

MARKETS FOR WIND ENERGY DEVELOPMENT

March 21, 2012

Coordinator: Welcome and thank you for standing by. At this time, all participants will be on a listen-only line for the duration of today's conference call. Today's call is being recorded. If you have any objections, you may disconnect at this time. I'd like to go ahead and turn the call over to your host for today to Mr. Charles Newcomb with NREL. Sir, you may begin?

Charles Newcomb: Thank you, Jose. It's Charles Newcomb here with the National Renewable Energy Laboratory welcoming you to today's installment of the Department of Energy's Wind Powering America webinar series.

Today we've got a few conversations about the markets for wind energy development. We've got three different speakers. Let me advance the slide here. Hopefully, oh, shoot, it's not advancing. There we go.

We've got three presentations, one from Lori Bird with NREL as well, one from Tom Wind, who is probably a familiar name for many of you out there and one from Kevin Schulte, also another familiar name in the community in distributed wind world.

And what we're looking to present to you and give you an update on is I think the production tax credit is on a lot of people's minds right now and understanding how incentives are going to look in the future and how they've been doing, where we're going and what the impact on any expirations might be on the market and how markets are softening or not softening depending on where you are.

So for that, Lori Bird is going to start us off. Lori Bird, again, with the National Renewable Energy Laboratory is our go-to person for all things green market. She's been with NREL for well over a decade. She didn't want too many details, but well over a decade and she is our expert on renewable energy policy, green power, REC markets of renewable energy certificate markets, green power pricing programs, etc cetera.

She's well published and referred to quite often in a number of journals out there. And also is one of the folks on the NREL team that's actually solar powered, so that's kind of nice when we've got somebody of that ilk among us.

And Lori will be giving us the big picture again to start with. Following Lori will be Tom Wind who will give us the perspective on how these production tax credits, portfolio standards, etc cetera, relate to the community wind scale and then finally Kevin will provide the perspective on what does that mean for the smaller end community and distributed projects.

So with that, can we bring Lori's presentation on, Sue? Thank you. Lori, the floor is yours.

Lori Bird: Okay, thanks for that. So, yes, I want to just try to get some perspective on the policy drivers that have been important to the wind industry. I'm really focused on large scale winds, so I'm going to talk about a little bit of our history and how we got here and some of the past challenges and then, you know, where we are in terms of the markets right now and our -- the future challenges as well.

So let me just start here by -- this is a slide that just shows capacity additions, wind capacity additions, you know, over the years. And I think, you know,

one interesting thing to -- and I apologize for not -- I didn't update the slide, but the 2011 numbers are in the text here, so we had 6800 megawatts of wind added in 2011, which brought us up to a total of close to 47,000 megawatts total installed in the U.S.

And so, you know, I think one thing to note is, you know, early on we had these issues in 2001, 2003, we had these peak years and then we had these low years in 2002, 2004 and that was (PTC) uncertainty, so, you know, it was on and off again and we had a lot of volatility installations and I think we're seeing that, again.

2008, 2009 we had these peak years but now we're back down to, you know, lower levels of development in 2010 and 2011, so more 5000 to -- I guess close to 7000 megawatts installed in these years.

And AWEA estimates that about 8000 megawatts are under development now and there is this lingering projects that we're able to get started and qualify for the cash grants. Those are still -- quite a few of those projects are still in the queue.

But, you know, we are seeing a little bit of a slowdown from these peak levels that we saw, particularly in 2009 when there was this big rush to get the cash grants in.

So -- excuse me -- so this is just a review. I'm sure a lot of you on the phone already know this but what are the major policies that have been helping support wind development? Of course, the production tax credit has been available and the issue on everyone's mind is the expiration at the end of this year for wind.

Accelerated depreciation is also very important, the bonus depreciation is expiring this year as well. And the cash grants, as I just mentioned, were quite important to sustaining growth during the economic crises when folks weren't able to take advantage of tax credits and created, you know, large amounts of investment and project development in 2009, in particular, and we're still seeing projects being completed under those.

So but another thing -- I'm going to focus a little bit on the state policies that exist that have also been quite -- have also supported wind development, renewable portfolio standards, primarily. There are a number of state financial incentives as well, sales and property tax credits, grants, loans, things like that.

And early on, you know, I think the public benefit funds that states have had were important drivers to help getting, you know, early stage projects under development or helping to ease markets in some instances.

So and other drivers that we've seen in recent years are fuel price stability of wind and a fuel price hedge, so we had natural gas prices at very high levels in recent years and we're not in that situation anymore as well, so it's a completely different market.

We did have merchant projects for a while there when electricity prices were quite high. And, again, we're not in that situation at the moment.

And early on, a lot of utilities adopted green power programs and those still exist where consumers can choose to buy wind energy. So those have been important historic drivers.

So this slide I think, you know, what I just want to point out here is this shows wind development in '99 versus 2011 and I don't think that's the full year of 2011. But the state policies have been important for driving the location of wind energy development.

You know, the federal incentives are quite -- are very important but the state policies have been important in terms of us getting some geographic diversity and meeting these RPS requirements that are out there. So that's why -- and so the graph on the right, the darker colors indicate higher penetrations of wind development.

And so -- and RPS policies I think -- did I skip a slide here? Interesting. Sorry, I thought I had another slide on the growth of RPS demand. For some reason it's not showing here.

Anyway, so RPS policies are going to grow significantly going forward. But some are in fairly early stages of implementation or their initial compliance years are, you know, just starting.

