SMALL WIND POLICY COMPARISON TOOL WEBINAR

July 12, 2011

Coordinator: Welcome and thank you for standing by.

At this time, all participants are on a listen-only mode. During today's conference if you would like to ask a question, you may press star 1 on your touchtone phone.

Today's conference is being recorded. If anyone has any objections, you may disconnect at this time.

I would now like to turn the conference over to Ms. Karin Sinclair. Ma'am, you may begin.

Karin Sinclair: Thank you. I want to welcome everybody to this next in a series of Webinars that the (ASES) Small Wind Division has been holding throughout the year. We do these bi-monthly.

We have a really good attendance thus far, and I'm sure we'll have some additional people linking into this Webinar. And as you already heard, it will be recorded and it will be posted at the end of the Webinar.

So at this point, I'd like to turn the Webinar over to Trudy Forsyth, who will be moderating for today. So Trudy.

Trudy Forsyth: Thanks, Karin.

This is Trudy Forsyth, and I have the pleasure of introducing the eFormative Options Team. They were one of 53 projects awarded in the Department of

Energy's 20% Wind Energy by 2030 Report. Their scope of work is to develop a Web tool that uses a pro-formula financial model to determine which policy options have the most impact on improving the bottom line of wind turbines up to 100 kilowatts, providing power for onsite use.

The project's team has prepared case studies of effective combinations of local, state, and federal policy measures such as incentives, portfolio standards, net metering rules, renewable energy credits, and carbon credits. And they have tangible examples of these different scenarios based on the existing policy landscape.

Part of this team is made up of experts from the Database for State Incentives for Renewables and Efficiency. That particular policy tracking work has been done I - for about two decades in time, and it really is the benchmark and the relevant spot to find out what's going on with policy.

This tool that's being developed by eFormative Options has target audiences, and those target audiences really are not for consumers to look at what their bottom line costs are. But the target audiences for the tool, the guidebook, and outreach efforts will include policy makers and advocates on the government and utility incentive program manager side, as well as state agencies, utility commissions, legislative, Congressional staff, country planners, local utility directors, academics, and people sort of in think tank and trade organizations.

So, the tool for this really is for those folks versus individual consumers. And now, I would like to turn it over to Laurel to give us the assumptions that are behind the logic of developing this tool, which needless to say is fairly complicated, based on the fact of integrating all these policies and their individual vagaries, which they are substantial.

So Laurel is a Policy Analyst for the Clean Energy Applications Program at the North Carolina Solar Center. She's focusing on net metering and interconnection issues. Laurel currently publishes the Interstate Renewable Energy Council's monthly Connecting to the Grid newsletter, which is a wonderful tool.

Previously, Laurel worked as a Policy Analyst for the Desire Project and spent three years as an Ecotourism Extension Agent in West Africa, where she worked to promote environmental and business management concepts in national parks across Senegal.

She holds an MA in Sustainable Development from the School for International Training, and a BA in International Studies from the University of North Carolina at Chapel Hill. Laurel is also a Southeast Regional Network Fellow for the 2009 Environmental Leadership Program.

So without further adieu, Laurel, share with us your assumptions.

Laurel Varnado: Great. Thanks Trudy. I appreciate that introduction. So yes, as Trudy mentioned, I'm just going to talk about the - sort of a high level overview of some of the vast assumptions that we had to make when designing this tool. And as she mentioned, they are pretty vast, so we're going to do the high level view only right now. And if you have questions, we can dig a little deeper in afterwards.

First, I'd like to provide a note of caution or a caveat if you will; this is only a policy model. We've put this assumption - or this disclaimer pretty much everywhere. This is a policy model designed to help policymakers quantify policy decisions; therefore, should not be used for any sort of project

development or financial decision making. So anyway with that being said, jump into the assumptions.

I've sort of classified these into four main categories of assumptions. The first is turbine and market sectors. Second is incentives - financial incentives. And the third is regulatory policy. And, the fourth is the market factors.

So I'm only going to give a brief overview of some of the more important things included in these categories. During the Webinar, you'll hear us talking about default assumptions, and these defaults were built into the model based on either current policy information or best estimates by the project team.

So we included these defaults to model current conditions, but we hope that the tool provides a way for the end user to sort of change these defaults and model scenarios that either help them project outward or provide a more accurate scenario for the local conditions.

Trudy Forsyth: Hey Laurel, this is Trudy.

Laurel Varnado: Yes?

Trudy Forsyth: Heather's asking if you can resize your window just a little bit smaller because it's getting cut off on the bottom.

Laurel Varnado: Okay. I'm going to try to do that. Can you see my whole PowerPoint now?

Trudy Forsyth: I have been able to see it the whole time.

Laurel Varnado: Okay.

Trudy Forsyth: I think Heather is our test case.

Laurel Varnado: Heather?

Heather: Yes. And also if you just click F5 it makes it full screen, if anybody else is having that trouble.

