a handful of the best projects that have a high likelihood of success?

Answer. I would allocate the majority (perhaps 75 percent) of the available funds to the larger, higher quality projects that have a high probability of success. By doing this, the Program Office will ensure the highest return on the government's financial investment while keeping the risk of default and financial loss to the government as low as possible. At the same time, I believe that some of the funding (perhaps 25 percent) should be allocated to smaller, higher risk renewable energy projects that may offer the opportunity for more significant technology breakthroughs in developing new clean energy technologies. In these cases, the higher potential rewards in developing new technologies to supplement more established technologies may justify a higher risk of default.

Question 7. Assuming a maximum contingent liability of $100 billion and that such an expansion were to be enacted by Congress, what do you believe is an acceptable rate of default for projects participating in a program of not just loan guarantees, but direct loans and other financial instruments?

Answer. In general, I believe that the program should be administered to achieve a default rate of on the order of 5-10 percent. To achieve this objective, as noted in my previous response, I would weight the funding in favor of larger, lower risk projects with a lower default rate, but I would consider some smaller, higher risk investments in projects that offer the potential for greater technology advances.

Question 8. I appreciated your description of the array of technologies needed to establish a 21st Century energy system and the unique financial challenges faced by each of these technologies. Your written testimony certainly gives a sobering perspective on the challenges facing the electric power sector and the need to expand the current loan guarantee authority. Unfortunately, the expanded loan guarantee authority included in the Stimulus Package does not include all of the clean energy technologies in the portfolio you described. Provided we can resolve the deployment issues with the current Title XVII program, do you agree that the program's guaranteed loan volume authority should be increased given the substantial number of requests the program has already received?

Answer. Yes, I would support an increase in loan volume authority to $200 billion, and I would remove restrictions limiting the amount of the available loan volume that can be applied to projects employing particular technologies. It is clear that the Department has received qualified applications for loan guarantees from attractive projects well in excess of the current authorized loan volume, and many of these projects will be needed if we are to meet the ambitious greenhouse gas emissions reduction targets now being considered by the Congress. In my judgment, having a workable, efficient, and adequately funded loan guarantee program is essential in meeting our climate change objectives and in substantially increasing the contribution of renewable energy resources to our energy mix.

RESPONSES OF JAMES K. ASSELSTINE TO QUESTIONS FROM SENATOR CORKER

Question 9. How have rising ECP (engineering, construction and procurement) costs affected the DOE management of the program? Does DOE see a need for Round 1 loan volume increases? If so, how much? How should mismatched project costs to loan volume problems be handled in the future?

Answer. Project costs have been increasing, in large part due to rising commodity and labor costs. Despite the recession, thus far we have not seen substantial reductions in these project costs. As indicated in my previous responses, I would favor increasing the available loan guarantee volume to $200 billion. In addition, I would suggest that DOE be directed to report periodically to the Congress on the adequacy of available loan guarantee volumes to meet the requirements of qualified guarantee applications.

Question 10. In the absence of credit at reasonable commercial rates, what are the process and resource issues that need to be addressed to allow ancillary but essential project elements (e.g., CO2 Off-takers in a Carbon Capture and Sequestration project (CCS) to participate in the core project but under a separate loan guarantee?

Answer. If financing capacity from private sources is not available at reasonable rates and on reasonable terms for important project components such as CO2 off-takers for a CCS project, it may be necessary to expand the scope and authority of the loan guarantee program to allow such project components to be included in the loan guarantee or to be assigned a separate loan guarantee.

Question 11. How has the credit crisis affected the DOE loan guarantee program in general? How has the credit crisis affected the "credit assessment" of projects faced with applications under due diligence this year (2009)?

Answer. If anything, the credit crisis has made the DOE loan guarantee program even more essential. Because the greenhouse gas reducing technologies that qualify for funding under the loan guarantee program use advanced and innovative, rather than well-established, existing, technologies, traditional private funding for these projects has become even more difficult and costly with the credit crisis. Thus, the credit crisis has increased the urgent need for this Committee to ensure that we have an efficient, effective, and appropriately funded loan guarantee program to move these projects forward.

Question 12. What does the DOE see as necessary changes to accommodate the Round 1 applicants under these relatively new economic circumstances? Does the full self-pay concept or rationale hold up?

Answer. I would suggest two changes to the program to ease the financial burden on applicants for the loan guarantee program. First, I would consider postponing the requirement for substantial fee payments by loan guarantee applicants until the applicant has executed a final, binding term sheet with DOE. This is consistent with private lending practice. Second, although I support the requirement to have the loan guarantee recipient pay the cost of the credit subsidy for the loan guarantee, I would recommend spreading the subsidy payment over the term of the loan guarantee rather than requiring an up-front payment as is currently the case.

Question 13. How can the NEPA process be expedited and accountable?

Answer. I believe that appropriate supervision by the Secretary of Energy and active oversight by this Committee should be sufficient to ensure that the Department fulfills its NEPA responsibilities without delaying the timely award of loan guarantees to well qualified projects.

RESPONSES OF KEVIN BOOK TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. In your testimony you present a compelling case that simply pushing down the debt costs of a project can have significant effects on the final costs to the consumer. It seems like the implication of this, at least to some extent, is that to gain these benefits beyond what the private market will yield, the lender must be willing to absorb some of the risk of failure without passing that cost on to the borrower. Given the constraints of federal budgeting and appropriations do you believe it is reasonably likely that the loan guarantee program as it currently exists can take on this risk and provide sufficient inexpensive debt support at the speed the industries require?

Answer. Mr. Chairman, the Title XVII program is currently constrained by the amount of funding appropriated by Congress and governed by technology-specific limits articulated within the December 2007 appropriations language. Recipients of loan guarantees within those constraints should be able to generate energy at lower cost and pass some or all of those savings along to end-users. The current structure of the program, however, does not appear likely to provide adequate debt coverage to meet the needs articulated by sponsors of the most capital-intensive projects (e.g. nuclear power and clean coal), nor the theoretical demand for renewable projects characterized by lower overall capital costs but higher generating costs, especially farm-scale solar power. It seems unfair to evaluate turnaround time for loan guarantees with only one guarantee issued since the enactment of the Energy Policy Act of 2005. That said, if the current latency between initial solicitation and final awards were to continue, it seems likely that it could further compound the financing challenges confronting energy project sponsors as a result of tight credit markets and/or short operating histories.

Question 2. You talk a bit about the core competencies of the Department and how that might be a mismatch with the necessary skills in lending and risk management that are the fundamentals of commercialization. In your opinion, is this an issue of compensation and personnel, or is there some more fundamental constraint on the Department that might keep it from developing this competency?

Answer. At its inception, the Department of Energy was chartered to facilitate the "integration of major Federal energy functions into a single department in the executive branch" [42 U.S.C 7111(5)], essentially to defragment and focus the nation's research and development efforts towards greater energy security. Just as the shape of diamond crystals mirrors the latticework of the underlying carbon molecules, I would suggest that the Department may organizationally resemble the methodical and patient practices of thephysical and social scientists who work within it. While it is possible to anchor a separately-chartered financing organization within the Department, it seems unlikely that existing organizational structures will facilitate the customer focus and risk tolerance typical of modern finance institutions. In this context, building a freestanding financing body within the Department is likely to require hiring from outside the Federal Government and may require compensation in line with industry norms.

RESPONSES OF KEVIN BOOK TO QUESTIONS FROM SENATOR MURKOWSKI

Question 3. The industry and Congress have been waiting anxiously since 2005 for the current Title XVII Loan Guarantee Program to be stood up and to begin issuing guarantees. With the possible exception of Mr. Frantz you have each argued for the establishment of some sort of new agency that would provide a broader array of financial tools to the clean energy industry. At the same time you have each underscored the need for government support for clean energy technology in the short term. While the idea of a new agency may have merit, how do we get from here to there? How do we avoid waiting another 3-4 years while that organization gets established? Are there ways that we can facilitate the current Title XVII program in the near term while working to establish a broader capability for the future?

Answer. Senator Murkowski, I see no reason why ongoing Title XVII activities should not continue on a parallel track with the creation of a new agency or organizational capability within the Department of Energy, provided that the transition occurs sooner rather than later. The more work that continues under the existing program, the harder it may be for the agency heads performing the transition to

coordinate their due diligence practices, their portfolio-based assessments of project risk and their ongoing communications regarding new and ongoing project matters.

Question 4. Is it possible for the Department of Energy to partner with the private sector to provide an efficient loan guarantee service while retaining control, or is it necessary to establish a private entity to make this work?

Answer. The notion of a federally-backed commercial loan is, by definition, a public-private partnership. The question you ask appears to be whether or not the lending and the risk assessment and credit enhancement functions could be performed by the private sector.

In theory, the answer is yes, but with some important caveats. Any outside guarantor could provide the risk assessment and credit enhancement functions associated with loan guarantees, but not necessarily at a cost of capital competitive with loans backed by the full faith and credit of the United States. Private players might also wish to form a new special-purpose entity to syndicate default risk, particularly in light of the challenges facing many of the primary providers of credit assurance and reinsurance services, potentially diluting accountability.

Every privately-sponsored "wrapper" around a Title XVII loan will come at a cost that reflects a combination of the lender's financial reality and the lender's assessment of the borrower's creditworthiness. Even a well-functioning credit market might not deliver debt costs as low as those possible under Title XVII or a successor entity/program.

Question 5. What legislative fixes are needed to the Title XVII program to make it function more smoothly? What fixes can be done administratively?

Answer. In my view, the most valuable improvement to current program—whether it be done legislatively or under administrative authority—might be to decouple the appropriation of funds from specific technologies and reinforce the technology-agnostic vision articulated in the original Title XVII program.

A legislative change might be more likely to produce results, in my view, given the considerable influence over technology choices the Congress and this Committee, to say nothing of executive branch appointees—are likely to possess. The most robust way to decouple politics from technology choice could be to give the Title XVII program or a successor agency/program the ability to manage its portfolio of assets as banks and investment funds manage theirs, including the ability to purchase mission-specificdebt, equity and derivatives to balance (or rebalance) risks as well as the capability to securitize and sell debt to "recycle" funds into future projects.

Question 6. Is it more important to get the loan guarantee funds out to a multitude of projects that could be successful, or concentrate the money on a handful of the best projects that have a high likelihood of success?

Answer. Senator Murkowski, if we hope to increase energy security, environmental stewardship and economic growth, we must do everything we can to encourage the diffusion of technologies that can make a difference. Commercial-scale, high-cost technologies likely to provide secure sources of clean energy might well consume the lion's share of the project portfolio because big projects are expensive, but they also can make a big difference.

Question 7. Assuming a maximum contingent liability of $100 billion and that such an expansion were to be enacted by Congress, what do you believe is an acceptable rate of default for projects participating in a program of not just loan guarantees, but direct loans and other financial instruments?

Answer. In my view, a properly allocated portfolio that includes mature, high-cost projects and innovative, smaller-scale projects should exhibit project-specific default risk in inverse proportion to project size. In English, we shouldn't be making big, stupid bets; we should be making big, smart bets and small, stupid bets that are likely to lead to big, smart bets later on. Taking your $100 billion baseline and the notion of "other financial instruments" into account, the overall portfolio need not lose money at all, even if, bycharter, its managers pursued innovative technologies that exhibited a 10-25% default risk.

Question 8. I am impressed by your statement regarding the importance of the loan guarantee program to clean energy technology projects. I am also glad that you mentioned the need for infrastructure investment to support these projects. I would imagine that the suppliers that manufacture the equipment and components needed for clean energy projects might look to the issuance of loan guarantees to time their own investments in expanded capacity and human resources required to meet future demands. Is it reasonable to expect the loan guarantee program to have a broader impact than just the individual projects and for that impact to be felt even before the projects begin? Are there changes that can be made to the program, or included in future legislation, that could further leverage the impact of the program?

Answer. Senator, many of projects that might receive loan guarantees under Title XVII or a successor program involve long lead times precisely because their complex

value chains include intermediate goods suppliers that must ramp up specialized manufacturing processes and undertake considerable investments in training and productive capital. The expectation of stable funding and rapid turnaround for eligible projects is likely to induce related and supporting players further up the value chain to accelerate their own investments. This could be particularly true in the cases of high-efficiency vehicles, clean coal power plants, photovoltaic technologies and nuclear power.

Question 9. From your perspective looking at domestic and global economic and policy trends there has been some discussion about the similarities between what we are seeing today and the 1980s, where the still fresh in the mind oil embargoes, and higher prices of oil led to greater interest in alternative and renewable energy development, but eventually lower oil prices reduced investor enthusiasm. After the recent sky high oil prices refocused our interest, do you see today's lower oil prices putting these energy sources on the backburner again, or will there be a sustainable interest in thecontinuation of the loan guarantee program, and possible a Clean Energy Investment bank typeentity?

