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OVERSIGHT OF THE WIND ENERGY PRODUCTION TAX CREDIT

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY POLICY, HEALTH CARE AND ENTITLEMENTS

OF THE

COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

OCTOBER 2, 2013

Serial No. 113–62

Printed for the use of the Committee on Oversight and Government Reform

Available via the World Wide Web: http://www.fdsys.gov
http://www.house.gov/reform

U.S. GOVERNMENT PRINTING OFFICE

85–357 PDF WASHINGTON : 2013

For sale by the Superintendent of Documents, U.S. Government Printing Office
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OVERSIGHT OF THE WIND ENERGY PRODUCTION TAX CREDIT

Wednesday, October 2, 2013

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY POLICY, HEALTH CARE AND ENTITLEMENTS,
COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM,
Washington, D.C.

The subcommittee met, pursuant to call, at 9:30 a.m., in Room 2154, Rayburn House Office Building, Hon. James Lankford [chairman of the subcommittee] presiding.

Present: Representatives Lankford, Farenthold, Jordan, Walberg, Speier, Lujan Grisham, Horsford, and Duckworth.

Staff Present: Molly Boyl, Senior Counsel and Parliamentarian; Joseph A. Brazauskas, Counsel; Caitlin Carroll, Deputy Press Secretary; John Cuaderes, Deputy Staff Director; Brian Daner, Counsel; Adam P. Fromm, Director of Member Services and Committee Operations; Linda Good, Chief Clerk; Tyler Grimm, Professional Staff Member; Ryan M. Hambleton, Professional Staff Member; Frederick Hill, Director of Communications and Senior Policy Advisor; Christopher Hixon, Deputy Chief Counsel, Oversight; Mark D. Marin, Director of Oversight; Laura Rush, Deputy Chief Clerk; Sarah Vance, Assistant Clerk; Jeff Wease, Chief Information Officer; Jaron Bourke, Minority Director of Administration; Beverly Britton Fraser, Minority Counsel; Jennifer Hoffman, Minority Press Secretary; Elisa LaNier, Minority Deputy Clerk; and Daniel Roberts, Minority Staff Assistant/Legislative Correspondent.

Mr. LANKFORD. The meeting will come to order. I want to begin this hearing by stating the Oversight and Government reform mission statements. We exist to secure two fundamental principles: First, Americans have the right to know that the money Washington takes from them is well spent. Second, Americans deserve an efficient, effective government that works for them. Our duty on the Oversight and Government Reform committee is to protect these rights. Our solemn responsibility is to hold government accountable to taxpayers because taxpayers do have the right to know what they get from their government.

We work tirelessly in partnership with citizen watchdogs to deliver the facts to the American People and bring genuine reform to the Federal bureaucracy. This is the mission of the Oversight and Government Reform committee.

Today's hearing is really about the oversight of the wind energy production tax credit. There is some changes that happened in the past year to the way that tax credit is written. So today we're going

to talk not only about some of the changes in section 45 of the Internal Revenue Code, but also the issue of long term, where is this really going, how we are trying to unfold the PTC. The PTC was first enacted 1992, it was not supposed to be permanent, it was a subsidy to help a Nation industry to help get on its feet.

However since then, it has been renewed by Congress eight times, most recently, as I just mentioned as part of the fiscal cliff deal signed January the 2nd of this year. The deal provided for 1-year extension of tax credit, lasting until January of 2014 coming up. We are rapidly approaching that date and this hearing is designed to examine this credit.

First and foremost, it is critical that we ensure our laws have clear standards that agencies can enforce. I am glad to see a representative of the Internal Revenue Service is here today, thank you, Mr. Wilson, for being here, and will be able to help with this conversation to provide some clarity.

The most recent extension include a significant change for how producers qualify for the credit. Previously a wind facility had to be placed in service, meaning producing electricity before the deadline. Now one facility only has to begin construction by the deadline to qualify.

One of the goals of this hearing is to make sure this change to the PTC is working properly for the taxpayers and for the Treasury. We need to make sure that the IRS is able to evenly apply the law in a manner that reflects Congressional intent. The IRS's guidance document defining beginning of construction appears to be lenient and vague at some points and we need to provide some clarity.

Furthermore, there are serious deficiencies in the mechanisms to ensure a taxpayer has complied with the tax credits requirements. There is a real risk the IRS is not properly positioned to ensure that credit is not being improperly claimed at some future date. According to a recent estimate from the Joint Committee on Taxation that I requested, another 1-year extension of the PTC will cost $6.2 billion for just wind alone, and that's over the next 10 years. A 5-year extension for wind would reduce Federal budget receipts by 18.5 billion over the next 10 years.

As long ago as the 1980s proponents of wind energy have been saying that tax credits only needed temporarily. So we are trying to look for what is that temporary date and how does this keep working. We keep hearing that we're almost there or just a little bit longer, but the facts state that wind power has been steadily increasing over the last ten years. And there is this point of saying when does wind power take off on its own?

In 2003 wind accounted for about .12 quadrillion Btu in power consumed. According to the energy information administration, the projected total for 2013 will be 1.61 quadrillion Btus rising to almost 1.7 quadrillion for 2014. From 2003 to 2012, wind power consumption increased over a thousand percent. Additionally wind power has a share of our domestic electricity generation has risen progressively. As of 2012, wind power is at 3.46 percent of our US electricity generation. This is up from .29 percent in 2003, representing almost 12-fold increase in wind share of electricity generation in a 10-year period. Additionally wind has increased its

share of total renewables from about 14 percent in 2003 to over 64 percent last year.

In all these metrics, wind energy use on a steady and uninterrupted rise. Today 30 States and the District of Columbia mandate a certain percentage of total energy production come from renewable sources, another 7 States, including my home State of Oklahoma have voluntary goals. To date, wind generation accounts for 90 percent of all new renewable resources developed under the State RPS programs.

It is my hope today that we can provide additionally clarity to wind producers, seeking to legally claim a credit that is in the law. And we have a healthy dialogue among economists in industry regarding whether the tax credit—continuing to use this tax credit is a good steward over taxpayer dollars. As we're preparing the Nation for a diversified energy profile, it is important that we look at all energy sources, how we handle that for the coming days. With that I recognize the gentlelady from California, Ms. Speier, for an opening statement.

Ms. SPEIER. Mr. Chairman, thank you. Now I appreciate that several of our witnesses have traveled long distances to be here today, so moving forward with this hearing can be rationalized. But our government is in a shutdown, 800,000 Federal employees are furloughed, and Congress has abdicated its fundamental constitutional responsibility to fund the government. So moving forward, I think it would be appropriate for this committee and other committees to shut down during this shutdown so that we feel the complete and utter efforts being made to not function in an adequate fashion.

Having said that, we are here today for a hearing on the production tax credit which has helped the wind industry grow to a major source of renewable energy here in the United States as the chairman has mentioned. In fact, wind energy has grown from about 1 percent of the U.S. total energy production before the PTC to now 4 percent. Today the wind energy industry employs more than 80,000 American workers, including workers at manufacturing facilities up and down the supply chain, as well as engineers and construction workers who build and operate wind farms. And these are good paying jobs.

Wind turbines are now made domestically by approximately 550 new manufacturing facilities in all regions of the country. These facilities produce more than 70 percent of the content of an average wind turbine installed in the U.S. compared to just 25 percent in 2005. In fact, as a direct result of the PTC, the wind industry was the number one source of new generation capacity in the United States last year, and we are making these turbines in America.

Wind energy also means lower prices for consumers, Department of Energy data shows that from 2005 to 2010, electricity rates increased by twice as much in the 40 States with at least wind power compared to rates in 10 States with the most wind generation. I can tell you that clean wind energy and the PTC are important to California, and I know that Oklahoma is one of the biggest producers of wind energy as well.

Only weeks ago, the IRS issued new guidance interpreting the latest extension of the PTC. That was passed on January 2nd of

this year. Not a single energy company has yet claimed the tax credit under this 1-year extension, and it will realistically be at least 18 months before the IRS will be called upon to apply its guidance. This can be a risky proposition for companies that are investing hundreds of millions of dollars in new wind energy projects. After all, if they don't build and get it operating, they don't get the credit. There are no loans or guarantees or upfront benefits. That's why clarity is an essential. We can help make sure we don't face problems down the road when those investing now seek to claim the credit.

Mr. Chairman, call me paranoid, but I also have to note that on the same day this hearing was announced, Americans for Prosperity, FreedomWorks and more than 20 other conservative groups launched a campaign to end the PTC. The majority's witness is also known as an opponent of the PTC and wind energy altogether. I hope that we are really conducting oversight of the implementation of the law and not using this hearing simply to launch another attack on a clean energy program that has worked well for many years.

There is little doubt that the elimination of the PTC or the risk of its determination lapse will damage the industry and put a break on its renewable growth. The wind energy has gone through a boom and bust cycle whatever Congress has allowed the benefit to expire or get close to expiration. Last year, even though the PTC lapsed for just 1 day, hundreds of workers who manufactured wind turbines were laid off and construction and manufacturing projects were cancelled in anticipation of the lapse. Workers in Grand Forks, North Dakota and Little Rock, Arkansas lost their jobs at turbine manufacturers when the PTC's future was in question.

Some object to the wind energy industry receiving any Federal support. But let's get real, the fossil fuel industry has received tax subsidies since the early 1900s. And other government incentives that far exceed everything we are doing for renewable energy. Big oil still gets Federal subsidies even though justified biggest oil companies, BP, Chevron, ConocoPhillips, ExxonMobil and Shell made a combined $118 billion in profits in 2012. Of course, those profits were down from their record high of $137 billion in 2011.

I want to bring your attention to this chart which illustrates the huge differences in subsidies for fossil fuels as opposed to wind energy over time. Oil and gas have received over $4.8 billion each year in government subsidies over 90 years. Wind energy, by contrast, has received a small fraction of that, an average of about $370 million per year for the last 19.

So if anyone has fiscal concerns about Federal support for energy producers, I think this chart shows clearly that there is much more reason to be concerned about support for fossil fuel industry than renewable energy sources. If we want to get rid of the PTC, well, let's get rid of all the subsidies for all of the various forms of energy. We need to give as much support to clean renewable energy sources as we have provided and continue to provide for fossil fuel industry.

The committee and the Federal Government shouldn't be in the business of picking winners and losers in the energy marketplace. We certainly shouldn't be using our hearing to promote the inter-

ests of fossil fuels by creating problems for renewable energy, especially when the PTC and other renewable programs help ensure that our Nation maintain a diverse energy portfolio.

Mr. Chairman, I thank the members for participating in this hearing. I thank, in particular, the witnesses who are here and hopefully we will have a thoughtful examination of ways to encourage greater use of renewable energy sources as we tackle the growing problems of climate change and energy independence. I yield back.

Mr. LANKFORD. Thank you. And just to remove any paranoia——

Ms. SPEIER. Yes, I need that.

Mr. LANKFORD. —this is actually the first that I've heard that they released that that day, so there was no connection on that. So I will be interested in being able to see that, that way you can be totally free of any paranoia.

Ms. SPEIER. Good to know.

Mr. LANKFORD. That's great. Members will have seven days to submit opening statements for the record. We now recognize our first and only panel today and look forward to the conversation. Mr. Curtis Wilson, associate chief counsel for Passthroughs and Special Industries in the Internal Revenue Service. Thanks for being here. As well, Mr. Robert Gramlich is the senior vice president for Public Policy, the American Wind Energy Association. Thanks. Mr. Dan Reicher is the executive director for the Steyer-Taylor Center for Energy Policy & Finance at Stanford University. Thanks for the flight. And Mr. Robert Michaels is a senior fellow at the Institute for Energy Research and Professor of Economics, California State University in Fullerton. Hopefully you all rode on the same plane together coming from California. So I appreciate your coming on this.

Pursuant to committee rules all witnesses are sworn in before they testify. Gentlemen if you please stand add raise your right-hand.

Do you solemnly swear or affirm the testimony you are about to give will be the truth, the whole truth and nothing but the truth, so help you God?

Thank you. You may be seated. Let the record reflect the witnesses have answered in the affirmative.

In order to allow time for a discussion I would ask you to limit your testimony to 5 minutes, there is a countdown clock in front of you that will help with that. If you go a little bit over we will have mercy, if you go a little bit under it's bonus points. And then we'll have a conversation and dialog from there. So recognizing the panel, Mr. Wilson, we'd ask you to be able to go first on this and look forward to receiving your testimony.

WITNESS STATEMENTS

STATEMENT OF CURTIS G. WILSON

Mr. WILSON. Thank you, Chairman Lankford Ranking Member Speier and members of the subcommittee. My name Curt Wilson, and I appreciate the opportunity to appear before you today to discuss renewable energy credits under the Internal Revenue Code. Before I begin, I will provide to you a little background about my

office and its role in connection with renewable energy credits. As you said, I'm the associate chief counsel of the Passthroughs and Special Industries division of the IRS Office of Chief Counsel. My division has between 70 and 80 lawyers, plus six support staff. Our responsibilities include providing advice to the Commissioner of the Internal Revenue Service and his staff, providing litigation support to our colleagues in our field offices and at the Department of Justice tax division, working with taxpayers on private letter ruling requests and drafting guidance to taxpayers in the Internal Revenue Service that is published in the Federal Register and the Internal Revenue bulletin.

When drafting published guidance, we work very closely with the Office of Tax Policy at the Department of Treasury. My office has subject matter responsibility for a wide range of issues. One of those issues is the credit for production of electricity from renewable energy sources under section 45 of the Code. That section generally permits taxpayers to earn a credit each year based on the amount of energy that they produce over a 10-year period from qualified resources at a qualified facility.

Alternatively, taxpayers may elect an investment tax credit based on a percentage of their eligible basis and qualifying property in lieu of claiming the production tax credit. Qualified resources include wind, geothermal, closed loop biomass, open loop biomass, municipal solid waste and a few others. In addition to the production tax credit and investment tax credit section 1603 of the American Recovery and Reinvestment Act of 2009 allowed taxpayers a third option of requesting a cash payment in lieu of either the production credit or the investment tax credit.

To qualify for that cash payment in lieu of the credits, a taxpayer had to place a qualifying facility in service in 2009, '10 or '11, or alternatively, the taxpayer could place a facility into service after 2011, but only if the taxpayer began construction during 2009 through 2011 and then placed the facility in service before a termination date, and that termination date varied depending on the type facility.

In contrast to the section 1603 program, to claim the production tax credit or the investment tax credit, taxpayers initially had to place a facility in service by the end of 2012 in the case of wind facilities, and by the end of 2013 for other eligible technologies.

The American Taxpayer Relief Act of 2012 extended eligibility for the credit for wind to the end of 2013, and also changed the qualification requirement for wind as well as other eligible technologies from a requirement that the taxpayer placed on facility and service to a requirement that the taxpayer begin construction.

The statutory language of the ATRA amendment didn't define beginning of construction standard. The 1603 program, which addressed similar energy related facilities, had used a similar phrase however. So when we began to consider publishing guidance for taxpayers, we look to how that standard was administered in the section 1603 program. Guidance regarding the section 1603 program had been previously issued in question-and-answer format. It generally provided that physical work of a significant nature constituted beginning of construction.

The determination of whether that task was met in any case was based on all the relevant facts and circumstances, and the Q and As provided examples. In addition, the section 1603 program provided a safe harbor that basically said you would be treated as if you had begun construction if you had spent at least 5 percent of the ultimate cost of the property.

The section 1603 guidance, in turn, used the description of beginning of construction that was very similar to regulatory language pertaining to bonus depreciation under section 16 168(k). So when we issued our first published guidance in notice 2013–29, we turned to that prior precedent in the 1603 program. For the most part, we followed that prior precedent providing both the physical work of a significant nature, and a 5 percent safe harbor, but we also noted that there would be strict scrutiny like there was in 1603 program if taxpayers didn't begin construction and then maintain a continuous construction program.

It's important to note that whether the taxpayers apply under the safe harbor of the 5 percent, or a second safe harbor that we provided in 2013–60 following questions from the industry about beginning of construction that taxpayers can still meet that standard if they do perform physical work of a significant nature.

I hope I've provided sufficient background on this credit and I am happy to take questions.

Mr. LANKFORD. Thank you.

[Prepared statement of Mr. Wilson follows:]

Testimony of Curt G. Wilson,
Associate Chief Counsel (Passthroughs and Special Industries),
Internal Revenue Service

Before the OGR Subcommittee on Energy Policy, Health Care and Entitlements

Hearing on Wind-Energy Production Tax Credit

October 2, 2013

Introduction

Good afternoon, Chairman Lankford, Ranking Member Speier, and members of the Subcommittee.

I appreciate the opportunity to be here today to discuss the production tax credit and the investment tax credit as well as the Treasury Department's and the Internal Revenue Service (IRS) Office of Chief Counsel's release of Notice 2013-29 and Notice 2013-60. I am the Associate Chief Counsel of Passthroughs and Special Industries (PSI). With the assistance of the Office of Tax Policy at the Treasury Department, attorneys in PSI drafted Notice 2013-29 and Notice 2013-60. We then submitted the drafts of these Notices through the usual clearance processes within the Office of Chief Counsel, the IRS, and the Department of Treasury.

Energy Credits in General

Before discussing the Notices, I will first review the credits applicable to renewable energy. Several renewable energy technologies qualify for two income tax credits in the Internal Revenue Code (the Code): (1) the production tax credit (PTC) under section 45 of the Code and (2) the investment tax credit (ITC) under section 48 of the Code.

PTC: The PTC is allowed for the production of electricity from qualified energy resources at qualified facilities. Section 45(d) defines qualified facilities to include, among others, wind facilities, closed-loop biomass facilities, open-loop biomass facilities, geothermal facilities, landfill gas facilities, trash facilities, hydropower facilities, and marine and hydrokinetic facilities. To qualify for the PTC, the taxpayer must sell electricity produced from qualified energy resources at qualified facilities to an unrelated person. The PTC is based on electricity produced during the first 10 years of operation of a qualifying renewable energy facility.

ITC: For qualifying facilities, a taxpayer may make an irrevocable election to claim the ITC in lieu of the PTC. The Code allows this election only for facilities that otherwise meet the requirements for the PTC and for which no credit under section 45 has been allowed. A taxpayer that properly makes the election may claim the ITC based on a percentage of the taxpayer's eligible basis, i.e., the basis of the depreciable (or amortizable) property that is an integral part of a facility capable of generating electricity eligible for the PTC.

Section 1603 Program: As established by the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5 ("ARRA") (and extended by Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 (Pub. L. 111-312)), the Treasury Department, through the Office of the Fiscal Assistant Secretary, administers a Program (the "Section 1603 Program") whereby eligible persons who place in service specified energy property may request a cash payment in lieu of either the PTC or the ITC. To qualify for the Section 1603 Program, the statute requires an applicant to (1) place the energy property in service in 2009, 2010, or 2011 or (2) place the energy property in service after 2011 if construction began on the property during 2009, 2010, or 2011. If the applicant began construction during 2009, 2010 or 2011 but did not place the energy property into service until after 2011, the applicant has to place the energy property in service by the credit termination date, as defined in the statute. The credit termination date ranges, depending on the specified energy property, from January 1, 2013 to January 1, 2017. The Treasury Department issued guidance on the Section 1603 Program in various formats, including FAQs regarding the term "beginning of construction." While the Section 1603 Program is no longer available for new projects, the Treasury Department continues to make payments as applicants place qualifying projects in service before the applicable credit termination date.

American Taxpayer Relief Act of 2012

Prior to the American Taxpayer Relief Act of 2012, Pub. L. No. 112-240, 126 Stat. 2313 (ATRA), taxpayers had to place qualifying facilities in service by the end of 2012 for qualified wind facilities, and by the end of 2013 for other eligible technologies. When it enacted ATRA, Congress extended the PTC and the ITC (but not the Section 1603 Program) for wind projects for one year, through 2013. For both the PTC and the ITC, Congress changed the placed in service expiration date with a "beginning of construction" expiration date. Now, qualified facilities (as described in section 45(d) of the Code) will be eligible for the PTC or the ITC (in lieu of the PTC), if construction of such facilities begins before January 1, 2014.

