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April 3, 2013

Chairman Ed Whitfield
Committee on Energy and Commerce
Subcommittee on Energy and Power
2125 Rayburn House Office Building
Washington, DC 20515-6115

Dear Chairman Whitfield:

Please find attached the responses to your questions for the record for the March 5, 2013 hearing entitled, "American Energy Security and Innovation: The Role of a Diverse Electricity Generation Portfolio." Please contact me if you have any additional questions.

Sincerely,

Rob Gramlich
Interim CEO
American Wind Energy Association

cc: The Honorable Bobby L. Rush, Ranking Member
Subcommittee on Energy and Power

The Honorable Ed Whitfield

In your written testimony, you stated that "At the federal level, the primary means of supporting fuel diversity has been tax credits. *Tax credits played a major role in bringing down the cost of shale gas,* and they are rapidly bringing down the cost of both wind and solar energy." Emphasis added. During the hearing I asked you to "provide the committee with a detailed analysis of what you were referring to with that comment." Please further explain your comment that tax credits played a major role in bringing down the cost of shale gas. Please submit any data, reports, or other analyses in support of your statement.

In 1980, the Windfall Profit Tax Act of 1980 created a new tax credit for unconventional fossil fuel production, also known as the Section 29 credit (later re-labeled the Section 45K credit). The *Alternative (Unconventional) Fuel Production Credit* was established to promote the domestic production of energy from unconventional fuel sources. Qualifying fuels included oil produced from shale or tar sands, gas produced from geopressurized brine, Devonian shale, tight formations, or coalbed methane, gas from biomass, and synthetic fuels from coal.

This credit generally applied to shale gas wells drilled between 1979 and 1992 with respect to production through 2002. This tax credit provided a value of $3 per barrel of oil-equivalent (adjusted for inflation since 1979) which was roughly the value of $1 per thousand cubic feet for fossil fuels produced from unconventional methods, including shale gas. According to Roger Bezdek, President of Management Information Services, "For much of this period, at least during the early 1990s, wellhead gas prices averaged between $1.75/Mcf and $2/Mcf." At these prices, the Section 29 credit provided a value of 50% to 57% of the price of gas.

Below is some third party information on the role, impact, and success of the Section 29 credit:

1) Congressional Research Service[1]

   "Throughout the 1990s, growth in energy tax expenditures was primarily driven by the unconventional fuel production credit (IRC §29)."

2) The Gas Technology Institute produced a study about the historical impact of the Section 29 tax credit that concluded:

   "*Passage of the original Section 29 led to a tripling in the production of nonconventional gas, as well as innovations in drilling and completion technology*."[2]

3) Roger Bezdek, in a Management Information Services, Inc. report concludes:

[1] Sherlock, M (Congressional Research Service). *Energy Tax Policy: Historical Perspectives on and Current Status of Energy Tax Expenditures*. May 7, 2010.

[2] Independent Petroleum Association of America. *Nonconventional Fuels Tax Credit.* February 2005. http://www.ipaa.org/wp-content/uploads/downloads/2012/01/2005-02-Nonconventional-Fuels-Tax-Credit.pdf

"The Section 29 tax credits were an important incentive for the development of eastern gas shales in the late 1980s and early 1990s..."[3]

4) Interview with Dan Seward, former Mitchell Energy Vice President

"We had a gas contract with a natural gas pipeline that gave us a higher price. We had a basket of prices and gases and with the different categories we could keep our gas price. So you could say that those pricing scenarios, and the [Section 29] tax credit, created the possibility for shale gas."[4]

The Honorable Joe Barton

Strong price signals are critical to maintaining resource adequacy in ERCOT's competitive electricity market. Because power plant developers bear the risks associated with new capacity expansion, they must be confident that they can recover the cost. The Production Tax Credit's (PTC) per megawatt hour subsidy distorts markets by allowing wind generators to bid negative prices and still make a profit. When wind generation is bid into the market at a negative price – which occurred close to 10% of the time in ERCOT's West region in 2011 – electricity sourced from other forms of generation (i.e. coal, natural gas, nuclear) must match that negative price or be replaced on the grid.

a. Does AWEA agree that a positive correlation exists in regions of the country, especially in Texas, between installed wind generation capacity and the frequency of negative wholesale electricity prices? If AWEA does not agree, please provide any information, analyses, or data supporting the claim.

We do not agree that such a correlation exists. In Texas, the frequency of negative prices is so low that it is difficult to identify a significant relationship. If anything, the increase in installed wind capacity and in wind generation over the last several years has actually coincided with a decreasing frequency of negative prices.

Market data indicate that negative electricity prices are exceedingly rare in Texas. Negative prices accounted for less than 1% of day-ahead market price points and around 2% of real-time market price points in ERCOT in 2011, based on a sample of over 1 billion real-time market price points and almost 5 million day ahead price points in the ERCOT market analyzed by Ventyx, a company that compiles and analyzes electricity market data.[5] Moreover, other energy sources account for some share of these negative prices. Nuclear power plants have historically caused electricity prices to go negative in portions of the Midwest, and high hydroelectric output can also cause negative prices in regions of the country with a large amount of hydropower generation.