Answer. A well-functioning market that that incorporates non-commercial traders to provide sufficient liquidity is, in its own right, a powerful force to encourage future investment. Although it is impossible to ignore the tremendous social and economic costs of oil price fluctuations, I would suggest that sound energy policy should be like any other long-term investment: focused on the trend line, not on day-to-day fluctuations. We should not day-trade our energy infrastructure any more than we should day-trade our retirement portfolios.

The inflation-adjusted oil price trend since the dawn of the industry 150 years ago exhibits a gentle upward slope on a cumulative average basis, which should tell us two things. First, that gentle upward trend disguises the thousands of innovative supply-side improvements and end-user efficiency gains that have kept the world well-supplied despite hundreds of interruptions, disruptions and dislocations; ongoing investment is the only reason we are doing as well as we are. Second, the trend line still slopes upward in spite of our technological prowess, which means that the real costs of our most abundantprimary energy source are rising, a reminder that we will eventually need to transition to a "next fuel".

Technology-agnostic, low-cost loans for innovative technologies seem a good idea at any oil price.

RESPONSES OF KEVIN BOOK TO QUESTIONS FROM SENATOR CORKER

Question 10. How have rising ECP (engineering, construction and procurement) costs affected the DOE management of the program? Does DOE see a need for Round 1 loan volume increases? If so how much? How should mismatched project costs to loan volume problems be handled in the future?

Answer. Senator, I do not feel qualified to speculate on how rising ECP costs have influenced internal DOE decision-making. My own opinion, however, is that technology-specific funding constraints that prevent DOE from responding to industry demands for debt coverage are likely to distort the hoped-for outcomes envisioned by this Committee in the 2005 Act. Nuclear power provides an example. "Overnight" costs for new nuclear power plants rose from an estimated $2,500/kW to an estimated $5,000-7,000kW since the Act was enacted. Other incentives in the Act converge towards an incremental 6,000 MW of capacity (6,000 MW of production tax credits and standby support for six new reactors). $18.5 billion in debt coverage might have covered as many as nine reactors at the low end of the ECP range, but might be sufficient to cover only three to four reactors at the high end of the range.

Question 11. In the absence of credit at reasonable commercial rates, what are the process and resource issues that need to be addressed to allow ancillary but essential project elements (e.g., CO2 Off-takers in a Carbon Capture and Sequestration project (CCS)) to participate in the core project but under a separate loan guarantee?

Answer. Credit terms notwithstanding, the widespread diffusion of CCS offtake agreements for permanent geological storage may require a clear framework that defines project sponsors' long-term liability at injection sites. This has recently become an insurable risk, but insurance adds yet another operating cost and greater uncertainty for players downstream from emissions sources. Policy tools like tax deductibility, publicly traded partnership status (which has been conferred to CO2 pipelines) and loan guarantees could potentially mitigate these additional operating costs.

Question 12. How has the credit crisis affected the DOE loan guarantee program in general? How has the credit crisis affected the "credit assessment" of projects faced with applications under due diligence this year (2009)?

Answer. I would hypothesize that the credit crisis has diminished the willingness of commercial lenders to underwrite DOE-backed loans due to concerns about their own capital adequacy. Likewise, many project sponsors in a variety of capital-intensive industries, including energy and manufacturing, were downgraded by debt ratings agencies on the basis of their challenges meeting working capital needs in a frozen commercial paper market.

Question 13. What does the DOE see as necessary changes to accommodate the Round 1 applicants under these relatively new economic circumstances? Does the full self-pay concept or rationale hold-up?

Answer. Senator, I cannot speculate as to DOE's position regarding changes to the program, but I am happy to offer my view that full self-pay may prove more challenging to innovative and financially mature applicants alike given straitened credit terms.

Question 14. How can the NEPA process be expedited and accountable?

Answer. Senator, I interpret your question to reflect concerns that streamlining the DOE's low-cost lending processes may do little to encourage the evolution of capture and storage technologies for commercial scale fossil energy producers as long as these projects face delays under NEPA review. I would suggest, if I have properly assessed your intent, that the existence of "delay risk" mitigation programs like "standby support"—while a key component of encouraging project sponsors to undertake high-risk endeavors,may also be one of the signals that lawmakers may wish to review the unanticipated consequences of the environmental regulations governing energy projects. This might be a particularly useful counterpoint to a streamlined Title XVII or successor program.

[Responses to the following questions were not received at the time the hearing went to press:]

QUESTIONS FOR ANDY KARSNER FROM SENATOR BINGAMAN

Question 1. You express some frustration in your testimony with how the loan guarantee program took shape under the last Administration. I expect you might agree that at least some of the implementation problems were attributable to a certain ambivalence towards the program at other levels within the Administration. Given the priority and attention that the President and Secretary are giving this issue, do you think the program can meet the needs as it is currently constructed?

Question 2. You have advocated for a quasi-governmental "Clean Energy Bank" to take over the functions of the loan guarantee program. Beyond the advantage in focus or additional resources that such an approach might bring, are there specific structural advantages an independent entity would hold over a similarly focused and strengthened program within DOE?

QUESTION FOR ANDY KARSNER FROM SENATOR STABENOW

Question 3. The idea of a clean energy bank sounds promising. I agree that to make the leap that is required to commercialize and deploy the next generation of technology to produce energy and create jobs we need to have an array of financing options at our disposal to take the necessary risks with the private sector. Can you explain in more detail how a potential quasi-governmental agency can work with the traditional structure of DOE to mix new financing expertise with the extant technological expertise at DOE? Also please describe the characteristics of the different models that you mentioned in regards to the EX-IM Bank and the Overseas Private Investment Corporation and explain which ones are most important for success. Finally, is the Carbon Trust in the United Kingdom an example of a energy financing entity that lawmakers should examine as a model for a new clean energy bank and why or why not?

QUESTIONS FOR ANDY KARSNER FROM SENATOR MURKOWSKI

Question 4. The industry and Congress have been waiting anxiously since 2005 for the current Title XVII Loan Guarantee Program to be stood up and to begin issuing guarantees. With the possible exception of Mr. Frantz you have each argued for the establishment of some sort of new agency that would provide a broader array of financial tools to the clean energy industry. At the same time you have each underscored the need for government support for clean energy technology in the short term. While the idea of a new agency may have merit, how do we get from here to there? How do we avoid waiting another 3-4 years while that organization gets

established? Are there ways that we can facilitate the current Title XVII program in the near term while working to establish a broader capability for the future?

Question 5. Is it possible for the Department of Energy to partner with the private sector to provide an efficient loan guarantee service while retaining control, or is it necessary to establish a private entity to make this work?

Question 6. What legislative fixes are needed to the Title XVII program to make it function more smoothly? What fixes can be done administratively?

Question 7. Is it more important to get the loan guarantee funds out to a multitude of projects that could be successful, or concentrate the money on a handful of the best projects that have a high likelihood of success?

Question 8. Assuming a maximum contingent liability of $100 billion and that such an expansion were to be enacted by Congress, what do you believe is an acceptable rate of default for projects participating in a program of not just loan guarantees, but direct loans and other financial instruments?

Question 9. In your written testimony you describe the endorsements of the Council on Competitiveness and the Energy Security Leadership Council for the creation of quasi-governmental organizations that can provide financial services for clean energy technology projects beyond what the Title XVII program can. I am concerned though that your own description of clean energy investments including "... sun, wind, biomass, and geothermal heat ..." does not seem to include nuclear energy which already avoids the emission of nearly 700 million metric tons of carbon dioxide annually. Even in the stimulus package we have seen the introduction of new loan guarantee authority specifically targeted to renewable energy while an amendment supporting the broader portfolio of clean energy technologies under the existing Title XVII program was removed. Do you agree that nuclear energy and clean coal technologies also have a place in the clean energy portfolio? And if so, how can we ensure that the type of quasi-governmental agency you advocate is equipped to handle the unique financial challenges faced by each of these technologies?

QUESTIONS FOR ANDY KARSNER FROM SENATOR CORKER

Question 10. How have rising ECP (engineering, construction and procurement) costs affected the DOE management of the program? Does DOE see a need for Round 1 loan volume increases? If so how much? How should mismatched project costs to loan volume problems be handled in the future?

Question 11. In the absence of credit at reasonable commercial rates, what are the process and resource issues that need to be addressed to allow ancillary but essential project elements (e.g., CO2 Off-takers in a Carbon Capture and Sequestration project (CCS)) to participate in the core project but under a separate loan guarantee?

Question 12. How has the credit crisis affected the DOE loan guarantee program in general? How has the credit crisis affected the "credit assessment" of projects faced with applications under due diligence this year (2009)?

Question 13. What does the DOE see as necessary changes to accommodate the Round 1 applicants under these relatively new economic circumstances? Does the full self-pay concept or rationale hold-up?

Question 14. How can the NEPA process be expedited and accountable?

QUESTIONS FOR DAVID G. FRANTZ FROM SENATOR BINGAMAN

Question 1. You have extensive experience in project financing from your former days at the Overseas Private Investment Corporation. Can you compare for us the different tools that were available to you there to support deployment that may have some applicability here?

Question 2. In addition to the loan guarantee program authorized in the 2005 bill, the 2007 energy bill authorized a sizable new direct loan program for advanced automotive manufacturing to help push forward domestic production of fuel efficient vehicles. A significant difference in that program is that is it was provided with advanced funding for subsidy costs in October of last year. What advantages or challenges does this different funding structure present? Are there lessons we can draw from that program's implementation?

QUESTION FOR DAVID G. FRANTZ FROM SENATOR DORGAN

Question 3. The Energy Policy Act of 2005 authorized a Title V Indian Energy Loan Guarantee Program in addition to the Title 17 Program. At last report, the Indian Energy Program was included by DOE in the Title XVII. However, the Title 17 program was authorized for innovative technologies, while the Title 5 program

was broadly authorized for any energy development by Indian tribes. What steps have to taken to ensure that DOE's Loan Guarantee Program includes the purposes authorized for the Indian Energy Loan Guarantee Program? What steps have you taken to ensure that Indian tribes have knowledge of the loan guarantee program and can compete fairly for funding? Would the Indian Energy Loan Guarantee Program be better served if it was run separately from the general program, and supervised by the Director for Indian Energy Policy and Programs?

QUESTIONS FOR DAVID G. FRANTZ FROM SENATOR STABENOW

Question 4. It is not apparent under either the statute or the Department of Energy (DOE) regulations whether pipelines for carbon capture would be eligible for a guarantee. As it stands the law seems broad as it allows "Carbon capture and sequestration practices and technologies". Without CO2 pipelines, the citing and construction of which involve significant costs, transporting the CO2 to sequestration sites will be very cost prohibitive. And as you all are aware, carbon capture will be vital to meeting future greenhouse gas obligations. Would a project to construct a pipeline to transport CO2 from an emissions source to a sequestration site (in connection with CO2 EOR), separate and distinct from the installation of carbon capture equipment at the emissions source, be eligible for a guarantee under the Title XVII Loan Guarantee Program (as defined "Carbon capture and sequestration practices and technologies," EPAct 1703 (b)(5))?

Question 5. In the small town of Morenci, Michigan, there is a plant called Palm Plastics. Palm Plastics has the distinction of being one of two sites in America that manufacture plastic shipping pallets for a company called Intelligent Global Pooling Systems or iGPS. These iGPS pallets are unique from other pallets in that they are 30% lighter than conventional pallets, which mean less weight to ship and therefore result in significant fuel savings and reduced pollution. These pallets are 100% recyclable, and therefore will never clog landfills. The growth of plastic shipping pallets throughout our supply chain will go a long way to save fuel and reduce greenhouse gases. I am proud to have these green jobs in my state making these pallets and would in fact like to see these precious manufacturing jobs grow. However, the credit crisis means that companies like iGPS cannot grow and they, like other companies, are turning to the federal government for capital. The text of Title XVII states that these loan guarantees are for projects that—"avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases: and employ new or significantly improved technologies as opposed to commercial technologies in service in the US at the time the guarantee is issued. Commercial technology is defined as a technology in general use in the marketplace." Clearly, the lighter weight of an all-plastic pallet significantly reduces pollutants and greenhouse gases. Among the types of "efficient end-use energy technologies" to which the loan guarantee program applies, would those also include new technologies applicable to the nation's supply chain, including material transport and pallets, which significantly reduce pollutants and greenhouse gases?

QUESTIONS FOR DAVID G. FRANTZ FROM SENATOR MURKOWSKI

Question 6. The industry and Congress have been waiting anxiously since 2005 for the current Title XVII Loan Guarantee Program to be stood up and to begin issuing guarantees. With the possible exception of Mr. Frantz you have each argued for the establishment of some sort of new agency that would provide a broader array of financial tools to the clean energy industry. At the same time you have each underscored the need for government support for clean energy technology in the short term. While the idea of a new agency may have merit, how do we get from here to there? How do we avoid waiting another 3-4 years while that organization gets established? Are there ways that we can facilitate the current Title XVII program in the near term while working to establish a broader capability for the future?

Question 7. Is it possible for the Department of Energy to partner with the private sector to provide an efficient loan guarantee service while retaining control, or is it necessary to establish a private entity to make this work?