According to the Joint Committee on Taxation, Congress made changes to the PTC and ITC because it believed that "additional renewable energy infrastructure will be built if the tax incentives for renewable energy are extended" and "that certain renewable power projects do not move forward because developers and investors are concerned that those projects cannot be completed before the renewable electricity production credit expires." Congress intended to reduce this uncertainty by replacing the placed-in-service expiration date with an expiration date based on when construction begins on a particular project.

Notice 2013-29

Following the statutory change to "beginning of construction" for both the PTC and the ITC, the Treasury Department and PSI issued Notice 2013-29 (released on April 15, 2013, and published in the Internal Revenue Bulletin on May 13, 2013) to provide guidance to taxpayers in determining when construction has begun. In the process of developing this guidance, we met and corresponded with taxpayers and tax practitioners representing the various energy industries eligible for the PTC or the ITC, and we received several letters from members of Congress urging prompt guidance. Many of these contacts suggested that we look to existing guidance under the Section 1603 Program on the question of when construction begins.

Treasury and the IRS believe that the use of similar phrases regarding beginning of construction and other qualifications in both the Section 1603 Program and ATRA suggests that Congress intended that we interpret those phrases in a similar manner. While the Joint Committee on Taxation did not mention the Section 1603 Program (which had a beginning of construction requirement) when it described the changes made by ATRA, Congress was aware of the Treasury Department's interpretation of beginning of construction for purposes of the Section 1603 Program when it considered the changes made by ATRA. For this reason, we looked at and drew from the guidance for the Section 1603 Program in interpreting when construction begins under the changes made by ATRA.

Under the Section 1603 Program guidance, a taxpayer could establish that construction began on a project in 2009, 2010, or 2011 by two methods: (1) begin physical work of a significant nature or (2) meet a 5% safe harbor based on costs. The Section 1603 Program provided that the Treasury Department will closely scrutinize any construction activity that does not involve (1) a continuous program of construction or (2) a contractual obligation to undertake and complete construction within a reasonable time.

Similar to the Section 1603 Program guidance, Notice 2013-29 provides two methods that a taxpayer may use to establish that construction of a qualified facility has begun. A taxpayer may establish the beginning of construction by starting physical work of a significant nature. Alternatively, a taxpayer may establish the beginning of construction by meeting a 5 percent safe harbor.

Physical Work of a Significant Nature and Continuous Construction: Construction of a qualified facility begins when physical work of a significant nature begins. The determination of whether a taxpayer has begun construction of a facility before January 1, 2014, will depend on the relevant facts and circumstances.

Work performed by the taxpayer counts for this test, and a taxpayer may also take into account certain work performed for the taxpayer by other persons under a binding written contract. This includes both on-site and off-site work. Notice 2013-29 gives a detailed example of the operation of these rules in a case involving on-site work at a wind facility.

The Section 1603 Program guidance provided that the Treasury Department would closely scrutinize a situation where the taxpayer fails to maintain a continuous program of construction. Similarly, Notice 2013-29 provides that the IRS will closely scrutinize a facility, and may determine that construction has not begun on a facility before January 1, 2014, if a taxpayer does not maintain a continuous program of construction, which involves continuing physical work of a significant nature. Relevant facts and circumstances will determine whether a taxpayer maintains a continuous program of construction (the "continuous construction" test). Certain disruptions in the taxpayer's construction of a facility that are beyond the taxpayer's control will not be considered as indicating that a taxpayer has failed to maintain a continuous construction program. Notice 2013-29 provides a non-exclusive list of examples of such disruptions: (a) severe weather conditions; (b) natural disasters; (c) licensing and permitting delays; (d) delays at the written request of a state or federal agency regarding matters of safety, security, or similar concerns; (e) labor stoppages; (f) inability to obtain specialized equipment of limited availability; (g) the presence of endangered species; (h) financing delays of less than six

months; and (i) supply shortages. Like much of Notice 2013-29, the continuous construction test was adapted, with some modifications, from the Section 1603 Program guidance.

In further defining physical work of a significant nature, Notice 2013-29 excludes preliminary activities (even if the taxpayer may include the cost of those preliminary activities in the depreciable basis of the facility). Preliminary activities include such activities as planning or designing, securing financing, exploring, researching, obtaining permits, licensing, conducting surveys, environmental and engineering studies, clearing a site, test drilling of a geothermal deposit, or test drilling to determine soil condition. Removal of existing turbines and towers is preliminary work and, therefore, does not constitute physical work of a significant nature with respect to the facility.

In addition, physical work of a significant nature does not include work (performed either by the taxpayer or by another person under a binding written contract) to produce property that is either in existing inventory or is normally held in inventory by a vendor.

Solely for purposes of determining whether construction has begun, multiple facilities that are operated as part of a single project (which depends on the relevant facts and circumstances) will be treated as a single facility. Notice 2013-29 provides an example where a wind farm will consist of 50 turbines, and in 2013, a taxpayer excavates the site for 10 of 50 foundations of the wind turbines and pours concrete for the supporting pads. Based on the facts detailed in the example, for purposes of sections 45 and 48, the example treats the entire wind farm as a single project that the taxpayer may treat as a single facility, and the example concludes that the taxpayer has performed physical work of a significant nature that constitutes the beginning of construction of that facility in 2013.

Notice 2013-29 also provides that only physical work of a significant nature on tangible personal property and other tangible property used as an integral part of the activity performed by the facility will be considered for purposes of determining whether a taxpayer has begun construction of a facility. This includes property integral to the production of electricity, but does not include property used for electrical transmission. Therefore, physical work on a transmission tower located at the site is not physical work of a significant nature because the transmission is not an integral part of the activity performed by the facility. However, physical work on a custom-designed transformer that steps up the voltage of electricity produced at the facility to the voltage needed for transmission is physical work of a significant nature with respect to the facility because power conditioning equipment is an integral part of the activity performed by the facility.

Notice 2013-29 also details whether other types of property (roads, fences, and buildings) are integral to the activity, and thus considered for purposes of determining whether a taxpayer has begun construction of a facility. Roads may or may not be integral to the activity performed by the facility. An example of a road integral to the activity is an onsite road that is used for moving materials to be processed (for example, biomass) and roads for equipment to operate and maintain the qualified facility. On the other hand, roads primarily for access to the site, or roads used primarily for employee or visitor vehicles are not integral to the activity performed by the facility. Generally, fencing is not an integral part of the facility because it is not integral to the activity performed by the facility. Similarly, buildings are generally not integral parts of the

facility because they are not integral to the activity of the facility.

Safe Harbor and Continuous Efforts: As an alternative to the facts and circumstances test for establishing physical work of a significant nature, Notice 2013-29 provides a safe harbor. Under the safe harbor, construction of a facility will be considered as having begun before January 1, 2014, if (1) a taxpayer pays or incurs (within the meaning of Treas. Reg. § 1.461-1(a)(1) and (2)) 5 percent or more of the total cost of the facility before January 1, 2014, and (2) thereafter, the taxpayer makes continuous efforts to advance towards completion of the facility (the "continuous efforts" test).

In determining the total cost of the facility, a taxpayer takes into account all costs properly included in the depreciable basis of the facility to determine whether it has met the safe harbor. The total cost of the facility does not include the cost of land or any property not integral to the facility. Notice 2013-29 addresses the situation of cost overruns and provides two examples on this point.

Similar to the Section 1603 Program guidance, Notice 2013-29 provides a look-through rule for applying the "economic performance" test of section 461(h), which governs when a taxpayer has incurred an item for tax accounting purposes. Solely for purposes of this notice, for property that is manufactured, constructed, or produced for the taxpayer by another person under a binding written contract with the taxpayer, costs incurred with respect to the property by the other person before the property is provided to the taxpayer are deemed incurred by the taxpayer when the costs are incurred by the other person under the principles of section 461. This rule is detailed in an example in Notice 2013-29.

Similar to the continuous construction test under the physical work method, Notice 2013-29 bases the determination of whether a taxpayer has satisfied the continuous efforts test on the relevant facts and circumstances. The Section 1603 Program guidance did not contain a continuous efforts test in its safe harbor, but the statute required that the property be placed in service by certain termination dates, which effectively required completing construction in a timely manner. Because ATRA removed the deadline for completing construction and placing a facility in service when it introduced the "beginning of construction" expiration date to sections 45 and 48, we thought it was appropriate to add a continuous efforts test to the safe harbor in Notice 2013-29. Given that the safe harbor looks at costs and not whether physical work has actually begun, the continuous efforts test provides an appropriate backstop to ensure that projects are not delayed for an indefinite period of time. Without an appropriate backstop, a situation could arise where after incurring 5 percent of the total costs in 2013, a developer puts a project on hold for a decade, and then in 2023, the developer starts work again and places the facility in service in 2024. In such a situation, it does not seem appropriate to allow the developer to qualify for the PTC or the ITC in 2024.

Notice 2013-29 provides a non-exclusive list of facts and circumstances indicating continuous efforts: (a) paying or incurring additional amounts included in the total cost of the facility; (b) entering into binding written contracts for components or future work on construction of the facility;(c) obtaining necessary permits; and (d) performing physical work of a significant nature. Also, similar to the continuous construction test under the physical work

test, certain disruptions in the taxpayer's continuous efforts that are beyond the taxpayer's control will not be considered as indicating that a taxpayer has failed to make continuous efforts. The list of examples of such disruptions provided in Notice 2013-29 is the same as provided for the continuous construction test.

Notice 2013-60: Clarification to Notice 2013-29

The Treasury Department and the IRS recently released Notice 2013-60 on September 20, 2013 (to be published in the Internal Revenue Bulletin on October 15, 2013) to further clarify the beginning of construction requirement.

Continuous Construction and Continuous Efforts Tests: After releasing Notice 2013-29, the Treasury Department and PSI received questions about the application of the beginning of construction methods, and in particular the continuous construction test and the continuous efforts test. We released Notice 2013-60 to answer these questions.

Notice 2013-60 treats a facility as having satisfied the continuous construction test (for purposes of the physical work method) or the continuous efforts test (for purposes of the safe harbor) so long as the taxpayer places the facility in service before January 1, 2016. In adopting this deemed satisfaction rule, we considered both the elimination of placed in service requirements by Congress and taxpayers' need for clarity in applying the begin construction requirement. By providing this bright-line deemed satisfaction rule for both the continuous construction and continuous efforts tests, Notice 2013-60 balances the extension and change to beginning of construction in ATRA with renewable energy project developers' need for certainty to assure investors that their facilities will qualify for the PTC or ITC. It is important to note that the pre-January 1, 2016 placed in service alternative is merely a deemed satisfaction rule (or safe harbor), and that a facility may qualify for the applicable credit under the usual continuous construction/continuous efforts tests even if the taxpayer does not place the facility into service before January 1, 2016. More specifically, Notice 2013-60 provides that if a facility is not placed in service before January 1, 2016, whether the facility satisfies the continuous construction test or the continuous efforts test will be determined by the relevant facts and circumstances.

Transfer of a Facility: A taxpayer that invests in a renewable energy project after its construction has begun needs to know that they can qualify for the PTC or ITC once the facility is placed in service. Developers of renewable energy projects have difficulty attracting investors without this certainty. The Section 1603 Program guidance provided specific rules regarding transfers of a facility or an interest in an entity owning a facility, but Notice 2013-29 did not. Taxpayers expressed concern regarding this lack of guidance in the context of the PTC or the ITC.

Notice 2013-60 clarifies that the transfer of a facility after construction has begun will not prevent a facility from qualifying for the PTC or ITC. The statutory language in section 45(d) requires only that construction of a facility begin before January 1, 2014. It does not require the construction to be begun by the taxpayer claiming the credit. If a qualified facility satisfies either the physical work of a significant nature test or the Safe Harbor, a taxpayer that owns the facility during the 10-year period beginning on the date the facility was originally placed in

service may claim the PTC with respect to that facility even if the taxpayer did not own the facility at the time construction began. Alternatively, a taxpayer that owns the facility on the date it is originally placed in service may elect to claim the ITC in lieu of the PTC with respect to that facility even if the taxpayer did not own the facility at the time construction began.

Conclusion

This concludes my testimony and I would be happy to answer any questions that you might have about these credits or the Notices.

Mr. LANKFORD. Mr. Gramlich.

STATEMENT OF ROB GRAMLICH

Mr. GRAMLICH. Thank you. Good morning, Chairman Lankford, Ranking Member Speier, subcommittee members. I appreciate the opportunity to speak to you this morning about the success of the PTC and its value to American taxpayers. I also appreciate the interest in clear standards and making sure the policy works effectively. The short answer is we now believe we have clear standards and we believe it will work very effectively.

The PTC is a production-based tax credit provided to a variety of different renewable electricity sources, including small hydro, geothermal and biomass to name a few, and it's also available for new nuclear energy facilities. Congress designed the PTC as a performance-based incentive such as the credit can be taken only if and when actual electricity is produced. It does not provide to finance development or construction. It is also broad-based and competitive such that every company that develops an eligible project can claim the credit on their tax return. There is not an application process and government employees do not pick or choose winners or losers.

On January 1st, 2013, as part the American Tax Payer Relief Act of 2012, just as the PTC expired, Congress extended and modified the structure of how projects qualify for the PTC. This was done in recognition of the uncertainty created by the exploration and the recognition of project development delays such as permitting delays or weather-related construction delays that can occur and create uncertainty as to when a project will be placed in service.

Under the modification projects that commence construction before January 1st, 2014 qualify for the credit. However consistent with prior law, a wind operator cannot actually claim the PTC until it produces and sells electricity. The IRS, as you have just heard, has issued much needed and much more clear guidance on the statutory change in a manner consistent with congressional intent and start construction precedence. Under the guidance construction commences when physical work of a significant nature starts. This start of construction framework has ample precedent and several other sections of the Tax Code, including sections for bonus depreciation for self-constructed property, expensing for qualified property use and refining liquid fuels and with respect to the recovery period for natural gas distribution lines.

Over the years, the PTC has been a tremendous success. With the credit in place, the U.S. wind industry was the number one source of new generation capacity last year, wind turbines are now generally made domestically by approximately 550 manufacturing facilities in all regions of the country. Wind projects in the U.S. have brought economic growth to rural communities, roughly $400 million in annual property taxes or similar payments to communities, and lease payments to farmers and ranchers of around $120,000 per turbine over its life time.

This tax credit estimated by the Joint Committee on Taxation to cost less than $2 billion per year drives over $20 billion in private investment annually and brings electricity to the equivalent of 15

million American homes. Without the PTC, these economic benefits and this private investment in the United States would not have occurred. Wind energy is also saving money for consumers across the country.

One recent report from May of this year found that doubling the use of wind energy in the Mid Atlantic and Great Lake States would save consumers close to $7 billion per year. Even in the southeast utilities have entered into power purchase agreements with wind energy owners, because wind energy proved to be the least expensive option for their customers. Furthermore wind energy offers the stability of long-term fixed energy price which is offered by very few other energy sources. This protects consumers from fluctuations in fuel prices much like a fixed rate mortgage protects home owners from interest rate spikes. The cost of wind energy has dropped by 43 percent in the last 4 years, a great indication of a policy that's working. But the PTC is still needed to prevent us from relying too heavily on any single fuel source.

For decades, Federal policies, especially within the Tax Code, has fostered a diverse mix of fuels in the interest of our economic and national security. So while the PTC may be a more recent addition to the Tax Code, it is one of many incentives that have been available over the years for many, in fact, all electricity sources.

In conclusion, the PTC is a wise investment. Allowing it to expire as is scheduled to occur at the end of this year will move us away from further diversification of our energy portfolio, take away opportunities for consumers to save money, dampen domestic manufacturing and innovation, and cause companies to hold off on investing in communities across America. Again, thank you for the opportunity to be here today, I look forward to answering your questions.

Mr. LANKFORD. Thank you.

[Prepared statement of Mr. Gramlich follows:]

Testimony of Rob Gramlich, Senior Vice President, Public Policy, American Wind Energy Association

House Oversight and Government Reform Subcommittee on Energy Policy, Healthcare and Entitlements

Oversight of the Wind Energy Production Tax Credit

October 2, 2013

Good morning, Chairman Lankford, Ranking Member Speier, and Subcommittee members. I appreciate the opportunity to speak to you this morning about the success of the PTC and its value to American taxpayers.

I would like to begin by reviewing how the production tax credit (PTC) works. The PTC is a production-based tax credit provided to a variety of different renewable electricity sources, including small hydro, geothermal, and biomass, to name a few, and it is also available for new nuclear energy facilities. For wind energy, the PTC allows a project owner to reduce its tax bill by 2.3 cents for every kilowatt-hour of electricity produced over a 10-year period. Congress designed it as a performance-based incentive, such that the credit can be taken only if and when actual electricity is produced. It is only available after a facility is up and running. It does not provide funding to finance development or construction. It is also broad-based; every company that develops an eligible project can claim the credit on their tax return. There is not a competitive application process and government employees do not pick and choose winners or losers.

On January 1, 2013, as part of the *American Taxpayer Relief Act of 2012*, just as the PTC expired, Congress extended and modified the structure of how projects qualify for the PTC. This was done in recognition of the uncertainty created by the expiration and in recognition of project development delays, such as permitting delays or weather related construction delays, that can occur and create uncertainty as to when a project will be placed in service. Under the modification, projects that commence construction before January 1, 2014, qualify for the credit. However, consistent with prior law, a wind operator cannot actually claim the PTC until it produces and sells electricity.

The Internal Revenue Service (IRS) has issued guidance on this statutory change in a manner consistent with Congressional intent and other "start construction" precedents.[1] Under the guidance, construction commences when physical work of a significant nature starts. This start of construction framework has ample precedent in several others sections of the tax code, including sections for bonus depreciation for self-constructed property,[2] expensing for qualified

[1] IRS Notices 2013-29 and 2013-60.
[2] IRC §168(k)

property used in refining liquid fuels,[3] and with respect to the recovery period for natural gas distribution lines.[4]

This physical work standard is tightly circumscribed. Preliminary activities do not qualify. For example, obtaining permits, environmental and engineering studies, planning and designing a facility, and work on transmission towers and roads for site access do not qualify. Further, the IRS has required a continuous program of construction and has narrowly defined a single project, which limits the ability to build additional phases at the same site with the initial qualification.

Projects can also qualify if companies incur 5% or more of total eligible costs prior to January 1, 2014. Such "safe harbors" also have precedent in IRS regulations.[5] While 5% may not sound like a lot, in reality, it represents a significant investment and assumption of risk on the part of a project developer. The vast majority of the cost of a wind energy facility is in two things: buying the turbines and the construction contracts. Practically speaking, the surest way to achieve that 5% level is signing a turbine contract, making payments under the contract, and taking delivery of the turbines. This means the developer assumes tens or hundreds of millions of dollars of risk and has to pay millions of dollars in order to meet the 5% safe harbor. A company cannot achieve that 5% threshold just by funding preliminary development activities. In addition, the IRS requires the developer to demonstrate continuous efforts toward completion of the project after meeting the initial 5% safe harbor.

Over the years the PTC has been a tremendous success. With the credit in place, the U.S. wind industry was the number one source of new generation capacity last year.[6] Wind turbines are now generally made domestically by approximately 550 manufacturing facilities in all regions of the country. Wind projects in the U.S. have brought economic growth to rural communities; roughly $400 million in annual property taxes or similar payments to communities; and annual lease payments to farmers and ranchers of around $120,000 per turbine over its lifetime. This tax credit, estimated by the Joint Committee on Taxation to cost less than $2 billion this year, drives over $20 billion of private investment annually and brings electricity to 15 million American homes.[7] Without the PTC, these economic benefits and this private investment in the U.S. would not have occurred.