So you can see this slide. Quite a few policies have been around for, you know, more than a decade or some have been around for that long. But some are -- there are quite a few newer policies as well.

And how have states been -- or how has wind development reacted to these policies? I think this is -- this slide just indicates where we've seen wind development. And these are installations in 2011, so the states with the most installed capacity.

And it's indicative of the states. If you look at this on a cumulative basis, how much wind has been installed in the leading states, it's the same states essentially in that graph.

But this is where we've seen the wind going in. And, you know, last year, and it's not too far off of what we saw in 2010 as well. And so what we're seeing is that a number of these markets are ahead of where they need to be.

This is slide that shows REC pricing trends, which are really only indicative of supply trends in the eastern markets and PJM and the New England ISO and so forth.

But, you know, we've seen very low REC prices in most of these markets recently because the states are ahead of where they need to be in terms of better targets.

This was not necessarily the case in some New England states, so their prices are a little bit higher. You can see Rhode Island and some other states there with higher REC prices. But many of the states are ahead of where they need to be.

So this just gives a little bit broader perspective and this slide is quite rough but, you know, states in general have been meeting their compliance targets and their RPS, you know, with some exceptions.

And as I mentioned, you know, quite a few regions are on track. You know, and it varies. The state policies vary in terms of whether there is some sort of incentive for in state or more local development or regional development, so that can impact the ability of states to meet their policies.

But in general, you know, the eastern markets, PJM, is ahead of where they need to be. The Midwest is ahead or on track depending on the states. Texas is well ahead and many of the western states are head but not all. California, the utilities just reached their 20% targets.

So that's sort of the near-term situation of, you know, where do we need wind? Where, if we had the wind and where will we need it going forward? California, we're going to need additional resources and in a number of these other markets.

I have -- we have some additional detail on some of that. I'll try to show I think an additional slide here.

But so I guess the big question going forward, you know, so we've had the PTC, we have these RPS policies in place. In the near term, you know, many of these are in pretty good shape already. They've met some near-term targets.

We've also, in the situation of low natural gas prices, the lack of load growth and part of the many utility service territories. Transmission challenges remain. This is another challenge in regions of the country.

And some other ones that are persisting are citing challenges I think particularly in New England but we're starting to see -- there's this question of, well, without the PTC will some of these state RPS policies, could they be hitting rate caps in the future.

In the west and in certain areas, we're starting to see -- and other areas as well, Midwest -- higher penetrations of wind on the grid and how can that be handled? So some of the questions going forward, you know, for the markets and the challenges that are posed there.

Let me just see if I have that other -- oh, so this is the other slide. I just want to put up quickly to indicate how much new capacity is needed in these regional markets going forward, just to give you some indication of what that looks like.

So that's really all I have. I just wanted to give you some perspective of sort of where we've been, what's been -- what are the important drivers, so clearly these federal incentives.

But state policy has been important as well and will continue to be important going forward, which I think is the message I want to leave you with. So Charles, I guess I'll kick it back to you and I think we're going to take questions at the end, right.

Charles Newcomb: That's correct. Thank you, Lori. And folks on the phone, I encourage you to ponder and think of questions to ask. Where you ask questions, it was on one of the slides that we presented earlier in the beginning but kind of breezed through it.

Across the top of your screen, there is a few menus that you can click on and one of them is a Q&A. And if you click on that Q&A button, if you will, it will pop up a little window and you can ask in that window, ask a question and it will post to the speakers. And we'll address all the questions at the end of the presentations so that we can make sure that we have adequate time for all the speakers.

But, again, you know, as with any Webinar, we can't anticipate all the questions ahead of time, so the speakers really are presenting information that will inspire questions and then we can have a conversation. The questions, of

course, will be written and then we will engage them via the speakers by voice.

So the next speaker is Tom Wind. And as I mentioned earlier, Tom is going to bring this down to the community wind scale and Tom has been in the industry for quite a while. We -- dating back a couple decades and he's long been our go-to person for all things community wind.

He's -- I don't want to call him the granddaddy of community wind because he might catch me up someday but maybe that's okay. But Tom is the principal over at the Wind Utility Consulting whose -- which is a group that does in depth analysis both on the impact side as well as the production estimates as well as the preliminary design, all that sort of work.

So Tom came to of Iowa State University back in the 70s with electrical engineering and has never looked back and has been a terrific resource for us in the industry and we most appreciate that, Tom.

Tom is also a member of AWEA as many will know and UWIG, Utility Wind Industry Group, and IEEE, etc cetera. So with that, Tom, I'll give you the floor.

Tom Wind: Okay, thank you, Charles. Can you hear me okay?

Charles Newcomb: Hear you just fine. Thank you.

Tom Wind: Okay, what I'll talk about today is -- advance this slide here -- here I go, okay -- is I'll talk about incentives, which are typically used for the wind projects that I use, that I work on.

And the -- I work on primary community wind projects that are from one to 20 turbines and they're typically 1.5 megawatt turbines but I've worked on projects with just 50 kilowatt turbines, too.

Community wind projects are kind of popular in Iowa and Minnesota, to a lesser extent, in Minnesota and there's some in Illinois, too. And we have the state policies in these states that encourage local investment in projects and that's what you need.

You need some sort of state policy saying this is what we want to have. We want more broad scale ownership of wind generation. And so states come up with policies to do that.

But the primary driver for nearly all wind projects are the federal incentives. And Lori talked a little bit about this. The 1603 treasury grant, which is really the best incentive that the community wind group could ever want because it is a cash check. It is cash from the treasury.