Laurel Varnado: Okay. That's what I was doing before, so I don't know. Can you see it now?

Heather: Yes. That's great.

Laurel Varnado: Okay, great. Sorry about that.

Trudy Forsyth: Thanks, Laurel.

Laurel Varnado: Sure. Let me just get back to where I was here.

So talked about the default assumptions. The first category that I mentioned is turbine defaults, and you'll see these four listed out here; residential, small and large residential, non-taxed, and commercial, and those are the turbines that we used for each of those scenarios as the default. These were also sort of the foundation for our case studies that Jen will get into a little later.

You can - we - you have an option to change this at the end of the model - the tool as well if you want to change the turbine, including other turbines that we've added into the model.

The turbine power curves were manufacturer supplied. Tested and verified by (in-rail) or third party verified, and these power curves assume standard

conditions such as zero feet elevation, sea level air density, things like that to reflect how manufacturer's curves are typically presented.

At the bottom, you'll see the height and wind speed defaults that we've included in the model. And those include Low and Mid-Class 2, Low and Mid-Class 3, and Low Class 4. Most of the states were the first two, Low and Mid-Class 2 and Low Class 3, but some of those - the Low Class 3 is used for Kansas, Montana, and Nebraska, some of the ones with higher wind speeds. And Mid-Class 2 is - we've used that for states like Colorado, Iowa, Oklahoma; states with slightly lower - and then all other states are set to Class - Low Class 2. And the user can change these of course. But these are all based on AWS Truepower's State Wind Resource Ranking if you want to know where those come from.

Some federal incentives that we included include the Renewable Energy Tax Credit for residential systems. The Business Energy Investment Tax Credit, MACRS Depreciation, and the Treasury Grant in Lieu of Tax Credit, also known as the Section 1603 Grant Program.

So we did not include - just as a note, we don't include the Federal Production Tax Credit, given the relatively small systems included in the model. The policy tool also assumes that only commercial sector is allowed to claim the MACRS Depreciation, and we do not include bonus depreciation, which expired in 2009 generally.

The project depreciable amount is assumed to be 90% of the initial system cost before the state rebates are applied, minus half the Federal ITC.

State incentives. I've kind of given a broad overview of what we included and what we didn't, and we used a (Desire Fee) draw these in for every state.

So generally speaking, we included financial incentives that were largely available to the general public without a lot of restrictions on who could apply for them. We excluded things that were - like competitive grants that were not necessarily guaranteed, restricted incentives like utility rebates, and property tax incentives that were locally determined.

I'll provide two caveats to this slide. We capture our state RPS policies through our rec prices in the model, so we assumed that installations in states with an RPS could receive a higher rec value than those with only a voluntary market. So we've include a slightly higher default rate for states with a rec value for states with an RPS, if that makes sense.

And on - and just to mention the feed-in tariff. We include a feed-in tariff option even though feed-in tariffs are not largely available at the state level. We did this because there's a lot of interest in feed-in tariffs and we sort of suspect that there will be more going forward.

But, I just wanted to mention that it's important to note that states have generally had a bit of difficulty in enacting state feed-in tariffs just because they're a wholesale policy. In other words, a sale for resell, and those are generally governed by (unintelligible), not states. So, states can approximate a feed-in tariff through other policy mechanisms, and that's why we include it here so that you can sort of see what impact that a feed-in tariff like program or a feed-in tariff would have on these policies.

Regulatory policies. We talk about statewide net metering in this model, and for us, statewide net metering means states that require all types of utilities to allow net metering. So in our estimates or in our minds, 16 states have

statewide net metering, and that's investor-owned utilities, municipal utilities, and co-ops all have net metering at the state level.

The policy tool also assumes that 100% of generation is assumed - is consumed on site, but you're also able to adjust a percent consumed onsite in the model, because it allows you to see what effect it has on the cost of energy if the system is - it like over-produces in a year. In other words, let's say you produce 110%, that 10% excess in what you use onsite is going to be valued at the avoided cost rate.

And through general discussions - I mean, there's no avoided cost rate database, but we've sort of estimated that avoided costs at 41% of the retail value, and we did that by looking at states around the country and the information that we could get, and sort of did an estimate.

The last two, interconnection and zoning and permitting. These are notoriously difficult to estimate, in part because they're just so site-specific. So for interconnection, we followed the (Ferg S-Chip) structure, and we included an extra $200 for an external disconnect switch, which a lot of states require systems to have. So you'll see that (S-Chip) structure is $300, $700, $1500, and $6000 for different sized systems. We largely followed that.

In addition, interconnection costs could include things like grid updates, whether or not a dedicated transformer is needed, and whether the customer requires single-phase or three-phase power. So you can see that it's a very site specific estimate. But of course, the user can change that default to make it more realistic for local conditions.

Zoning and permitting. We've estimated $300 to $2500 per - depending on the turbine. And of course, the user can change this as well.