Wind energy is also saving money for consumers across the country. One recent report from May of this year found that doubling the use of wind energy in the Mid-Atlantic and Great Lake states would save consumers close to $7 billion per year.[8] Department of Energy data shows that from 2005 to 2010 electricity rates increased by twice as much in the 40 states with the least

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[3] IRC § 179C
[4] IRC § 168(e)
[5] For example, Section 168(k) with respect to bonus depreciation includes a 10% safe harbor. Given the complexity of the tax code and related regulations, the IRS has regularly offered safe harbors for individuals, partnerships and corporations.
[6] U.S. Department of Energy, Energy Efficiency and Renewable Energy, *2012 Wind Technologies Market Report*, by Ryan Wiser and Mark Bolinger (Washington, DC: U.S. Government Printing Office, 2013), iv.
[7] The Joint Committee on Taxation, *Estimates Of Federal Tax Expenditures For Fiscal Years 2012-2017* (Washington, DC, 2013), (https://www.jct.gov/publications.html?func=startdown&id=4503).
[8] Synapse Energy Economics, *The Net Benefit of Increased Wind Power in PJM*, by Bob Fagan, Patrick Luckow, Dr. David White, and Rachel Wilson (Cambridge, MA, 2013), 1.

wind power compared to rates in the 10 states with the most wind generation.[9] Even in the southeast, utilities have entered into power purchasing agreements with wind energy facilities because wind energy proved to be the least expensive option for their customers. Furthermore, wind energy offers the stability of a long-term fixed energy price, which is offered by very few other energy sources. This protects consumers from fluctuations in fuel prices much like a fixed rate mortgage protects homeowners from interest rate spikes.[10]

In addition to these benefits, the PTC helps ensure that our nation maintains a diverse energy portfolio. As I have noted in a previous testimony before Congress, electric utilities must commit to power supply options with over thirty-year lifetimes without knowing future fuel prices, future environmental regulations, future fuel supplies, cooling water availability, and more. These risks must be managed, and the best way for utilities to do that, as with one's financial investment portfolio, is to diversify.

The cost of wind energy has dropped by 43% in the last four years,[11] but the PTC is still needed to prevent us from relying too heavily on any single fuel source. The impending expiration of the PTC before it was extended in January had a devastating impact on the industry. Investment was put on hold and factories halted production and project installations came to a standstill. Only 1.6 megawatts were installed in the first half of this year, which is the capacity of a single turbine.

For decades, federal policy, especially within the tax code, has fostered a diverse mix of fuels in the interest of our economic and national security. So while the PTC may be a more recent addition to the tax code, it is one of many incentives that have been available over the years.

In conclusion, the PTC is a wise investment. Allowing it to expire, as is scheduled to occur at the end of this year, will move us away from further diversification of our energy portfolio, take away opportunities for consumers to save money, dampen domestic manufacturing and innovation, and cause companies to hold off on investing in communities across America.

Again, thank you for the opportunity to be here today. I look forward to answering your questions.

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[9] Electricity price data for 2005 and 2010 available at http://www.eia.gov/electricity/state/. 2010 state wind penetration data available at http://emp.lbl.gov/sites/all/files/lbnl-4820e.pdf, page 9

[10] U.S. Department of Energy, Lawrence Berkley National Laboratory, *Revisiting the Long-Term Hedge Value of Wind Power in an Era of Low Natural Gas Prices*, by Mark Bolinger, 2013(http://emp.lbl.gov/publications/revisiting-long-term-hedge-value-wind-power-era-low-natural-gas-prices).

[11] DOE, *2012 Wind Technologies Market Report.*

Mr. LANKFORD. Mr. Reicher.

STATEMENT OF DAN W. REICHER

Mr. REICHER. Chairman Lankford, Ranking Member Speier, members of the subcommittee, my name is Dan Reicher, and I'm pleased to share my perspective on the wind energy production tax credit. The PTC has been a highly effective policy tool in the financing of tens of thousands of megawatts of U.S. Wind projects. I support the extension of the PTC for a multiyear period, with a gradual phase-down as Congress simultaneously transitions the industry to the same financing mechanisms that have provided low cost capital to hundreds of billions of dollars worth of oil, gas, coal and transmission infrastructure for decades. I refer to Master Limited Partnerships, MLPs, and Real Estate Investment Trusts, or REITs.

MLPs and REITs combine the fundraising advantages of a classic corporation, that is the sale of publicly traded stock with the tax benefits of a partnership. That is, a single layer of taxation. These two financing mechanisms were authorized by Congress decades ago and importantly, do not require periodic reauthorization unlike renewable energy tax credits. Since Apache Petroleum launched the first MLP in 1981, MLPs have reached a total market capitalization over $440 billion.

REITs have a total market cap of over 670 billion, with IRS rulings opening up REIT investment and electricity transmission, gas pipelines and other traditional energy-related projects. The use of MLPs and REITs would give renewable energy projects access to far greater pools of capital than in the tax equity markets, and as a result, lower the cost of project capital significantly and with it, renewable electricity prices. And with publicly traded shares, MLP and REITs would allow millions of Americans to invest in our Nation's renewable energy future just like they can today in fossil energy and transmission infrastructure.

A bipartisan bill, the MLP Parity Act, would extend MLPs to renewable energy, energy efficiency, carbon capture and storage, cogeneration and other technologies. The bill is cosponsored by Representatives Poe, Republican of Texas, Gibson Republican of New York, Gardner, Republican of Colorado, Welch, Democrat of Vermont, and Mike Thompson, Democrat of California. Senators Coons, Moran, Murkowski and Stabenow back a bipartisan and identical companion bill in the Senate.

On the REIT front the IRS, on its own, could issue a broad revenue ruling that would extend REITs to renewable energy. The IRS has already issued private letter rulings extending REIT status to, among other things, electricity transmission lines, gas pipelines, cell towers and billboards. In December 2012, 35 Members of Congress Republicans and Democrats, wrote President Obama urging him to support the extension of REITs and MLPs to renewable energy. I understand that the administration is considering these approaches. A smart transition to the financing of U.S. wind projects would involve a 3-pronged approach: Number 1, a multiyear extension of the PTC with a gradual phase down; number 2, the near-term congressional adoption of the MLP Parity Act; number 3, an

IRS revenue ruling that expands REITs to include renewables. This smart transition would allow the wind industry for the next several years to continue to build projects using a well established financing approach that PTC, while the industry also works with the existing MLP and REIT finance community to transition to these long-standing lower cost financing mechanisms. In this way, wind companies could land in a place that much of the rest of the energy industry has long enjoyed, low cost, government authorized financing mechanisms, not requiring periodic Congressional extensions. This would be a big step forward for an industry that is generating more and more good paying U.S. jobs as it also generates more and more low carbon electricity.

I want to emphasize that my support for MLPs and REITs should, in no way, signal that I endorse an immediate phaseout of the PTC or any weakening of the current investment tax credit for solar. We need significant time for a thoughtful phase-down of the PTC, and we need significant time for an effective ramp up of MLP and REIT financing. Above all the industry needs policy certainty and continuity to avoid the serious consequence of past boom and bust cycles. I'd be pleased to take questions. Thank you.

[Prepared statement of Mr. Reicher follows:]

Chairman Lankman, Ranking Member Speier, and members of the subcommittee, my name is Dan Reicher and I am pleased to share my perspective on the wind energy Production Tax Credit (PTC). I am Director of Stanford University's Steyer-Taylor Center for Energy Policy and Finance and a faculty member of the Stanford Law School and the Graduate School of Business. The findings and opinions in my written and oral statements related to this hearing are entirely mine and do not necessarily reflect the views of Stanford University or any other entity with which I am affiliated.

I also serve on the Secretary of Energy Advisory Board and the Board on Energy and Environmental Systems of the National Academy of Sciences. I co-chair the board of directors of the American Council on Renewable Energy and am a member of the board of directors of the American Council for an Energy Efficient Economy.

Prior to my role at Stanford, I was Director of Climate Change and Energy Initiatives at Google where we did significant investment, policy and technology work involving wind and other clean energy sources. I also served on President Obama's transition team. Prior to my position with Google, I was President and Co-Founder of New Energy Capital, a private equity firm funded by the California State Teachers Retirement System and Vantage Point Venture Partners to invest in clean energy projects. Prior to this position, I was Executive Vice President of Northern Power Systems, one of the nation's oldest wind companies.

Prior to my roles in the private sector, I served in the Clinton Administration as Assistant Secretary of Energy for Energy Efficiency and Renewable Energy where, among other things, we funded significant wind energy technology development and launched the Wind Powering America Initiative. At DOE, I also served as the Acting Assistant Secretary of Energy for Policy and International, and Department of Energy Chief of Staff and Deputy Chief of Staff.

Summary

The PTC has been a highly effective policy tool in the financing of tens of thousands of megawatts of U.S. wind projects. These projects have deployed an array of turbine technologies, with significant associated U.S. manufacturing and jobs. I support the extension of the PTC for a multi-year period as Congress transitions the industry to the same financing mechanisms -- authorized by Capitol Hill decades ago -- that have provided low-cost capital to hundreds of billions of dollars worth of oil, gas, coal and transmission infrastructure. I refer to Master Limited Partnerships (MLPs) and Real Estate Investment Trusts (REITs).

A bipartisan bill -- the MLP Parity Act -- would extend MLPs to renewable energy, energy efficiency, carbon capture and storage, cogeneration, and other technologies. The bill is co-sponsored by Representatives Poe (R-TX), Gibson (R-NY), Gardner (R-CO), Welch (D-VT), and Mike Thompson (D-CA). Senators Coons (D-DE), Moran (R-KS), Murkowski (R-AK), and Stabenow (D-MI) back a companion bill in the Senate.

On the REIT front, the Internal Revenue Service (IRS) -- on its own -- could issue a broad "revenue ruling" that would extend REITs to renewable energy. The IRS has already issued private letter rulings extending REIT status to, among other things, electricity transmission lines, gas pipelines, cell towers, and billboards.

In December 2012, thirty-five members of Congress – Republicans and Democrats – wrote President Obama urging him to support the extension of REITs and MLPs to renewable energy. I understand that the Administration is considering these approaches.

A *smart transition* to the financing of U.S. wind projects would involve a three-pronged approach:

1) A multi-year extension of the PTC, with a gradual phase-down;
2) The near-term Congressional adoption of the MLP Parity Act;
3) An IRS revenue ruling that expands REITs to include renewables.

This *smart transition* would allow the wind industry, for the next several years, to continue to build projects using a well-established financing approach -- the PTC -- while the industry also works with the existing MLP and REIT finance community to transition to these long-standing, lower-cost financing mechanisms. In this way wind companies could land in a place that much of the rest of the energy industry has long enjoyed: low-cost, government-authorized financing mechanisms *not* requiring periodic Congressional extensions. This would be a big step forward for an industry that is generating more and more good-paying U.S. jobs, as it also generates more and more low-carbon electricity.

I want to emphasize that my support for MLPs and REITs should in no way signal that I endorse an immediate phase-out of the PTC or any weakening of the current Investment Tax Credit (ITC) for solar. We need significant time for a thoughtful *phase-down* of the PTC. And we need significant time for an effective *ramp-up* of MLP and REIT financing. Above all, the industry needs policy continuity and certainty to avoid the serious consequences of past boom-and-bust cycles.

Below I briefly describe the attractiveness of MLPs and REITs for financing renewable energy projects and discuss the elements of a smart transition to more predictable and lower-cost financing of wind energy.

Lowering the Cost of Financing Renewable Energy – MLPs and REITs

Without the need to pay for fuel, two factors largely determine the cost of large-scale renewable power projects. First, *equipment* costs, i.e. what you pay for buying and installing wind turbines, solar panels, and the like. Second, *finance* costs, i.e. the cost of capital for a project.

Technological innovation has dramatically reduced renewable energy equipment costs over the last several years. But financial innovation has not kept pace in lowering the cost of capital for commercial-scale projects. As a result, the cost of financing today makes up an ever-

greater fraction of the total cost of renewable energy projects, inflating the cost of the generated electricity, sometimes significantly.

Renewable energy projects deploying well-proven wind turbines and solar equipment face higher financing costs, not because of technology or off-take risks, but rather the reliance on "tax equity", i.e. investment built around renewable energy tax credits, the Production Tax Credit (PTC), that has been used largely to back wind projects, and the Investment Tax Credit (ITC), that has been focused primarily on solar projects.

Renewable energy tax credits have helped stimulate tens of thousands of megawatts of development across a range of clean energy technologies. They have been vital to the growth of an industry making increasingly significant contributions to our nation from an economic, security and environmental standpoint. But as financing has made up an increasing share of the overall cost of a renewable energy project -- particularly with the steep drop in associated equipment costs -- some issues have developed with these credits:

- They generally have only short-term Congressional approval. The PTC, for example, was recently reauthorized for just one year. It has expired four times in the past 15 years and in some cases the credit has actually lapsed and had to be retroactively extended. The uncertainty around these credits makes them less attractive to investors and has created boom-and-bust cycles that have hindered the sustained development of renewable power and associated domestic manufacturing.

- Renewable energy tax credits have a limited group of investors who can "monetize" them – i.e. a small number of investors nationwide with significant tax bills to offset. This requirement for "tax liability" has sidelined many interested investors including tax exempt pension funds, sovereign wealth funds, and, importantly, millions of retail investors who trade stocks. The small group of eligible investors, facing little competition, can charge higher rates for their capital.

- The tax code's ownership requirements regarding the use of some tax credits, for example the ITC, may tie up capital for years to avoid "recapture" of tax credit benefits. And there are other kinds of issues that can constrain the flow of capital in tax credit-backed deals. This general lack of "liquidity" can further drive up the rates that eligible investors charge for their capital.

There is a solution to the generally higher financing costs of tax credit-backed wind projects. Give renewable energy projects access to the same mechanisms currently providing lower-cost capital to traditional energy projects like oil and gas pipelines and transmission lines. These mechanisms are Master Limited Partnerships (MLPs) and Real Estate Investment Trusts (REITs).

MLPs and REITs combine the fundraising advantages of a classic corporation, i.e. the sale of publicly traded stock, with the tax benefits of a partnership, i.e. a single layer of taxation. These two financing mechanisms were authorized by Congress decades ago and do not require periodic reauthorization.

Since Apache Petroleum launched the first MLP in 1981, MLPs have reached a total market capitalization of over $440 billion. REITs have a total market capitalization of over $670 billion, with IRS rulings opening up REIT investment in electricity transmission, gas pipelines, and other energy-related projects.

The use of MLPs and REITs would give renewable energy projects access to far greater pools of capital and, as a result, developers would no longer have to pay scarcity prices for project capital. For example, First Wind, a major wind developer, has stated that its current cost of capital in its tax equity-based investments is 14%. The company expects its cost of capital under MLPs will be 6-8%. Barclay Bank's analysis of MLPs reports a range of yields for energy MLPs, with 7% in the mid-range. So it is reasonable to expect renewable energy projects financed using MLPs to attract capital at approximately 6-8%. Cutting the cost of capital in half for many projects in a capital-intensive industry like renewable energy will have a profound impact.

Furthermore, with publicly traded shares, MLPs and REITs would allow millions of Americans to invest in our nation's renewable energy future just like the significant opportunity they have with respect to fossil energy and transmission infrastructure. MLPs and REITs would also open an attractive secondary market for renewable energy investment by allowing the entry of new investors beyond a project's initial phase of tax benefits, thereby enhancing liquidity in the renewable power marketplace.

In recent meetings, traditional MLP investors have expressed serious interest in adding renewable energy projects to existing oil and gas MLPs. They see a variety of potentially attractive aspects to such "hybrid" MLPs, including portfolio diversification.

Clearly, there are an array of attractive features associated with MLP and REIT-based financing of renewable energy projects. The problem is that under current law renewable energy projects are not eligible for MLP and REIT investments.

The MLP Parity Act, cosponsored by Senators Coons (D-DE), Moran (R-KS), Stabenow (D-MI) and Murkowski (R-AK), was introduced in April 2013 and would change this situation for MLPs. It is an improved and expanded version of a bipartisan bill introduced in 2012 in the 112th Congress. The bill continues to include eligibility for renewable power generation and biofuels and widens the scope of projects that qualify for MLP status to include carbon capture and storage, energy storage, building energy efficiency, waste-heat-to-power, and biochemicals.

Representative Ted Poe (R-TX), Mike Thompson (D-CA), Peter Welch (D-VT), Chris Gibson (R-NY), and Cory Gardner (R-CO) also introduced the bipatisan MLP Parity Act in the House.

Regarding REITs, the Treasury Department -- on its own -- could issue a broad "revenue ruling" extending this financing mechanism to renewables. The IRS has already extended REITs, through private letter rulings, to, among other things, electricity transmission lines, gas pipelines, cell towers, and billboards.

Thirty-five members of Congress – both Democrats and Republicans -- wrote to the President in December 2012 urging his strong support for both REITs and MLPs. The letter said in part:

> *"Opening MLPs and REITs to renewable energy would level the playing field by giving renewables the same access to low-cost capital enjoyed by oil, gas, coal, and transmission infrastructure projects. Small tweaks to the tax code could attract billions of dollars in private sector investment to renewable energy deployment, reduce the cost of renewable electricity by up to one third, and dramatically broaden the base of eligible investors."*

In their letter, the Congressional members did not take a position about an important related issue, i.e. with adoption of MLP legislation how to go forward with the extension of the PTC when it expires at the end of this year, and also how to address the scheduled phase-down of the ITC at the end of 2016.

A Smart Transition to Predictable and Lower-Cost Financing of Wind Energy

We need a *smart transition* to the financing of U.S. wind projects that is both predictable -- avoiding the on-again/off-again cycle of the current PTC – and lower-cost, providing access to cheaper capital from a much broader base of investors. A smart transition would involve a three-pronged approach:

1) A multi-year extension of the PTC, with a gradual phase-down;

2) The near-term Congressional adoption of the MLP Parity Act; and

3) An IRS decision to expand REITs to include renewable energy.

This three-pronged approach would allow the wind industry to continue to build projects using a well-established financing approach -- the PTC -- as it also works with the MLP and REIT finance community to transition to these long-standing, lower-cost mechanisms. The approach would ensure that the wind industry continues on its important growth

trajectory over the next few years, while it simultaneously transitions to lower-cost financing using MLPs and REITs.

In this way wind companies could land in a place that much of the rest of the energy industry has long enjoyed: lower-cost, government-authorized financing mechanisms *not* requiring periodic Congressional extensions. This would be a big step forward for an industry that is generating more and more good-paying U.S. jobs while it also generates more and more low-carbon electricity.

I want to emphasize that my support for MLPs and REITs should in no way signal that I endorse an immediate phase-out of the PTC or any weakening of the current Investment Tax Credit (ITC) for solar. A *smart transition* requires a multi-year extension of the PTC, to provide a smooth glide path as we transition to MLPs and REITs, following Congressional enactment of the MLP Parity Act and the Obama Administration's decision-making on REITs. We need several years for both a thoughtful *phase-down* of the PTC and an effective *ramp-up* of MLP and REIT financing. If Congress and the Administration can move forward in this fashion we will put the wind industry and other clean energy technologies on a stronger base, with significant economic and environmental benefits for the nation.

Thank you for the opportunity to testify.

Mr. LANKFORD. Dr. Michaels.

STATEMENT OF ROBERT J. MICHAELS

Mr. MICHAELS. Thank you, Chairman Lankford, Ranking Member Speier and members of the committee for the opportunity to testify today on the loss of taxpayer dollars in the form of wind production tax credit. To start with, go back to the creation, the PTC began as an obscure part of the Energy Policy Act of 1992, a tiny subsidy to an infant industry that might need support to grow. Not until 1990s was it even mentioned in DOE's annual energy outlook where it was expected to produce very little by 2020. It surprised us, it grew to a highly competitive international industry, wind turbines accounted for the largest block of new power generation in 2012. Throughout this the PTC sunsetted, was renewed and so on.

Today, wind lobbyists are again asking for full continuation permanent subsidy. Looked at objectively, wind power is a poor choice for continued subsidy through the PTC. It is in no way an infant industry, generator manufacturers compete around the world and could fund their own research. Even if advances are on the horizon, a subsidy like the PTC should not be offered because it pays turbine owners to operate rather than to invent. Even without the PTC the wind is exceptional because it still does have a long-term market in the form of State renewable portfolio standard requirements which are expected to lead to approximately a large amount over the next 20 years under these programs.

Wind is hardly without its drawbacks, we hear that a wind turbine could light 20,000 homes per year. Because wind blows intermittently, most of the residents will be living in the dark most of the time. An electric grid only works if supply equals demand every second which requires the Nation's power plants to compensate for winds randomness and act as reserves. Over 85 percent of these plants obtain their energy from coal, natural gas and nuclear power. Adding one of those plants to the system increases reliability because it is controllable. Adding a wind generation does the opposite because it requires additional reserves to compensate for wind's unpredictability. For system planning purposes, the ERCOT, the Texas grid operator, counts a megawatt of wind generation capacity as equal to 8.7 percent of a reliable fossil fuel megawatt.