And prior to that we always had to use some sort of a tax credit and since most community projects didn't have the ability to use that tax credit, it was difficult to get financing.

So the 1603 treasury grant is what's driven most projects the last two or three years. As you know, our production tax credit, the PTC has been out there at seller depreciation. That's always helpful.

But the U.S. gave REAP grant or another important grant mechanism. Typically we've applied for \$250,000 to \$500,000 per REAP grant and I would guess there's probably 30 projects in the state of Iowa that have received REAP grants of that amount.

Also, the REAP program has a loan guarantee as does the Small Business Administration. Those can be used and we have a few projects in Iowa that use the Clean, Renewable Energy Bond, CREBs.

Originally we thought those would be very helpful but it turns out that they're really not that much value. Sometimes some entities even forego using them because of the difficulty in using them and there's just not a really good market for the CREBs bond.

And lastly, the new market tax credit. I just worked on a project, just completed a project. It got \$3.1 million, essentially equity through a new market tax credit.

Those are the primary drivers. However, it takes state incentives to usually foster environment where you get much community wind. And there could be grants. It could even be a community block development grant. The state of Iowa has a production tax credit, 1.5 stamps per kilowatt hour generated and sold for the first 10 years.

We have sales tax exemptions, so when you buy equipment, you're not paying a 5% or 6% or 7% sales tax on it. We have (unintelligible) for all types of projects in Iowa whether they're community wind or large scale.

Some states have investment tax credits. Some states have net billing requirements, which allows a facility to install a wind turbine and then use that power, essentially all that power, for powering their facility.

Sometimes other states have favorable excess buyback rates. So when the wind turbine's generating more power than is needed and it has to be sold,

well then the price they receive is somewhat comparable to the price they would be paying for that power.

And then just I think one state or two states so far have feeding tariffs, which are -- it's just a standard tariff, a fairly high value that's appropriate for -- necessary to make the project feasible.

So if the state grants in there the state incentives that really make the difference whether you have community wind or not, without the federal incentives and only the state incentives, it's difficult to get a project to go. It's difficult to make an economic -- sometimes it happens but usually it's a special case when that happens.

The bottom bullet here is a few community wind projects, perhaps 5% to 10% of them that I work on and this is, of the community wind projects, forego all federal incentives because they're nonprofit. They don't want to -- it's more difficult for them to use it or whatever, so they forego that.

The next slide shows the types of community wind projects. For example, nonprofit municipal electric utilities, or rural electric cooperatives, the first bullet there, they can either own the wind generation outright or they can purchase power from local people that install and own the wind turbines.

We have both types of projects in Iowa and so it -- and this is a very active area. Today we have six turbines going up, six 1.5, 1.6 megawatt turbines going up in the state of Iowa and they're all either selling power to rural electric cooperatives or to municipal electric utilities. And they're all privately held.

Second bullet, local residents owning wind generation and selling the power to a for-profit utility, like a large utility, oftentimes it'll have a standard offer that they'll have based on their avoided cost and, for example, we just completed this 8 megawatt project where we have local people owning it and then selling the power under a long-term contract to utility.

The third type of community wind project is where a school or college directly own the wind turbine. And so then, usually as a non-profit entity, they won the wind turbine and use the power themselves.

The fourth one is where large farm operators will install a wind turbine just within eye sight of where I live here in rural Iowa, there is probably four or five 50 to 100 kilowatt turbines that are installed, typically near a hog confinement buildings providing power for those operations or a large green facility.

So again, farmers owning these wind turbines, taking advantage of the tax credits and just using the power themselves.

And then occasionally we have businesses that own a wind turbine but that's not very common. Businesses usually require pretty quick turnaround or payback on their money and it's usually not economic for them to own projects like that.

I'll have to talk about a few projects and the first project is the (Wolverine Wind Energy LLC). This group of framers in 2010 worked together. There was 13 of them living in the area where the wind turbine was installed.

And they raised money by -- I think they raised it seems like it was a pretty good deal. I think they raised less than \$100,000 and they were able to borrow

money from a local bank. They were able to receive I think it was a \$400,000 REAP grant, \$500,000 REAP grant and then they used the 1603 treasury grant and then they also were able to get the Iowa State Production Tax Credit (unintelligible).

The combination of all of those incentives was enough to lower the price of wind power to a point that the local rural electric cooperative there said that that price was a little higher than what they were paying but they had predicted that it would be lower than what they would pay in the future.

So they worked out a price a little bit above their voided cost, froze it for I think 12 years and after 12 years when the local owners thought they'd have their bank debt paid off, they would drop the price down and let the cooperative recoup any premium they paid above its voided cost.

And then after that point on, they would renegotiate the price. They'd have the price reopener and then they would figure out it, you know, if they needed to raise or lower the price based on if everybody was making money and everybody was happy.

So it's a case where the local owner wanted to see, wanted to do something and -- excuse me -- the local cooperative wanted to see local owners involved in a wind project.

The second project, (Deluth College Wind Energy) project, a college is nonprofit. They -- in order to take advantage of the 1603, the federal treasury grant, you have to be a for-profit entity.

So the thing they did was they formed a subsidiary underneath the college. It was a C corporation which was a for-profit entity and that C corporation was

the one that installed the wind turbine. And they applied for a REAP grant and they also were eligible for the state production tax credit which was also for for-profit entities.

So they captured these incentives under the guise of a for-profit entity. Because they were not -- the wind turbine was not owned by the college, the college could not buy the power from the wind turbine because in Iowa we have exclusive service territory rules that preclude that.