The last thing I'm just going to talk about briefly is a few market factors that we've included in the tool. Financing. We've assumed that you're going to pay for the entire system up front, but the model also allows the user to model partial financing options.

We've applied an escalation rate to electricity prices and O&M, so we used the EIA Annual Energy Outlook 2010 projections to calculate a 20 year average GDP change type price index, which that's kind of a mouthful, but I'm just reading off of my page here.

And so, you take that initial escalation rate of 1.018% and then you also multiply that by an electricity escalation rate for the electricity rates and that was 1.004% for residential and 1.003% for commercial and non-taxed. And so, I've given this example, so we've predicted that O&M costs will increase by 1.8% this year for residential, and electricity prices will increase by 2.2%. And more information is of course available in the Guidebook if you want to read about that a little further.

Discount rates. These are used to relate present and future dollars. They can be - they can also be viewed as sort of the rates at which future values are diminished to account for the time and value - time value of money. So, we've assumed a 6% discount rate for residential, 7% for commercial, and 5% for the non-tax sector. And let's see - we've used - we've based those on things like the treasury bill average rate, the prime average rate, and the 20-year muni bond.

So, we did a lot of background reading and research into these, and we tried to provide sort of conservative assumptions for these. But of course, these are just the defaults and the user can change these to model different scenarios.

So just wanted to give you a brief overview of some of the things - some of the decisions that went into this model. And if anybody has any quick questions, I can take them now. Otherwise, I'd like to turn it over to Jen, who's going to talk about some case studies.

Trudy Forsyth: Well, thank you very much Laurel. We do have one question, and the question is, "Is the avoided cost 41% of the retail value? The retail value of the energy charge only, or the retail value including the energy charge, distribution charges, et cetera?"

Laurel Varnado: It's - are you talking about - I guess - I don't know - you don't know if they're talking about competitive markets or regulated markets? Is that the distinction?

Trudy Forsyth: I don't see any information on that. I'll tell you what, let's ask (Gabriella) to expand on her question, and then we can address once Jen's presentation is over.

Laurel Varnado: Okay.

Trudy Forsyth: Does that sound reasonable?

Laurel Varnado: Sure.

Trudy Forsyth: Sure. Okay.

So the next person that I'd like to introduce is Jen Banks, and Jen is the Wind Energy Project Coordinator at the North Carolina Solar Center. Jen heads up the Solar Center's efforts to educate North Carolina citizens and government

officials on the potential for wind energy, both land-based and offshore, to become a beneficial addition to the state's energy mix, which God bless you for that one Jen.

Before joining the Solar Center in January 2011, Jen worked with the American Wind Energy Association where she was the Staff Lead for offshore wind. She focused on offshore wind education and policy at the federal level, as well as various wind (citing) issues such as sound, health, and stakeholder involvement.

Previous experience includes wind energy education along the North Carolina Coast, preparing the regulatory portion of an offshore wind feasibility study for South Carolina, and recycling education for North Carolina citizens and local governments.

Jen holds a BS in Environmental Technology from the North Carolina State University, and a Master of City and Regional Planning degree from Clemson. So now we're going to turn this presentation over to Jen, but just so that everyone knows, after this I'm going to ask Heather Rhoads-Weaver to introduce everyone on the team here for the Power through Policy Best Practice for Cost Effective Distributed Wind Project, which is this project.

So Ms. Jen.

Jen Banks: Thanks, Trudy.

Now I just want to let everyone know that I'm going to be bouncing back and forth from my PowerPoint to the actual Web tools. So I apologize if there's a delay or if there's some trouble. And hopefully, my fellow speakers will let

me know if they see any problems on the screen. I'll try and do it as seamlessly as possible.

But anyway, so thanks for that great introduction Trudy, and I'll be talking with everyone about - a little bit about the Web tool and then also just going through a case study that we have in our Guidebook to let everyone know how a local policy maker or a state policy maker might utilize the Web tool.

So before I jump into this case study actually, I'm going to show everyone the Web tool, just so you can get an idea. I think this is probably the first time some of you are seeing it. And I want to give everyone a quick overview before we jump into this case study.

So you can see here on the first page that you can easily select your type of turbine and the state that you're interested in. And when you do that, you'll see at the bottom of the screen that the results update for every change that you make. You can also see that on the different tabs, you have all of the different variables that you're able to change to see what sort of a difference it would make if your state had a policy that was different from the default values that are listed over here on the right side of the screen.

So I'll just tab through these so that you can see - we have a Financial tab where you can also see the defaults and make changes based on whatever you're interested in seeing an impact from.

We have a Federal tab, and we have a State tab which has actually two pages. So if you're using this, make sure that you remember to go down and take a look at the next page so that you can see all of the variables.

And then if you continue to the next tab, this shows you the information on the turbine, the wind resource, and the sector that you have chosen.

And on the last tab, you can take a look at just a little bit more information about the project. You can find information about the assumptions that Laurel talked about, and...