Wind entails other costs. Over the past 5 years, approximately $22 billion have been spent on transmission dedicated to reaching wind facilities which would not otherwise have to have been built. The fact that wind turbines do not burn fuel or emit no pollutants or carbon does not make them green. The reasoning conveniently neglects the reality of the substantial volume of fossil fuel generation must operate and pollute solely as backup for the intermittent wind power that most utilities have no choice but to accept. Going back a step, wind turbines are made of materials whose production entails emissions, and the material requirements per megawatt of wind capacity are substantially greater than for gas or coal capacity.

Finally, some advocates see wind is worthy of public support because of its alleged ability to create jobs. There is nothing discernibly unique about wind as an industry. Construction jobs are short lived and mostly in conventional building trades, most construction

employment is small and post construction employment, is small in volume and skewed toward low skills.

Claims that the wind production tax credit increases employment are without foundation. There are computer programs that purport to show job creation as wind workers incomes are re-spent. When households and businesses pay premium prices for wind power those funds are unavailable for them to spend elsewhere. Every visible new job in the wind industry comes with a less visible lost job elsewhere in the economy. It concerns me that the National Renewable Energy Laboratory now offers computer models for use by wind advocates, that calculate created jobs, and never consider the lost jobs due to overpriced power. Wind power has grown from a novelty boutique energy source into a mainstream industry that employs numerous high-paid lobbyists at the Federal and State level.

The PTC has remained, and even expanded despite the lack of any rationale for keeping it. At the wind industry's present size, other seeming advantages have also vanished to be replaced by higher costs, generally funded by consumers rather than wind investors. Winds environmental implications are not all benign, advocates of the PTC cannot substantiate claims of job creation. The PTC's rationale has vanished, it's usefulness to taxpayers has expired and so should the PTC. Thank you.

[Prepared statement of Mr. Michaels follows:]

DR. ROBERT J. MICHAELS

Senior Fellow of the Institute for Energy Research

Professor of Economics, California State University, Fullerton, CA

Testimony as prepared for a hearing to the

House Committee on Oversight and Government Reform

Subcommittee on Energy Policy, Health Care, and Entitlements

on October 2, 2013

I. INTRODUCTION AND PURPOSE OF TESTIMONY

A. Biographical

My name is Robert J. Michaels. I am Professor of Economics at California State University, Fullerton. I am also Senior Fellow at the Institute for Energy Research, Adjunct Scholar at the Cato Institute and Senior Fellow at the Texas Public Policy Foundation. I am also an independent consultant in electricity and natural gas. I hold an A.B. degree from the University of Chicago and a PhD from the University of California, Los Angeles, both in economics. My past employment as an economist includes Staff Economist at the Institute for Defense Analyses and affiliations with various consulting firms. The findings and opinions I am presenting today are entirely mine and not the official views of any professional or consulting affiliation. I attach a current biography to this testimony.

For over 20 years I have performed research on regulation and the emergence of markets in the electricity and gas industries. My findings have been published in peer-reviewed journals, law reviews, industry publications, and presented at professional and industry meetings. I am also author of *Transactions and Strategies: Economics for Management* (Cengage Learning, 2010), an applied text for MBA students and advanced undergraduates. My consulting clients have included state utility regulators, electric utilities, independent power producers and marketers, natural gas producers, large energy consumers, environmental organizations, public interest groups and governments. My services have at times entailed expert testimony, which I have presented at the Federal Energy Regulatory Commission, public utility commissions in California, Illinois, Mississippi and Vermont, the California Energy Commission, and in four previous appearances before House committees.

Of particular relevance for today's discussion are my testimonies before the Vermont Public Service Board and the Washington State Energy Facilities Siting Committee, both on behalf of environmental organizations critical of proposed large wind installations.[1] My testimonies analyzed wind energy in the contexts of electric system

[1] 1 *Deerfield Wind*, Vermont Public Service Board Docket No. 7250 (2008), Testimony on behalf of Save Vermont Ridgelines; and *Whistling Ridge Energy*, Washington Energy Facilities Site Evaluation Council Docket No. 2009-01 (2009), Testimony on behalf of Friends of the Columbia Gorge.

operation, planning and power markets. They also examined the environmental consequences of increased reliance on wind and the results of studies purporting to show that the projects would create employment opportunities. Today's testimony also examines these matters in a national context.

My testimony today is presented on behalf of the Institute for Energy Research (IER), a nonprofit organization that conducts research and analysis on the functions, operations and government regulation of global energy markets. IER articulates positions that respect property rights and promote efficient outcomes for energy consumers and producers. The organization was founded in 1989 as a public foundation under Section 501(c)3 of the Internal Revenue Code. Its funding comes from tax-deductible contributions of individuals, foundations and corporations.

B. Purpose of Testimony

This testimony responds to the Committee's request for my views on the potential extension of the wind energy production tax credit (PTC). Initiated in 1992, the credit has engendered substantial controversy, most recently regarding its 2013 extension and recently issued IRS rules on compliance with it. The PTC has been extended five times and been allowed to sunset on four occasions. Beginning at 1.5 cents per kilowatt-hour (kwh) in 1994 – 1999, it has been adjusted for inflation to its current level of 2.3 cents/kwh. My broad conclusion is that the PTC has far outlived any limited usefulness that it may once have had in stimulating wind power development, and that it should be permanently terminated as soon as possible.

Like numerous other tax preferences and subsidies, the PTC was originally enacted to spur development of a technology that may have required research and experience to become competitive with more established power sources. Even in those early times, however, the structure of the worldwide market for wind generators rendered "Infant industry" arguments questionable. Today wind accounts for a large part of new generation investments and there are no discernible links between a continuing PTC and possible future technological improvements. If there is in fact a plausible case for support of emerging technologies, that support should take the form of direct allocations to research. Instead the PTC provides tax savings to owners of all eligible wind turbines on the basis of their production volumes. The emergence of Renewable Portfolio Standards (RPS) in a majority of states has further

weakened any infant industry rationale for the PTC. Utilities in RPS states represent a large and stable market for wind generation that will provide steady demand for it over a long horizon. Below I provide evidence that it is RPS rather than the PTC that has been responsible for the strong and sustained growth of investments in wind power, although the intermittency of the PTC has been responsible for significant inter-year fluctuations.

Federal data and forecasts show that the all-in cost of wind turbines has and will be higher than that of gas-fired plants, inclusive of their fuel costs. These comparisons, however, still overstate wind's possible benefits to power distributors and users. Wind power is by nature intermittent and can only be integrated into a regional grid if other generation is instantly available to compensate for wind's variability. Adding a controllable generator to an electric grid generally increases reliability. By contrast, wind is a power source that can put reliability at risk as dependence on it increases. "Must-take" rules in many regional power grids shift the cost of maintaining wind power's reliability away from wind generators to ratepayers. Since 2008 the growth of wind generation in isolated areas has been responsible for approximately $22 billion in new transmission facilities. Many of them are financed by ratepayers and would have been unnecessary absent wind power. In some areas it has become a significant presence that has led to reliability concerns. As wind grows, it is also affecting outcomes in competitive energy markets, where it randomly exerts significant downward pressure on energy prices that will reduce investment in conventional generators needed to maintain reliability. The PTC further complicates market operation because its certainty of payment allows generators to bid power into the grid at negative prices and still profit.

Wind's other benefits are either overstated or ephemeral. The "zero emissions" associated with a kilowatt-hour of wind power are generally far from zero. They must be netted against the emissions from plants that must operate to maintain reliability in the face of wind's intermittency. On a life-cycle basis, production of the materials and services used to construct a wind generator also entails pollution and carbon emissions. Few people view any type of powerplant as a scenic treasure, and wind has become less of an exception as the size of turbines grows.

Finally, there is no substance to claims that the PTC is desirable because wind power's effects on employment in the economy make it part of an "industrial policy." So-called "green jobs" are arbitrary classifications (one list includes bus drivers). Jobs in renewable electricity

are a small fraction of any assumed total, and those in wind power are a small fraction of that fraction. Advocates often use computer models to substantiate claims that investment in wind, stimulated by the PTC, will generate extensive employment opportunities in other activities. In reality, these benefits have yet to be demonstrated. Funds expended on wind projects are unavailable to spend on the outputs of other industries, so to a first approximation the net effect of gained jobs in wind and lost jobs elsewhere is zero. Oddly, these computer models do not estimate lost jobs in these other industries, which makes their seemingly favorable findings on wind-related employment meaningless.

II. POSSIBLE RATIONALES FOR THE PTC

A. Public goods and infant industries

Two interrelated rationales for governmental activities in private markets originally dominated debate about the PTC. Despite great changes in technology and markets they remain frequently cited. The U.S. Government Accountability Office's (GAO) March 2013 report on federal financial programs and incentives affecting wind power restated the canonical "public goods" reasoning:

> [U]nless the government intervenes, the amount of research and development (R&D) that the private sector undertakes is likely to be inefficiently low from society's perspective because firms cannot easily capture the "spillover benefits" that result from it. That is particularly true at the early stages of developing a technology. Such research can create fundamental knowledge that can lead to numerous benefits for society as a whole but not necessarily for the firms that funded that research; thus government funding can be beneficial.[2]

Beyond these theoretical assertions, GAO made no efforts to assess the possible relevance of this reasoning to wind power and the PTC.

GAO did, however, enumerate "basic research, applied research, demonstration, commercialization and deployment" as activities where federal intervention might be warranted. (GAO, 7) The PTC, however, is ill-suited to incentivize all but the last of these activities. Tax preferences under it are quite unlike direct support payments to basic researchers such as those from National Science Foundation and national energy laboratories.

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[2] GAO, *Wind Energy: Additional Actions Could Help Ensure Effective Use of Federal Financial Support*, GAO-13-136 (March 2013). (Subsequently cited as GAO 2013)

The PTC is directed entirely to owners of already-built generators. It reduces taxes in proportion to their power output during the first ten years of operation, regardless of whether a plant embodies new technologies or established ones. The case for the PTC stimulating basic research is unproven, and such research might be better supported by direct incentives. The PTC may in fact stimulate deployment, as do state-level renewable portfolio standards (RPS), a topic to which I return below.

The other activities listed by GAO are equally speculative rationales for the PTC. Today's wind power industry is large, technologically sophisticated and competitive. When the PTC was enacted in 1992 wind accounted for a negligible percentage of total power production.[3] The PTC remained in effect during most of the succeeding years, and by 2011 wind capacity in the U.S. had grown to over 45,000 megawatts (MW), whose output was 3.2 percent of total U.S. generation.[4] In 2012 wind capacity increased by more than any other type of generation.[5] Wind may once have been an "infant industry" but it is no longer so. Over the past twenty years, however, the relative benefits of the PTC have increased. Between 1990 and 2010, the levelized cost per megawatt-hour (mwh) of U.S. wind power fell from approximately $170 to $80 (in 2010 dollars).[6] Between 1992 and 2010 the PTC was indexed to stay roughly constant in real terms. Hence the per mwh subsidy in real terms associated with the PTC has roughly doubled over the period.

The market for wind turbines in the U.S. has become significantly more competitive. In 2005 four manufacturers accounted for 99 percent of U.S. installations, a figure that grew to 12 manufacturers in 2012. The U.S. market shares of the three largest suppliers added up to 72 percent in 2012, and two of those suppliers were European corporations.[7] Wind turbine manufacturers and operators have developed new products and operating methods that have substantially reduced costs. Average operation and maintenance costs were $55 per kilowatt-

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[3] U.S. Energy Information Administration (EIA),
Table 8.2a Electricity Net Generation: Total (All Sectors), 1949-2011.

[4] *Id.,* and Table 4.3. Existing Capacity by Energy Source, 2011.

[5] U.S. Department of Energy, 2012 Wind Technologies Market Report, 5.

[6] Eric Lantz *et al, IEA Wind Task 26: The Past and Future Cost of Wind Energy,* National Renewable Energy Laboratory, 2012, 16. The figure reached a minimum of approximately $50 in 2005 and subsequently rose.

[7] 2012 Wind Technologies Market Report, 15.

year for projects built in the 1990s. For those built after 2010 the figure was $25.[8] Both large manufacturers and small producers of turbine parts have been responsible for technological advances, whose revenue streams are often protected by patents. There are no discernible links between any of these advances and the continuation of the PTC.

Whatever the rationale and economic value of the PTC, wind power remains both intermittent and expensive. The most recent forecasts from the U.S. Energy Information Administration expect little further progress. Exhibit 1 contains projections of levelized cost including fuel and maintenance expenses (in 2011 dollars) per mwh for generators expected to go on-line in 2018.[9] The three most costly sources are solar thermal ($261.5/mwh), offshore wind ($221.5) and solar photovoltaic ($144.3). The cost of onshore wind is $86.6/mwh. An advanced combined cycle gas-fired generator's cost is $65.6 per mwh, 76 percent of wind's cost. Even under a carbon tax or a cap-and-trade system wind barely passes a market test. The costs of carbon capture and sequestration (CCS) technology are still uncertain, but EIA estimates that adding it to a combined cycle gas generator leaves that unit at only an eight percent cost disadvantage to wind. If gas prices remain steady or rise by slightly less than EIA's projection, the gas unit is the economic choice.

B. The PTC and state renewable portfolio standards

At first glance the PTC appears to have been a major cause of the wind industry's growth, since investment has been substantially higher in years when it was in effect than in years when it was not.[10] Given the PTC's uncertainty and intermittency it is hardly surprising that investors bunched their activities in this way. Although technologies were available, the 1992 enactment of the PTC resulted in very little activity through 1996. Significant growth began only in 1998. States began enacting RPS in the late 1990s and the number trended upward until about 2007, after which few states joined them. RPS laws typically qualified a

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[8] *Id.* at 39.

[9] EIA, Levelized Cost of New Generation Resources in the Annual Energy Outlook 2013 (Jan. 28, 2013) http://www.eia.gov/forecasts/aeo/electricity_generation.cfm

[10] 2012 Wind Technologies Market Report, 55.

number of technologies as renewable, but in most states wind accounted for over 90 percent of compliance investments. By one estimate, if future RPS requirements were to be fulfilled by wind, its capacity would rise from today's 60,000 MW of today to about 130,000 MW by 2030.[11]

Nearly all state RPS programs have remained as enacted, in the face of large changes in the costs of both wind generation and conventional power. In practice, RPS requirements appear to provide a near-guarantee of wind market size that is independent of the PTC or its absence. As regional markets grow wind turbine owners can further supplement their incomes by selling renewable energy credits in other states that are unwilling or unable to build their own wind units. Given the stability of RPS and uncertainty of the PTC, the former may have a greater value to wind entrepreneurs.

III. WIND POWER, PRICES AND RELIABILITY

A. Operations and intermittency

Wind advocates often describe a project as producing (e.g.) "enough power to light 20,000 homes." Residential use is only about 1/3 of total consumption, but whatever that value the statement is at best misleading and at worst outrightly false. Any power system operates under a fundamental constraint: at every second, power production must exactly equal consumption. Any difference between production and demand (whether positive or negative) will trigger a region-wide blackout. Meeting the constraint requires a mix of generation. There will be baseload units (often nuclear and coal) producing near capacity at all hours, intermediate units (often gas) that respond to predictable inter-day variation, and units that only run at peaks. Reserve generators must also be operating, to instantly step in if another generator or transmission line fails. The need to respond quickly to both predictable and unpredictable events indicates that a generator's value to the grid does not simply depend on its operating cost. It also depends heavily on whether the operator can control its output to help maintain the balance between production and consumption.

The controllability ("dispatchability") of conventional generators (as well as renewables like biomass burners and geothermal units) means that bringing them into operation strengthens the reliability of the grid. Adding wind generators whose output is unpredictable

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[11] David E. Dismukes, *Removing Big Wind's "Training Wheels:" the Case for Ending the Federal Production Tax Credit*, Institute for Energy Research, 2012, 8.

and uncontrollable does the opposite. Regional grids often operate under "must take" rules that prohibit the operator from refusing an offer of wind power except in extraordinary situations. This constraint raises required reserves and their fuel costs, and the greater wind's variability the higher the cost of accommodating it. In many systems, the additional costs are distributed to various customers by regulatory rules ("socialized") rather than borne by wind generators responsible for them. In some operational situations the extra reserves required by wind's intermittency must suffice to instantaneously adjust to a complete loss of wind. Even an extensive grid cannot rely on wind fluctuations at different locations to balance out and thereby provide the equivalent of a single reliable generator. Exhibit 2 shows the variability of hourly wind output as a percentage of system load over a year in ERCOT, the Texas regional grid. There is no pattern to the fluctuations, and their amplitude is very high. The variability becomes even more apparent at higher resolution over the two months graphed in Exhibit 3. As noted above, there are times at which wind generation falls to zero, sometimes followed within hours by operation of virtually all available turbines, with accommodation required by "must-take" rules.

Adding to the operational difficulties, in most regions the wind is more likely to blow when the power it generates is least valuable. It is typically strongest at night, when baseload generators (which can take over a day to restart) must continue to operate at lower outputs in anticipation of tomorrow's load. It is weakest during peak hours of the mid-afternoon. Seasonally, in many areas wind is typically (but not always) weakest in summer when most grids reach their annual peaks. The upper panel of Exhibit 4 shows the average percentage of ERCOT load met by wind power at different hours of the day, averaged over a year. Its lower panel shows average monthly percentages of load supplied by wind.

Wind is typically weakest during periods of extreme temperature (both hot and cold) during which a system's gas-fired generation capabilities are at greatest risk of reaching their limits. During high-temperature peak load periods, the fraction of California wind capacity that actually produces power averages only 5 percent of the installed amount.[12] Texas has the nation's largest installed wind generation capacity, scattered over a wide area of the state. For planning purposes ERCOT sets a wind turbine's "effective capacity" at 8.7 percent of its

[12] Testimony of Yakult Mansour, President of the California Independent System Operator, California State Senate Committee on Governmental Operations, Aug. 9, 2006.

nominal amount.[13] All of these operational difficulties are likely to be aggravated if policies such as the PTC lead to further increases in the amount of wind investment.

B. Investment and intermittency

Wind's effect on operating costs also impacts capital costs. As wind grows in the generation mix its randomness and seasonality will bring a need for additional generation capacity, which will increase costs regardless of whether it is owned by regulated utilities or independent power producers. The effects also extend to transmission, where we already have strong evidence on costs. The efficient locations for fossil-fuel generation are often convenient to railroads or pipelines that deliver their fuel, and close to loads where they can contribute more to reliability. In the U.S. the best opportunities for wind development tend to be far from loads and often necessitate dedicated transmission. Investment induced by PTC or RPS can require the building of additional transmission at high cost. Since 2008 the Federal Energy Regulatory Commission (FERC) has approved over $15 billion in transmission to reach wind generation, and another $7 billion is under construction in Texas, which is exempt from FERC jurisdiction.[14] Because these are often radial extensions from a denser network they will contribute less to reliability than interconnected lines. Intermittency implies that these lines will operate below capacity much of the time. The average "capacity factor" for U.S. wind turbines from 2006 through 2012 was 32.1 percent, very low relative to fossil-fuel units.[15]

Larger volumes of wind generation, induced in part by the PTC, can decrease the efficiency of regional grids and distort investment decisions in other ways. In grids operated by Regional Transmission Operators, an important fraction of many generators' revenue is obtained from short-term (day- or hour-ahead) energy sales into their markets, where prices are determined by supply and demand at the time. The presence of increased wind capacity has the effect of lowering those prices and the revenues obtained by all generators whose

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[13] Lawrence Risman and Joan Ward, "Winds of Change Freshen Resource Adequacy," *Public Utilities Fortnightly,* May 2007, 14 -18 at 18; and ERCOT, *Transmission Issues Associated with Renewable Energy in Texas, Informal White Paper for the Texas Legislature*, Mar. 28, 2005, 7. http://www.ercot.com/news/presentations/2006/RenewablesTransmissi.pdf

[14] Dismukes, *Op. Cit.* at 15.