Question 8. What legislative fixes are needed to the Title XVII program to make it function more smoothly? What fixes can be done administratively?

Question 9. Is it more important to get the loan guarantee funds out to a multitude of projects that could be successful, or concentrate the money on a handful of the best projects that have a high likelihood of success?

Question 10. Assuming a maximum contingent liability of $100 billion and that such an expansion were to be enacted by Congress, what do you believe is an acceptable rate of default for projects participating in a program of not just loan guarantees, but direct loans and other financial instruments?

Question 11. One criticism of the Loan Guarantee Program has been that it operates more like a government procurement process rather than a commercial banking program. This leads to a time consuming solicitation followed by a lengthy comparative evaluation process before loan guarantees are issued. With the substantial interest shown by industry in this program combined by the economy's need for new investment it seems a more efficient process would be worth pursuing. Given the broad discretion granted to the Department of Energy under Title XVII to establish the most efficient process, could the Department implement a rolling review process similar to that used in other Federal loan guarantee programs? How do you think this would impact the Loan Guarantee Program?

Question 12. Would a project to construct a pipeline to transport CO2 from an emissions source to a sequestration site (in connection with CO2 EOR), separate and distinct from the installation of carbon capture equipment at the emissions source, be eligible for a guarantee under the Title XVII Loan Guarantee Program (as ″Carbon capture and sequestration practices and technologies,″ EPAct 1703 (b)(5))?

Question 13. When can a decision be expected regarding the applications to the front end nuclear fuel cycle solicitation?

QUESTIONS FOR DAVID G. FRANTZ FROM SENATOR BURR

Question 14. I understand that DOE has been notifying applicants for the loan guarantee program about the status of their applications, in particular whether the applicants are being considered in the "first tier" for project structures that "Accelerate Deployment of New Nuclear Capacity."

Question 15. Can you tell us how many applications the Application Evaluations and Rankings process determined to be first tier and how many represent "viable alternatives?"

Question 16. I noted that in one of your responses to an applicant, you stated, "We will inform you promptly should this occur {should any other, more ready project be disqualified or withdraw} or if we receive additional authority to provide loan guarantees."

Question 17. What exactly does this mean? Does this mean the DOE is currently limited in the number of loan guarantees it can provide, not because of the viability of certain projects, but because Congress has arbitrarily capped the number of projects that can be provided with loan guarantees?

QUESTIONS FOR DAVID G. FRANTZ FROM SENATOR CORKER

Question 18. Do you believe that DOE should give priority to eligible and viable projects that are "shovel ready" to immediately address U.S. economic recovery? What specific actions are you taking to award loan guarantees to project applicants that can achieve rapid creation of new domestic jobs?

Question 19. If the Department changed the current process of solicitations to a rolling review process, project applications could be considered as they are received and decisions could be expedited. Is there any statutory impediment as to why DOE cannot employ the rolling review process that has been successfully deployed elsewhere in business and government? Would you agree that there are projects that could move more quickly if the Department had such a business model in place?

Question 20. How have rising ECP (engineering, construction and procurement) costs affected the DOE management of the program? Does DOE see a need for Round 1 loan volume increases? If so how much? How should mismatched project costs to loan volume problems be handled in the future?

Question 21. In the absence of credit at reasonable commercial rates, what are the process and resource issues that need to be addressed to allow ancillary but essential project elements (e.g., CO2 Off-takers in a Carbon Capture and Sequestration project (CCS)) to participate in the core project but under a separate loan guarantee?

Question 22. How has the credit crisis affected the DOE loan guarantee program in general? How has the credit crisis affected the "credit assessment" of projects faced with applications under due diligence this year (2009)?

Question 23. What does the DOE see as necessary changes to accommodate the Round 1 applicants under these relatively new economic circumstances? Does the full self-pay concept or rationale hold-up?

Question 24. How can the NEPA process be expedited and accountable?

APPENDIX II

Additional Material Submitted for the Record

STATEMENT OF CHRIS DEVERS, CHAIRMAN, PAUMA BAND OF MISSION INDIANS AND CHAIRMAN, COUNCIL OF ENERGY RESOURCE TRIBES

INTRODUCTION

Good morning Chairman Bingaman, Ranking Member Murkowski, and distinguished members of the Committee on Energy and Natural Resources. My name is Chris Devers and I am the Chairman of the Pauma Band of Mission Indians. I am also Chairman of the Council of Energy Resource Tribes ("CERT").

On behalf of CERT's member tribes I am pleased to submit this statement for the Committee's consideration relating to the Department of Energy's Guaranteed Loan Program and matters related to Indian tribal energy development.

Founded in 1975 during what was then known as the "Arab Oil Embargo", CERT is headquartered in Denver, CO, and boasts 57 member Indian tribes. CERT's member tribes are actively engaged in the development and production of renewable and non-renewable sources of energy from coast to coast. CERT's mission is to support member tribes in the development of their management capabilities and the use of their energy resources to foster tribal economic development and political self-governance. CERT is governed by a Board of Directors comprised of the principal elected leadership of CERT's member Indian tribes.

THE UNFULFILLED PROMISE OF INDIAN ENERGY

American Indian tribes and their energy resources hold enormous potential to create jobs, generate revenues, and aid in the American economy's need for a stable energy supply. Three factors contribute to this scenario:

- The significant reserves of tradition sources of energy such as oil, gas, and coal, as well as the unleashed potential of renewable resources owned by Indian tribes;
- The pricing environment for energy products; and
- The enactment in 2005 of a classically liberal, pro-production energy policy.

A. Indian Tribal Energy Resources and the Pricing Environment

Indian tribes in the lower 48 states—especially those in the Rocky Mountain west—own an enormous amount of energy resources. With the current Federal restrictions on exploring for energy in the Great Lakes, the eastern portion of the Gulf of Mexico, the California coastline, and ANWR, Indian tribal resources and lands in the Rockies present one of the most significant opportunities for domestic production in the United States.

In what is now a dated analysis, in 2001 the U.S. Department of the Interior (the Department) estimated the total dollar value of energy produced from Indian tribal lands for the period 1934-2001 to be $34 billion. These revenues derived from 743 million tons of coal, 6.5 billion cubic feet of natural gas, and 1.6 million barrels of oil. In terms of undeveloped reserves and undiscovered resources, the Department also projected that tribal lands could prospectively generate $875 billion, derived from 53 billion tons of coal, 37 billion cubic feet of natural gas, and 5.3 million barrels of oil. These projections were made in 2001 and in the intervening 7 years, the price of energy products has increased significantly.

If the Department conducted an updated analysis using current pricing data, the total revenue projection would be increased by hundreds of billions dollars.

B. The New Indian Tribal Energy Laws

On August 8, 2005, President Bush signed into law the Energy Policy Act of 2005 (Pub.L. 109-58) which included as title V the Indian Tribal Energy Development and

Self Determination Act. The new law authorizes a variety of Federal technical and financial assistance to participating tribes and seeks to reduce administrative obstacles at the Federal level to greater levels of energy development on tribal lands.

Unlike some congressional enactments, the new Indian tribal energy law does not discriminate in terms of renewable versus non-renewable resources. Instead, the law leaves to the Indian tribe and the market the decision on whether and under what circumstances to develop energy on tribal lands. The centerpiece of the new law is the authority provided to the Secretary of the Interior to negotiate and enter agreements with willing tribes that would govern energy and related environmental activities on tribal lands.

These agreements, known as Tribal Energy Resource Agreements or "TERAs", posit a reduced role for the Secretary and an enhanced role for the tribe but only if the tribe has the requisite financial, regulatory, and technical expertise (called "capacity" in the new law) to develop their resources, and regulate the physical environment in a responsible manner. Once a tribe has an approved TERA, it (and not the Secretary) may negotiate and enter agreements with outside parties without the review or approval of the Federal government.

C. The Federal Apparatus is Complete, Next Step Project Development

The new Indian tribal energy law was signed into law in 2005 and the regulations to implement it went into effect in April 2008. The Congress has seen fit to appropriate money to fund both the Department of Interior's Office of Indian Energy and Economic Development, and the Department of Energy's Office of Indian Policy and Programs.

The Federal side of the equation has been completed, then, and the next steps involve Indian tribes inventorying their energy resources, identifying potential projects, and working with energy and financial partners to bring these projects to completion.

FINANCIAL ASSISTANCE FOR INDIAN ENERGY PROJECT DEVELOPMENT

In the past several years, CERT has been very active on the legislative and policy front and was instrumental in the development and passage of the Indian Tribal Energy Development and Self Determination Act of 2005 as well as the passage of the Energy Independence and Security Act of 2007.

The 2005 law is particularly important in that it seeks to maximize tribal decision-making authority and authorizes a comprehensive set of assistance programs housed in both the Department of Energy and the Department of the Interior to design, develop, and manage energy development projects on tribal lands. One of the programs designed to assist tribes in this regard is the "Department of Energy Guaranteed Loan Program" contained in 25 U.S.C. §3502(c).

Section 3502 authorizes the Secretary of the Energy to provide loan guarantees for an amount equal to not more than 90 percent of the unpaid principal and interest due on any loan made to an Indian tribe "for energy development." The total outstanding amount of loans guaranteed by the Secretary may not exceed $2 billion.

The loans which are eligible for the guarantee are loans made by financial institutions subject to examination by the Secretary or loans made by an Indian tribe, using funds of that tribe.

Sadly, since the enactment of this provision in 2005, the Department has failed to implement the Indian loan guarantee program. The Department has also failed to submit to Congress a report on the financing requirements of Indian tribes for energy development on Indian land, as required by section 3502(c)(7). These failures have occurred despite the large number of renewable and non-renewable energy projects that are poised for development on tribal lands.

OBSERVATIONS AND RECOMMENDATIONS

Section 17 of the Energy Policy Act of 2005 ("Incentives for Innovative Technologies") directs the Secretary to issue loan guarantees in an amount equal to 80 percent of the project cost of the facility that is subject to the guarantee. Section 1703 lists two general categories of eligible projects including those that would (1) avoid, reduce, or sequester greenhouse gas emissions and (2) employ new or significantly improved technologies as compared to commercial technologies.

Specific types of projects that would be eligible include the following:

1. Renewable energy systems;
2. Advanced fossil energy technology;
3. Hydrogen fuel cell technology;
4. Advanced nuclear energy facilities;

5. Carbon capture and sequestration including agricultural and forestry practices that store and capture carbon;
6. Efficient electrical generation, transmission, and distribution technologies;
7. Efficient end-use technologies;
8. Production facilities for fuel-efficient vehicles, including hybrid and advanced diesel vehicles;
9. Pollution control equipment; and
10. Refineries, meaning facilities at which crude oil is refined into gasoline.

Section 3502's Indian Guaranteed Loan Program has never been implemented and yet there are scores of projects on tribal lands not being undertaken delayed because of a lack of financing. At the same time, there is nothing in the language of Title 17's loan guarantee appears to suggest that Indian tribes or tribal projects are ineligible for guarantees issued by the Secretary under the authority of Section 1702.

Accordingly, CERT encourages the Committee to urge the Department to consult with Indian tribes on the issue of loan guarantees and project financing on tribal lands.

CONCLUSION

I thank the Chairman and the Committee for this opportunity and your ongoing support of tribal energy development and the needs of Indian communities nationwide.

MAGELLAN MIDSTREAM PARTNERS, L.P.,
Tulsa, OK, February 12, 2009.

Hon. JEFF BINGAMAN,
Chairman, Senate Committee on Energy and Natural Resource, U.S. Senate, 304 Dirksen Senate Office Building, Washington, DC.

RE: Hearing to examine the Department of Energy Loan Guarantee Program, authorized under Title 17 of the Energy Policy Act of 2005, and how the delivery of services to support the deployment of clean energy technologies might be improved

DEAR CHAIRMAN BINGAMAN AND RANKING MEMBER MURKOWSKI: Magellan Midstream Partners, L.P. owns and operates the longest refined petroleum pipeline in the United States, which crosses thirteen states and over 8,500 miles of pipeline. We have partnered with Buckeye Partners, LP, which owns and operates nearly 5,400 miles of refined petroleum pipeline. Our collective goal is to develop the first ever "dedicated ethanol pipeline," which we call the "Independence Pipeline." The Independence project is a 1,700 mile, $3.5 billion renewable fuel pipeline project, which currently originates in Minnesota and Iowa, travels through seven states, and ends in the New York Harbor.

The project would create 25,000 jobs per year during construction of the project, would decrease the cost of delivered ethanol to the east coast, and would safely and efficiently deliver more than 10 million gallons of ethanol per day to millions of northeastern motorists.

This large-scale renewable fuel pipeline project is dependent on expanding the loan guarantee program authorized under Title 17 of the Energy Policy Act of 2005. This is a huge project and expansion of the loan guarantee program is necessary if Congress intends to support this Administration's goal to dramatically increase the utilization of renewable fuels throughout the United States. There is no doubt, pipelines offer the safest, most reliable and cost effective method of transporting the volumes required under the federal renewable fuels program.