We'll go back to the first page now so that we can start working on this case study, which is an optimal policy combination for the State of Kansas. And Kansas was chosen because it has minimal policies in place. And what we'll do is we'll take a look at the base case scenario for Kansas and compare that to various policy scenarios when we add in specific policies.

So now I'll jump back to the Web tool. So for this case study we used the 100 kilowatt commercial sector turbine. So I have that selected, and I'll come over here and select the State of Kansas. And I think I have something else that is saved from my last changes, so I'm going to reset really quickly.

Once this pulls up, I will go back to select our turbine.

Woman: Jen, I think you need to hit the Inputs tab.

Jen Banks: Oh, thank you.

Woman: There you go.

Jen Banks: Forgot a step there.

Okay, so now if I select the commercial sector turbine and the State of Kansas, then you can see the results have updated here at the bottom of the screen, and this is our base case scenario.

So the first thing we'll take a look at is changing the policy for the interconnection costs. So if we go to the Cost tab, and you can see here the interconnection cost - and again, you can still see the results page at the bottom. So the base case right now is $6000 for interconnection.

And if we wanted to change that to $1.00, then you see at the bottom that it doesn't have a great impact on the results, but you can see that the net present value has changed from about $233,000 - -$233,000 to -$227,000. But, the individual rate of return, the payback, and the cost of energy remained the same.

And if we take that way and decide to look at the zoning costs, which is set at $2500 for the default, if we made that $1.00, then you can see again that there's not a great change in the results but the net present value again is - it's changed a bit under a different zoning cost.

So we'll go ahead and put that back and take a look at the statewide net metering. So you can see here on the State tab that Kansas does not have a statewide net metering policy.

But if we were to take the toggle switch and say yes, we do want Kansas to have a statewide net metering policy and see what that would do, you can see at the bottom of the screen that it has changed the results. The individual rate of return has increased to 3% -- it's now positive -- the payback has reduced to 15 years, the net present value is still negative, but it's -$97,000 instead of about $230,000. So, the cost of energy remains the same.

So again if we were to undo this change and take a look at what would happen if the State of Kansas had a rebate program similar to that of New York - New York's onsite small wind incentive program provides 50% of the installed cost of a wind system up to a maximum of $400,000. This is a production-based incentive, and you can see here on the screen the different levels of the rebates for the different amounts of electricity that you have produced.

So if we go back to the Web model and we consider that the commercial turbine that we have selected would have a rebate of $163,468 under the New York program, then we can go to Page 2 of this State tab and change the rebate to $163,468. And you see that at the bottom the results have changed - to update - have updated to reflect that change.

So our individual rate of return is -1%. The payback is still more than 20 years. The net present value is still negative, but it's $127,000. But you can see that the cost of energy has decreased to 9 cents per kilowatt hour. And, this is actually a 31% decrease in cost of energy when you make that change.

So I think it's helpful, because I know that I've sort of run through all of this. It's helpful to take a look at all of these things next to each other. So you can see that we have the base case listed on the table, and you can see the impact of each of the policies. Now these are separate impacts, so if you look at the interconnection cost, that's the impact of just the interconnection cost and the zoning's impact of just the zoning, is the same as you move down.

But, this helps you determine the specific impacts from each policy. And if you're a policy maker, you're really more interested in knowing the combination of policies that are most effective.

So from this table, you can see that as we said, the rebate program has the most impact on the cost of energy, and the statewide net metering really has the most impact net the payback. So if you're a policy maker and you thought, “Well, what if we combined those two together, since they’re the two that have the most impact? If we combine those, then what would be the combined impact of those?”

So now we’ll jump back to the Web model, and we already have the rebate listed on here, and you can see the results based on that. So, we’ll go back to the first page of the Web tool and we’ll select yes for statewide net metering. And then, that’s going to update the results at the bottom for us. You'll see that the individual rate of return is now at 7%. The payback is - has decreased to 10 years, which is really important when you consider the lifespan of these turbines. And the net present value is $8000, and the cost of energy is at 9 cents per kilowatt hour.

So to help everyone see that a little bit easier, here’s a table that just shows you the base case to that scenario of having statewide net metering and having a rebate program similar to that of New York.

So if - again, if you were a policy maker and you were trying to find the absolute best scenario in order to make distributed wind most economic in your state, then you might think, “Well, what if we combined all those policies together and see what sort of impact that has?”

So here on the Web model we have the statewide metering selected, and we have the rebate entered in. So if we go back to the Cost tab and we change that interconnection cost from the base case of $6000 to $1.00, you'll see the results change at the bottom. And then if we have the zoning cost changed again from the $2500 base case to just $1.00, then we have the results of all

four of those policies together. So we have an individual rate of return of 8%, a payback of 9 years, net present value of $16,833, and a cost of energy of 9 cents per kilowatt hour.