So the wind turbine LLC sold the power back to the utility, which was at a rate actually higher than what the college was buying power for. So it worked out fine. And they anticipate that some day at the retail rates that they pay, that the college pays, increases to the point of this -- of their contract that they have for selling the power to the utility then they would change the interconnection slightly so that they would use the power rather than sell the power because they think at some point in time they're going to be paying more than the rate that the utility's offering to buy the wind power.

So there is an innovative example of a college using incentives. There's another one, a (Sage Municipal Utilities) installed a 1.5 megawatt turbine in 2009 and they essentially -- they were a nonprofit entity. They did -- they were allowed to get a REAP grant. I think probably \$250,000, \$300,000 and they did use the Clean, Renewable Energy Bonds. But again, the bonds were not that much advantage.

As you know, municipal bond rates are very low right now and so there's not a whole lot of advantage to having the CREB bonds because even though CREBs are supposed to be zero interest rate, they really aren't.

I'd like to conclude talking about a few examples of projects that I've worked on that did not use federal incentives. The first one is the (Granel) college. It was just a 50 kilowatt turbine, cost, oh, about \$220,000, \$230,000. The had an environmental research center out in the country and that turbine was just the right size to power this environmental research center.

So they (raised all that), didn't use any federal incentives. They had the wherewithal to pay for cash -- cash for it. That turbine will likely not pay for itself over 20 years. It'll probably take a little longer than that for the turbine to pay for itself but it was something that a college wanted to do.

A second project that I am working on is -- I won't name the college here but it involved three turbines totaling about 5 megawatts. It'll go online probably 2013, late maybe 2014. And it will provide power to campus facilities.

And we looked at using federal incentives, in other words, forming some for-profit entities to do that. But they decided that it was just easier just to pay cash for the project. If you've got that much cash, you can say things like that. But they're going to just pay cash and forego nearly every incentive there is out there.

So they'll take advantage of the sales tax exemption, things like that that we have here in the state. This campus will also install an electric boiler so that at times when the wind turbines put out more power than the campus uses, which is I would guess 1500 to 2000 hours per year, they will use that electricity to generate steam and they have a boiler operating on campus year round anyway.

So they will essentially drop the steam into a steam system, which will reduce the amount of natural gas that they use for generating steam. So they'll use all the wind and turbine generation that they'll get off the 5 megawatts.

The last project or it's a series of projects. There's nine -- there's 11 schools in Iowa that have large wind turbines and nine of those installed wind turbines primarily without much federal incentive.

At the time they were installed, there was the (REPAS) program, Renewal Energy Production (and Save) program, but it was not funded very well and so they didn't really receive much federal benefit from that.

So they essentially paid cash. They had to pay cash upfront. They typically would borrow a little money. The state had a loan program. They'd loan money out and they just paid cash. Typically these projects cost from \$400,000 to \$1 million at the time and they were turbines, generally less than 750 kilowatts. There was one turbine at 1600 kilowatts that cost about a \$2 million project.

So those projects primarily were instigated without the use of any significant federal incentives. So if we don't have federal incentives in the future, it's going to be much more difficult for wind generation projects to get off the ground. However, it can be done. And it will be done in stances where the entity has the cash reserves or has access to low-cost financing and where it has an opportunity to use all the wind power fairly easily, like the second project I talked about there.

So, Charles, this is all I wanted to talk about at this point. I'll turn it back over to you.

Charles Newcomb: Tom, thank you very much. It's a little startling to see numbers like 5% to 10% not having utilized federal incentives and it doesn't look like a great picture going forward, so let's sure hope that the folks that are moving the PTC down the aisle are successful.

Kevin Schulte is our next speaker and Kevin is the CEO and co-founder of Sustainable Energy Developments out in Ontario, New York near the shores of -- oh, I'm losing my geography. You have a beautiful lake, the eastern-most of the great lakes. Kevin, I'm sorry. I forgot the name of your lake.

Kevin Schulte: Lake Ontario.

Charles Newcomb: Thank you. I guess that would make sense in Ontario, New York. Terrible that I don't remember that. Anyway, Kevin -- under Kevin's leadership, (SED) has made some major forays into some very creative distributive projects in the northeast predominantly but also all the way down into Delaware.

So Kevin and his crew came out of (JMU) originally out of (Tom Miles)' program at (JMU) and it's always fantastic to see companies sprout out of these institutions like (JMU) and (UMASS) and others.

And Kevin is famous for his active development and interaction with the way regulatory affairs go in his state and move and policies move. He is also famous for his innovative financing structures and sources of funds and working creatively with the folks in the finance world and also has pioneered some interesting turbine selection coming out of Europe.

It's nice to see Kevin pushing into these new areas. So I guess the last feather - - or not the last but recent feather in Kevin's cap was helping to found our -- the Distributive Wind Energy Association which has been around for a couple

of years now but was an organization to uniquely address the challenges of the distributed market and players in that space.

And it's been really heartening to see how well they're working with the American Wind Energy Association. So it's always wonderful when we see industry organization that worked hand in glove in this fashion.

So without further ado, Kevin, if you're on the phone, hopefully -- I see you've advanced your slide there -- I'll give you the floor.

Kevin Schulte: Hi, everybody. Just a little bit more about who we are, we are similar actually in a lot of cases to what Tom's doing out in the Midwest and the Northeast. We're working with state agencies, municipalities, businesses, schools, farms and home owners to install wind power.

