Testimony to the Senate Committee on Finance
Subcommittee on Energy, Natural Resources, and Infrastructure
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Good afternoon, Chairman Bingaman, Senator Cornyn, fellow committee members, ladies and gentlemen. Thank you for this invitation to share my thoughts on these important topics.

I come here today in my role as head of policy analysis at Bloomberg New Energy Finance, a market research firm focused on the clean energy sector. Our clients include major investment banks; wind, solar, and other clean energy equipment makers; venture capitalists and project developers; plus major energy companies including the oil majors. Our primary mission as a firm is to provide timely, accurate, and actionable data and insight on investment, technology, and policy trends in clean energy. My remarks today represent my views alone as a clean energy industry analyst. They do not represent the corporate positions of either Bloomberg LP or Bloomberg New Energy Finance. In addition, they do not represent specific investment advice and should not be construed as such.

The subject of today's hearing is the role of tax credits in the development of technologies related to power generation and efficiency, and those related to transport fuels. I would also argue that tax credits have played different roles in these two areas and should be addressed separately.

Before touching on the tax credit issue, however, I'd like to update the committee on clean energy investment trends globally. Last year, the industry set a record, attracting $260bn in new outside investment, up from $54bn in 2004. In the fourth quarter of last year, we counted the *one trillionth dollar* of new investment in clean energy.

If there's a single theme that can be discerned from this it's that where supportive, clearly defined policies are implemented, private capital follows. As a result, we've seen major clean energy manufacturing sectors grow in Germany, China, and elsewhere.

The same cannot be said of the United States, which despite featuring strong supports in some states has not enshrined long-term national targets or goals for clean power generation. Still, the US actually led the world in attracting new investment in 2011 with over $55bn in new funds deployed here, mostly private money. This marked the first time since 2008 that the US did not finish second to

China in new clean energy capital attracted. (Bloomberg New Energy Finance will detail this further in a forthcoming report with the Pew Center next month.)

There is little to suggest the US will maintain its leadership position this year or next, however. Last year's surge in private US investment was a direct reaction to policies that were due to expire in 2011 or 2012. These included the 1603 "Treasury grant" program, the 1703 loan guarantee program, and the Production Tax Credit (PTC) which benefits primarily the wind industry. These three programs had the effect of front-loading US investment into calendar year 2011. In 2012 and 2013, the echo effect of this front-loading will almost certainly be felt.

With that as context, let me turn to the PTC, which has long played a critical role in the development of the US wind industry since being established by Senator Grassley and others in 1992. The credit has expired three times in the last dozen years. On each occasion, the result has been a sharp drop in new installations.

We are now on course for another such fall next year. Bloomberg New Energy Finance forecasts approximately 9,500MW of new power-generating capacity will be installed in 2012 but just 500MW will be installed in 2013. That would see the industry go from registering one of its best years on record in terms of installations to its worst since 2004.

What is likely to make the upcoming PTC expiration more dramatic is that this time around the US now has substantially more manufacturing capacity on its own soil. When the PTC expired at the end of 2003, resulting in a sharp drop in installations in 2004, there was insufficient domestic manufacturing to meet wind turbine demand, meaning project developers were importing final goods, mostly manufactured in Denmark, Germany or Spain. When the PTC expired then, manufacturers in Europe mostly felt the pinch.

This time, the US has over 13GW of final turbine assembly capacity. Again, without the PTC, we expect just 0.5GW of demand for that equipment in the US in 2013.

The industry is substantially bigger now with considerably more Americans employed. At this moment, a number turbine manufacturing plants are hard at work preparing turbines for delivery in the second half of this year, so that projects can be completed by the end of 2012 to meet the PTC expiration deadline. But we anticipate that by the second half of this year, a substantial portion of capacity will go idle as there are virtually no large-scale wind turbine orders in place for equipment to be delivered in 2013.