So again, to let you see that in table form to help you compare that to the base case. We had a 31% reduction in the cost of energy. We have a positive net present value. And if you remember from our last scenario with just net metering and the rebate, you've doubled your net present value by changing the interconnection and zoning costs.

You have an 8% individual rate of return and a payback of nine years, which is all - again, it's one year shorter than if you just did the statewide net metering and the rebate program.

So hopefully, this was helpful to show everyone the functionality of the Web tool to help you see - you know if you're interested in a specific policy in your state and what sort of impact that would have on project economics. And it's pretty simple to go in there and change the variables and see what would happen so policy makers and citizens could take a similar look, do their own case study and determine what policies should be a priority for their state.

Thanks for listening in on the Webinar. And if anyone has any desire to see the Web tool, you can email Heather Rhoads-Weaver, and it's not been rolled out publically yet, but we can provide a link for anyone who is especially interested in seeing it now.

So I'll go ahead and turn it back over to Trudy for questions.

Trudy Forsyth: Okay. All right, thanks Jen.

Well let's see, I want to give Heather an opportunity to introduce the whole team that is developing this Distributed Wind Policy Comparison Tool and Guidebook. And then, we will get back with (Gabriella Martin)'s question. So Heather.

Heather Rhoads-Weaver: Okay. Thanks Trudy. And several of us are here on the line to help with answering questions. Trudy and (Tony Amensa) have been really important advisors on the project and helping us work through a lot of issues as we're developing the tool. We also have (Alice Orel) from the Pacific Northwest lab on the line, and she's done a mountain of work on the Excel version of the pro forma model.

And then the Xcelsius Software that's driving the tool has primarily been developed by the North Carolina Solar Center, Wade Fulghum. And before he was involved, Brian Miles was a lead staffer now. Now Jen Banks, who just gave the demo, is our lead. And Laurel Varnado as well as (Amanda Vanaga) have been helping on the policy issues.

I believe we also have (Maureen Quinlan), (Steve Caland), and a few others on your staff that have been involved. Jen, did you want to mention anybody else's names?

Jen Banks: No, I think that covers everybody.

Heather Rhoads-Weaver: Okay.

And then from eFormative Options, Matt Gagne and Kurt Sahl, Alicia Healey have been involved, and Peter Asmus is helping us with our media outreach. And then Keith Bennett is our Project Officer at DOE. So it's quite a large team.

And I will say if you go to the WindPolicyTool.org, you can sign up to subscribe for an announcement when we do go live publically with the tool. And the beta login is right there. I just - I would need to send out a password to anybody that wants to try it out now.

Trudy Forsyth: And of course, all of this is pulled together masterfully by Ms. Heather Rhoads-Weaver. You didn't introduce yourself.

Heather Rhoads-Weaver: Okay. Thanks Trudy.

Trudy Forsyth: All right.

So we will of course joyously accept your questions, but let's go first with the question that (Gabriella) asked. And she was basically referring to a deregulated market where generation and distribution are separate.

So her question is, "When you say the avoided cost is approximately 40% - 41% of the retail value, were you looking at the retail value of the energy charge only, or the retail value including the energy charge, distribution charges, and (et cetera)?" And I think this question goes to Ms. Laurel.

Laurel Varnado: Yes. Thanks, Trudy. We were just looking at the entire retail value, so including all of the distribution and energy charges together. So I know there's retail choices only in around 14 states or so, so we just look at sort of a broad spectrum of what is included in the retail value of energy.

So 41% is basically - would be essentially the energy component of competitive choice market's energy value I guess.

Trudy Forsyth: Yes.

Laurel Varnado: So it's - just looking at it - a holistic value of the retail credit for energy.

Trudy Forsyth: Yes.

So we have more of a statement here next, and it has to do with the default value of the North Wind 100. So what is our default value for the North Wind 100? Can somebody answer that? I think that's probably again you, Laurel.

Laurel Varnado: The default value for what? I'm sorry, I missed that.

Trudy Forsyth: The North Wind 100 machine.

Laurel Varnado: The default value for what? The...

Trudy Forsyth: The (unintelligible) cost or the turbine system cost?

Laurel Varnado: Oh, the turbine system cost? I don't know. Heather or Jen, do you have the...

Jen Banks: Yes. I can look that up. And I will go ahead and - I've had several questions about you know, why we selected these particular turbines? If other tower heights can be included? And the basic response to that is we wanted to have a limited number to make the tool manageable, so we said you know not more than ten choices of turbines. We wanted to represent the North American market, so those that have a large market share, and also those that are progressing towards SWCC certification.

We wanted to include just certified power curves, but the timing was a little off, so we did use those power curves from manufacturers as well as those that have been verified by (Enrill).

And then, you'll see that a lot of the turbines have two tower heights. We asked the manufacturers to give us either their most common one or two heights, and to give us pricing on those. So most of the pricing estimates came directly from the manufacturers. We did kind of verify that with some installers.