Most of our projects to date have been utilizing retail, the fact that retail power costs a whole lot of money here in the northeastern United States. And moving forward, we're going to be continuing that trend but we have gotten several very innovative net metering or net billing programs instituted, particularly here in New York and also Massachusetts that will be utilizing more of a community wind model where the power's directly interconnected to the grid but is actually used to offset remote loads.

So do that with village power, village, towns, college campuses, things like that. We're 10 years old next month and we're 20 people. We've got about 46 projects now on the ground across the northeaster United States.

My next slide I show just because -- this just brings up the last. So this is all of our projects around the northeastern United States. I believe it's 46 projects now. And the reason I show this is not for a feather in my cap. It's more

important to tell you that there is exactly one of these 46 turbines that use the federal production tax credit, just one, only one.

It is not a policy tool that is helpful to the community wind world or to the distributed wind world. In 2009, we got the -- or the investment tax credit for all wind power until the end of this year and particular, for small wind below 100 kilowatts through 2016.

And so we've utilized both of those as well as the 1603 for about a half dozen other projects. But that leaves us with about 35 of our 46 projects that have used no federal incentives. So that's just news and notes for you.

We'll skip that slide. Just a little bit of notes on our project and this is important for folks to know and it's -- I think it's a big part of why we've been successful is really the visibility of our projects.

We've got -- this is 44. We've actually got 46 projects. We've gotten two done this year. 143 operating years, meaning our average projects are now between three and four years old, so our fleet has some age on it to see that they're working and see that some of our models are being tested in terms of production models and things like that.

There are 800,000 people in the municipality of our projects and 9 million people or 3% of the U.S. population in the county of our installations. That's just to say that the model that we're engaged in here in the northeast is much more similar to Europe from a population density perspective.

Projects are seen and really become part of the every day living of the folks that are around them. Four of our projects are viewed by 0.5 million people a

day on highways in Massachusetts. And then about 400,000 people ski under our two ski resort projects and that's a (Chimney Peak) and (Burt Cherise).

(Chimney Peak) is the only project we've ever used to take the production tax credit and that project only took it for one year. By its second year, we got net metering in place in Massachusetts and we actually -- because the powers net metered the production the tax credit is no longer -- the project becomes no longer eligible for the production tax credit.

My policy plan, so this is on a federal level. We have a lot of policy plans at the state level. I'm going to talk about state level policy as I go through some individual projects in a minute and how they'll utilize state policy if we have no federal policy to support us going forward.

So the first thing that I will tell everyone is the production -- I work in community and distributed wind and the production tax credit is not helpful to what we're doing.

The ability of a wind project to elect a Section 48 investment tax credit must be included with any extension of the production tax credit. So to the 106 people on the line that are out there doing wind power and all of its numerous ways, as we talk about the production tax credit, it's imperative that we include in the dialogue the investment tax credit, which is valuable to community wind mainly because of its ability to be used against active income, which attracts a large number of potential project investors.

Do we -- an organization I'm apart of is leading the charge on this. It's a bipartisan, bicameral effort and it needs all of your support. So to the extent you can help, you have the ability to be involved and just get in touch with me and I can get you involved in our efforts.

Precedent was set with a floor vote on the (unintelligible) amendment to the highway bill just last week where an investment tax credit was attached to the potential expansion of the production tax credit. To me this is totally critical in moving this forward that we're now starting to set precedence of attaching these two pieces of federal incentives together.

We do have bipartisan support but we need more of that. Particularly we need republicans either on House Ways and Means Committee or Senate Finance. So to the extent that you're in a district with a republican member of House Ways and Means or a republican member of Senate Finance, you can be very helpful in the cause of getting our federal incentives extended beyond the end of this year. So please contact me in that case.

And then I think most importantly is stop having conversations about what happens when the federal incentives run out and get involved in ensuring that won't happen. I think getting involved is the key to success here on a national policy front.

So what happens if we don't have the IPC? And as I said, I won't mention the PBC because it's never been very useful to my business model. But I'll mention the IPC. So what happens if it's not extended?

We're going to look at four -- fundamentally look at four types of projects: one, projects that don't use tax incentives, schools, municipalities, colleges and universities.

The fundamental reason to focus on them in my opinion, and I believe (Tom) mentioned this before, private businesses generally have very intense return

requirements. You know, you talk to some of the bigger ones and they tell you that they need to have their money back in five years or less.

Well, getting your money back from a wind turbine in five years or less, even with federal tax incentives is not very likely. So schools and municipals and these types of organizations, they have much more reasonable payback requirements, more like 15, sometimes 18 years.

Because of those more reasonable payback requirements of those types of entities, they're going to be very -- wind power can still be very appetizing to them as a result of the fact that their expectations are reasonable.

Find other tax incentives. Tom mentioned new market tax credits. I'll mention one that we're using up here in New York and that's -- did you know that wind power on a brown field gets a 20% monetizable tax credit for the federal government.

Here is a perfect example. Right now we have a 30% investment tax credit. If that were to go away, well, we could get 20% of it back if we're working to help clean up a brown field.

In New York, there is something like 500 registered brown fields that have not been cleaned up. So we're looking at how do we utilize those potential market for new wind projects.

The Steel Winds project, which is eight 2.5 megawatt clipper machines in the city of Buffalo was the first project in the state of New York to utilize this business model.

We're working in models with very -- in markets with very strong state incentives. So (NYSERDA) has very large grants and Vermont has feeding tariffs, so with good potential rates. So those are two places where we'll work in spite of or with the potential that there's no federal policy beyond this year.