[15] 2012 Wind Technologies Market Report, 42.

sales are linked to the market. The significant revenue reductions reduce investors' profit expectations and deter them from new investments.[16] Paradoxically, the growth of wind power discourages investment in the generation that is needed to maintain reliability. Given the regional nature of the grid, the consequences can also be borne by interconnected states that do not have RPS policies.

As the volume of wind generation grows, its effects on energy market prices have become even more perverse in some regions. When transmission between wind areas and load centers iscongested generators must bid for access to the lines. The winners are those willing to receive the smallest netbacks. In a competitive market with conventional powerplants this result is desirable – those with the lowest operating costs will be the winning bidders. Where wind power has a significant presence the PTC at times allows its owners to bid *negative* prices and still earn a profit. A wind generator will pay any amount below its PTC savings for access to the lines, since it can still earn the difference between what it pays and the tax savings. Even if the negative bid does not set the market price, it further reduces the returns to fossil-fuel generators whose minimum operating limits are critical for reliability.[17]

IV. WIND POWER'S ENVIRONMENTAL EFFECTS

Reliable electricity, inexpensive electricity, and a clean environment are all desirable. Unsurprisingly, all are also costly. Wind turbines are durable, have low operating costs and do not burn fossil fuel, but these facts alone do not clinch either the economic or environmental case for wind. Wind power carries costs of its own, including materials and labor to build and install turbines, as well as support costs that include fuel for added reserve generation, new transmission lines, etc. Fossil-fuel plants must incorporate pollution control technologies that wind units do not need. As noted above, the per-MWh capital costs of wind exceed all-in (capital plus fuel) costs of modern gas-fired plants by over 30 percent, even if we do not include the support costs associated with intermittency.

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[16] Chi-Keung Woo *et al*, "Blowing in the Wind: Vanishing Payoffs of a Tolling Agreement for Natural-Gas Fired Generation in Texas," *Energy Journal* 33 (2012), 207-229.

[17] For graphics that show the growth of negative pricing in four wind-rich RTOs, see the NorthBridge Group, *Negative Electricity Prices and the Production Tax Credit* (2012), 10.

Manufacturing either a conventional generator or a wind turbine requires raw materials whose extraction and assembly release emissions that are costly to mitigate. Wind units, however, require larger volumes than fossil units of some raw materials commonly associated with high pollutant and carbon emissions. Estimates of life-cycle costs are sensitive to technical details, but one fairly representative comparison found that a megawatt of coal-fired capacity requires 98 metric tons of steel and 160 cubic meters of concrete (cement manufacture emits carbon), while a megawatt of gas generation capacity requires approximately 3 metric tons of steel and 27 cubic meters of concrete. A megawatt of wind capacity, by contrast, requires 460 metric tons of steel and 870 cubic meters of concrete.[18]

In most of the U.S. wind power displaces gas generation. Coal units are base-loaded, while gas units adjust the grid to both expected and unexpected changes in load. Gas produces relatively small amounts of EPA "Criteria Pollutants" (including particulates and oxides of nitrogen and sulfur) that substantially raise the costs of mitigating coal-based emissions. It also emits less carbon per kwh generated. If wind generation proliferates and gas-fired capacity is limited, the operator must use coal-fired units to balance the grid, as happens at times in Colorado, Texas and elsewhere. Controversial research by gas marketer Bentek Energy recently analyzed operating data to discover the consequences of using coal plants as wind backup in the absence of gas-fired capacity, a situation that sometimes prevails in Colorado and Texas. Bentek found that the use of coal actually increased emissions of Criteria Pollutants (and did not reduce carbon), even after netting out the emissions reductions due to wind. Bentek concluded that loads in those areas could have been served with lower total emissions had the wind units never existed. The American Wind Energy Association has challenged Bentek. The issue remains undecided, but there will be important consequences for wind power whichever side wins.[19]

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[18] James Conca, "Is the Answer, My Friend, Blowing in the Wind?" *Forbes*, July 1, 2012. http://www.forbes.com/sites/jamesconca/2012/07/01/is-the-answer-my-friend-blowing-in-the-wind/

[19] Bentek Energy, *How Less Became More: Wind, Power and Unintended Consequences in the Colorado Energy Market* (April 10, 2010). http://docs.windwatch.org/BENTEK-How-Less-Became-More.pdf The American Wind Energy Association's attempt to refute the Bentek findings is at http://www.awea.org/newsroom/realstories/upload/110720-The-Facts-about-Wind-Energy-and-Emissions.pdf

V. WIND POWER AND EMPLOYMENT

A. How many jobs are green?

Since the initiation of the PTC we have heard numerous assertions that subsidizing wind power results in the creation of "green jobs." These opportunities simultaneously improve worker incomes and bring relief from unemployment, all while improving energy efficiency and cleaning the environment. Green jobs, however, provide no rationale for extending or gradually eliminating the PTC. Instead one can make a case that more economic benefits will stem from its abandonment than from its perpetuation. To see why, I first examine the nature of green employment. I follow by critically evaluating claims that investment in wind power will send ripples of prosperity through the entire economy.

Two recent studies illustrate the inherent arbitrariness of classifying jobs as green. In 2011 the Brookings Institution estimated 2.7 million jobs in the "clean economy."[20] 18.9 percent were in "Agricultural and Natural Resources Conservation," 5.3 percent in "Regulation and Compliance," 31.0 percent in "Energy and Resource Efficiency," and 39.6 percent in "Greenhouse Gas Reduction, Environmental Management, and Recycling." All are exercises in creative classification. Energy efficiency includes 350,000 workers in public mass transit (mostly bus drivers) and environmental management includes 386,000 people in trash disposal. The authors chose not to use an approach that most analysts would have found far more helpful: how many clean jobs have (or will) come into being as a result of various regulations? And how many will vanish?

The Brookings researchers counted only 138,000 positions in renewable power, 5 percent of their clean job total. After subtracting 55,000 jobs in hydropower (commonly viewed as nonrenewable), they are left with 84,000, i.e. 3.1 percent of all clean jobs. Of these, 29,000 were in solar, (which generates under 2 percent of renewable power) and 24,000 (under one percent of clean jobs) are in wind. Similar research in Washington State (where wind is a significant presence) found a total 3,464 workers in renewable energy, 3.5 percent of the state's green jobs. Its authors noted that "construction ... [and] professional and technical

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[20] Mark Muro, *et al*, *Sizing the Clean Economy: A National and Regional Green Jobs Assessment*, (Brookings Institution, 2011). It is possible that growth in residential photovoltaics since its publication would raise the totals.

services accounted for the majority of all [renewable] positions."[21] The majority of jobs are in manufacturing and construction, and both are generally short-lived. After they open, "most renewable energy facilities operate with a relatively small number of operations and maintenance employees…[t]he proportion of part-time positions is higher for renewable energy than for any other private-sector core area (35 percent).[22] Both the Brookings and the Washington studies tell us that green jobs are not objectively definable, that it is easy to inflate their numbers, and that they do not differ significantly from non-green positions that require similar qualifications. Whatever the definitional details, wind power has a minimal presence in labor markets.

B. Are there economy-wide effects?

Green jobs may be few, but advocates frequently claim "multiplier" effects that create many additional jobs when the original green workers respend their incomes in the community. In reality wind power's costs must eventually turn up in consumers' monthly bills (or possibly in their future taxes). A tax that forces consumers to buy needlessly expensive power when cheaper (and clean) power is available inflicts harm on their budgets, while benefitting those interests that succeeded in enacting the tax. Seen in this light, increases in government support for uneconomic technologies cannot possibly produce "green jobs" and prosperity. How could it possibly happen if that support brings the nation higher energy costs and no countervailing benefits? Quite simply, taxing Person A and spending the money to employ a new green job holder must at the same time destroy a job held by Person B who would have otherwise received the taxed-away funds as income.[23] It does not matter whether the tax takes the form of a higher power price or a direct governmental tax collection.

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[21] Washington State Employment Security Department, *2009 Washington State Green Economy Jobs* (Mar. 2010), 5.

[22] *Id.* at 30.

[23] I acknowledge that there are many technical complications to this reasoning in economic theory, but the sentence in the text suffices to make my point.

In previous research I have analyzed (to my knowledge) every existing argument that attempts to link support for renewables to green jobs. In every case I have found the arguments sadly lacking, both in logic and in any measured effects.[24] I have also submitted testimonies to state regulators (on behalf of environmental groups) showing that the job creation arguments of wind advocates fail, as matters of logic, as quantitative predictions, and in actual results.[25] DOE's National Renewable Energy Laboratory (NREL) utilizes a "social accounting matrix" computer model ("JEDI") to estimate additional employment that will result from a given renewable project. The model was discussed during my 2010 testimony before this Subcommittee, when Dr. David Mooney of NREL responded to a member's question by discussing JEDI's forecasts of job creation from investments in wind power. I responded that NREL's model is constructed so that any project it examines *must* create jobs, i.e. it is mathematically impossible for a user of that model to ever find adverse effects of wind power on employment. also noted that NREL had yet to put its model through the most rudimentary test – comparing the predicted employment effects against reality. At the Committee's request, I submitted supplemental testimony on this subject, which I have attached to this testimony. The Committee also invited Dr. Mooney to submit testimony in support of his assertions about job creation. I have no record that such testimony was ever submitted.

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[24] A summary appears in Robert Michaels and Robert Murphy, *Green Jobs: Fact or Fiction*, Institute for Energy Research, Washington D.C., Jan. 2009. Also see Robert J. Michaels, "National Renewable Portfolio Standard: Smart Policy or Misguided Gesture?" *Energy Law Journal* 29 (No. 1, 2008), 79-119; and Robert J. Michaels, "A National Renewable Portfolio Standard: Politically Correct, Economically Suspect," *Electricity Journal* 21 (April, 2008), 9-28.

[25] In the Matter of Whistling Ridge Energy Project, LLC, Application No. 2009-01, Supplemental Prefilled Testimony of Robert J. Michaels, PhD, Dec. 14, 2010.

VI. SUMMARY AND CONCLUSIONS

At its inception the PTC was a minor addendum to legislation affecting a then-tiny industry. It was a product of politics, rationalized by economic arguments that few took any interest in verifying. In the national haste to increase power production from renewables, wind became a clear winner. It seemed to produce power for free, emitted few if any pollutants and was producible in many parts of the country. Until the recent rise of solar, "renewable" was in effect a synonym for wind. Renewables have a considerably longer history than wind, and one worthy of a brief review. Biomass has long been an economically viable fuel in some areas, and until quite recently geothermal power made up the largest share of California's renewables. Biomass and geothermal probably escaped notice for two reasons: they could stand on their own economically, and they could be dispatched as integral parts of a power system. These renewables were like fossil-fuel plants, whose presence strengthened reliability and lowered the cost of delivered power.

Wind changed renewables from useful assets into problematic ones. When wind turbines were a small fraction of generation they created minimal problems because small doses of intermittency required few extraordinary actions or investments. At the same time wind's cost characteristics and the environmental acceptability of smaller-scale projects rendered it the renewable of choice to meet RPS requirements. The PTC only strengthened a rush to wind whose consequences could hardly have been foreseen when wind was a footnote. The PTC itself led a complex life, with intervals of dormancy and complex legislative bargains over it. The time has come to end that life, and to do so as quickly as possible.

The original "public goods" and "infant industry" justifications for subsidizing wind vanished long ago with the growth of advanced turbine technologies and a competitive world market for them. Even if further growth will stimulate more progress, state RPS requirements (and national ones elsewhere) will ensure a long-lived market for the generators. Wind's effects on system operating costs will be with us for a long time, aggravated by rules that prioritize its operation. Wind's presence is becoming a major influence on market prices, and its further growth is likely to distort far more costly decisions on generation and transmission investment. Perhaps new operating technologies and superior ways to forecast wind will be

able to alleviate these problems. Their solution, however, can only be more difficult as the installed base of wind turbines grows with continuation of the PTC.

People can understandably dispute the effects of recent economic stimulus policies in bettering (or perhaps worsening) macroeconomic performance. The PTC has been a relatively small (relative to the federal budget) experiment in the difficulties and unintended consequences of applying economic stimuli. It has rewarded those who invested in wind power, while its longer-term effects on operating costs and the future of electric reliability are only appearing at this rather late hour. And if the PTC does not even meaningfully increase employment, the case for ending it is even more transparent.

Exhibit 1. Estimated Levelized Cost of New Generation Resources Entering Service in 2018, 2011 $/MWh

Plant type	Capacity factor (%)	Levelized capital cost	Fixed O&M	Variable O&M (including fuel)	Transmission investment	Total system levelized cost
Dispatchable Technologies						
Conventional Coal	85	65.7	4.1	29.2	1.2	100.1
Advanced Coal	85	84.4	6.8	30.7	1.2	123.0
Advanced Coal with CCS	85	88.4	8.8	37.2	1.2	135.5
Natural Gas-fired						
Conventional Combined Cycle	87	15.8	1.7	48.4	1.2	67.1
Advanced Combined Cycle	87	17.4	2.0	45.0	1.2	65.6
Advanced CC with CCS	87	34.0	4.1	54.1	1.2	93.4
Conventional Combustion Turbine	30	44.2	2.7	80.0	3.4	130.3
Advanced Combustion Turbine	30	30.4	2.6	68.2	3.4	104.6
Advanced Nuclear	90	83.4	11.6	12.3	1.1	108.4
Geothermal	92	76.2	12.0	0.0	1.4	89.6
Biomass	83	53.2	14.3	42.3	1.2	111.0
Non-Dispatchable Technologies						
Wind	34	70.3	13.1	0.0	3.2	86.6
Wind-Offshore	37	193.4	22.4	0.0	5.7	221.5
Solar PV[1]	25	130.4	9.9	0.0	4.0	144.3
Solar Thermal	20	214.2	41.4	0.0	5.9	261.5
Hydro[2]	52	78.1	4.1	6.1	2.0	90.3

[1]Costs are expressed in terms of net AC power available to the grid for the installed capacity.
[2]As modeled, hydro is assumed to have seasonal storage so that it can be dispatched within a season, but overall operation is limited by resources available by site and season.
Note: These results do not include targeted tax credits such as the production or investment tax credit available for some technologies, which could significantly affect the levelized cost.
Source: U.S. Energy Information Administration, *Annual Energy Outlook 2013*, December 2012, DOE/EIA-0383(2012).

Exhibit 2

Hourly Wind Output in ERCOT (Texas) as a Percentage of Load

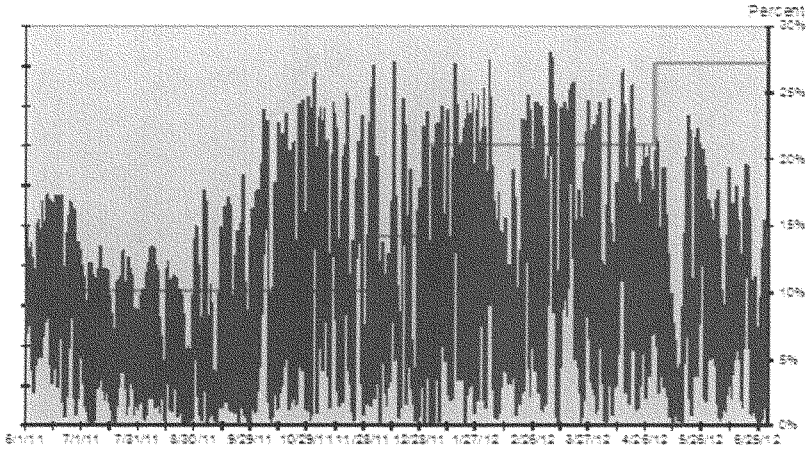


Exhibit 3

Hourly Wind Output in ERCOT (Texas)
as a Percentage of Load (Detail)

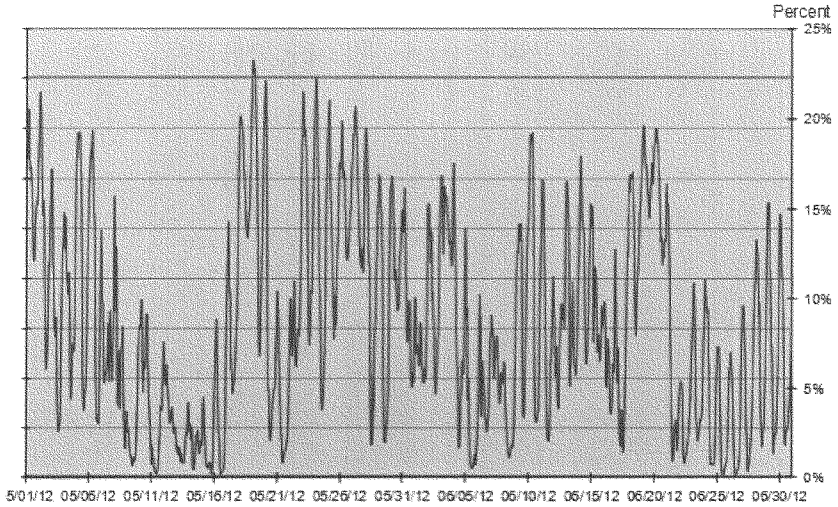
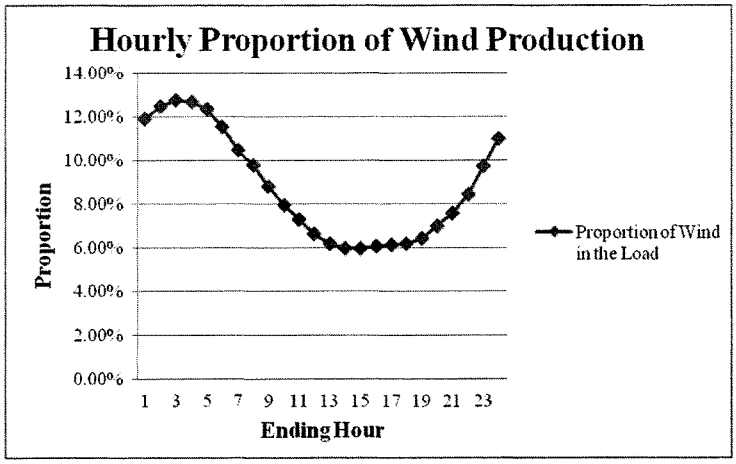
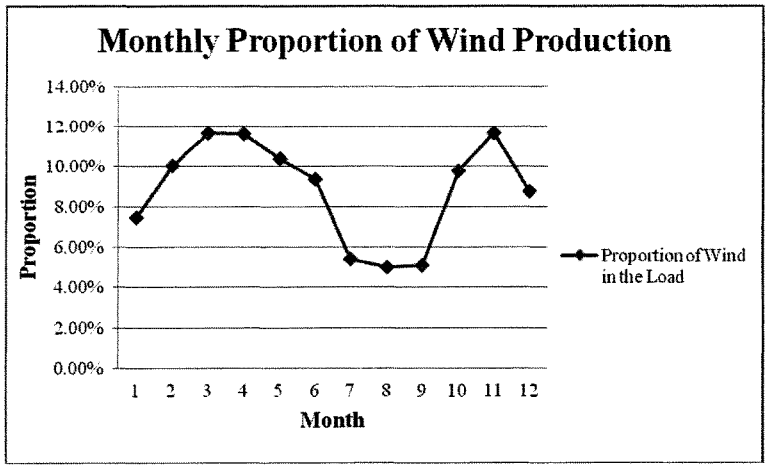


Exhibit 4

Average proportion of Wind in ERCOT Load

by Hour of the Day and by Month





Mr. LANKFORD. Thank you. I am very grateful for all four of you to be here. Listening to opening statements could not have been more different, and I'm looking forward to the dialogue on that, and I really do appreciate that and that's the way it should be to be able to go through the dialog as we try to pursue some of this.

Mr. Wilson, I mentioned to you before and giving you the heads up on it. Mr. Gramlich had mentioned much greater clarity is there, the 5 percent phaseout, or the 5 percent safe harbor is obviously a clear safe harbor based on what the final price is. My concerns are the way the rule is written as it comes out right now and based on beginning construction, it gives the impression almost that IRS has to be there to be able to inspect the roads, to be able to inspect the purposes and the intents, when really this is going to be filed later on it.