So the bottom line for the northern - in the tool, the assumption is $550,000. Of course, you can adjust that if you think it's lower or higher in your own market.

Trudy Forsyth: Right.

And so this tool really - I guess we should hand out another sort of waiver or disclaimer in that the prices of products in this tool are really just suggestions. They're not necessarily accurate. You should go to that manufacturer and get a cost quote from the directly.

One question here from (Mason Sorenson). He says, "I know you mentioned this tool is for 100 kilowatts or less. Is there any reason that this could not be used for a single turbine project that is large, such as one megawatt?" Who wants to answer that one?

Woman: (Alice) or (Amanda), do you want to explain the limitations about policy feed?

(Alice Orel): Well - hi. This is (Alice). The - right now, the tool only includes turbines up to 100 kilowatts, so you couldn't - you can't model a one megawatt turbine in the tool. But in theory, yes. The tool could be adjusted to include different sized turbines up to one megawatt.

Trudy Forsyth: Okay, thanks (Alice).

Heather Rhoads-Weaver: And I also want to make sure people understand that this is not a tool to evaluate an individual project economics. It's really for looking at policy-wide questions. So a lot of the assumptions built into it are - you know, are for more macro analysis rather than a project specific. Just so we make that really clear.

Trudy Forsyth: Yes. Yes. It's - I think you said it exactly right, Heather. It's really a tool for comparing different policies.

So (Lizzie Rubato) from the State of Oregon has a question. "Are you looking for input from specific states on corrections or clarifications to your assumptions?"

Heather?

Heather Rhoads-Weaver: Oh, defiantly.

Trudy Forsyth: Yes.

Heather Rhoads-Weaver: Yes. If we have you know, anything incorrect in here, we're open to feedback.

I will say that the grant we going to from DOE was fairly limited, so a lot of the requests we're getting to expand the tool in different ways, we are you know basically looking for cost sharing or match funding to help us continue to enhance the tool. But any corrections, we defiantly want to hear about.

Trudy Forsyth: Yes. That's right.

And my question is basically based on this tool, what are the best states? So you're looking at incentives that exist today; how they affect either IRR, or net present value, or cost of energy. But who do think have the best incentives in the market for distributed wind -- 100 kilowatts and less -- today.

Heather Rhoads-Weaver: So Arielle, if you're able to put the control over to my computer, I actually was kind of ready for this question. I have a slide here, and this is from a presentation I gave at the Wisconsin Small Wind Installers Conference last month. And, I believe it is online now, all the presentations from that conference, if you go to smallwindconference.com.

Let's see. Is my screen showing yet?

Trudy Forsyth: I think there's - on the very bottom, there's this little hand with a screen and an arrow. If you click on that, I think that will help. It says request control.

Heather Rhoads-Weaver: Okay.

Arielle Wolfe: I gave control to you. You just need to share your desktop now.

Heather Rhoads-Weaver: Okay.

Trudy Forsyth: The graphic is so much better. Everybody on the phone, just wait for this, because it'll - it will really set up an interesting comparison.

Heather Rhoads-Weaver: So Arielle, is it prompting me to do something here?

Arielle Wolfe: You have to (unintelligible)...

((Crosstalk))

Woman: (Unintelligible).

Arielle Wolfe: Yes. Content and then the Share dropdown box, and then hit share your desktop.

Heather Rhoads-Weaver: Oh, okay.

Arielle Wolfe: Yes. And that should do it.

Trudy Forsyth: While we're waiting for Heather, I will just reiterate thanks for everyone participating on this Webinar sponsored by the (ASES) Small Wind Technical Division.

Heather Rhoads-Weaver: Okay.

Trudy Forsyth: We're getting close.

Oh, there it is. I see it on my screen.

Heather Rhoads-Weaver: Okay. So there are two versions of the ranking. This shows the top ten and bottom ten states for the internal rate of return. And you see that

Hawaii, Vermont, and Oregon come out the best. And that take into account the entire cash flow for the project, the life of the project. So performance-based incentives, net metering, all that would be reflected here.

The other major metric we look at is the cost of energy, and this reflects up-front costs. So this would emphasize those states that have rebates and tax credits that effect the up-front purchase value. And of course, Oregon has a number of programs combined together that really make it the most favorable. However, we do understand that the Energy Trust is limited to the investor-owned utility service areas, and the tax credit has some limitations and an overall cap.

So it may not be as rosy as it looks on paper, but some of the other states here you see come out pretty well.

And the reason I think that you see Hawaii coming out on top here, well of course, the retail rates are very high in Hawaii, so you're - if you're able to net meter your retail rate, the project looks pretty good. And, this is averaging together all three of the sectors; residential, non-tax, and commercial sectors.

So, this is a really nice output from the pro forma model we've developed that we can update this as policies change and you can look at individual sectors, individual turbines to see which states do best and worst, and which states we really need to focus on to improve.

Trudy Forsyth: So I have a simple question for you Heather, and then a question for (Alice).