And then the other one is to install turbines 100 kilowatts or smaller that do have federal incentives beyond this year. Let's see, next slide. Next slide, there we go.

So a little bit of a look at our pipeline, we'll show you some other unique incentives that we're working. (Suni Canten), this is just a reasonable payback requirement. (Suni) is the state university of New York, (Canten) is the town that the -- that this campus for (Suni) is located in.

We're installing a 1.8 megawatt Vestas machine there in 2013. The interesting thing there for everyone to notice, we bought that turbine at a discounted rate because we were able to take the order next year rather than during the rush to get everything done for PTC and ITC deadlines in 2012.

The (Sonic Health Systems), that's a hospital in Massachusetts where we actually finally go the go ahead on that particular project today. That's two 1 megawatt turbines.

(Indian River Central School District) -- and I'll mention there's three or four New York school districts on here. The interesting thing in New York is that the state funds capital improvement projects at school districts if the project fundamentally meets an 18-year payback with no other incentives.

So we look at these projects -- 18 years, well we can make an 18-year payback. We may not be able to make a 10-year payback or a five-year payback but 18 is pretty reasonable.

And so like (Indian River) as a for instance, if they can -- if their wind project meets an 18-year payback, which it does -- it's more like a 14-year payback -- then the state will fund that project at 93% of the total install cost. And so it actually costs the rate payers of the district 7% of total install cost to eliminate 100% of their electric needs on campus.

So that's pretty cool. (Buffalo Hydroponics) is a 50 kilowatt turbine going next year. And then I'll go all the way down to the second to last bullet point where I say the (Vermont Speed). (Vermont Speed) is -- that's the feeding tariff in Vermont. It's worth twenty-eight point three cents a kilowatt hour for 20 years.

So we're working on 20 different installations around the state of Vermont utilizing 100 kilowatt turbines which are going to continue to get the IPC into next year.

And then the other thing that we're doing is we're installing solar. We not have a 10 megawatt pipeline worth of solar projects around the northeastern United States and that's primarily because the solar incentives are stronger in many places than they are for community wind.

I realize I skipped a slide -- or I didn't skip a slide but I skipped the last statement on this slide about the different state markets we're working in. I think it's important and it goes along with us adding solar.

Get to work in your states ensuring wind has an equal or level playing field for solar for state and market incentives and Massachusetts, as a for instance, wind turbines can get up to a \$400,000 grant. A solar project gets a fixed price, twenty-eight point five center per kilowatt hour (unintelligible) for 10 years.

The difference in value is about four or five to one and makes the payback on solar systems under five years, which is just an unlevel playing field, especially coupled with the federal IPC being extended to 2016 for solar power.

Okay, with that being said, just a couple projects that we worked on that would have -- that would be still in our wheel house. (Holy Name Central Catholic) is a 600 kilowatt wind turbine we imported from India at a Catholic high school in Western Massachusetts.

The project ended up costing about \$900,000 after state grants and the first year of savings was about \$190,000 to the school. It was the first project in the state of Massachusetts to use the new net metering laws and basically provides 100% of the school's electricity billing and that is really cool because two things.

Number one, it produces about 300,000 kilowatt hours a year more than the school needs and because of the way the net metering policy works, that money or the excess power is actually credited back to them in cash at retail rates which they can then use to pay down the demand charges on their electric bill, so it's a pretty cool project.

City of Medford is a 100 kilowatt, (Northwind) 100 at a public school in Massachusetts. It's on Route 93 just north of Boston. Again, a 100 kilowatt

non-taxable entity, the type of wind power that can get done with or without federal tax incentives.

And then small wind, we have 35 small wind turbines in the state of New York. This is, you know, an important and emerging market sector, residential based, schools, small municipal projects and all kinds of things like that, some remote Department of Environmental Quality sites, etc cetera.

So with that, Charles, I'll pass it back to you. That is my last slide.

Charles Newcomb: Kevin, thanks very much for those perspectives. Okay, folks, so that concludes the presentations, which means that it's time for Q&A. So, again, Q&A is accessed by typing in questions. That window, again, is launched by clicking on the Q&A button area. It doesn't look like a button but it's an area that becomes a button when you click on it at the top of your screen.

So with that, I'd like to launch into a couple of questions, one for (Laurie Bird) and it's a -- well, let me actually first point out that the presentations, because this is a typical question, presentations will be available at windpoweringamerican.gov.

Typically it takes, you know, within a week or so, they're posted so these presentations can be accessed that way later on.

But one of the questions, Lori, for you was do you have sources for the state-by-state list on the systems benefit funds available? And if so, that's good and could you share those? And then are you aware of any constraints on any allocations in those states that are notable.

Lori Bird: Yes, so there's a couple good sources of information on that. One is the desire database, a database of state incentives for renewable energy. It's www.dsire -- without the first E, so it's d-s-i-r-e -- I think usa.org. So but you can, you know, just search under desire but make sure you don't get that first E in there because you get unwanted porn sites or something like that I think. So you have to be careful.

But anyway, they have a good map of -- and a lot of additional supporting information on the funds that are available in different states. There are restrictions on how those funds need to be spent and in some cases some of that money has been rated by the state government for general funds and so forth.

So I'm not sure if they've been updating all of that data. Another source of great information on that is the Clean Energy State's Alliance and that does a lot of work with those state funds and they have some publications, I believe, that have additional detail on those.