To make it more clear, there is a section, I mentioned to you before, if the road is done for construction, it counts as under construction. But if that same road was built for employee use or for visitors to come on, it doesn't count. So is it the intent of the IRS to say make this as non nebulous as you can, make sure that you've spent at least 5 percent to get safe harbor because everything else is going to be a guess.

Mr. WILSON. That was certainly not my intent to make it nebulous. We—as I mentioned earlier, we did pattern our guidance off the prior guidance and——

Mr. LANKFORD. Sure.

Mr. WILSON. —section 1603 program and section 168(k). We do have a history with that and it has not generated a lot of questions on those points. Just to clarify, the service doesn't typically—wouldn't typically go and determine whether or not someone had began construction at the time that they were doing it. They might get picked up on audit at a later stage, and then the taxpayer would demonstrate that they had actually begun construction through the normal business records process.

Mr. LANKFORD. Correct, and that was my point. When I read through the regulations and they are invigorating reading, which is great, by the way, try to be a clear as you can, when I read through the regulations on it, it almost gives the assumption that someone is going to have to look at it before it begins to make that judgment call if they doesn't reach this 5 percent safe harbor.

So my question to you is, is it the assumption that industry will make sure they hit that 5 percent, and if they don't hit that 5 percent safe harbor it's going to be quite a significant paperwork process to be able to prove they were under construction by that date.

Mr. WILSON. I—the—there is no assumption that people will try to make the—to use the safe harbor, the 5 percent safe harbor more than the other safe harbor which I mentioned and noticed in 2013–60, which is a place in service by the end of 2015. That is an alternative that they can use. They can make the 5 percent safe harbor, they can make the place in service safe harbor, or they can do the physical construction.

Mr. LANKFORD. But physical construction, if they are going to put up, let's say, 100 towers and they put in the footings for two of them, that is under construction, so they might have only spent 3 percent of the actual total end cost. So the question is, that now

it becomes were they under construction enough, were two footings with the steel and the concrete down, I know they are not going to pour that way by the way, they are going to have to do multiples, but putting in a road, and putting in two footings for 100 different units, does that count long term? For all 100 eventually?

Mr. WILSON. That depends, if the all 100 are operated as a unit——

Mr. LANKFORD. Right.

Mr. WILSON. —it is a facts-and-circumstances determination, but you can treat multiple units as one project for purposes of beginning a construction. If you begin work on——

Mr. LANKFORD. If they do continuous construction, let's say they put in two footings, and it ends up being 3 percent of the total cost of the final cost of projects, but then they do a little bit of construction each year for the next 10 years, and they don't really put it into use, start actually generating producing power for 11 years from now, would that 10-year time clock begin for the PTC at the point that they put the first tower in as far as actually producing electricity, when does that 10-year clock begin for the PTC for them?

Mr. WILSON. That, again, I will have to say it, it will depend. If there—one of the things that the guidance provides is that we will look carefully with strict scrutiny at a taxpayer who begins construction but then doesn't maintain a program.

Mr. LANKFORD. Some level of continuous—I am assuming they are going to have some kind of level of continuous construction. Could they take 10, 11 years—I know that they would have a difficult time getting capital for that, I get that. Could they take 10 or 11 years to do a project and then start the 10-year clock running? Could an investor know I'm going to trickle this project along while I'm working on other things just to keep something moving and then get the PTC at some future date?

We have the responsibility on this dais to also do budgeting. When we put a tax credit out there in the past it has been very clear, we know when it guess online and we know we have 10 years from there. With this one, some of the difficulty we have in budgeting on this is, we don't know when it's going to go online. We don't know how many projects are going to take, and how long it continues construction, and when we talked about phase-out and such, that a typical project may take 3 or 4 years to do in construction, not including all the very lengthy permitting processes. The challenge is this is somewhat of a phase-out already because of the length of time and it is unknown. So could they theoretically hold this indefinitely?

Mr. WILSON. They could, if they still met the beginning of construction and continuous program of construction, then there is not an end date for that.

Mr. LANKFORD. Okay. Well, that's something we'll work on, that is our responsibility. I am going to continue to move on so we keep the conversation moving. Ms. Speier.

Ms. SPEIER. Thank you, Mr. Chairman. Mr. Gramlich, give me an idea of the kind of high-paying jobs the industry generates.

Mr. GRAMLICH. Sure there certainly are a lot of construction jobs; manufacturing jobs would be the other general area as you noted

and I noted as well; the 550 manufacturing facilities in the country now producing wind energy.

Ms. SPEIER. Give me an average salary.

Mr. GRAMLICH. Oh, boy, I'm not sure I know. Manufacturing jobs are notoriously well paying, and it is one of the very few sectors that is actually growing, and significantly growing, manufacturing jobs in this country.

Ms. SPEIER. So maybe on behalf of the committee, you could you submit to us some numbers so that we'll have the benefit of that as we evaluate the PTC in the future.

Mr. GRAMLICH. Sure.

Ms. SPEIER. Dr. Michaels suggested that these aren't permanent jobs. Would you like to comment on the robustness of the jobs that are created within this industry?

Mr. GRAMLICH. Well, he said there as nothing discernibly different about this industry, I mean, these are great jobs, many industries have great jobs, our industry happens to have a lot of manufacturing jobs. As long as the industry keeps growing, those facilities, those 550 facilities will keep churning out wind turbines over the years. It's very similar to the auto manufacturing sector in terms of the skills and the types of jobs, and of course, those auto manufacturing facilities, as long as there is a market they keep turning out automobiles year in and year out. That what we expect and hope for.

Ms. SPEIER. Mr. Reicher.

Mr. REICHER. Let me say quickly, I worked for a wind company for several years after I left Washington. This is a longstanding wind company, it is in the business of R&D, manufacturing assembly, installation maintenance, this is in a small New England town, it has been a real important industry in that community. They have installed turbines for the military around the world for native Alaskan villages all over this country and all over the world, it is a very specialized type of turbine, and these have been great jobs for people who I don't think would otherwise have the access to those kinds of jobs.

Ms. SPEIER. My other question was to what extent are we exporting these turbines?

Mr. GRAMLICH. There is a little of a bit growing export market. One of the reasons we produced so much here is that these happen to be very large, heavy pieces of equipment. So we actually have a unique strategic advantage for this sector in manufacturing these turbines here in this country compared to a lot of other industries where policymakers may be looking to, you know, where can we grow manufacturing jobs? This is actually because of the unique physical attributes of wind turbines, this is actually a great opportunity where we really can't expect to manufacture the turbines here that we end up deploying here.

Ms. SPEIER. All right. So when we do, as we often do, is not act until the last minute, do this lurching forward as we have this year in extending it for 1 year, the implications are profound. Can any of you talk about the impacts to jobs lost when we don't give any clarity and consistency in what we are offering in terms of tax credits?

Mr. GRAMLICH. I can, sure. I mean, last year, we expected, with the impending expiration of the tax credit last year, we commissioned a study that found 37,000 jobs, or roughly half the jobs in the industry would have been lost. We did, in fact, lose many of those jobs in the latter half of the year as the exploration approached. Some of which we lost to manufacturing and may never get back.

Now the industry has rebounded with the extension of the tax credit and the change to the start construction framework as opposed to solely using placement service qualification——

Ms. SPEIER. Mr. Gramlich, I'm going to ask one more question, so if you could just wrap up.

Mr. GRAMLICH. Sure. That has alleviated some of the time pressure so it is a more workable policy than it used to be.

Ms. SPEIER. So Mr. Reicher suggested, Mr. Wilson, that you could administratively extend REITs and MLPs to apply to wind energy companies. Are you contemplating that, is that on the agenda within the administration?

Mr. WILSON. That's a question that the Office of Tax Policy at the Department of Treasury has responsibility for doing. My office works with them, but they are the ones who would make the policy call on that.

Ms. SPEIER. So have you made any recommendations to them?

Mr. WILSON. Unfortunately that's outside the REIT or outside my area of responsibility.

Ms. SPEIER. My time has expired. But Dr. Michaels, you basically said that we don't need this tax credit. And if that is, in fact, your position, then do we need a credit for oil, and gas, and coal that have been around for generations, are not new industries, and I realize my time has expired so maybe you can include that in some response.

Mr. LANKFORD. No, the witness can answer the question.

Ms. SPEIER. Thank you.

Mr. MICHAELS. Thank you. This hearing is about wind, I am not an expert on subsidies to those other industries. I think they should all be evaluated. But again, if we're simply looking at wind, I think it's particularly worthy of note in light of the PTC, in light of the general energy situation. All those others, I agree with you, are imminently worth studying. I didn't come prepared to do that, would be happy to do it otherwise.

Mr. LANKFORD. Mr. Walberg.

Mr. WALBERG. Thank you, Mr. Chairman, and thanks to the panel for being here. Interesting, interesting subject to deal with.

Mr. Wilson, according to David Burton, a tax law specialist with Akin, Gump, he stated, "Savvy project developers could theoretically bank tax credits well into the future." If a developer plans well and banks through 2013, PTC-eligible component parts it may be able to continue to construct PTC eligible wind farms indefinitely. His concern—Mr. Burton's concern appears to be fair. Why is there no hard deadline in your guidance?

Mr. WILSON. We didn't place a hard deadline because the statute doesn't place a hard deadline. It allows the credit if you begin construction before the end of the—of appropriate—before the end of

2014 or '13, and so we didn't think we had authority to place a hard deadline.

Mr. WALBERG. So in other words there was a lot of flexibility that credits could still be claimed years down the road.

Mr. WILSON. That's true. Unlike the section 1603 program which had termination dates, the extension that was part of the ATRA did not have an end date to it.

Mr. WALBERG. Mr. Gramlich, many States like Michigan have renewable energy suggestions or requirements already in place and working, doesn't this suggest that when energy can function on its own without further Federal subsidies like PTC?

Mr. GRAMLICH. Well, the State renewable portfolio standards are very effective policies. The thing is we met and exceeded most of them by now, so for the foreseeable next few years, they have no real market impact. In a few States where more than 5,000 megawatts, I think that would be maybe double what the actual requirement would be.

Mr. WALBERG. It would seem like it would be in the States' best interest then if they are seeing that type of impact to increase, but we're not seeing that, are we?

Mr. Michaels, along that line of questioning, you note in your testimony that the widespread use of RPSs negate the need for the wind PTC, could you elaborate further on that?

Mr. MICHAELS. The RPS requirements in States are projected to require somewhere around 100,000 megawatts of renewable generation, most of them are going to be wind over about the next 15 years. That means one thing, even if wind is uneconomic, it says that these people, utilities in these States will have to buy it. It will support the industry in a very real sense, it supports demand without complexities and the incentives that come with protection tax credit.

Mr. WALBERG. Mr. Gramlich, response to that?

Mr. GRAMLICH. Dr. Michaels, I believe in his testimony, said 70 gigawatts of additional wind would be needed, and then a minute ago in his oral testimony said some large number, and then just now, I think he said 100 gigawatts. The truth is it is actually 28, so far less than half of his lowest claim.

Mr. WALBERG. Dr. Michaels, response to that?

Mr. MICHAELS. I have never heard the 28 gigawatts. I think we can simply resolve this by looking at the references.

Mr. WALBERG. Dr. Michaels, you note that the PTC is probably a poor tool to bring forth innovations, explain that a little further. That's a fairly strong statement.

Mr. MICHAELS. I would challenge someone to tell me any innovations in the industry that have directly been brought about as a result of operations under the PTC. My argument is if you really wanted to reward innovation, reward innovation, don't reward operation. The link between operation and innovation is likely to be far weaker than the link between a dedicated research effort in innovation, that's all I'm saying.

Mr. WALBERG. Mr. Gramlich, your association suggests that Congress should extend the wind PTC. How long?

Mr. GRAMLICH. We submitted testimony and spoke with the House Ways and Means Committee this spring. They are looking

at tax reform. They are—as we understand, they are looking at all energy resources as has been discussed here, we're not quite sure or we haven't seen any bills obviously on that. Senate Finance Committee is looking at some alternative structures, so we are engaged in that.

Mr. WALBERG. But what would you suggest at this moment?

Mr. GRAMLICH. We offered some ideas that would, in fact, probably more than any other industry has offered in terms of how long would be needed to sustain a minimally viable industry, which we believe everybody wants at least that much so that we can keep the cost reductions going, which are, in fact, caused by the production tax credit. The reduction of over 40 percent in our cost in 4 years is very, very much tied to the PTC.

Mr. WALBERG. I've run out of time here. How many years?

Mr. GRAMLICH. The letter that we put out in December which was in the record in the House Ways and Means is available to see, we said 6 years under certain assumptions would create the minimally viable industry, but the stability that would be required to get to those——

Mr. WALBERG. Thank you, Mr. Chairman.

Mr. LANKFORD. Thank you. Ms. Duckworth.

Ms. DUCKWORTH. Thank you, Mr. Chairman. You know I think if we are serious about reducing our reliance on foreign oil, reducing harmful greenhouse emissions and ensuring that Americans have access to reliable and affordable energy, we must make serious investments in a diverse energy sector, not just wind, not just oil, and not just gas, but a diverse sector. And I think wind energy is playing an important role in meeting these goals.

In my district, wind energy has been an amazingly successful story American manufacturing. I'm proud to say that the State of Illinois is leading the way in both wind turbine manufacturing and capacity. Illinois now has the wind power in place to power 1.1 million homes, and we host over 2,000 wind turbines in 36 manufacturing facilities for wind turbine components with many of those in my district, including Winergy and Bly Industries. Bly Industries is a great example of the type of innovation and investment in American manufacturing that the wind industry is a great story of. Bly Industry manufactured rotating swash plates for helicopters. And with the cuts in defense spending, they were reducing production, they quickly, agilely adjusted their production line, and now have more orders than they can fill in the wind industry, and now have doubled their workforce.

Good manufacturing jobs, good jobs that have benefits and a lot of people put back to work. So I am somewhat interested in knowing—looking at this aspect of it, we've got 6,000 wind related jobs in Illinois, a thousand of them in manufacturing. Although Dr. Michaels has said wind energy is a dying industry, I'm not sure how that jibes with the fact China, India, Brazil, Germany and Romania, all countries with very different economies and governments, are all supporting wind projects and resulting in employment. I'm going to ask both Dr. Michaels and Mr. Gramlich to answer this question, how competitive, Mr. Gramlich, is the global wind industry?

Mr. GRAMLICH. It is very competitive. As you say a number of countries are investing a great deal in wind energy; China for example, and a number of European countries. So it's been very difficult but the Nation, U.S. has done a great job in bringing again 70 percent of the domestic production here to this country, and we have great resources, tools, training capabilities in this particular manufacturing sector that we've been able to keep up with that, even with our limited policy stability that we've had here.

Ms. DUCKWORTH. I know that in my own district, I have at least one manufacturer who makes gear boxes for windmills, exports them globally to places like China, one of their biggest customers.

Dr. Michaels, you said this was a dying industry. Can you talk a little bit about the global situation for wind?

Mr. MICHAELS. I do not know where the word "dying" came from. To my recollection, I have never stated that and it has it is clearly not a dying industry.

Ms. DUCKWORTH. I have this quote from you, it says it would be dying were it not for the fact that the industry gets all sorts of subsidies and tax breaks. It gets far heavier subsidies than any other energy sources. You're talking about nothing but incredibly expensive technologies that produce low quality power. You didn't say that?

Mr. MICHAELS. I said that it might well be dead, and dead may have been an extreme. It might me be a much, much small presence, I think is a more accurate thing to say. If, in fact, your story is correct, and it may be, then wind can stand on its own, and it should stand on its own without the PTC. It is a competitive industry, the type we like to always encourage in America, and there's a lot of people who don't like government intervention in these types of markets, precisely because it interferes with their dynamism. So dying may have been not the best word to choose.

Ms. DUCKWORTH. Mr. Reicher, can you address the topic of the global wind industry?

Mr. REICHER. Representative Duckworth, it's a very competitive global industry that lots of countries want to own. The Chinese have taken big, big steps forward to build a very significant wind industry, they are beginning to put up turbines in this country, they have been long competitors in Germany and in Denmark. It is a big race and it is a big global market.

The international energy agency said we are going to spend $38 trillion between now and 2035 in building energy infrastructure of all types, $38 trillion. That is a huge market. An increasing chunk of that market will be renewable energy. The Chinese and other nations want to own a big chunk of that market, I think if we could put our policy, technology and finance tools in place in the right way, we could own a big chunk of that market as well. A market for technologies, many of which were developed and invented and deployed first in the United States.

Ms. DUCKWORTH. Thank you, thank you, Mr. Chairman.

Mr. LANKFORD. Mr. Farenthold.

Mr. FARENTHOLD. Thank you very much, Mr. Chairman. And I will start with Mr. Gramlich. I'm concerned that the wind energy subsidies that we're spending, and the growth of wind energy is actually costing us more than we know. Are you familiar with con-

cerns that the military that have been raised with respect to interference of wind turbines with radar use for air traffic control and military training and any of the costs associated with that?

Mr. GRAMLICH. Every project does need to review a number of things, including wildlife impacts, local community impacts, but certainly if you are anywhere near a military installation, there has been a lot of work and a lot of interaction with the Department of Defense on how radar and training routes can be preserved, intact, and consistent with both development and military objectives.

Mr. FARENTHOLD. I'm going to go now to Dr. Michaels. The Public Utility Commission of Texas chair Donna Nelson has stated that Federal incentives for renewable energy have distorted the competitive wholesale market in Texas. Wind has been supported by Federal production tax credit that provides $22 per megawatt hour of energy generated by wind resources. With these substantial Federal incentives, some wind producers have actually bid negative prices into the market and can still make a process, we've seen a number of days where the negative clearing price in the west zone of ERCOT, which is the Texas energy market, where most of the wind farms are installed. These market distortions are creating a problem in Texas in that because wind is unreliable and it makes it difficult for other generators to recover their cost and discourages investment in new generation. Do you believe that her statement is accurate?

Mr. MICHAELS. Um, Chairman Nelson and I worked in proceedings before the Public Utility Commission of Texas. We have our differences but on this one, I'm generally in agreement with her. It is a much deeper problem because it is going to become greater as wind grows as a presence. What happens is that congestion on the transmission lines, people have to bid for it, limited capacity, and because of the PTC, essentially you can bid a negative price, and after you get the PTC back, you're still making an income greater than zero from that. Why is that a distortion? Very simply, it's at variance with the realities of resource scarcity. It is a variance of what we would see in competitive markets, and there doesn't seem to be anything we can do about it when obtaining the efficiency of the grid. It's going to be a much bigger problem because it is not just in Texas, there are at least three other regional transmission operators who are starting to face increasing volumes of this in the same way that Texas is and nobody really knows how to resolve it.

Mr. FARENTHOLD. Thank you, Mr. Reicher, you indicate in your written testimony that a multiyear extension in the PTC, Protection Tax Credit, is necessary to avoid a bust in the wind energy industry. As former DOE Chief of Staff, you are certainly familiar with the Energy Information Administration's annual energy outlook, are you not?

Mr. REICHER. I am.

Mr. FARENTHOLD. Could you turn your microphone on, please? You answered in the affirmative.

Mr. REICHER. I don't know this year's specific outlook, but I am generally familiar with the——

Mr. FARENTHOLD. You agree that it is one of the definitive resources with respect to energy and economic forecasts.

Mr. REICHER. It's a useful one.

Mr. FARENTHOLD. And so AEO's reference case which assumes that the PTC will not be reauthorized by December 13th of— I'm sorry, December 31st of 2013, projects strong growth for the wind energy development in the United States. In fact, it says, the increase in wind power generation from 2011 to 2040, had 134 billion kilowatt hours, or 2.6 percent per year. It represents the largest absolute increase in renewable energy generation. It also indicates that wind will add more than 42 gigawatts of capacity by 2040, and total wind capacity will exceed hydropower by 2040. How can you characterize that projection with no PTC extension as a bust?

Mr. REICHER. I don't know the details of that projection. Let me just say, what I do know is the history of the development of this industry, and that is when the PTC is in place, we see growth in this industry. When we lose it as a result of unreliable Federal policy, we see a drop-off.

Mr. FARENTHOLD. And let me just follow up on Mr. Walberg's question to you. He asked how long do you think it needs to be extended. Do you have a time frame?