All of that said, I would note that extending the PTC will not be a panacea for the US wind market, which will remain at over capacity in 2013 regardless of the tax credit. We forecast that if Congress were to extend this credit now, approximately 3.5GW of new capacity would get built in 2013. This falls far short of matching the over 13GW of domestic capacity.

The wind industry has made major strides in both improving the efficiency of industrial-scale equipment and reducing capital costs. The result is that wind developers can now sell their power at between $30 and $70 per megawatt-hour and earn respectable returns in the US. In some parts of the world, including some parts of the US, wind can already compete and beat out its fossil rivals on cost -- without the benefit of subsidies.

However, the industry today finds itself under pressure from low electricity prices due both to relatively weak economic conditions and to unusually cheap natural gas, which today is trading at its lowest level in two decades. The expiration of the PTC would add a third negative factor. It would make what is likely to be a challenging year all the more difficult.

When will wind be able to compete with fossil forms of generation without the benefit of the PTC? In some cases, as I noted, it already is. In others, it will when electricity prices rise, which is likely when economic growth picks up, natural gas prices rise, or some combination of both takes place. Today's exceptionally low natural gas prices are unlikely to be the long-term norm, according to the Energy Information Administration and others. When these prices rise to a more sustainable level, demand for wind will rebound. We anticipate this recovery to start in 2014 and pick up steam in 2015 and beyond.

I'd now like to turn my attention to tax credits for the biofuels industry, which I view very much as a distinct topic, both because these credits are used to support the transport fuel sector (rather than power generation) and because the biofuels industry enjoys substantially clearer long-term support from the federal government overall than does the wind, solar, geothermal or other renewable power generation technologies.

As I mentioned, the US has set no long-term targets for consumption of electricity generated from non-carbon emitting sources. However, such a mandate does exist for the consumption biofuels. The Renewable Fuels Standard (RFS) effectively guarantees a market of a certain size for biofuels producers. It also renders tax credits less necessary since when such credits are removed, the market can simply "price in" their value.

Already, we have seen this with the "blender's tax credit" for ethanol. That $0.45/gallon credit expired at the end of 2011 and its disappearance has not had a major impact on the conventional ethanol industry. Today, the $0.45 that last year the federal government provided is instead being covered by some combination of ethanol producers, blenders, and end consumers.

The US corn ethanol industry remains at over capacity with plants with approximately 15.6bn gallons of production built, but an RFS requiring 13.2 gallons this year. Still, the industry is poised to benefit from rising oil prices which could push the price of gasoline up over that for ethanol on an energy-equivalent basis. Should that happen, blenders will start to use ethanol above and beyond what is required by the RFS.

The lessons learned from the expiration of the blender's credit for corn ethanol may be worth heeding when considering the potential expiration of yet another sub-segment of tax credits -- those for "advanced" biofuels. To date, these credits have hardly been put to work since they reward production and little production has taken place. The question then is how much developers of advanced biofuels technologies might be hurt by their non-existence next year and afterward.

I would hypothesize that the answer is not all that much. First, thanks to the RFS, there will automatically be a ready market for advanced biofuels. Under the mandate, blenders must consume certain levels of advanced biofuels specifically. For their part, producers will dictate prices since there is so little advanced biofuel available today. Second, putting these credits to work could prove challenging for some producers, primarily because a number of them are small and not yet profitable.

The advanced biofuels sector is still very much at the early stage of development. As a result, a tax credit that focuses on production -- or any tax credit at all, for that matter -- is of limited use. Much more helpful to the industry are programs such as grants and loan guarantees which can help firms across the so-called technology valley of death and build their first demonstration- or commercial-scale project.

One bit of additional context: we anticipate 62m gallons of new advanced biofuels capacity will come online this year from companies such as Gevo, Poet, Ineos, and Kior. In 2013, we anticipate about 50m gallons of new capacity to be added from Abengoa, Coskata, and Fulcrum. With the credit set at $1.01/gallon, its cost in 2013 could total approximately $113m.

Thank you for your time. I look forward to your questions.