Charles Newcomb: Thank you, Lori. A question for Kevin, you had a few turbines in your list. A couple of them were 850KW's. Can you share what turbine that might be and also what's a typical hub height that you're using, you know, in the northeast where you've got some pretty good sized trees?

Kevin Schulte: We use hub heights totally dependent on the site, right, what makes economic sense. So we've got turbines anywhere from -- in terms of commercial scale like our 600s are on -- we've got one on a 55, one on a 65 and then, you know, we're going all the way up to 100 meter tower for the 1.8 megawatt we're installing next year.

So everything in between, a lot of our projects are sort of in the 60 to 70 meter range with the mid size. The 850 is (Gamesa). We bought the first (Gamesa) out of the (Gamesa Harvest and Wind Network Partnership) that was just -- the press release was just announced earlier this week, which his that (Gamesa) is reentering community and distributed wind market with their G5X series and we bought the first machine out of that partnership for -- it's actually getting installed -- the first one is getting installed here at my office, Charles, a project you're familiar with.

Charles Newcomb: Oh, excellent. Good for you. That'll be nice and I'm sure (Bob) will be excited. Thank you. Tom, is there a -- can you expand a little bit on how for-profit, privately owned project could be feasible absent 1603 or a PTC? Like what are some creative ways that, aside from moving to Massachusetts where the cost of energy of higher, you've got some great net metering rules?

What could you do out in your part of -- your neck of the woods?

Tom Wind: You know, I'm not -- it's really, really hard to envision how a project in our area could get off the ground. For example, wholesale power costs are typically around \$0.05 a kilowatt hour, so that's what utilities pay for their power before the \$0.04 to \$0.06 per kilowatt hour.

You know, I found that you need to save with the wind speeds we have in our area, you need to save about \$0.08 a kilowatt hour with a wind turbine or make \$0.08 either through the (PPA) rate or what you save in your power (bail) plus any incentives.

So you've got to get the \$0.08 somehow. And the wholesale market is not there. So without the federal incentives, you have to rely on state incentives to

get there. And so the only other way you can do that is just have, accept a very low return on your equity investment.

You know, money is fairly cheap at the banks now and if your pockets are deep enough you can -- you can just put the cash down and accept a fairly low rate of return on your investment, which might be 3% or 4% or something like that.

So that's the only way I can see how to do it is you have to maximize your state incentives and then use low-cost capital.

Charles Newcomb: And tolerate a longer payback.

Tom Wind: Yes.

Charles Newcomb: Okay. Kevin, another question for you: whether you've considered entering into an alternative ownership arrangement like flip models or sales leasing models in order to access some additional equity.

Kevin Schulte: Yes, we have done that. We've executed one, two, three different projects with third-party owners right now and then we have the University of Delaware project, which is a special entity ownership with the university and (Gamesa), actually in partnership.

So, yes, we have looked at it. The problem that we find with third-party and small projects is just the sort of risk to reward ration. Generally speaking, we find that the equity models that are interested in larger projects are looking for easier projects or later stage projects and not willing to fund some of the early stage risk development like interconnections and permits.

So we struggled with it as a long-term business model. But we have been able to utilize third-party financing on a couple of projects here.

Charles Newcomb: Great. Thank you, Kevin. Tom, you know, there was -- often what comes up in conversation is folks say, well, why does wind need incentives, right? Why can't you just compete with oil or, not oil, but gas or coal or nukes? And often we talk about, well, it's leveling the playing field because, in fact, there are incentives for fossil generation.

Could you expand briefly on what those other incentives might include so that people on the phone, on the line will be better equipped to address that comment, that type of comment?

Tom Wind: You're talking about other incentives that the fossil fuel industry receives?

Charles Newcomb: Exactly.

Tom Wind: Well, yes, I guess I can. It is difficult to compete against fossil fuels, you know, especially in the Midwest here. Coal is relatively cheap. I mean, vast quantities; we're very good at digging out of the ground, getting it to the site. Our whole transportation infrastructure, railroad system, I mean, it's fine tuned for the delivery of fossil fuels.

And so that right there, they have an advantage right there that the infrastructure is there. Secondly is that the fossil fuel industry gets depletion allowances. They get credits in their income taxes for the depletion of the fuel, even though they didn't pay for it. When they did it out of the ground they don't pay for it but they get to take a credit against their taxes because they're using it up.

So everybody realizes that that is really a subsidy there. It's like depreciating something you never paid for.

Another advantage that the fossil fuel industry uses, or especially in the oil and gas industry, is that -- is for raising capital. There is a provision and tax code called the master limited partnerships which allow individuals that form together into partnerships to utilize the federal income tax benefits against ordinary income or income like you receive in wages.

And that's not allowed in the wind industry. Primarily the PTC is used against passive income and most individuals don't have that. So raising funds and utilizing the federal tax benefits is hard for community win projects.

You know, Kevin said he had difficulty in being able to use those. It wasn't until the 1603, which was a grant did we have much success in raising funds locally for wind projects.

So that's something that, you know, being able to use the federal tax benefits against ordinary income would be a real good advantage that would help us get along. And if we had that alone, you know, that would partly replace not having a federal product tax credit or 1603. So that's what comes to mind, Charles.

Charles Newcomb: Thank you, Tom. Lori, I'm not sure if you can answer this but we can give it a shot. Have you heard of any movement towards wind incentives becoming permanent legislation sort of like what Tom has talked about in terms of these oil and gas or coal incentives in terms of depletion allowances, that sort of thing to make it more workable for the industry long term? Have you heard those kinds of rumors?