We are pursuing a 90% loan guarantee, which in our view, is necessary to complete the project.

Throughout the past year, we have met with the Department of Energy a number of times to better understand whether it is possible to expand the current loan guarantee program. We believe it is. Although we are concerned the Department of Energy is reluctant to provide any loan guarantee higher than 60% of the total cost of a project. In these difficult economic times, we think it is necessary for Congress and the Administration to assist industry in building the infrastructure that will allow our Nation to increase its dependence on domestic energy supplies. In most cases, a 60% loan guarantee program is not sufficient to meet the needs of industry.

Secondly, prepayment of the credit subsidy will prove to be prohibitive for some companies, especially, as in our case, if the size of the project is $3.5 billion. In order to encourage projects of this size to move forward, we would encourage you to consider allowing the credit subsidy to be waived in certain cases. Specifically, Congress

could allow the Secretary of Energy to waive the credit subsidy if certain priorities that benefit consumers are met.

Congress has indicated renewable fuels will have an increasingly important role in our domestic energy policy and the growing national demand for renewable fuels will create potential opportunities to construct more efficient transportation infrastructure across the United States. We believe the necessary long-term solution for efficient renewable fuel transportation is a large-scale pipeline system. Therefore, we urge you to expand the loan guarantee program to include funding for renewable fuel pipeline projects.

I look forward to discussing this issue with you and other Senators in greater detail.

Sincerely,

BRUCE W. HEINE,
Director of Government and Media Affairs.

STATEMENT OF GLENN ENGLISH, CHIEF EXECUTIVE OFFICER, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION, ARLINGTON, VA

THE DEPARTMENT OF ENERGY LOAN GUARANTEE PROGRAM

I am pleased to provide information about a program of great importance to the members of the National Rural Electric Cooperative Association—the Department of Energy's (DOE) Loan Guarantee Program. The Loan Guarantee Program provides a much needed commitment from the federal government to join with the electric utility industry in updating the nation's electric generation infrastructure with technologies that avoid greenhouse gas emissions, including nuclear, carbon capture and sequestration (CCS) and renewable technologies. I commend the Committee for their examination of the status of this vital program, and will comment on a specific aspect that is limiting the ability of electric cooperatives to participate. Specifically, the DOE loan guarantee program currently discriminates against joint ownership structures commonly utilized by electric cooperative, municipal and investor-owned utilities.

BACKGROUND ON ELECTRIC COOPERATIVES

NRECA is the national service organization representing the interests of electric cooperative utilities and their consumers. In addition to advocating consensus views on legislative and regulatory issues, NRECA provides health care, pension, financial investment and many other programs for its members.

Electric cooperatives are not-for-profit, private businesses governed by their consumers (known as "member-owners"). Today, 930 electric cooperatives serve 42 million consumers in 47 states. Cooperatives are a unique sector of the electric utility industry, serving an average of only 7 consumers per mile compared with the 35 customers per mile served by investor-owned utilities (IOUs) and 47 customers per mile served by municipal utilities. To put this in greater perspective, electric cooperatives serve only 12% of the population—but maintain 42% of the nation's electricity distribution lines covering three quarters of the land mass.

ELECTRIC COOPERATIVES BALANCE INCREASED DEMAND WITH GREENHOUSE GAS REDUCTIONS

The electric cooperative sector is growing at twice the rate of the other utility sectors because people are moving to co-op service areas. The U.S. Energy Information Administration forecasts that by 2030, demand for electricity will be 28 percent higher, the equivalent of adding four Californias to the power grid. In some regions, demand will soon outstrip supply, according to the North America Electric Reliability Corporation.

At the same time electric cooperatives are meeting these demands, co-ops are deploying technologies that will help to meet environmental goals. Renewable resources, efficiency investments, technologies to capture and store carbon from coal plants and nuclear energy are all equally important to meeting demand and reducing greenhouse gas emissions. These technologies must all be made available in order to fulfill our mission of providing affordable and reliable electricity, and to modernize the nation's infrastructure.

The DOE Loan Guarantee program is more important than ever in this time of scarce lending. Despite the fact that the program has been severely underfunded, electric cooperatives have pending applications in partnership with others to finance nuclear projects. Those projects are already creating jobs that will ramp up in the

near term. Electric cooperatives have also initiated millions of dollars in renewable electricity projects under the Clean Renewable Energy Bond program, have been recognized by the Federal Energy Regulatory Commission as national leaders in deploying "smart meters" and are demonstrating carbon capture technologies. Cooperatives are working in all of these areas because no stone can be left unturned to both meet increasing demand for electricity and achieve environmental goals.

THE DOE LOAN GUARANTEE PROGRAM DISCRIMINATES AGAINST JOINT OWNERSHIP

Electric cooperatives were pleased to see that the Senate-passed stimulus bill includes an additional $50 billion in loan guarantee authority for DOE. This additional authority appropriately reflects the magnitude of anticipated electricity demand, and I urge conferees to maintain the Senate authority level. But there is an equally critical issue yet to be addressed that I would like to bring to the attention of this Committee. Under DOE's current interpretation of the program, electric cooperatives and other utilities are severely hampered in their ability to tap the program, whether it be for nuclear, clean coal or renewable technologies.

By way of example, one electric cooperative and one public power system that distributes power to electric cooperative consumers have applications pending before the Department of Energy for loan guarantees for nuclear projects, and more electric cooperatives are expected to seek to tap this program in the near future. Yet, late in 2008, DOE effectively disqualified loan guarantee applicants with traditional "undivided ownership" interest structures (i.e., those entities jointly owning a project, but financing each ownership interest independently). The traditional undivided ownership interest structure is used commonly for large, capital intensive projects such as base load power plants in order to effect joint ownership of a single plant among investor-owned, municipal and cooperative utilities. Such arrangements permit utilities with adjacent service territories to share risks and size generation resources appropriately to current and future demand. DOE's interpretation of the loan guarantee statute to disallow this structure is unnecessarily restrictive and will disqualify many utilities, including electric cooperatives, municipal utilities and investor-owned utilities from seeking loan guarantees for nuclear or other generation resources under this very common structure.

DOE's current interpretation of the statute severely limits the effectiveness of the guarantee program in a manner that was not intended by Congress. The federal government, through the U.S Department of Agriculture Rural Utilities Service has been accepting "undivided ownership" structures for decades. As a practical matter, DOE's interpretation will make the DOE loan guarantee program unavailable for many new power plants. If these projects are to move forward without a DOE loan and with today's scarce private lending at high rates, the price tag for the new power projects—and thus their costs to ratepayers—could nearly double.

Electric cooperatives submitted preliminary applications in September of 2008 seeking loan guarantees under a traditional undivided ownership interest structure, and paid a non-refundable $200,000 fee. DOE initially informed these applicants that they were highly ranked in the queue for funds, but surprised them in December of 2008 by asserting that traditional undivided ownership interest structures were unacceptable. This assertion came just four days prior to the deadline for final applications. Co-ops and other applicants, with much time and money already invested in joint venture projects, had little choice but to move ahead and pay an additional, non-refundable $600,000 fee for submitting the final application. The applications have been submitted in hopes that DOE's interpretation can be corrected to accommodate undivided ownership interest structures.

The payment of this fee demonstrates that co-ops are committed to critical new capacity with low or zero greenhouse gas emissions. I urge Congress and DOE to demonstrate that they share this commitment and to develop a solution as soon as possible this year that will prevent discrimination against joint ownership structures, keep projects moving forward and limit the need for private financing that will be costly for ratepayers. Time is of the essence in resolving the issue, as applicants are responding to an unanticipated, adverse decision by DOE despite being far along in project spending and commitments.

CONCLUSION

I commend the Senate Energy and Natural Resources Committee for this hearing examining the DOE Loan Guarantee program. The program is increasingly important to electric cooperatives as we take on the challenge of meeting increased demand while doing our part to reduce greenhouse gas emissions. I look forward to the opportunity to work with this Committee to overcome the obstacles to participa-

tion by undivided ownership interest structures in the DOE loan guarantee program.

STATEMENT OF DAVID ARFIN, VICE PRESIDENT OF CUSTOMER FINANCING SOLARCITY, INC.

Chairman Bingaman, Senator Murkowski and Honored Committee Members:

Thank you for the opportunity to share SolarCity's perspective on opportunities for the Department of Energy's Title XVII Loan Guarantee Program to help drive a robust, domestic renewable energy industry. This hearing is both timely and important, given the program's challenges to date and the possibility it may expand dramatically as part of the pending economic recovery legislation.

SolarCity is a young company with some notable achievements driven by a vision for helping to create a clean, renewable energy society. In our first two and a half years, SolarCity has grown into the largest residential solar installer in the United States, by reservation volume. We directly employ more than 300 workers in three states (California, Arizona and Oregon) and estimate that we have helped to create 2,000 indirect American jobs. We are actively planning for rapid national expansion by partnering with local contractors and hope to more than triple these numbers in the next three years. All of the solar panels we install are manufactured in the U.S. Our efforts have been recognized by the Aspen Institute's Energy and Environment Award, and our growth has received national media attention, featured by PBS, NPR, Fox Business News, CNBC, the Wall Street Journal, the New York Times and hundreds of other media outlets.

The key drivers of SolarCity's growth have been three-fold: a) a business model that combines private investment and public incentives and doesn't overburden either resource ; b) a scalable operations model and technology innovations that have driven down the cost of installations while delivering consistently reliable performance; and c) our ability to provide turn-key solar energy solutions for homeowners and businesses who want to go solar, simplifying a maze of financial and regulatory issues and enabling our customers to lower their electricity costs. By touching so many homes and businesses with relatively small systems, we create construction jobs that can't be outsourced, and allow more citizens to reduce greenhouse gas pollution and alleviate dependence on foreign energy sources.

Given the current state of the capital markets, we are delighted that Congress is considering ways to expand the Title XVII loan guarantee program to include a broader universe of commercial renewable energy technologies. When coupled with the pending changes allowing for a grant in lieu of the Investment Tax Credit, the result can be a very effective means of revitalizing a critical domestic industry that has become crippled by the current credit crisis and recent collapse of the tax equity markets.

As you consider ways to ensure the most effective implementation of this program, we believe there are four overarching areas that are important for Congress to consider in its deliberations, with a view toward the Department of Energy's administration of Title XVII:

The new loan guarantee program envisioned under Section 1705 of the pending House and Senate economic recovery proposals should allow small renewable energy installations to be aggregated into larger portfolios and efficiently processed by the Department of Energy.—Residential installations are generally small, averaging four to five kilowatts per home. These installations result in consumer savings, reduce homeowners' carbon footprint and create green jobs in the process—consistent with the President's policy goals for the economic recovery package. We do not wish to overburden the program office with many applications for small projects. Thus, in order for companies like SolarCity to make efficient use of the new renewable energy loan guarantee program, the Department of Energy should allow aggregation of these smaller projects into larger "buckets" in the administration process; we suggest that the minimum "bucket" for submission to the program be $2 million.

Prioritize near-term projects that are vital to timely job retention and creation.—Administration of the renewable loan guarantee program must quickly prioritize shovel-ready projects that can create jobs in the first half of 2009. SolarCity, for example, has hundreds of projects ready to be installed at customer sites. Our "green collar" jobs are not limited to the installation sector; SolarCity employs two workers in the customer service, sales and finance areas for every pair of "boots on the roof". To guarantee maximum impact of the new loan guarantee program, we suggest the Department of Energy prioritize projects that can be permitted, built and placed in service now. As these

projects begin to move forward, it will help boost confidence and thaw frozen credit markets.

Encourage certainty, throughput and visibility.—It is critical that the new loan guarantee program be both credible and creditable to the public and to renewable developers alike. Once certain viability thresholds have been met, sponsors for those renewable energy projects of less than $5 million should be guaranteed a "place in the queue," prior to construction and the placed-in-service date. Similar to the ratemaking practice of "construction work in progress"—which allows utilities to get recovery of their expenses prior to the actual start date of construction—renewable energy developers need capital to enable them to move forward.

Another important factor is the need for a fast response, particularly for smaller projects. We need a short, standardized form and predictable outcomes with reasonable processing times. Certainty and simplicity are critical if the program is to have the intended impact on renewable energy project development during these difficult economic times. Reliable loan support will be a key factor in attracting private project capital.

In addition, it will be extremely difficult for the program to move at a predictable, acceptable pace if we add additional agency approval processes, such as one whereby the Office of Management and Budget must approve each transaction already reviewed by the Department of Energy. This program needs to move forward expeditiously to adopt rules that will allow money to flow to developers, and not get bogged down in overlapping and duplicative inter-agency administrative reviews.

Allow flexibility for projects that receive federal guarantees.—The solar industry needs flexibility in financing mechanisms at this critical time, when private capital remains difficult to find despite the proven nature of existing technologies and business models. Receiving a cash grant for 30 percent of a project's cost (or a bundle of projects' cost) should not preclude developers from receiving a federally-guaranteed loan through the new DOE program for the balance of the project costs. Similarly, solar assets have an expected life of 30 years; as such, loan guarantees with a minimum term of 20 years would be most useful in the current fiscal climate.