Are - is your team available to work on this tool for other technologies besides distributed wind?

Heather Rhoads-Weaver: Sure. I mean, I think that we are primarily interested in the distributed wind marketplace. Of course, the Solar Center has created several tools similar to this for PV and - Laurel, you can help me out here if there are some solar thermal tools that are similar. But - and (Alice), go ahead and - I know that you're working on some larger scale wind projects as well.

So you know, turning this into kind of a user friendly package is quite a complex process. I will say that - you know, we are open to ideas, but it's not an inexpensive prospect.

Trudy Forsyth: So Laurel and (Alice), did you want to add anything to that?

(Alice Orel): I think the model could be replicated for other technologies. It would be a new project though. It wouldn't be something we would incorporate into this particular distributed wind model, but it could be done again for different technologies.

Trudy Forsyth: Do you have a tool for larger wind applications?

(Alice Orel): No. Not - oh well, kind of. It depends. I mean, there's other calculators out there that are more project based, right. Not policy-based. They don't have the policy assumptions built in like we do. You have to input them yourself. (Enrill) has a tool like that, and (Windustry) has a calculator like that.

Trudy Forsyth: And Laurel, what about the solar side? And, is there a tool for solar thermal?

Laurel Varnado: I'm not sure off the top of my head if - I know there are some - like (Enrow) had that tool, the (Crest) tool that - but it's just such an individual - there are so many individual caveats with each of these technologies that I think it's important to focus on one at a time and really get all your assumptions down.

Because - well, solar thermal is - you know, you're dealing in BTUs, and there's a whole other - that's a whole other bag of worms I guess. So...

Trudy Forsyth: Yes.

Now I'm going to put somebody on the spot who has no idea that I'm going to put her on the spot. So (Maureen), is there anything that you would like to add in terms of tool development for renewables from the North Carolina Solar Center perspective?

(Maureen): Thank you for that surprise question.

Trudy Forsyth: Gently responded to.

(Maureen): I would - I guess I would say in addition to Laurel's answer, if you go to the North Carolina Solar Center's Web site, which is www.ncsc.ncsu.edu, under Information Resource you will see several calculators there. But I think like Laurel mentioned, it's more of a project-based calculator, not a policy tool like this.

Trudy Forsyth: Right. And it really is the policy tool aspect of this that makes it so absolutely wonderful, particularly for states or entities trying to trade off which policy is going to have the biggest effect.

So (Alice), what discount rates did you use, and why did you use them?

(Alice Orel): Well Laurel mentioned earlier (unintelligible) about her assumptions about (unintelligible) that we did a lot of research to figure out what was the best discount rates to use - and I'm trying to look for my notes real quick. Sorry.

The - and we didn't want - we tried to look at averages over time so as not to trap the model like in current economic conditions. To give it more of a long-term perspective. And so, we used members from the Federal Reserve Historical Database. The residential rates based on the - a 20-year - the average - or the 20-year treasury bill average rate, the commercial based on the average prime rate, and the non-taxes based on an average 20-year municipal bond rate.

Trudy Forsyth: Okay.

Let's see here. (Lizzie) says, "Oregon's tax credit for commercial business systems is now effectively gone for small wind. At least for the near-term, I think we have to hand in our trophy." So there's a comment from (Lizzie).

Any other questions that anybody has?

Coordinator: If you would like to take a question from the phone lines, you may press star 1. If you would like to take a question from the phone lines, please press star 1.

Trudy Forsyth: So that means the person asking the question would do that. Star 1.

Okay. We see - Heather, we see your screen - a lot of it in action.

Heather Rhoads-Weaver: I was trying to get the North Carolina Solar Center Web page to come up, but it does look like they not only have for quite a few different - the solar PV, solar thermal biomass, as well as energy efficiency, combine heat and power, and LED retrofit calculators. So I think those are - most of them are using the Xcelsius software.

And then one thing we talked about for our project is that if we were going to expand it beyond small wind turbines, that we might use a different interface that - there are some limitations to Xcelsius, and we'd be probably looking around for some kind of Web-based solution.

Trudy Forsyth: Yes. Okay.

Coordinator: I do have one question from the phone lines.

Trudy Forsyth: Okay.

Coordinator: (Aaron Godwin), you may ask your question.

(Aaron Godwin): Hi. I was the troublemaker that was asking the question about the price of the turbine.

My concern is that if a policy maker sees this, and this is the only thing that they see, that the message they're getting is this just doesn't work on its own without significant help. And I put this kind of in light of kind of the real world projects we're dealing with and the question that somebody else asked about getting it up to other distributed generation projects. Single units. Maybe up to like 1.5 meg, because our costs per nameplate KW would be significantly less, and the scenarios dramatically improve.

Where using like the Northern Power at $550,000 is probably one of the most expensive machines in the market per kw, and it really sends - I'm not saying it's a bad machine. In fact, we think it's a good machine, it just sends a bad message to the policy maker that's not fully informed.