Lori Bird: I know that there's been some interest in exploring those, you know, master limited partnership concepts that Tom was just talking about. I have not. You know, I think there has been some discussion of a longer term PTC that would scale down over time or different structuring of that site to market conditions.

I don't know how actively these things are being discussed. Really it's a better question for AWEA to answer than I to be honest.

Kevin Schulte: I can chime in, Charles, if you like.

Charles Newcomb: Please, Kevin, thank you.

Kevin Schulte: The answer to your question is the president is saying that he wants permanent, long-term renewable energy tax incentives and congress is not cooperating. So there's a major discussion about a one-year extension of the production tax credit or even a two-year extension of the production investment tax credit that's going on.

Many believe that the President's wishes for permanent tax credits won't be answered until we see what the results of November's election or both the presidential election and what happens in both the house and senate. So the President's certainly pushing for that but we haven't really seen -- we've seen some congressional support but not really a bipartisan congressional support.

We don't think that that will move until after November's elections.

Charles Newcomb: You know, as a follow-on, there is a question out there, Kevin, for you that says what kind of changes would you foresee in your business plan depending on whether republican or democrat wins in November? And I guess you've answered that reasonably well there, right.

Kevin Schulte: I will say that the IPC will be extended and I'm taking bets to people that are not -- don't agree. So that -- I don't -- I fail to want to answer that question, Charles.

Charles Newcomb: Good for you. There is no spoon, right. You know, there's another question about this. Lori, you gave us a number of websites including the database for state incentives, etc cetera.

What I might ask you to do, Lori, is would you mind providing an updated presentation that we'll post on the Web site that has sort of the list of sources that you would recommend people touch into for the various incentives and then we'll post that and then people who are trying to scribble those things down as quickly as they could perhaps successfully or less successfully would have that?

Lori Bird: Sure, that's fine.

Charles Newcomb: Okay. There's another question. Have the presenters considered REITs as a source of funding for wind projects? I have to admit that REIT is something that I haven't come across. What is an REIT?

Tom Wind: I think that's a real estate investment trust.

Charles Newcomb: Okay. Does that mean anything to you, Tom, in terms of...

Tom Wind: This is Tom Wind. And I have not heard of that being used before. But I suppose it's a mechanism for investors getting their money together and I imagine there's some tax advantages because I know they've been around a long time.

I don't know. Kevin, do you know anything more about that?

Kevin Schulte: I personally don't but for, Charles, for you to get out to the crowd here, there was a killer presentation on the concept that one of Lisa Daniel's Windustry conferences last fall -- so I bet she could track down the person that presented.

Charles Newcomb: Okay, and Lisa Daniels is at Windustry so and can be contacted through there, windustry.org. All right, Tom, how -- well, let's see. This is interesting. I don't know if you're allowed to provide pricing information but there's a question for you, Tom.

How much are the 5 megawatt turbines that are being purchased by the college cost?

Tom Wind: Well, yes, I can tell you that. They're not 5 megawatt turbines. They haven't been purchased yet but we're -- they're one point -- they'll be 1.68 megawatt GE turbines with a 100 meter rotor and I think I've got them pegged in there for \$2.4 million or \$2.5 million just for the turbine delivered. I'll check on my spreadsheet here while we're online here but I think it's around \$2.4 million to \$2.5 million delivered to the site.

Charles Newcomb: Okay. You know, you bring up a natural segue. I just popped up this slide here. We're about six minutes past the hour, so I know that people want to start to drop off soon. But so I wanted to get to this before we lose too many more people that coming up at the next Webinar on April 18th, we've got this technology update where we'll talk about things like the (GE16100) or the new (G87) or whatever it is, the various new, large rotor utility scale machines

as well as hopefully some of the smaller machines that (Kevin) has been utilizing.

But there's some interesting numbers out there. So when we've looked at these large machines, among the various elements we discussed in April, is how much more land do we have for these machines that Tom is talking about because they make -- they open up new areas that are feasible for wind development assuming you've got a PTC, ITC, something that makes these projects workable?

So, again, on April 18th, we'll be providing a technology update and on May 16th we'll be providing a Webinar on careers in wind energy and how that's going.

So if it's okay, we'll just have a couple more questions if people can hang on just a minute longer.

Lori, I know that you had another webinar you need to jump to, so I'll ask you one last question, if you can site the source for your 2010/2015 breakdown on RPS compliance by region. Where did that come from?

Lori Bird: We actually...

Charles Newcomb: Oh, I lost you there. Are you there? Tom, are you there?

Tom Wind: Yes, I'm here.

Lori Bird: I'm still here.

Charles Newcomb: Okay, oh, there you are, Lori, sorry.

Lori Bird: Do we still have the phone on the line?

Charles Newcomb: We've got 74 people, so, yes, attendees, you mean?

Lori Bird: Yes, I just meant if they're hearing us on the phone. But anyway, I guess we'll just assume that they are.

Charles Newcomb: We'll pretend.

Lori Bird: So I'm sorry. What was the question again?

Charles Newcomb: Sorry about that. You had a slide on breakdowns on RPS compliance.

Lori Bird: Okay, yes. We had actually did the breakdown into the regions but it's from (LBNL) data and I believe that data set is now if -- I'm not certain of this but I think it's available on the Desire database as well.

Charles Newcomb: Okay. All right, let me see if I can find one more for Tom. I think we've gone through them all. And, you know, there's an interesting -- Tom pointed out -- oh, and (Tom Stand) did say, yes, we are listening and, Tom, I owe you a phone call. And I'm sorry to have been...

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