Thank you for the opportunity to submit this testimony. SolarCity has a proven track record of delivering solar solutions, and we are eager to continue making these benefits accessible to consumers and workers across the nation. As Congress and the new Administration look for ways to ensure continued growth of the renewable energy sector in these challenging economic times, we stand ready to assist you by providing the perspectives of an innovative start-up company navigating the current capital market realities.

Thank you for your consideration.

DEAR SENATOR BINGAMAN AND MEMBERS OF THE COMMITTEE: The undersigned companies offer this testimony for inclusion in the record of your February 12th hearing on the Department of Energy's Loan Guarantee Program. We appreciate your interest in and leadership on this issue.

In 2006, the Department of Energy issued its first round solicitation ("Round 1") inviting pre-applications for loan guarantees under the EPAct 2005 Loan Guarantee Program. Out of a reported 143 responses to its Round 1 loan guarantee solicitation, DOE selected 16 projects in late 2007 and invited those projects to submit formal applications in November 2008. In late 2008 DOE apparently accepted completed Round 1 applications from 11 different clean energy projects. Each of the undersigned companies has participated in Round 1 and expended substantial time and resources over the past three years to become one of the 11 projects farthest along in the loan guarantee process. Given our status as selected Loan Guarantee Program beneficiaries with the most advanced projects in the country, we believe we are uniquely positioned to offer these comments for your consideration as you explore how the EPAct 2005 Loan Guarantee Program can be improved.

The Round 1 projects, given their advanced stage of development, are uniquely positioned to advance critical national energy policy goals while also providing significant near-term stimulus to our economy. The near term deployment of the innovative clean energy technologies represented by the Round 1 projects is threatened by the broader financial and credit crises. With targeted fixes, the Round 1 solicitation is ready to provide timely economic stimulus while commercializing clean energy technologies. We respectfully observe that with the following few modifications to the current loan guarantee program, the Round 1 projects will be able to move

forward quickly to achieve the goals of the loan guarantee program while adding thousands of good jobs around the country.

Fully fund all pending Round 1 guarantees.—It is essential that the volume allocation for the first round solicitation be sufficient for the selected projects. The existing appropriation of a volume allocation of $4 billion is far short of what would be needed to fund the Round 1 projects. Applicants have been notified that inadequate funding has been provided for Round 1. This jeopardizes the implementation of the most advanced projects in the loan guarantee program and the substantial job creation associated with those projects unless the Round 1 allocation is increased. Increasing the authorized volume of guarantees for Round 1, or re-allocating a portion of the volume previously authorized for later round solicitations to Round 1, would ensure that all Round 1 projects are fully funded and can proceed in a timely way.

Further, the increased volume should also provide levels and access to capital for essential projects directly related to the core Round 1 project. For example, the credit crisis has destroyed pre-credit crisis project assumptions about separately and commercially financed CO2 off-taker investments. Off-takers should be allowed access to capital in amounts, at rates and with Federal processes that are aligned with the core project FLG process.

Appropriate the credit subsidy cost of Round 1 projects.—In the absence of an appropriation to cover the credit subsidy cost of projects under section 1702(b) of EPAct, each of the projects participating in the loan guarantee program will be required to provide funding to cover the credit subsidy cost determined by the loan guarantee office. Private funding of the credit subsidy cost impedes the ability to rapidly commercialize the cutting edge technologies represented by the Round 1 projects, defeating one of the core purposes of the loan guarantee program. The credit subsidy cost will materially increase the cost of projects, and will be particularly difficult for projects that might include participation by non-profit public entities, such as municipal or cooperative utilities. Appropriating the credit subsidy cost for the Round 1 projects will ensure that they move forward quickly.

Require fees to be paid only upon issuance of the guarantee.—The current program rules require a Facility Fee, which can be substantial, to be paid upon credit board approval, far in advance of the closing of a transaction and actual issuance of the loan guarantee. Instead, the rules should provide that such fees are to be collected upon actual issuance of the loan guarantee, and that issuance of the final loan guarantee is conditioned on payment in full of such fees.

Ensure that the currently pending Round 1 projects proceed through the existing loan guarantee program process.—Current Round 1 applications have been in process since 2006 and have made substantial progress working through all of the requirements necessary for any loan guarantee program recipient. To the extent any separate or parallel loan guarantee program might be established it is imperative that current applications in process not be undermined since the Round 1 projects will be the first to achieve the EPAct 2005 loan guarantee program goals and can create jobs now.

We believe these enhancements to the program will ensure implementation of a successful loan guarantee program. It appears that DOE's loan guarantee office is now appropriately staffed to move the Round 1 projects through the process efficiently provided that sufficient volume is appropriated to cover all of the Round 1 projects. While the rulemaking and office staffing processes may have taken longer than hoped, they were essential to setting up a program that will work.

Thank you very much for the opportunity to provide comments and help ensure the loan guarantee program achieves its vital goals.

BrightSource Energy, Inc.,
The Mesaba Energy Project, a subsidiary of Excelsior Energy Inc.,
TX Energy (Eastman Chemical Company),
SAGE Electrochromics, Inc.,
Westbank Biofuels Project (Endicott Biofuels II, LLC).

STATEMENT OF MARVIN S. FERTEL, ACTING PRESIDENT AND CHIEF EXECUTIVE OFFICER, NUCLEAR ENERGY INSTITUTE

The Nuclear Energy Institute appreciates the opportunity to provide this testimony for the record of the committee's hearing on the loan guarantee program authorized by the Energy Policy Act of 2005, administered by the Department of Energy (DOE).

The Nuclear Energy Institute (NEI) is responsible for establishing unified nuclear industry policy on regulatory, financial, technical and legislative issues affecting the industry. NEI members include all companies licensed to operate commercial nu-

clear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

In this statement, NEI will discuss:

1. the importance of the Title XVII loan guarantee program in supporting the financing of new nuclear power plants and other technologies
2. some of the difficulties encountered during implementation of the loan guarantee program, and
3. suggestions on how to improve implementation and restructure the program for long-term success.

I. THE IMPORTANCE OF THE LOAN GUARANTEE PROGRAM

The loan guarantee program created by Title XVII of the Energy Policy Act is an essential and appropriate mechanism to enable financing of clean energy technologies. In fact, an effective and workable loan guarantee program is significantly more important today than it was when the Energy Policy Act was enacted in 2005.

Loan guarantees are a powerful tool and an efficient way to mobilize private capital. The federal government manages a loan guarantee portfolio of approximately $1.1 trillion, to ensure necessary investment in critical national needs, including shipbuilding, transportation infrastructure, exports of U.S. goods and services, affordable housing, and many other purposes. Supporting investment in critical energy infrastructure (including new nuclear power plants) is a national imperative, and there is no reason that the energy loan guarantee program cannot be as successful as the Export-Import Bank and other federal loan guarantee programs.

The Title XVII loan guarantee program includes 10 technologies that are eligible for loan guarantees. They include renewable energy systems, advanced fossil energy technology (including coal gasification), hydrogen fuel cell technology for residential, industrial, or transportation applications, advanced nuclear energy facilities, efficient electrical generation, transmission, and distribution technologies, efficient end-use energy technologies, production facilities for fuel efficient vehicles, including hybrid and advanced diesel vehicles, and pollution control equipment. Each of these technologies presents different financing challenges.

Nuclear power is a capital-intensive technology. NEI estimates a new nuclear power plant could cost $6-8 billion, including financing costs. This large capital investment does not mean that new nuclear plants will not be competitive. Capital cost is certainly an important factor in financing, but it is not the sole determinant of a plant's competitive position. What matters is the cost of electricity from the plant at the time it starts commercial operation relative to the other alternatives available at that time. Based on NEI's own modeling, on the financial analysis performed by companies developing new nuclear projects, and on independent analysis by others, NEI believes that new nuclear capacity will be competitive and profitable.

For new nuclear power plants, the financing challenge is structural. The U.S. electric power sector consists of many relatively small companies, which do not have the size, financing capability or financial strength to finance power projects of this scale on their own, in the numbers required. Loan guarantees offset the disparity in scale between project size and company size. Loan guarantees allow the companies to use project-finance-type structures, to employ higher leverage in the project's capital structure, and to insulate the project sponsor's balance sheet from the project's credit risk, in whole or in part. Absent the loan guarantee, financing one of these projects on balance sheet could have negative consequences: stress on cash flow, stress on credit quality, earnings-per-share dilution from issuance of new equity.

The financing challenges are, of course, somewhat different for the regulated integrated utilities than for the merchant generating companies in those states that have restructured. But these challenges can be managed, with appropriate rate treatment from state regulators or credit support from the federal government's loan guarantee program, or a combination of both.

Supportive state policies include recovery of development costs as they are incurred, and Construction Work in Progress or CWIP, which allows recovery of financing costs during construction. Many of the states where new nuclear plants are planned—including Florida, Virginia, Texas, Louisiana, Mississippi, North Carolina and South Carolina—have passed legislation or implemented new regulations to encourage construction of new nuclear power plants by providing financing support and assurance of investment recovery. By itself, however, this state support is not sufficient. The federal government must also provide financing support for deployment of clean energy technologies in the numbers necessary to address growing U.S. electricity needs and reduce carbon emissions.

The Title XVII loan guarantee program also represents an innovative departure from other federal loan guarantee programs. It is structured to be self-financing, so that companies receiving loan guarantees pay the cost to the government of providing the guarantee, and all administrative costs. For this reason, a Title XVII loan guarantee program is not a subsidy. In a well-managed program, in which projects are selected based on creditworthiness, extensive due diligence and strong credit metrics, there is minimal risk of default, and minimal risk to the taxpayer. In fact, the federal government will receive substantial payments from project sponsors.

II. DIFFICULTIES WITH IMPLEMENTATION OF THE TITLE XVII LOAN GUARANTEE PROGRAM

Since enactment of the Energy Policy Act in August 2005, achieving workable implementation of the Title XVII loan guarantee program has been a challenge. In part, this reflects the previous Administration's initial skepticism about the program. The previous Administration's reluctance to implement an effective and workable program is evident from the amount of time—two years after enactment of the Energy Policy Act—before it established a Loan Guarantee Program Office and announced the appointment of a permanent director in August 2007. Many of NEI's concerns about implementation, including major disagreements over interpretation of the statutory language by the Department of Energy, are amply documented in NEI's comments on the Notice of Proposed Rulemaking, filed with DOE in July 2007. Many of those concerns were not addressed in the Final Rule promulgated later that year.

The implementation difficulties encountered by NEI member companies developing new nuclear projects thus predate formation of the Loan Guarantee Program Office. In fact, NEI is impressed with what a relatively small staff, operating under chronic budgetary constraints, have been able to accomplish in the time—slightly more than a year—that they have been at work. In that short period of time, the Loan Guarantee Program Office has developed internal management procedures and protocols; developed criteria to evaluate the creditworthiness and merit of loan guarantee applications; reviewed 143 applications received pursuant to an August 2006 solicitation and down-selected to 16 projects for further negotiation; prepared and issued three major solicitations; issued a request for proposals for the legal advisers, financial advisers and technical experts needed to assist with due diligence in reviewing loan guarantee applications; and developed the analytical model necessary to calculate the credit subsidy cost that will be paid by project sponsors.

Despite this significant progress, implementation of the program by the Executive Branch continues to be difficult, for reasons outside the control of the Loan Guarantee Program Office. One of the major difficulties stems from an unnecessarily narrow and restrictive reading of the original statutory language by the DOE Office of General Counsel. Section 1702(g)(2)(B) of Title XVII asserts that "[t]he rights of the Secretary, with respect to any property acquired pursuant to a guarantee or related agreements, shall be superior to the rights of any other person with respect to the property." The DOE Office of General Counsel has consistently misinterpreted this section as a prohibition on pari passu financing structures, and a requirement that the Secretary must have a first lien position on the entire project. Counsel for NEI and many of the project sponsors, with substantial experience in project finance, believe that Section 1702(g)(2)(B) gives the Secretary a "superior right" to the property he guarantees, not to the entire project.

If a nuclear project has multiple co-owners, each holding an undivided interest in the project, DOE insists that a default by any co-owner (such as abandoning the project during construction, or failing to meet its share of debt service during commercial operation) would constitute a default under every co-owner's obligations, allowing DOE to foreclose on all project collateral. The effect is to make each co-owner responsible for the others' obligations or to risk loss of its own interests. Aside from any business concerns such terms might raise, state law, federal tax law or both prohibit such cross-collateral or cross-default arrangements. This legal interpretation—which flows from the misinterpretation of the "superior right" provision discussed above—impacts four of the five top-ranked nuclear power projects now pursuing Title XVII loan guarantees.

The DOE's position is thus a major obstacle to co-financing of nuclear projects. Projects financed as undivided interests cannot proceed if this interpretation stands. Financing from export credit agencies in other countries like France and Japan, would be equally difficult. This result makes little sense since such co-financing will leverage the existing loan volume of $18.5 billion, and reduce the risk to which the Department of Energy is exposed.