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[3] Bezdek, R. *An Energy Policy that Actually Worked.* June 2002. http://www.misi-net.com/publications/Energy_Policy_That_Worked.pdf

[4] The Breakthrough Institute. (December 2011). *Interview with Dan Steward, Former Mitchell Energy Vice President.* http://thebreakthrough.org/archive/interview_with_dan_steward_for

[5] Ventyx analysis for AWEA

Even though Texas added 1,825 MW of wind capacity in 2012, an increase of almost 18%, instances of negative prices are currently down more than 60% relative to the same time period last year.[6] That is because negative prices are caused by a lack of transmission capacity preventing low cost energy sources, such as wind, from reaching consumers. As Texas has increased the capacity to move low cost wind energy from the western part of the state to consumers in other parts of the state, the already extremely low frequency of negative prices has fallen even further. This trend is further confirmed by ERCOT data indicating that the amount of wind generation curtailment has fallen from 8.5% of potential wind generation in 2011 to 1.7% for the last five months of 2012.[7] Instances of negative prices should fall to near zero by the end of 2013 when the Competitive Renewable Energy Zone transmission lines are completed, and the same should occur in other regions as they complete long-needed upgrades to their grids.

b. Does AWEA support the development of additional wind generation capacity in saturated wind energy markets, such as Texas, where negative pricing is prevalent? If yes, please explain why AWEA supports adding new wind generation in such markets.

Texas and other electricity markets in the U.S. are not saturated by wind, so AWEA does support continued wind energy development in all U.S. markets. As explained above, negative prices are extremely rare and localized. In addition, the construction of new transmission capacity in ERCOT and other regions over the next several years is expected to virtually eliminate the already very rare occurrences of negative prices.

Importantly, the West Zone of ERCOT only accounts for around 5% of the total conventional generating capacity of ERCOT, and a similar share of ERCOT's electricity demand. There have been virtually zero wind-related instances of negative prices outside of the West zone, so negative prices should not have had any impact on investors' decisions regarding whether to build new power plants in the zones of ERCOT that account for around 95% of its electricity demand.

Adding wind energy to the grid does reduce electricity prices by displacing more expensive forms of energy, and that is a good thing for consumers. However, that impact has nothing to do with the Production Tax Credit. Wind energy and other renewable sources enter the real-time electricity market as the lowest cost sources of energy, as renewable sources have no fuel cost. Nuclear and hydropower also enter the real-time market as very low cost sources of energy.

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[6] Comparison of frequency of negative prices at load zones for January-March 2013 versus January-March 2012, based on ERCOT data available at http://mis.ercot.com/misapp/GetReports.do?reportTypeId=13061&reportTitle=Historical%20RTM%20Load%20Zone%20and%20Hub%20Prices&showHTMLView=&mimicKey

[7] 2011 ERCOT data from Wiser, R., Bolinger, M., *2011 Wind Technologies Market Report*, August 2012. Page 43. Available at http://eetd.lbl.gov/ea/emp/reports/lbnl-5559e.pdf ; 2012 data provided by Bolinger, M., Lawrence Berkeley National Laboratory, to appear in 2012 *Wind Technologies Market Report*

To maximize social benefits and allow the market to operate efficiently, grid operators use these low cost energy sources to displace the output of the most expensive power plants that are currently operating. This saves on fuel costs and drives down electricity market prices, benefiting consumers. When grid operators make these choices it is simply an indication of a market working efficiently to pass on to consumers the savings created by wind power, and these fuel savings are a primary reason why utilities and others added wind energy to the power system in the first place.

c. Would AWEA endeavor to mitigate market distortions by encouraging wind generators receiving the PTC to curtail output when wholesale electricity prices approach zero? If not, explain why. If yes, please identify any plans or strategies to mitigate market distortions.

As explained above, the Production Tax Credit does not cause market distortions, so no mitigation is needed. Wind plants already curtail their output when market signals indicate that there is insufficient transmission to carry their output to demand centers. Because wind plants have zero fuel cost and emit no harmful pollution, in situations where transmission constraints exist, it is usually the most efficient outcome for wind plants to continue operating. In addition, wind plants can reduce their output more quickly and accurately than any other type of power plant, so from a reliability perspective it also makes sense for wind plants to be the last to reduce their output. The current system of market mechanisms that is in place in much of the country, including Texas, achieves that outcome. We support the expansion of competitive market mechanisms to ensure that no resource has an unfair advantage on the use of the transmission system at times when curtailment is required.

Instead of curtailing generation, we support transmission development to bring low-cost electricity from wind to more customers. Negative prices occur in highly localized areas when there is a barrier keeping that supply from benefiting consumers outside that area. Adding transmission capacity is the proven solution to reduce and eliminate the occurrence of negative pricing, and we would welcome the opportunity to work with you and members of the committee on the planning, permitting, and cost allocation of new electricity transmission infrastructure.