Mr. REICHER. I have said in my testimony, we need to put it in place for a multiyear period with a phase-down. I was very clear there ought to be a phase-down.

Mr. FARENTHOLD. And multi——

Mr. REICHER. Just if I could finish, and that ought to be linked, and I don't know if you were here to hear my statement, this absolutely needs to be linked to opening up master limited partnerships and real estate investment trusts to renewable energy. Both of those financing mechanisms put in place by this Congress have been available to conventional energy sources and they ought to be——

Mr. FARENTHOLD. And those won't— and those alone won't do it. You've still got to basically give them money.

Mr. REICHER. Be careful. I said a multiyear extension with a phase-down. With a smart ramp up of those, I am very clear that if we give some years to the PTC, phase it down, and then ramp up these other two financing mechanisms that have been so vital to the development of oil and gas infrastructure, to the tune of roughly $500 billion, that's a smart transition, and that's what we ought to be doing. And let me just finish. We have bipartisan support in this House for that bill and we ought to—we ought to get on with it.

Mr. FARENTHOLD. All right, well, I'm out of time. Thank you very much for your testimony.

Mr. LANKFORD. Ms. Lujan Grisham.

Ms. LUJAN GRISHAM. Thank you, Mr. Chairman, and I appreciate the panel being here today. New Mexico ranks 12th in the Nation for the production of wind energy and it's currently producing energy for about 280,000 homes. And it is also providing great economic promise in our State which currently has negative job growth and is experiencing one of the toughest economic situations in the country.

I am—and you have heard this, I think, several times this morning, but we have one of the national labs also, two national labs in New Mexico, and they are both very clear that in the interest

of national security, having a diverse energy portfolio is critical; not just necessary, critical, must happen, and making sure that there is a clear strategy to assure that that is developing and growing in a meaningful way is also on their critical list for national security issues. But recognizing that most—that some of the testimony today, and some of the questions that really focused on the credit and whether or not that's a useful investment, I want to focus on for a minute, Dr.—Mr. Michaels.

Now, you state in your written testimony, that Federal data and forecasts show that all in all, the cost of wind turbines have and will be higher than that of gas-fired plants. And you referred to the cost estimates released by the U.S. Energy Information Administration in Exhibit 1. Now, Exhibit 1 compares the cost of different types of energy production, and it shows that wind power is one of the least expensive methods of producing electricity compared to all other types of conventional and non-conventional forms of power generation.

Now, considering that my own State, its potential, has the potential and is capable of needing more than 73 times the State's current electricity needs, I'm very encouraged. The Intergovernmental Panel on Climate Change, which is a worldwide committee tasked with examining climate change, recently found that it is extremely likely that human influence has been the dominant cause of observed global warming and the panel warns that extreme weather will continue unless we act aggressively to reduce the pace of greenhouse gas emissions.

In New Mexico, we are on the forefront of climate change. Earlier this year the Federal drought monitor listed New Mexico's drought as the worst in the country. Nearly the entire State was classified as experiencing extreme or exceptional drought, and currently we are under a state of emergency due to extreme flooding.

I have lived in New Mexico all my life and I have never seen anything like this, destroying roads, farms, and homes. Now, what I'm getting at here, is that the cost of electricity is not the only cost that should be considered. There are environmental and health costs associated with power plant pollution from destroyed and damaged property due to droughts, fires, floods, rising oceans, to health care costs due to heart attacks, premature deaths and many types of respiratory illnesses.

In Exhibit 1, Mr. Michaels, does your written testimony include these environmental and public health costs associated with the different types of energy production?

Mr. MICHAELS. I'm using—pardon me, I'm using the figures from the Energy Information Administration and no, those figures do not include all of those costs. And again, they also don't include costs of overpriced power, and how people may suffer under that for various reasons. And the most important thing they don't do for wind is they are assuming that a megawatt of wind power comes out with the same reliability as a megawatt of fossil fuel power. You have to add to that wind expense the fact that you need backup; that you have to do a lot more than just look at the cost of that unit. The gas fired units——

Ms. LUJAN GRISHAM. Well, Mr. Michaels, or Dr. Michaels, I appreciate that. I have got Mister in here and I see clearly it is a doc-

tor. So I apologize for getting your title wrong. But in any event, it is clear then that this comparison in your exhibit is not complete.

Mr. MICHAELS. I think it is impossible to make a complete comparison. I'm trying to do the best I can with data that I think I can live with. Yet——

Ms. LUJAN GRISHAM. Without a complete cost comparison, is it fair to say that in making recommendations about using all of our tools and investing, particularly in something that affects national security, that maybe we ought to have an effective, complete, comprehensive cost comparison that would include all of those things, including the things that you have identified?

Mr. MICHAELS. Personally, if I——

Ms. LUJAN GRISHAM. Apples to apples, for all of these energy sources.

Mr. MICHAELS. Please pardon me.

Ms. LUJAN GRISHAM. Oh, sure.

Mr. MICHAELS. Personally, I would really very much like to see that. I think that costs would come out and I think we would learn a tremendous amount, and I think both of us would probably learn quite a bit on both sides of this issue. Are, in fact, we overstating or understating, say, the health issues and the climate issues, or are we overstating or understating the costs of backing up reliable wind power? These are open issues, and I certainly favor doing more research into that.

Ms. LUJAN GRISHAM. Dr. Michaels, I'm out of time and I appreciate the chair's allowance of that, but as policymakers, I agree we should definitely be doing things in a much more comprehensive, factual manner to make these decisions and recommendation. Thank you, Mr. Chairman.

Mr. LANKFORD. I now recognize Mr. Jordan.

Mr. JORDAN. I give my time to the chairman. Thank you.

Mr. LANKFORD. Thank you. Ms. Lujan Grisham, I completely agree the difficulty of this, as this committee has dealt with before is trying to evaluate the social cost of carbon and all these things because that number is difficult to get your hands around. We have seen the administration change it by 50 percent in just 3 years, saying their models have changed. So there is this great challenge of this very subjective, how do you get your hands around that. We have an economists here that live and breathe on subjective data, and giving their advice in the middle of all of that, and I understand that, but that dynamic is incredibly difficult for us to do. It is part of our conversation today as we both figure out how do we provide greater certainty for the industry that is currently living under this law? And then also, where are we going on this long term? We do need to have a broader energy portfolio but we have a lot of issues to deal with this as well.

Mr. Reicher, you have mentioned a couple of times about the MLPs. I would like to go into greater depth with you on that, because this conversation about, as you said before, a significant trailing off of the PTC to give it a significant amount of time to be able to become where Mr. Gramlich—6 years or more whatever it may be. It was interesting. I have been in Congress a relatively short period of time, about 3 years. But in my first months here, because my energy—my State is a significant producer of wind. We

are jokingly called the Saudi Arabia of wind in Oklahoma because we have so much wind generation and we are an exporter of wind out of our State, which is a good thing economically for us and functionally for us. But the grand challenge of it is is how do we do this? I had folks that caught me in my office from my industry in the first months that I was here and said, we just need 4 more years of the PCT, and I think we can trail this off if we get a good sunset on it. This is not a comment from Mr. Gramlich, but to hear you say we just need 6 more years, made me think about that conversation I had 3 years ago with someone that said, we just need 4 more years.

This is one of those very difficult things to get our arms around. We have got to find a way to be able to figure out how do we provide some certainty in Federal policy? Let's talk in greater depth of what you are trying to do with this MLP proposal. How does that fit in? How does that work economically? How does that bring more capital into the industry?

Mr. REICHER. Well, let's take it back home, in fact, to Oklahoma where your oil and gas industry, the infrastructure that backs up a lot of that oil and gas industry has been financed largely using master limited partnerships.

Mr. LANKFORD. Yes, it has.

Mr. REICHER. And they have been vital to this from the early 1980s. They do, in fact, lower the cost of capital for infrastructure. They are certain in terms of their policy base, you don't need to reauthorize them. And they have been a—have had a dramatic impact on the building of energy infrastructure. My point is, let's open up those mechanisms to the rest of the energy industry. I'm not just talking renewable energy. I'm talking carbon capture and storage. So that if we need to pull carbon out of coal plants and you have to build infrastructure, finance that with MLPs. I'm talking energy efficiency. I'm talking cogeneration.

The bill sitting here in this House and over in the Senate is very broad technologically. So put that in place. The IRS can, in fact, issue a revenue ruling to do something very similar.

Ranking Member Speier, they can make the change to REITs. Congress has to make the change to MLPs. Meanwhile, link that, don't, don't cut off—don't cut off the PTC at the end of this year. Give it some running room.

Mr. LANKFORD. Well, just to push back somewhat, what is your guess at this point of how long the PTC has right now, as it currently stands under construction? If someone is under construction, and they begin to hit the 5 percent safe harbor threshold, for instance, how many years is this trailing right now? Because it's—well, it is ending "this year." It is really not ending this year. They have got 3 or 4 years. How many companies, how many years is this really going to be a trailing off of what we currently have?

Mr. REICHER. Mr. Chairman, I was in the wind energy development business, and you know, these are projects that generally take in the larger ones in 2 to 4 years, something like that. I wouldn't lose a lot of sleep over the fact that there could be a project that goes a little bit longer. I think the IRS has done exactly what it should do, which is you, the Congress, didn't give them a specific date. They have written some good guidance as

they have to in many of these cases, and they have said, here is what under construction means. I don't think there is going to be major abuses of this. I think it is going to take a few years to get out of this. So let that happen. Meanwhile, extend the PTC for a reasonable period of time, and then pull these other two long-term financing mechanisms in, that means the MLP and the REIT.

Mr. LANKFORD. Mr. Gramlich, Dr. Michaels has mentioned a couple of times on it, and I have talked to several folks in the industry as well, this issue of where you have a wind farm, you also have got to be connected at some point in that grid to nuclear, coal, gas, something, because even in Oklahoma, the wind does stop blowing on days. I have been to a wind farm and stood next to it and seen every tower still. So that what is the connection there between other fuel sources that are consistent that you can turn on and off, and the wind which only God turns on and off?

Mr. GRAMLICH. Chairman Lankford, there are three States getting more than 20 percent of their electricity from wind right now. They are——

Mr. LANKFORD. Of their actual production, or their production capacity?

Mr. GRAMLICH. Their production, their megawatt hours over the course of a year from wind energy. Iowa is one of them. These are perfectly reliable systems. You could have those utilities in here talk about how their lights stay on. So——

Mr. LANKFORD. But because they are partnering with another fuel source, and I'm running out of time.

Mr. GRAMLICH. Exactly how it worked for fossil and nuclear facilities, because every single generation facility can go off at any moment. It is nothing——

Mr. LANKFORD. While we have a diversified fuel structure, that's why, quite frankly, I believe it is good to have coal and natural gas, and nuclear, and wind, have all of these out there because you wanted a diversified source on it. But that is true, they are going to always be partnered with. They can't be just be a standalone consistent power source.

Mr. GRAMLICH. Exactly. That is why I did not advocate for a 100 percent wind energy grid.

Mr. LANKFORD. Okay, thank you. Mr. Horsford.

Mr. HORSFORD. Thank you. Good morning, Mr. Chairman. I thank you to our panel for being here. Those who oppose wind energy argue that production tax credits should be permanently eliminated as an incentive for wind project development because the wind industry is no longer in its: "infancy," and therefore no longer needs such support. The argument goes further that all electricity generators should be subject to smart-based competition, and but only wind projects should compete on their own economic and environmental merits without the support of Federal financial incentives.

Mr. Gramlich, your expertise lies in the wind industry, and I have met with your organization in the past. I'm from Nevada. My district is 52,000 square miles. I have both rural, and urban. One portion of my district in the northeast in White Pine County has a major wind farm. There is another one in the Northwest portion of the district that's in Representative Amodei's district, but wind

is a very important part of the economic diversification opportunities in rural America. So you are an expert in wind industry, so I want to ask you to respond to this graphic. Do you agree with the data depicted on the chart displayed regarding energy subsidies?

Mr. GRAMLICH. I do. I think that's a very accurate and informative chart. I think it's very important to look at the number of years over which different energy technologies have received incentives, because it effectively gives them a long head start in the market.

Mr. HORSFORD. Is there any way that you can characterize the oil and gas industry as being in its infancy given that it has been receiving Federal subsidies now for more than 90 years?

Mr. GRAMLICH. Well, I don't have ways to characterize it other than to say that incentives do exist for all conventional, as well as newer clean technologies.

Mr. HORSFORD. But after 90 years, they are not infants.

Mr. GRAMLICH. I do think the time frame absolutely matters. Yeah, the relative short period over which clean energy sources have received incentives is very relevant to determine how long they are needed. I mean, one answer to the question of—from Representative Walberg would be, well, I don't believe the incentives for wind will be needed as long as conventional sources have received them. I don't know, you know, it of course matters a great deal, what your assumption is on what other technologies receive in order to say how much we need and we don't know that yet.

Mr. HORSFORD. Okay, well, let's stay with this for just a moment though. The production tax credit has been around since 1992, that's correct?

Mr. GRAMLICH. Correct.

Mr. HORSFORD. But a significant increase in wind energy capacity didn't actually occur until about 8 years ago in 2005, is that also correct?

Mr. GRAMLICH. I know that well because that's when I joined AWEA, that's correct, yes.

Mr. HORSFORD. So would you say that wind energy tax credits are still in its infancy?

Mr. GRAMLICH. Yes, I think they have made a great impact, but they have certainly not reached their—completed their task.

Mr. HORSFORD. Okay, so let's take a look at the amount of the subsidies on this chart. According to this chart, the oil and gas industry receives about $4.8 billion in Federal subsidies on average every year, and which have developed into giant industries as a result.

Mr. Reicher, would it be a fair competition if the oil and gas industry was permitted to keep receiving $4.8 billion worth of Federal subsidy while the wind industry receive nothing?

Mr. REICHER. Representative Horsford, we have subsidies across the board for the energy industry ranging from oil and gas, to nuclear, to renewables, to energy efficiency, and they have all served important roles in different ways across research development, demonstration, and deployment. So we really do have to take a hard look at all of this, and put it all on a level playing field and it is not on a level playing field today.

You cite nuclear power. Nuclear provides 20 percent of U.S. electricity, zero carbon, very important in our—in our energy mix today. And it has received some important subsidies over time from R&D dollars, to Federal liability insurance, to tax credits for new reactors. It's become an important mix and Congress has backed these subsidies over decades and decades. And we are doing similar things in the oil and gas area and we ought to continue to push the renewable area as well.

Mr. HORSFORD. Okay.

Mr. REICHER. Now, the option to get rid of all of them. I don't see that happening. If we are not going to get rid of all of them, let's build a level playing field.

Mr. HORSFORD. Thank you. My time is expired, Mr. Chairman. I would just say that we need to be careful. It seems that the distractors of the wind industry are asking the government to pick winners and losers by only removing Federal subsidies for one particular sector of the energy capacity, which is wind energy, but leaving all of the other subsidies intact, and I would not support that approach. Thank you.

Mr. LANKFORD. Thank you. We are going to start a second round of questioning here in just—people on the dais wants to be able to participate in that.

Mr. Gramlich, when a wind farm does construction they have business expensing as well, just normal business expensing for the actually tower itself. Are they able to write off the products they produce and such as their normal tax treatment for a wind farm? Is there anything else in addition to the PTC?

Mr. GRAMLICH. I'm not—we could certainly give you an answer to that and follow-up on that. I'm not exactly sure how the other tax provisions work.

Mr. LANKFORD. Right. They operate as a business and function as a business and have normal business expensing through products, through purchasing the towers to whatever it may be. It is considered a business expense. They are able to write off that business expense. Does anyone disagree with that? Mr. Wilson, I know I'm outside of your lane there on that but——

Mr. WILSON. I'm not aware of any others. We can check and get back to you. But I don't think—I'm not aware of anything that is not available to any other business.

Mr. LANKFORD. Correct. Every other business would be treated the same and be consistent on that. Part of the—part of the conversation on this, and I mention Mr. Horsford and his comment on that, the challenge of it is, is when you take oil and gas and say, okay, I'm going to take all of their IDCs and all of their normal business expensing and I'm going to call that a subsidy. But for wind, I'm not going to call their version of the IDCs their products, that's not a subsidy. That is just normal business expensing. But for oil and gas, that's different. They shouldn't have any way to do business writeoffs, and normal business expense.

I know, this hearing was not about trying to compete different types of fuels. I think everyone has been clear on this dais. We want every type of fuel. But if we are going to be consistent in comparing apples and oranges, we probably should compare apples and apples and oranges and oranges in this to be able to compare as

far as how tax treatment is done, whether this normal business expensing, if we are going to do that, let's put it all in there. And let's actually compare not based on size, because it is my guess—I don't have the exact number in front of me—I think the oil and gas industry is slightly larger than the wind industry. So when you talk about the dollars that are involved in actual investment, it is a different amount of dollars that are involved in investment as well.

I need to ask about renewable fuel standards. Obviously, many states, my State, Oklahoma, is one of the largest wind producers in the country. We don't have a mandatory renewable fuel standard. It is a voluntary process. In our State it has thrived in that, as far as wind energy. The question becomes of trying to guess this, and this is for the two economists that are here as well as anyone else that wants to jump in on it.

How do we begin to compare and say what's the effect of the PTC, versus what is the effect of the renewable, of all of the renewable requirements that are on every single State? So every State has this blend of fuels that's now—that's putting this in place and we see this thriving wind energy there because the State's mandating some sort of renewables in the portfolio. So how do we balance the two? How do we begin to guess what's due to the renewable requirement portfolio? What's due to the PTC? Dr. Michaels, do you want to do that? And then Mr. Reicher, you can jump in as well. Is there a way to be able to guess and to separate those two out on greatest impact?

Mr. MICHAELS. It sounds like something that I would spend several months trying to think of how to redo the research. Quite frankly——

Mr. LANKFORD. That's the benefit of being an economist.

Mr. MICHAELS. And other economist jokes. No, that is really a problem. I don't know how I would approach it at this point.

Mr. LANKFORD. Okay.

Mr. MICHAELS. I'm sure there probably are people who are looking at it though.

Mr. LANKFORD. Mr. Reicher, do you have a guess on that as well?

Mr. REICHER. Mr. Chairman, it's push and pull. There have been vital complementary mechanisms over the last couple of decades. And as a former developer, I would look out into the market and say, you know, where is a good place to build a project? Is there some pull going on as a result of State policy? Is there some push going on as a result of the availability of tax credit? You sit down, you look at the deal, and you see if the numbers work and you decide whether to build it. You take either one of those out, and these would not be——

Mr. LANKFORD. Sure.

Mr. REICHER. —as attractive a project.

Mr. LANKFORD. No, I definitely agree. Both of these have driven production. In the earlier stages, even in my State, if you wanted to declare your home as a home that's running on wind power, your electricity bill is higher and you would pay a premium for that. But it's individuals that were very concerned about those issues and wanted to pay a part of that because the cost was higher initially.

Now, I don't know how our cost is catching up and where things are going on that, but there is no question that there's some individuals who want to do that. That's why the master limited partnerships is a very interesting, capital thing for people that want to invest in that, could actively invest in that, provide greater capital, but there is also that process as well. Let me briefly go into this as well, and we may have time to be able to come back on it also. And that is on is environmental issues.

The effects of the environmental requirements and requests, the permitting process. The wind farm that is in Oklahoma is currently going through the process with Fish and Wildlife on a taking permit for the number of eagles that will be killed in the future days by the wind farm. Other solar projects have large problems with a random lizard that is in that area and so they are having difficulty in moving it's solar project.

All of these things are real dynamics of actually moving forward in the permitting process. What effect do we have right now on some of the environmental regulations and the permitting and actually moving wind power ahead? Mr. Gramlich, you want to jump into that?

Mr. GRAMLICH. Sure, I would mainly just offer that our goal in that area is the same as it is in tax policy. We are looking for clarity, like every other industry. We want to know what the rules of the road are, and with this change in the statutory provision for the tax credit, we sought for and received clarity from the IRS. We are seeking the same from Interior and the Fish and Wildlife Service. And you know, hopefully we will get more. We don't have full clarity, but you know, the good news is, wildlife impacts are being managed. Wind is, even though it tends to get far more attention than anything else that impacts wildlife, I think it is .0003 percent, of bird—human-induced bird deaths are caused by wind, where every bird death is regrettable and we are working hard to mitigate those.