One company developing a new nuclear project was sufficiently frustrated by its discussions with DOE on these matters that, after investing significant capital in developing a Part I application and paying the $200,000 filing fee, it elected not to file a a Part II application.

Insufficient Loan Volume

The omnibus appropriations legislation for FY2008 authorized $38.5 billion in loan volume for the loan guarantee program—$18.5 billion for nuclear power projects, $2 billion for uranium enrichment projects, and the balance for advanced coal, renewable energy and energy efficiency projects. The authority in the FY2008 omnibus expires at the end of the 2009 fiscal year.

This loan volume is clearly inadequate. DOE has issued solicitations inviting loan guarantee applications for all these technologies and, in all cases, it appears that the available loan volume is significantly oversubscribed. For example, the initial nuclear power solicitation resulted in requests from 14 projects seeking $122 billion in loan guarantees, with only $18.5 billion available. NEI understands that 10 nuclear power projects submitted Part II loan guarantee applications, which represented $93.2 billion in loan volume. Two enrichment projects submitted Part II applications, seeking $4.8 billion in loan guarantees, with only $2 billion available. NEI also understands that the solicitation for innovative coal projects resulted in requests for $17.4 billion in loan volume, more than twice the $8 billion available. The solicitation for renewable energy, energy efficiency and transmission projects is still open (the deadline for applications is February 25), but the expectation is that demand will exceed available loan volume, partly because traditional sources of financing for renewable energy projects are seriously constrained by the banking crisis.

It is, therefore, essential that limitations on loan volume—if necessary at all in a program where project sponsors pay the credit subsidy cost—should be commensurate with the size, number and financing needs of the projects. In the case of nuclear power, with projects costs in the $6-8 billion range, $18.5 billion is not sufficient.

III. IMPROVEMENTS TO THE LOAN GUARANTEE PROGRAM

The Title XVII loan guarantee program authorized by the 2005 Energy Policy Act was an important step in the right direction. That program was designed to jump-start construction of the first few innovative clean energy projects that use "technologies that are new or significantly improved as compared to commercial technologies in service in the United States at the time the guarantee is issued."[1]

That goal remains as valid now as it was in 2005, but today the United States faces a larger, additional challenge—financing large-scale deployment of clean energy technologies, modernizing the U.S. electric power supply and delivery system, and reducing carbon emissions. This is estimated to require investment of $1.5-2.0 trillion between 2010 and 2030.

In NEI's view, the scale of the challenge requires a broader financing platform than the program established by Title XVII. An effective, long-term financing platform is necessary to ensure deployment of clean energy technologies in the numbers required, and to accelerate the flow of private capital to clean technology deployment.

During the 110th Congress, Senator Bingaman introduced legislation to create a 21st Century Energy Deployment Corporation. Senator Domenici, ranking member of this committee during the last Congress, introduced legislation to create a Clean Energy Bank. Both proposals address aspects of the financing challenge facing the United States and its electric power industry.

Establishing an entirely new institution is a heroic undertaking, however, and it is not clear that such an initiative is necessary. NEI sees no reason why the existing Title XVII program and the DOE Loan Guarantee Program Office could not serve as a foundation on which to build a larger, independent institution within the Department of Energy. There is precedent for such independent entities, equipped with all the resources necessary to accomplish their missions, in the Federal Energy Regulatory Commission and the Energy Information Administration. This approach could have significant advantages:

1. An independent clean energy financing authority within DOE could take advantage of technical resources available within the Department, to supplement its due diligence on prospective projects and to identify promising technologies emerging from the research, development and demonstration pipeline

[1] Energy Policy Act of 2005, Section 1703(a)(2)

that might be candidates for loan guarantee support to enable and speed deployment.

2. An independent entity within DOE would have the resources necessary to implement its mission effectively, including its own legal and financial advisers with the training and experience necessary for a financing organization. Providing the independent entity with its own resources would eliminate the difficulties encountered during implementation of the Title XVII program.

3. Programmatic oversight in Congress would remain with the Energy Committees, which have significantly more experience with energy policy challenges, and in structuring the institutions necessary to address those challenges.

IV. CONCLUSION

In conclusion, NEI believes that the energy loan guarantee program created by the 2005 Energy Policy Act is as essential today as it was in 2005. NEI also believes that U.S. energy and environmental challenges justify a significant expansion of the program.

STATEMENT OF LAURA MILLER, DIRECTOR OF PROJECTS, TEXAS, THE SUMMIT POWER GROUP

Mr. Chairman and Members of the Committee, thank you for this opportunity to testify regarding the Federal loan guarantee program for carbon-sparing, advanced-technology energy projects. My name is Laura Miller. I joined the Summit Power Group after serving as the Mayor of Dallas, Texas, and leading a coalition of Texas mayors who two years ago fought the construction of new pulverized-coal-fired power plants with no carbon capture.

By contrast, Summit is developing a coal gasification project in Texas with such a high carbon capture rate that the project's resulting CO_2 emissions will be even lower than those of a state-of-the-art combined cycle natural gas-fired power plant. That's why I joined up. Our Texas project will include two warranted and commercially proven Siemens gasifiers, each 500 MWth, and a 1-on-1 F-class Siemens combined cycle power plant. In addition to power, the project will produce commercial quantities of ammonia/urea for fertilizer, argon gas, sulfuric acid—and three million tons per year of captured, pipeline quality CO_2. Unlike the first generation of IGCC (integrated gasification combined cycle) projects proposed years earlier, Summit's Texas Clean Energy Project will have very high warranted levels of performance, availability, and reliability—and a long-term operations and maintenance agreement with Siemens to assure that these high levels of performance, availability, and reliability continue.

Summit develops power projects for utilities, independent power producers, and other project owners. Donald Paul Hodel, our Chairman, and Earl Gjelde, our CEO, founded Summit after Mr. Hodel served as Secretary of Energy and Secretary of the Interior for President Reagan, with Mr. Gjelde as his second in command at both posts. Obviously, others who have a different political persuasion have since joined Summit—me included—but one thing we share completely is a determination to provide electricity in the most clean and efficient manner possible. All Summit projects are highly efficient, climate friendly, and helpful to America's energy independence and national security. We develop wind energy projects. We develop low-emission natural gas-fired projects. And we have just launched a new business line—utility-scale photovoltaic (PV) solar energy projects. None of these Summit projects has needed or applied for a Federal loan guarantee.

I am testifying today about the Texas Clean Energy Project (TCEP), the project I mentioned earlier, which we are developing at the former FutureGen site near Midland-Odessa. It is the first Summit project that uses coal, and it is one of several gasification projects Summit is developing with carbon capture. With a Federal loan guarantee, this plant can be built as a commercial project—not as a science experiment. It will capture more carbon than any commercial power plant yet built anywhere in the world. It will have lower carbon emissions per megawatthour of useful power produced than any commercial plant yet operating on fossil fuels anywhere else in the world. People will flock to see it, and they should, since it will represent a true milestone in carbon management.

Summit planned this project in a way that would not require a Federal loan guarantee. But in today's unexpected and unprecedented financial market conditions, without a Federal loan guarantee this project will not get built—at least not in the foreseeable future. Capital is simply not available: The capital exists, but there is no market access to it. Not only will carbon capture be delayed as a result, but thousands of construction jobs and hundreds of permanent jobs—and the entire economic

stimulus created by a project costing nearly two billion dollars—will be foregone on a project that we consider "shovel ready," thanks to the hard work of many Texans and past efforts at the site by the FutureGen Alliance.

Representatives of other projects will testify on specific issues with the existing Federal loan guarantee (FLG) program—the application fees, the risk premium payment, and so forth. Those are important matters. But Summit's message here today is simple: The single most important feature of the FLG program is simply that it exists. It needs to continue to exist, and with increased support—not reduced support. And it needs to continue to be available for carbon capture projects like this—not just for nuclear and renewable energy. Without it, and despite everything Summit and others do to promote renewable energy, any realistic hope of meeting current carbon reduction and energy independence goals for the U.S. and the world will simply disappear, swallowed up by today's global financial crisis. In terms of climate policy and national security alike, that would be a tragedy—in my view, a catastrophe.

Speaking for myself, one old-technology, pulverized coal plant—with few pollution controls and zero carbon capture—is currently being built in China every week. India is not far behind. In 2006, China surpassed the United States in the amount of carbon dioxide it produces for the first time in history. Since coal is plentiful and cheap, coal-fired power plants will continue to be built around the globe—including the United States where, despite strong opposition from environmental groups, business leaders and elected officials, a number are currently under construction, including three in Texas. The international technology bar must, and can be, raised. Each week that passes without a coal gasification plant with carbon capture and sequestration breaking ground allows yet another sub-par coal plant to be built that will needlessly foul the world's air, soil and water as it operates 24 hours a day, 365 days a year, for up to five decades. The time to build clean-coal plants with carbon capture is not today. It was yesterday.

For Summit, the key issue our large-scale carbon capture project faces is not technological. The technology is commercially proven and warranted. Nor is the issue the cost of capital, at least not primarily. The issue is simply access to capital. For large, new, carbon-sparing energy projects, the necessary capital—particularly the necessary project debt—will simply not be available while the global financial crisis persists.

Summit set out to develop TCEP as a project financed in conventional private capital markets, taking advantage of Federal carbon-reduction incentives but without relying on major Federal subsidies. Then the outside world delivered major blows to the project's economics. First, we saw huge increases in construction and raw materials costs. That made TCEP more expensive. Then the price of natural gas plunged. That made power produced from natural gas less expensive by comparison. The price of oil also plunged, and that reduced projected prices for captured carbon dioxide. In today's pre-cap and trade world, using captured CO_2 for enhanced oil recovery is the only significant and commercially-available way to both sequester carbon and help cover the costs of doing so—including the costs of independent monitoring, measurement, and verification (MMV) to assure that CO_2, once injected into the ground, will stay there.

All those outside problems made state tax relief and other local incentives vital to our project economics. The State of Texas has been very responsive, and seems poised to grant all reasonable incentives within the State's power for high carbon capture projects such as TCEP. These same problems also made other Federal incentive programs more important, too. These include Section 48A investment tax credits, Section 45Q credits for carbon dioxide that is actually captured and sequestered, and clarification of depreciation rules, so that that gasification projects with high carbon capture rates will be depreciated properly, like chemical plants and refineries, not like conventional natural gas-fired power plants.

But none of these problems—rising construction and materials costs, falling natural gas prices, and falling prices for captured CO_2—required Summit to seek a Federal loan guarantee. Indeed, we did not apply for one. What requires Summit to do so now is a related but different problem, the national—and indeed global—financial market collapse. Conventional financing for projects with such large capital costs is simply unavailable now from the private sector. It is unrealistic, and much too expensive, to try to build such projects on an all-equity, no-debt basis. But the debt is not available; lenders are not lending. People who still have good jobs can't borrow money even to buy a house. No one can borrow a billion dollars or more to build a carbon capture project, even where—as here—the project's components are each commercially proven and warranted.

So it is vital that the FLG program continue, that it be expanded, and that it be available for carbon capture projects such as Summit's Texas Clean Energy

Project—not just for nuclear plants and renewable energy projects, as important and useful as those technologies may be. The U.S. and the Western World will not provide the leadership needed to reduce carbon emissions from coal-fired power projects in China and India, or elsewhere in the world, by building more nuclear plants and wind farms, whatever their virtues. But if we capture and sequester carbon produced in the responsible use of coal, with new power generation technology not yet in worldwide use, then our leadership may make a difference. That is Summit's hope, and my personal hope.

Yet you have heard it said—repeatedly—that no plant such as Summit's has yet been built. And, therefore, clean coal does not exist. That's thoroughly misleading—and not an argument that should be made in a discussion about increasing Federal loan guarantees for clean-coal projects. To declare that "no such plant has yet been built" is equivalent to having declared, in July 1969, "No human has ever set foot on the moon." By that date, humans had been lofted into space and returned safely. Spacecraft had orbited and landed on the moon. Most important, years of effort to string these successes together, and actually land a human on the moon, were then on the verge of success. No human had ever set foot on the moon. But that was about to change.

Here, the gasification of coal has been carried out successfully for decades—actually, for more than a century. In horse and buggy days, "town gas" from gasified coal fueled our nation's street lamps. Power generation equipment has also been operated smoothly, successfully, and cleanly on the much cleaner synthesis gas, or "syngas," produced today. Carbon capture from gasification facilities has also been carried out successfully for decades, including in the United States—specifically North Dakota, as the good Senator and Committee member from that state knows best. Senator Dorgan can also tell you about the transportation of liquefied carbon dioxide by pipeline, which his state does as well, along with the geological injection of large volumes of carbon dioxide, including CO_2 from gasification. In the Permian Basin of Texas alone, many million tons of CO_2 have been injected, over more than thirty years. In fact, CO_2 injection is the only method of enhanced oil recovery that results in CO_2 being geologically sequestered.