Trudy Forsyth: Yes. And I guess my hope is that the policy makers that we've been working with for some time on states - a state level are well enough informed.

But you're right, because you don't know who's going to use this tool in the future.

So Heather, maybe what you ought to do is put in some caveat on turbine prices. You know, turbine price may vary and not necessarily represented accurately here. Because, it will vary over time as that goes forward.

Heather Rhoads-Weaver: I think that's a really good idea. And also, this case study we showed today was really more just to demonstrate the tool itself. And in the Guidebook that we are finalizing, we've looked at quite a few different scenarios and ways where the economics do look more favorable.

And I'm showing on the screen right now - we looked at for New York for example, comparing a 50 kilowatt and a 2 kilowatt turbine in different wind regimes. You know, the cost of energy is getting down pretty low for the taller towers of course. And then in Wisconsin, we looked at a whole variety of turbines here.

And you can see - yes, the 100 kilowatt is you know, fourth or fifth down the list, but some of the smaller turbines also have pretty good economics. So I think - you know, we did want to highlight that in places where there are good policies, certainly the bottom line you know, is favorable for small end, but there is a lot of room for improvement as well.

(Aaron Godwin): Am I still on?

Trudy Forsyth: Yes.

(Aaron Godwin): I guess the question is, is I know that some of the other calculators use generic machines, and which would also kind of get away from the fact that you're promoting a particular machine. And then I - so one would be can you convert to a more market-balanced generic? And two would be can you have a user definable input, where the user would define either you know, what the size of the unit is? Again, if you did that by generic or by a - you know, totally user-definable inputs.

Trudy Forsyth: I think you have an input - you can put anything you want in there, right?

Heather Rhoads-Weaver: Well...

(Alice Orel): No.

Heather Rhoads-Weaver: Let (Alice) answer that, and also if (Tony) wanted to chime in.

We did talk about both of those issues early on in the project, but go ahead (Alice).

(Alice Orel): No. We don't have the capability right now to put in a user-defined generic turbine. All of the turbines are defined in the model right now.

And a lot of states are - have a specific list of what kinds of turbines they will provide incentives for. And so, those are the types of turbines that we have you know, in our model too. The ones that have - that states are recognizing and giving incentives to.

Heather Rhoads-Weaver: And (Tony), I know you've dealt with this issue on a lot of other models you've worked on. Do you want to explain why using a generic machine we didn't feel would lead to useful results?

(Tony), is there? Or maybe Trudy, you - you were part of that discussion as well. I think that - you know, going from an actual power curve and actual pricing, we felt that kind of having averages in there, you're just not going to get down to the level of accuracy.

Trudy Forsyth: Yes. That's exactly right. And these things move all over the place. Price, cost points are always in a state of flux, and power curves which is - gives you energy production; it can take on a variety of forms. You know, we do testing here at the National Wind Technology Center, and we're an accredited test organization and we test to standards. But, we know that there is variety in terms of turbine output depending on where you test it.

So just trying to rise above the vagaries of the turbine pricing in energy production, because this tool is really focused on policy options. So, that's why it didn't addressed in further detail.

Any other questions?

Coordinator: Once again on the phone lines, if you would like to ask a question, you may press star 1.

Trudy Forsyth: Okay.

Heather Rhoads-Weaver: Well Trudy, as we're wrapping up, I neglected to mention earlier that we have had input from quite a broad group of state policy managers and advisors, and we've been selecting data on state incentive programs. So we

wanted to thank everybody that's responded to our request for feedback and for data. And you know, we really couldn't have done this project without you. So we really appreciate everybody's help.

Trudy Forsyth: Yes. That's right.

All right. In closing, thank you very much for everybody to attending - for attending our (ASES) Small Wind Division Webinar, which is - the focus is on the Power through Policy Tool, best practices for cost effective distributed wind.

I'd like to thank Heather, and Jen, and Laurel, and (Alice) for helping us get a better glimpse as to this tool and its capabilities. And, for their wonderful in developing such an interactive tool that policy makers can use to compare the effects of different policies.

Karin Sinclair: And one more thing. This is Karin Sinclair. I wanted to also thank the speakers, and I want to tell some of the folks that are on our line who may not be current (ASES) members that if they're interested in small wind activities that we're doing, they should consider joining (ASES), especially as a professional member of the Small Wind Division.

And secondly, I would like to encourage anybody to send you - who has an idea for future Webinar topics to send those either to myself, Karin Sinclair, or Trudy Forsyth, as we are both co-Chairing the Small Wind Division.

That's it.

Woman: Okay. Thanks, Karin.

Trudy Forsyth: All right. Thanks everybody. Enjoy the rest of your day.

Woman: Thank you.

Woman: Thanks, Trudy.

Woman: Thank you.

Coordinator: And this concludes today's conference call. Thank you for joining. All parties may disconnect at this time.

END