Mr. LANKFORD. Yeah, it just makes for a great photograph is really what it does on that. And we have just as many issues in Western Oklahoma, saying we can't put up a wind tower because of the habitat of the lesser prairie chicken in Western Oklahoma. And to say, it is not a matter of the taking of an eagle, it is a matter of the habitat of a lesser prairie chicken that someone has said prairie chickens are afraid of wind towers, and so we don't want to put more wind towers in this area because we fear that when we get a lesser prairie chicken on a couch and begin to do counseling with them, they are nervous about those towers. And so we have a whole different set of issues. Obviously, that is a different hearing for a different day. Mr. Horsford.

Mr. HORSFORD. Thank you, Mr. Chairman. I actually enjoy coming to this committee because it's actually the one time when we get have a little bit of substantive debate. And I really do appreciate your leadership as chair that allows us to have more of these discussions. And I didn't want to interrupt you or ask you to yield prior when you were clarifying the issue around the subsidies, and all I have to say about the subsidies is, you know, oil and gas has a whole lot of exemptions and loopholes that have been built into those subsidies over the 90 years. And I agree that if we are going

to look at things apple-to-apple comparison, then it should lay out some of the unique exemptions that that industry has enjoyed, and whether or not it's proper for them to continue to enjoy them at the expense of having a new burgeoning portion of renewables to have an appropriate incentive to participate. And I think that is a fundamental policy question that we need to have, so I agree with you.

Mr. LANKFORD. Would the gentleman yield for a colloquy?

Mr. HORSFORD. Sure.

Mr. LANKFORD. And I'll extend your time. I think we can do unanimous consent fairly easily to extend your time.

Mr. HORSFORD. Sure.

Mr. LANKFORD. The issue that I have is, most of those tax treatments for oil, gas, other traditional fuels that have been around for a while, most of them really are normal business expensing; just their business expenses look different. Obviously it is very expensive to be able to put up a tower, do a drilling operation for a moment and being able to pull that out. But that's the normal operation. They are able to write that off.

So while some folks will say that's a loophole, or a special subsidy, that's their normal business. That's what they do as a business, and it only applies if they keep doing it. If they ever stop, then that goes away. And some of the challenge of this is for wind at this moment, they have more business expensing which they should, by the way, have normal business expensing. They also have a PTC that is driving that. They also have renewable portfolios that are driving that.

It's an industry that has grown rapidly. It is rapidly catching up with hydro, which no one would have guessed decades ago that it would catch up with hydro. And the challenge is, how do we do this in the future for any industry that's functioning? And I totally agree, everything should be looked at, but we also need to be able to keep it in context; what it really is. Like a—for instance, going to one of the loopholes you talked about, G&G for oil and gas. That's just geology. That's a normal part of their business expensing. If you are doing geologic research, you are going to have to spend that if you are actually going to poke a hole in the ground and do the research. So it is just research, normal business expensing.

But we will work through this process in the days ahead. We will have, hopefully, a tax reform proposal come to the House, and we will have this in a very aggressive format at that point on a lot of issues simultaneous.

Mr. HORSFORD. Reclaiming my time, Mr. Chairman, I appreciate those points. I will just note that the oil and gas industry is much more profitable than any of these other sectors, and the question will remain, and the policy choice, is, should those special exemptions, tax loopholes and other subsidies continue to apply for some 90 years for what is a very profitable industry?

And I have no, you know, say what you will, it is a private business. They can make money. But wind energy and other renewables are much more entrepreneurial. They are more of the small business that's partnering to develop an energy project with, oftentimes, a utility. That's what happened in my home State of Ne-

vada. It's a small wind energy project that has a purchase power agreement with a major utility. And their margin of profit is nil, if there's a profit at all, because they are trying to demonstrate that this approach will work.

So I just hope that as we proceed, and I'm glad to hear that we may ultimately have a comprehensive tax reform package, because we need to look at these industries who have historically gotten special exemptions, tax breaks, and other subsidies, who have tremendous profits to the detriment of entrepreneurs, small businesses, and those who should be getting Federal subsidy in order to grow our economy.

Thank you, Mr. Chairman.

Mr. LANKFORD. Absolutely. And while we are having this dialogue, and I do appreciate the dialogue going back and forth on it, I'm glad to see every type of energy is extremely entrepreneurial. Wind is much more efficient now in its generation than it was 20 years ago in the actual production of electricity and what they are actually putting into the line. So we are more entrepreneurial. But what is happening right now with oil and gas in the revolution that has occurred in fracking is because of an entrepreneurial risk as well.

So those were small businesses that have also taken an enormous risk. The cost of a well now that we have this, as a Nation, a wash in natural gas. But that also, each drilling platform has gone from a little over $1.5 million to about $6 million just to go try to get down to that hole and be able to do it.

So there is lots of entrepreneurial risk in that. That's a great part of being an American, quite frankly, is that every one of these industries has a tremendous amount of entrepreneurial risk, and when they take the risk, it pays off for them.

Mr. Wilson, I'm going to ask you one quick question. The IRS provides the private letter rulings in response for guidance. Is there a plan to do private letter rulings for wind developers just to make sure that they are going to meet the under construction, or they have begun construction test? Is that dialogue already occurring with industry to give them some sort of stability and confidence?

Mr. WILSON. We haven't received any request for private letter rulings yet.

Mr. LANKFORD. Would you anticipate those would come in the next 3 months as we get closer and closer to this deadline?

Mr. WILSON. I'm not really anticipating that. I think, for the most part, the wind industry is pretty satisfied with the placed in service safe harbor. I think, for the most part, they think they are going to be able to make that comfortably. So I'm not anticipating private letter rulings.

Mr. LANKFORD. Okay, so what—your assumption is at this point that the majority of everyone is going to make the above 5 percent safe harbor target for final cost of construction, and they are not going to have to worry about some of the earlier rulings if they are less than 5 percent.

Mr. WILSON. Right.

Mr. LANKFORD. Obviously, you can't say with certainly at this point——

Mr. WILSON. Right.

Mr. LANKFORD. —but that's your assumption at this point.

Mr. WILSON. Either the 5 percent safe harbor or the alternative safe harbor for placed in service——

Mr. LANKFORD. Correct.

Mr. WILSON. —before the end of 2015.

Mr. LANKFORD. Correct. Mr. Gramlich, do you assume the same thing on that?

Mr. GRAMLICH. I can't speak to whether private letter rulings will come, but the guidance that they did provide is, I know, our investors are ready to go now. That guidance, as I said before, was much, much needed, both the one in the spring as well as the one just issued. So I think there is going to be a lot of business happening based on that. And may I say one more thing about the Treasury rules?

Mr. LANKFORD. Certainly.

Mr. GRAMLICH. I'm a little concerned with an impression that may have been left by some questions and some answers earlier about the open-ended nature of the IRS rules. You should be assured that under either approach, safe harbor, or physical work, significant investment to the tune of tens of millions of dollars for a particular wind project will be needed and committed to, and payments begun by the end of this year in order to qualify.

So—and that risk, as we have just discussed on the entrepreneurial, that is on the developer. That is not on the taxpayer, or on anybody else. So the companies are, you know, doing what they can right now to sign their power purchase agreements with utilities. They need and off-taker, they need a customer, they need to know where that sale is going because they don't want to hold that risk with no customers. So it is not open-ended. It is not indefinite. That risk will be held by them, and we expect a very limited universe of projects to qualify for that. Partly the, you know, the power markets are somewhat soft for all new electricity, so it is not going to be a huge set of projects that do qualify, regardless, and also, keep in mind that PTC applies to other technologies than wind. So when Treasury and IRS are looking at these timelines, they have to account for the construction timelines of not just one technology, but multiple.

Mr. LANKFORD. Right. Mr. Reicher, you look like you are leaning onto your button there. Do you have a comment?

Mr. REICHER. Thank you, Mr. Chairman. I would just say that it's this kind of a situation, the complexity of this, that gives investors pause; that other countries look at the U.S. and they say, this is a strange way to support a very important industry. And I think it is unfortunate, and I think it's the reason why a multiyear extension with clarity would be so helpful. This is not the way to build an industry. It sends such poor signals to investors, so let's do that, and those other two pieces.

Mr. LANKFORD. Let me ask you a question with that. Is it better, let's say we can get into a tax treatment to do a multiyear extension with a clear phase-out so that everyone knows, it's here 100 percent this year, 100 percent year this year; it phases out, 50 percent, 50 percent, and the trailing off occurs that everyone talks about, is that better than what we have now, and to set a clear

definite, and I agree with your statements, by the way, with the Master Limited Partnerships, blending with that, to provide that kind of clarity than what we have now?

Mr. REICHER. Absolutely, and I think that's consistent with what the American Wind Energy Association has said in its statement at the end of 2012.

Mr. LANKFORD. Right.

Mr. REICHER. Pick a significant amount of time, a reasonable amount of time, phase it down, and put these other things into place.

Mr. LANKFORD. Correct. But my own—my own question, we have two things here. My own request to joint tax evaluates we do this another 5 years, it's another $18 billion in costs. So we have to look at cost issues to say, what does that really look like, and the discouragement that I would have on this side of the dais is, if you set a, let's say a 6-year time period and say there is going to be a phase-out, what is not there so that 2 years from now when the phase-out actually begins and it starts trickling off, our offices aren't flooded with saying we just need 6 more years to go through that. Setting that definite time period and making sure it's clear. Let's get a balanced look at this to make sure we have the infrastructure in place to provide this, but we also know the industry is going to continue to fly on its own. Any thoughts on that?

Mr. REICHER. Yeah, number one, you are correct. You know, in theory, you can't bind a subsequent Congress.

Mr. LANKFORD. Right.

Mr. REICHER. Decisions can change. Having said that, if you blend these other financing mechanisms in, I would sit here today and bet that you will see the sort of logical transition that I'm talking about, and there will be less and less of a reason to seek another 6 years.

I actually think that this multiyear phase-down and pull these other mechanisms in, I think we will be at a point in 5 or 6 years where people will say, boy, we have done a really smart transition of this industry to a way that grown-up industries like oil and gas infrastructure and transmission infrastructure now use to get built.

Mr. LANKFORD. Right. Mr. Michaels—Dr. Michaels, one quick comment, and then I'm going to recognize the ranking member. You had mentioned something about jobs and about job growth. These are manufacturing jobs. I know you didn't mean this, but I want to be able to just clarify one thing. And I'm not evaluating your heart on this one. You said they are low skilled, they are manufacturing, they are not good jobs. I want to give you an opportunity to clarify that because I can assure you, there are lots of folks in manufacturing jobs in my district that are great people, and that are great jobs on that.

Mr. MICHAELS. No, that definitely——

Mr. LANKFORD. Can you get your microphone there?

Mr. MICHAELS. That definitely does need a clarification. Manufacturing jobs come in all sorts of skills, so do construction jobs, and the only thing I was saying, was if you look at the typical educational attainment, training attainment of people who are in these jobs, people who work at the wind installations after they go into operation, I have seen these in things like environmental impact

statements for wind operations where they have to inventory the workforce, and I think generally speaking, the people in the construction and in the wind are pretty standard, good people, but pretty standard, and the people operating are simply relatively less qualified people.

Mr. LANKFORD. Yeah, the grand challenge of this is, is that the new push to have a definition of what's a green job and what's not a green job. And that's where this gets drawn in, to suddenly say it's a green job and so it's on a higher level and you actually meet that person and they are doing manufacturing and other things, like a lot of other jobs. I went to a green job training location that was a Federal grant that went into my district from several years ago and they were doing green job training, and at the end of it I met the director I met some of the folks, I went through the program, and I asked the director privately, how many people in this program that have gone through for a couple of years, will work in a green job? And her answer was, the skills are transferrable. I said, that means zero, doesn't it? And her response was, the skills are transferrable.

There are jobs that are out there that are great jobs and I have no opposition to this at all to be able to have great manufacturing jobs, and jobs operating and that kind of such in wind power, but create this sense that the only way American economy is going to move forward, is if we create more green jobs, I think begs the question of—we need to create more jobs, period, to have a growing economy. With that, I recognize the Ranking Member Speier.

Ms. SPEIER. Mr. Chairman, thank you. On that note, in a country that has been reeling from extraordinary unemployment numbers for 5 years now, I think Americans would applaud the creation of any job, green or otherwise, and I am, I guess, bullish on the wind industry, in part, because we are making it in America. And the more we can bring manufacturing back, the more we can be insourcing, the more we can be restoring the manufacturing base that has really served us so well for so long, is to our advantage.

Now, having said all that, this has been a really good discussion, Mr. Chairman, and the robustness of it and the thoughtfulness of it is really the kind of dialogue that should take place in this committee more often. So I want to thank you for that. Now, I do think what it has underscored for me is that we should not look at any one of these credits in isolation; that if we are going to look at these credits, we look at them in toto, we look at them to make sure that we are not picking winners and losers, something that I have said and that others have said this morning. We have got to be fair. And I am one of those that really wants to embrace that kind of a review, and since that is under the jurisdiction of this subcommittee, I hope that you will consider having a hearing where we can look at all of these tax credits, and evaluate them completely.

Let me just ask one last question. And that is to you, Mr. Wilson. Has the GAO identified any abuses of the PTC in your recollection?

Mr. WILSON. I'm not aware of any, no.

Ms. SPEIER. Do any of you know of any kinds of abuses that have taken place? So this is not a situation where people have somehow

tooled the system, or used it to feather their beds in a manner that wasn't consistent with generating energy, correct?

Mr. WILSON. Not that I'm aware of, no.

Ms. SPEIER. All right, so with that, Mr. Chairman, I thank you for bringing this hearing to our attention, and for opening up some other avenues of review.

Mr. LANKFORD. Thank you.

Ms. SPEIER. And thank you, all of the witnesses.

Mr. LANKFORD. Thank you. And I ask unanimous consent. I have mentioned a couple of times a letter that I wrote to the Joint Committee on Taxation asking for some information documentation, and I ask unanimous consent to place this in the record. No objection.

Mr. LANKFORD. Gentlemen, thank you for being here and letting us pepper you with questions. We will do some follow-up in the days ahead. I'm grateful for the clarification that's happening, and look forward to us finding some solutions to be able to solve this long term. We do need a plan so this is not a perpetual, never-ending proposal of how we handle energy production. We need a plan and structure that we know is going to work and help us. So gentlemen, thank you very much for your time. With that, we are adjourned.

[Whereupon, at 11:16 a.m., the subcommittee was adjourned.]

APPENDIX

Material Submitted for the Hearing Record

DARRELL E. ISSA, CALIFORNIA
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Opening Statement

Rep. Jackie Speier, Ranking Member
Subcommittee on Energy Policy, Health Care and Entitlements
Hearing on
"Oversight of the Wind Energy Production Tax Credit"

October 2, 2013

Thank you, Mr. Chairman, I appreciate that several of our witnesses travelled a great distance to be with us today, but to take a business as usual approach to a hearing that deals with an issue that does not pose a threat to health or safety seems grossly inappropriate. Our government is shut down, more than 800,000 federal employees have been furloughed, and Congress has abdicated its fundamental Constitutional responsibility to fund the government.

But we are here for this hearing on the Production Tax Credit, which has helped the wind industry grow to a major source of renewable energy here in the U.S. In fact wind energy has grown from about 1% of total U.S. energy production before the PTC, to almost 4% last year.

Today the wind energy industry employs more than 80,000 American workers at manufacturing facilities up and down the supply chain, as well as engineers and construction workers who build and operate wind farms. And these are good paying jobs.

Wind turbines are now made domestically by approximately 550 new manufacturing facilities in all regions of the country. These facilities produce more than 70% of the content of an average wind turbine installed in the U.S., compared to just 25% in 2005. In fact, as a direct result of the PTC, the wind industry was the number one source of **new** generation capacity in the U.S. last year.

Wind energy also means lower prices for consumers. Department of Energy data shows that from 2005 to 2010 electricity rates increased by twice as much in the 40 states with the least wind power compared to rates in the 10 states with the most wind generation.

I can tell you that clean wind energy and the PTC are important to California, and I know that Oklahoma is one of the biggest producers of wind energy.

Only weeks ago, the Internal Revenue Service issued new guidance interpreting the latest extension of the PTC—that was passed on January 2 of this year. Not a single energy company has yet claimed the tax credit under this one year extension, and it will realistically be at least 18 months before the IRS will be called upon to apply its guidance. This can be a risky proposition for companies that are investing hundreds of millions of dollars in new wind energy projects. After all, if they don't build and get it operating, they don't get the credit. There are no loans or guarantees or upfront benefits.

That is why clarity is essential. We can help make sure we don't face problems down the road when those investing now seek to claim the credit.

Mr. Chairman, call me paranoid, but I also have to note that on the same day this hearing was announced, Americans for Prosperity, Freedom Works and more than 20 other conservative groups launched a campaign to end the PTC. The majority's witness is also a known opponent of the PTC, and wind energy altogether. I hope that we are really conducting oversight of the implementation of the law, and not using this hearing to simply launch another attack on a clean energy program that has worked well for many years.

There is little doubt that the elimination of the PTC, or the risk of its termination lapse, will damage the industry, and put a brake on its renewed growth. The wind industry has gone through a boom and bust cycle whenever Congress has allowed the benefit to expire or get close to expiration. Last year, even though the PTC lapsed for just one day, hundreds of workers who manufactured wind turbines were laid off, and construction and manufacturing projects were

cancelled in anticipation of the lapse. Workers in Grand Forks, North Dakota and Little Rock, Arkansas lost their jobs at turbine manufacturers when the PTC's future was in question.

Some object to the wind energy industry receiving any federal support. But let's get real

The fossil fuel industry has received tax subsidies and other government incentives that far exceed everything we are doing for renewable energy. Big oil still gets federal subsidies even though just the five biggest oil companies-- BP, Chevron, ConocoPhillips, ExxonMobil, and Shell-- made a combined $118 billion in profits in 2012. Of course those profits were down from their record high of $137 billion in 2011.

I want to bring your attention to this chart which illustrates the huge differences in subsidy for fossil fuels as opposed to wind energy over time.

Oil and gas have received over **$4.8 billion each year** in government subsidies **for over 90 years**. Wind energy, by contrast, has received a small fraction of that -- an average of **only $370 million per year** for the last **19 years.**

So if anyone has fiscal concerns about federal support for energy producers, I think this chart shows clearly that there is much more reason to be concerned about support for the fossil fuel industry than renewable energy sources. We need to give as much support to clean renewable energy sources as we have provided—and continue to provide—to the fossil fuels industry.

The Committee, and the federal government, shouldn't be in the business of picking winners and losers in the energy marketplace. We certainly shouldn't use our hearings to promote the interests of fossil fuels while creating problems for renewable energy. Especially when the PTC, and other renewable programs help ensure that our nation maintains a diverse energy portfolio.

Mr. Chairman, I look forward to receiving testimony from all of our witnesses and having a thoughtful examination of ways to encourage greater use of renewable energy sources as we tackle the growing problem of climate change and energy independence.

I yield back.

113TH CONGRESS, 1ST SESSION

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SEP 2 4 2013

Honorable James Lankford
U.S. House of Representatives
228 Cannon House Office Building
Washington, D.C. 20515

Dear Mr. Lankford:

This letter responds to your request dated September 23, 2013, for a revenue estimate of a proposal that would extend the Internal Revenue Code (the "Code") section 45 credit for the production of electricity from renewable resources, but only for wind.

Present-law Code section 45 expires for wind facilities whose construction begins after December 31, 2013. You have asked for a revenue estimate of a proposal that would extend the code section 45 credit sunset date by which construction must commence for either one year or five years, but only for wind resources.

The following is the estimated effect of your proposal on Federal fiscal year budget receipts.

Fiscal Years
[Millions of Dollars]

Item	2014	2015	2016	2017	2018	2014-18	2014-23
1-year extension...	-80	-306	-539	-643	-696	-2,265	-6,183
5-year extension...	-80	-294	-591	-960	-1,463	-3,388	-18,521

NOTE: Details may not add to totals due to rounding.

I hope this information is helpful to you. If we can be of further assistance in this matter, please let me know.

Sincerely,

Thomas A. Barthold

Thomas A. Barthold