What is now ready to happen—and that has not yet happened—is to string these successes together into a single large integrated project that gasifies coal, generates electric power, produces other commercial products from syngas, and captures carbon that is ultimately sequestered. Projects that do this are finally ready to be built, and to begin capturing and sequestering carbon. Summit's Texas Clean Energy Project is just such a project. We are ready to proceed with it. Rather than say, "no such project has yet been built," people should instead recognize that such projects are imminent and should help them get built.

We will need a Federal loan guarantee—which is not what we had hoped. Properly administered, however, the FLG program is one response to the current financial crisis that should not cost the Federal government money. A borrower under the FLG program receives a loan, not a grant. The borrower must repay the loan, at a higher interest rate than the government's own borrowing rate. The government should make money on the loan. This is entirely appropriate. Again, the issue preventing these projects from being built today is not the borrowing rate—the issue is the lack of any borrowing being available, at all, in the private capital markets. I can't speak for every potential project. But if Summit's TCEP project can gain a Federal loan guarantee, the interest rate we anticipate being required to pay will not stand as a major impediment to successful completion and operation of the project.

Thank you for this opportunity to testify. My Summit colleagues and I welcome your questions, and we appreciate your thoughtful policymaking and support on this vital matter.

OPTISOLAR,
Hayward, CA, February 11, 2009.

Hon. JEFF BINGAMAN,
Chairman, Senate Energy and Natural Resources Committee, 304 Dirksen Senate Building, Washington, DC.

Re: OptiSolar Inc.'s Written Testimony Regarding the Department of Energy Loan Guarantee Program for the February 12, 2009 Senate Energy and Natural Resources Committee Meeting

DEAR SENATOR BINGAMAN, Please accept this as OptiSolar Inc.'s written testimony regarding the current state of the Department of Energy Loan Guarantee Pro-

gram and how the delivery of services to support the deployment of clean energy technologies might be improved.

The Department of Energy's program for Loan Guarantees for Projects that Employ Innovative Energy Efficiency, Renewable Energy, and Advanced Transmission and Distribution Technologies ("Innovative Energy Program") supports the commercialization of new, clean energy technologies and the resulting environmental benefits. The program has the potential to stimulate employment growth as well as improve the nation's energy independence. But the program's goals are undermined by the imposition of extraordinarily high up-front program costs on program applicants, potentially totaling tens of millions of dollars, and the indeterminate time frame for consideration of applications. If the Department of Energy funded the program's costs, as it does for other similar programs, more applicants could participate in the Innovative Energy Program. If there were a specific schedule for expedited review of the applications, applicants could depend on the program for shovel-ready projects, such as OptiSolar Inc.'s solar panel manufacturing project, described below. Each of these improvements would make the program more effective in achieving its goals.

(I) ABOUT OPTISOLAR'S SOLAR PHOTOVOLTAIC PANEL MANUFACTURING PROJECT

OptiSolar Inc. ("OptiSolar") is a vertically integrated utility scale solar electricity generation company that manufactures solar panels using amorphous silicon thin film photovoltaic technology. OptiSolar plans to submit an application for a Department of Energy ("DOE") loan guarantee under the Innovative Energy Program in response to Solicitation Reference Number: DE-FOA-0000005, issued pursuant to the Code of Federal Regulations, Title 10, Chapter II, Section 609 (the "Final Rule").

OptiSolar will use the guaranteed loan to complete construction of its photovoltaic panel manufacturing facility and the acquisition of solar panel manufacturing equipment for the facility (the "Project"). OptiSolar has already invested approximately $75 million in the Project, which is located in Sacramento County, California. Once the proceeds of the guaranteed loan are disbursed, OptiSolar will immediately reinstate hundreds of construction jobs for work that it suspended due to the financial crisis, and will ultimately create over 1,000 permanent manufacturing jobs.

OptiSolar has been operating photovoltaic solar module development equipment in Hayward, CA since 2006. OptiSolar successfully completed construction of its manufacturing facility in Hayward in the first quarter of 2008. It began installing photovoltaic solar module manufacturing lines, the first of which began its operating ramp in March, 2008. The second manufacturing line was installed and began its operating ramp in August, 2008. Both lines are currently producing photovoltaic solar panels which were used to construct OptiSolar's first solar farm in Sacramento, California, and are being used to construct OptiSolar's first commercial solar farm. in Ontario, Canada.

OptiSolar began construction work on the Project in March 2008. OptiSolar has largely completed the first phase of construction to prepare the Project to receive its first photovoltaic module manufacturing line, including site demolition, earthwork and exterior improvements, concrete pours, masonry work, steel installation, architectural interior finishes, process piping, fire protection, underground utilities, HVAC and mechanical equipment, gas and equipment pads, interior electrical work, electrical work in support of a planned 69 kV substation, fire alarm system installation, facility monitoring system installation, and gas monitoring system installation. Much of the manufacturing equipment for the first photovoltaic module production line has already been received at the Project site.

OptiSolar was in the process of raising additional equity for the development of the Project when the financial crisis struck. Despite the low risk of investing in OptiSolar's proven manufacturing process, financing parties have been forced to scale back their commitments dramatically or withdraw them completely. In December 2008, in response to the general financial crisis, OptiSolar suspended construction on the Project. On Friday, January 9, 2009, OptiSolar gave termination notices to almost 300 employees, approximately 50% of its workforce, a great many of whom were working on the Project. OptiSolar reluctantly took this drastic step in an effort to preserve its core business and ability to ultimately execute on its business plan for the large-scale manufacture of photovoltaic solar panels and the development of large-scale solar fauns. OptiSolar is prepared to immediately recommence construction and begin installation of its first photovoltaic module manufacturing line upon the first disbursement of the guaranteed loan, immediately rescuing hundreds of construction jobs.

(II) IMPROVEMENTS TO THE DOE INNOVATIVE ENERGY LOAN GUARANTEE PROGRAM

The Innovative Energy Program, as it exists today, offers a distant promise of a solution to the financial crisis and the deployment of new, innovative clean energy technologies, and places several nearly-insurmountable hurdles in the way of that promise. With some changes. the Innovative Energy Program within the DOE Loan Guarantee Program could become a key solution in both the economic recovery and the development of a renewable energy infrastructure in the United States.

(A) Innovative Enemy ProLiram Applicants Should Not Be Subject to High Application Costs

Congress should appropriate funds to reduce the application fee for the Innovative Energy Program and to conduct the credit analysis necessary to determine the viability of applicants' projects.

Section 609.6(b)(21) of the Final Rule and Section F(12) of Attachment A of the Innovative Energy Program solicitation requires applicants to submit a preliminary credit assessment with their application for a loan guarantee.[1] Together, the cost for the services of a rating agency to provide a credit assessment and the application fee total approximately S300,000, in OptiSolar's case. Applicants are expected to incur about half of these expenses, in OptiSolar's case, approximately $150,000, before even knowing whether DOE will select their applications for due diligence and project underwriting. The Final Rule asks applicants to gamble cash that they urgently need for other uses in a high-stakes wager for government assistance. This part of the Final Rule will inhibit worthy applicants from seeking guarantees through the program, and thus hinder the ability of the program to achieve its goals.

(B) Innovative Energy Program Applicants Should Not Bear DOE Administrative Fees and Costs or Credit Subsidy Costs

Congress should appropriate funds to cover the costs of administering the Innovative Energy Program and the credit subsidy cost for borrowers under the Innovative Energy Program.

Sections 609.8(d) and (e) of the Final Rule require applicants to pay for DOE's administrative costs and, when no Congressional appropriation has been made, for the credit subsidy cost (which is essentially a cash reserve for the DOE to cover potential program defaults). In OptiSolar's case, those fees and costs that can be easily estimated—a 1% facility fee and the cost of DOE's lawyers and consultants—alone will approach $4 million even before OptiSolar receives a firm commitment from the DOE for a loan guarantee. The credit subsidy cost remains unknown to an applicant until immediately before the loan is disbursed—after the applicant has incurred millions of dollars in other fees and expenses. This unknown credit subsidy cost could, in certain scenarios, reach into the tens of millions of dollars. These parts of the Final Rule will inhibit worthy applicants from seeking guarantees and hinder the ability of the program to achieve its goals.

(C) DOE Should Expedite the Disbursement of Loans

Congress should require DOE to expedite the review of applications under the Innovative Energy Program. Currently, the Innovative Energy Program does not impose any timeline for DOE to evaluate applications, select applicants to receive loan guarantees, and close on the relevant financings. Applicants such as OptiSolar cannot rely on the program to execute projects in the near term. because a decision on the guarantee could take months or years. Given the current effort in Congress to quickly inject capital into the markets to create jobs, build renewable energy capacity, and generate economic growth, the Innovative Energy Program should expedite the review of loan guarantee applications.

(D) An Existing DOE Program Has Similar Characteristics to the Proposed Improvements

DOE already administers a program which has the improvements proposed above for the Innovative Energy Program. It is the DOE's Advanced Technology Vehicles Manufacturing Incentive Program (the "ATVM Program"), The ATVM Program authorizes the DOE to make direct loans for the purpose of re-equipping, expanding, or establishing manufacturing facilities for advanced technology vehicles and compo-

[1] "An Application must include, at a minimum, the following information and materials:... A preliminary credit assessment for the project without a loan guarantee from a nationally recognized rating agency for projects where the estimated total Project Costs exceed $25 million." Final Rule Section 609.6(b)(21).

nents.[2] In September, 2008, Congress modified the ATVM Program so that applicants are not required to pay any application fee, nor are they required to submit a rating agency credit assessment at any point in the application process.[3] ATVM Program borrowers only pay a 0.1% fee on their loan and do not pay for the credit subsidy cost, because Congress has appropriated funds to cover the cost.[4] The ATVM Program demonstrates how the Innovative Energy Program would work with the improvements proposed above.

III. THE FINANCIAL CRISIS AND THE GOALS OF THE ECONOMIC STIMULUS WEIGH IN FAVOR OF IMPROVING THE INNOVATIVE ENERGY PROGRAM

The world has changed since the Final Rule was issued in June of 2008, and the renewable energy industry has been impacted just as severely as the automotive industry. On January 8, 2009, President Obama, in a speech to the nation as President-elect, noted that "Manufacturing has hit a twenty-eight year low. Many businesses cannot borrow or make payroll." Solid companies face cash shortages due to malfunctioning capital markets, and the nation recognizes that, as President Obama said in his January 8th speech. ". . . doing too little or nothing at all . . . will lead to an even greater deficit of jobs, incomes, and confidence in our economy. It is true that we cannot depend on government alone to create jobs or long-term growth. but at this particular moment, only government can provide the short-term boost necessary . . ." OptiSolar is not alone in facing a financial contraction of extraordinary duration that inhibits its ability to expand its manufacturing capacity for renewable energy technology.

The DOE created the Innovative Energy Program pursuant to Title XVII of the Energy Policy Act of 2005 (the "Act") in order "to encourage commercial use in the United States of new or significantly improved energy related technologies and to achieve substantial environmental benefits. DOE believes that commercial use of these technologies will help sustain and promote economic growth, produce a more stable and secure energy supply and economy for the United States, and improve the environment." (Federal Register Vol. 72, No. 204, p. 60116 (Tuesday, October 23, 2007).)

Imposing the current fees and costs of the Innovative Energy Program on applicants and the absence of a timeline for the award of guaranteed loans undercut the program's goals. First, the Innovative Energy Program is designed to "enable project developers to bridge the financing gap between pilot and demonstration projects to full commercially viable projects that employ new or significantly improved energy technologies." (Press Release by the Department of Energy, June 30, 2008.) These projects could otherwise have difficulty making it from the demonstration stage to the commercialization stage of development fast enough to benefit from economies of scale, due to perceived risk. Penalizing applicants with a credit subsidy cost that increases with the level of perceived risk undercuts this goal. Second, even absent the current financial crisis that has sapped the cash reserves of even the most established companies, new companies are hard-pressed to come up with millions of dollars to cover fees and costs on a speculative basis, before they have a commitment from DOE to guarantee a loan and before their (by definition) pre-commercial technologies have started generating revenues. Finally, near-term, shovel-ready projects, such as OptiSolar's solar panel manufacturing project, will languish due to the current financial crisis, unless the review of program applications is expedited.

The nation has an interest in improving the renewable energy infrastructure in the United States, creating jobs, diversifying the nation's energy mix, and increasing the manufacturing base of clean energy technologies. The proposed changes to the Innovative Energy Program would help achieve these goals. For these reasons, OptiSolar encourages the adoption of the proposed changes. Thank you for your consideration.

Sincerely,

RANDALL GOLDSTEIN,
Chief Executive Officer.

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[2] As authorized by Section 136 of the Energy Security Act of 2007, Pub. L. 110-140 (December 19, 2007).

[3] See 10 CFR Part 611 Subpart B. Section 611.101: Federal Register. Vol. 73. No. 219. pp. 66733-34 (Wednesday, Nov. 12, 2008). See also Federal Register, Vol. 73, No. 219. pp. 66729, paragraph H.

[4] Section 129(a) and 129(c) of the Consolidated Security. Disaster Assistance, and Continuing Appropriations Act. 2009. Pub. L. 110-329 (September 30. 2008). See also Federal Register Vol. 73, No. 219. pp. 66721-66722 and 66729. paragraph H (November 12. 2008).

STATEMENT OF EDWARD J. DRISCOLL, CHIEF EXECUTIVE OFFICER, RATIONAL ENERGIES

Mr. Chairman, Ranking Member Murkowski, and Members of the Committee:

We appreciate the opportunity to share our thoughts and concerns regarding the Department of Energy's (DOE) Title XVII Loan Guarantee Program (Program) with the Committee. We believe the Program has the potential to accelerate significantly the commercialization of new technologies that will create new jobs; reduce our nation's dependence on foreign oil; improve the environment; and create sustainable alternative energy businesses. However, as currently structured, the Program makes it extremely difficult for early stage companies to utilize the program effectively as a means to achieve its intended purpose.

RATIONAL ENERGIES CLEAN DIESEL PROJECT

Rational Energies LLC is a Minnesota based company that has designed a process for converting municipal solid waste (MSW) into renewable clean diesel (RC diesel) that meets the ASTM D975 fuel quality specification. We are currently engaged in a project to construct a $300M MSW to RC diesel plant to be located in Empire Township, Minnesota. The plant will produce just over 28M gallons per year of RC diesel; enough to supply the municipal bus fleet in the Twin Cities and many of the school buses with a fully compatible diesel product that provides up to 80% reduction in greenhouse gas emissions. Additionally, the plant will prevent almost 700,000 tons of garbage per year from being dumped in landfills, which would equate to a substantial reduction in the formation of methane (a high GWP greenhouse gas). This project will result immediately in an estimated 40 jobs for design and engineering, 250 jobs during construction, and 90 mostly "head of household" jobs when operational. Major elements of the project, including feedstock, technology, product sales, plant design engineering, EPC contractor and land, are all in place. The Minnesota State environmental permitting process has been initiated, and construction can begin when permitting is complete in 12 to 18 months. Our project has the support of Empire Township, local counties, the State of Minnesota, local garbage haulers, one of our local bus companies, and the University Of Minnesota.

The Program has the potential to be a good fit for Rational Energies, LLC, because we are proposing the construction of a plant based on technologies that have never before been integrated into a commercial scale operating plant. Private financial institutions are normally reluctant to invest in new technologies, and the current financial crisis has restricted private capital even further.

We have considered applying to the Program as it currently exists but have not because several of the program elements make it difficult to utilize:

First, the credit subsidy costs require a significant capital expenditure for which we can demonstrate no return on investment to our investors. Private equity sources funding early stage companies generally will not tolerate this use of capital.

Second, the fixed solicitation deadline forces technology development efforts into a limited timeframe that can restrict applicants from being able to provide the best possible data for a given application.

Third, there is no mechanism in the Program that provides early stage companies financial support or incentives to employ the due diligence efforts of outside experts needed to "bridge the gap" between applicant claims and bankable expectations. This is a cost that private investors are usually unwilling to cover. If the federal government were willing to provide these funds in the form of grants or loans, we believe it would have the effect of accelerating the development of many projects.

RECOMMENDATIONS

We recommend to the Committee and to the Department of Energy that the Title XVII Loan Guarantee Program be modified to make it more accessible to development stage companies in the following ways:

First, end the requirement for the applicant to fund the credit subsidy payment. This will ease the financial burden of early stage companies in applying for the program. This appears to have been incorporated in the American Reinvestment and Recovery Act's (ARRA) temporary program to incentivize the development of renewable energy systems and electronic transmission systems, as well as leading edge biofuels that have been demonstrated and have commercial promise to substantially reduce greenhouse gas emissions. Additionally, Sec-

retary Chu has recently indicated that, in an effort to reduce up-front costs, the DOE will seek to restructure credit subsidies so that they are paid for over the life of the loan.

Second, modify the solicitation format to provide for a more natural technology and business cycle. We believe this would have two benefits: (1) it would allow the DOE a more even flow of applications to process and ease the burden on staff; and (2) it would allow companies to complete applications as their development schedules permit, easing the need to rush data or information into reviewers' hands just to meet an arbitrary deadline. Secretary Chu recently announced the rolling appraisal of applications as one of the DOE's proposed reforms to the program.

Third, provide a means to pre-screen applicants and provide some assistance in the form of grants to complete financial and technical due diligence validation to those that appear worthy of financial support. Grants up to $5M should be adequate for the majority of alternative energy projects.

CONCLUSION

If the United States is to retain its economic and technological competitiveness, while at the same time making a significant contribution to reducing its overall greenhouse gas emissions, it is essential that a more robust deployment of clean energy technologies occur at an accelerated pace. Along those lines, we believe the DOE can be an effective force in stimulating the economy, particularly as it relates to the development of alternative fuels. The DOE has the capacity to provide capital where the private equity markets are unwilling or unable. If properly modified, we believe that the existing DOE Program could quickly move to fund projects like the Rational Energies Clean Diesel Project that will provide immediate, sustainable "head of household" jobs that cannot be exported outside the U.S.

Thank you for your time and consideration.

STATEMENT OF MICHAEL J. MCINNIS, MANAGING DIRECTOR, THE ERORA GROUP, L.L.C.

Mr. Chairman, Ranking Member Murkowski, and Members of the Committee:

We appreciate the opportunity to share our suggestions about how to encourage the rapid deployment of clean energy technologies. We believe it is essential for Congress and the Department of Energy to reform existing loan guarantee and grant programs. If reformed correctly, these programs can serve to accomplish broader objectives, including economic stimulus, and will encourage the growth of a new industry, creating green jobs, reducing our dependence on foreign sources of energy, and addressing issues respecting greenhouse gases. Unless Congress and the Department of Energy act, the construction of new projects and the anticipated economic stimulus to local economies across the country will continue to be delayed, or may be permanently shelved, as a consequence of the frozen capital markets.

CASH CREEK GASIFICATION PROJECT

We are in the final stages of developing the Cash Creek Gasification Project in Henderson County, Kentucky. The project will create 1,000-1,500 construction jobs and 200-300 new permanent employment positions, while supporting thousands of manufacturing jobs related to equipment purchases. When operational, the project will gasify 2.8 million tons of coal per year, producing natural gas and generating electricity in a natural gas combined cycle plant. Once built, the plant will be the cleanest coal-fueled facility in the country, with a greenhouse gas emissions profile similar to that of a natural gas combined cycle facility. In fact, the facility will capture nearly 100% of the carbon dioxide resulting from the gasification process and greater than 75% on a plant-wide basis. The captured carbon dioxide can then be transported by pipeline to support enhanced oil recovery in other parts of the country or could be geologically sequestered as that opportunity arises.

Our facility has in hand, or soon will have secured, all the necessary permits to commence construction, including all required water use and air quality permits. By working with local chapters of the AFL-CIO and executing a project labor agreement, we have ensured that a trained workforce will be ready to commence construction.

During the course of developing the Cash Creek project, we contemplated applying for a loan guarantee under the existing title 17 program. We determined, perhaps to our detriment, that such an application was not warranted due to the extraordinary costs of preparing the application coupled with uncertainties in the applica-

tion process. It is against this backdrop that we respectfully offer the following recommendations.

RECOMMENDATIONS

We recommend that the Department revise the regulations that implement title 17 of the Energy Policy Act of 2005 to address two important issues. First and foremost, we believe that the Secretary should issue an additional project solicitation and prioritize the award of loan guarantees based on a project's greenhouse gas emissions profile and how soon the project will have all permits necessary to commence construction. Implemented in this way, the title 17 loan guarantee program not only would serve as a catalyst to stimulate the economy by supporting shovel-ready projects, but also would encourage applicants to develop the cleanest possible projects. Second, the Department should revise the implementing regulations to streamline the application process and to address the implementation problems that discouraged us and other companies from seeking loan guarantees as a tool to bring commercially available technology to market.

In addition, by making modest changes to section 703 of the Energy Independence and Security Act of 2007, Congress not only would encourage the development of technologies for the large-scale capture of carbon dioxide from industrial sources, but also would speed their deployment.

Given current and foreseeable credit market conditions, federal loan guarantees and grants will be essential to developing and deploying large-scale gasification and carbon capture and storage (CCS) projects. We believe it is essential for Congress to increase funding for the loan guarantee and grant programs, and to encourage the Secretary of Energy to issue an additional project solicitation and move quickly to support projects that offer a great deal of promise in reducing our dependence on foreign sources of oil and moving us towards a less carbon-intensive future. We set forth below, in further detail, suggestions about how current law and regulations could be improved to encourage the rapid deployment of clean energy technologies, such as those embodied in the Cash Creek Gasification Project.

TITLE 17 LOAN GUARANTEE PROGRAM

We have considered but so far have not sought loan guarantees for the Cash Creek Gasification Project in part because we would have to invest millions of dollars in preparing our submission without any clear sense of the amount of the credit subsidy cost we would have to bear in return for receiving a loan guarantee. Under the agency's implementing regulations, to comply with the Federal Credit Reform Act, an applicant must agree to make a non-refundable payment to the Department to cover the credit subsidy cost of a guarantee (in the absence of an appropriation that otherwise would cover it). Unfortunately, there is no way to discern this cost in advance of making an application. Moreover, an applicant will only receive a non-binding estimate from the Department when it issues a term sheet, which will occur only after an applicant has spent several million dollars preparing an application for a project of the size and scope of the Cash Creek Gasification Project. Even when we had access to adequate sources of project funding, we decided not to file an application because we faced too much economic uncertainty about whether the credit subsidy cost would make our project either uneconomic or significantly less economic. In the current economic environment, the risks associated with the credit subsidy cost process are too great to bear.

In order to help bring new projects with the greatest potential benefits to fruition quickly, we have three suggestions.

First, in awarding loan guarantees, the Secretary should give priority to those that have the cleanest greenhouse gas emissions profiles and are shovel-ready, irrespective of when an application was or is filed. As noted above, by implementing the title 17 loan guarantee program in this way the Department not only will stimulate the economy by supporting shovel-ready projects, but also will encourage applicants to develop the cleanest possible projects.

Second, the application process should be streamlined and the amount of information that must be submitted should be scaled back so that the application process will not be unreasonably expensive and burdensome. In addition, some application requirements ignore the realities of the marketplace. For example, an application prioritization process that requires that the applicant proffer a power sales agreement ignores the fact that there is a liquid and transparent market for power in which utilities and others participate. Prioritization based on power sales potentially precludes the development of these technologies by limiting the flexibility of utilities in how they procure their power supplies. Finally, as part of this effort, the Department should provide potential applicants with more precise information about the

likely credit subsidy payment that will be required for proposed projects. Alternatively, Congress should appropriate sufficient funds to cover the credit subsidy cost (as it did with respect to the advanced technology vehicles manufacturing program last year). By providing greater certainty and reducing the paperwork burden, the Department will have eliminated barriers to applicants that otherwise would bring forward good projects.

Third, with these changes and given the current state of the economy, we believe that it is appropriate that there be an additional solicitation (round of applications) to encourage participation by applicants that meet the revised criteria.

CARBON CAPTURE GRANT PROGRAM

As drafted, section 703 of EISA is focused principally on demonstration projects, rather than deployable projects, that would capture "a high percentage" of carbon dioxide. Thanks to the promise of carbon capture and sequestration, the prospect of coal gasification plants with the emissions profile of natural gas plants is no longer a distant reality. In fact, shovel-ready projects that would fulfill this promise, such as the Cash Creek Gasification Project, would be going forward, but for the absence of liquidity in the project finance markets. The stimulative effect of rapidly deploying CCS technology (and coal gasification technology) will spur economic growth and create thousands of jobs as new facilities come on-line and existing facilities are retrofitted to use commercially available technology to substantially reduce greenhouse gas emissions.

We recommend two changes to section 703 to encourage not only research and development projects, but also deployable projects that are using state-of-the art technology: Revise section 703(a)(1) to make clear that the Secretary should carry out a program to "demonstrate and deploy commercially available technologies" for the large-scale capture of carbon dioxide from industrial sources; and revise section 703(B) to provide priority in the award of grants to projects for which all applicable permits have been issued or soon will be issued and for which at least 75% of the carbon dioxide will be captured and sequestered. With these changes, the law (and implementing regulations) would complement a recalibrated title 17 loan guarantee program by encouraging the award of grants to shovel-ready projects with the best greenhouse gas emissions profiles.

CONCLUSION

If the United States is to retain its economic and technological competitiveness, while at the same time making a significant contribution to reducing its overall greenhouse gas emissions, it is essential that large scale commercially viable CCS and coal gasification technologies be deployed. By improving the loan guarantee program, amending section 703, and enacting new legislation, including Chairman Bingaman's proposed 21st Century Energy Technology Deployment Act, Congress can address the problems caused by the current credit crisis and meet the twin goals of creating new green energy jobs and placing a down payment on technology that will make the United States more energy efficient and energy independent.

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