JOBS AND ECONOMIC DEVELOPMENT IMPACT (JEDI) MODEL
January 10, 2013

Coordinator: Welcome and thank you for standing by. At this time all participants will have open lines for the duration of today's conference call. If you need to mute your phones, you may press star six to mute as well as star six to unmute. Today's conference call is being recorded. If you have any objections you may disconnect at this time. I will now turn the conference over to Miss Karin Sinclair. Ma'am, you may begin.

Karin Sinclair: So, welcome to the first webinar put on by the ASES Wind Division for the year 2013. As many of you may know, we try to provide topics of interest to our members on a bimonthly basis, and this topic that we'll be presenting on today, JEDI, Jobs and Economic Development Impacts Model, is one of those that was requested by some of our members, so I would just put out to you to anybody on the call, if you have a topic of interest, please get in touch with me. We'll try to cover that topic in a subsequent webinar.

Today we will have David Keyser from NREL presenting on JEDI with also an emphasis on the small wind module that's in development stages. David is a recent hire to NREL, but he is by no means a novice in this area. He's an economist who's had a number of years of experience doing economic impact models and has worked with the state of Colorado as an economist, so I'm going to turn this over to David, and feel free to ask him any questions you may want.

David Keyser: All right, well, thank you, Karin. What I will be talking about today is the JEDI suite of tools that are offered by NREL, specifically focusing on the small wind JEDI. During this presentation, I think the best thing to do for all of you, the ones that you can interrupt at any point in time, and I would much

rather field questions or comments that you have during the presentation as opposed to waiting for a Q&A at the end.

Certainly we will have some time for questions and answers at the end, but I always would much rather talk about what the audience is interested in than what I'm interested in. I know that it's kind of difficult over a webinar since we can't see each other, so just interrupt me at any point in time. Don't feel bad about doing that.

What I want to do today is first start out doing more of a broad overview of JEDI model, what it is, what you can get out of it, how it works, and then look into and then go over how you might interpret results of that model and what they mean. Then I'll move into model development and how we come up with models and look at how we're coming up with the small wind JEDI model. I'll also go over how you download and use JEDI, look at a sample scenario, and talk about some other small wind resources that are offered by NREL right now.

To start out, JEDI is a free input output tool, what's called an input output tool, and I'll talk more about what that is later on, but it's a free input-output economic impact tool that's offered by NREL so that people can download these models and estimate potential economic impacts of investments in different energy technologies. JEDI also is somewhat unique among economic impact models in that it has a set of default inputs that are based on either real life scenarios, real world scenarios, or input from experts in different fields.

We like to get feedback from developers, and so JEDI has a lot of information beyond just economic impacts about renewable energy and other energy technologies. It's something that someone can walk into without a whole lot of knowledge about a project and calculate some off the cuff economic impact

estimates, or it's something that you can walk into having a lot of information about a project and really dial down and customize to get a really tailored economic impact scenario.

Right now, there are several technologies that are offered by - within JEDI models, land-based wind, natural gas, coal, marine hydrokinetic - hydro-kinetic - marine hydrokinetic, concentrating you know, a couple of different solar powers, a couple of different bio-powers, and geothermal, and the small wind JEDI's in development. We're about to release an offshore wind, and there are a few other JEDI models that are in development as well, so there are quite a few different technologies that are included in JEDI.

So why would anybody even care about impact modeling? Well, everyone cares about the economy, or at least that's what I like to think, given that's what I do, but people care about what the economic implications of the project. They care about evaluating the scenarios, whether it's for their own information, for the information of constituents, if it's something they're going to put on a grant application, these are things that matter.

It can also help local businesses, for example if someone is talking about putting in an energy project in their region and they want to know, well, what might the potential impacts to me be of this project? They would be interested in economic impact results, and governments are also very interested in it, not just from a communicating to a constituency point of view, but also in their planning of what they might need to provide to potential businesses or workers who might be moving into their area.

And a lot of times, impact results are requested through grant applications for this reason. So a lot of different people use these models because there's a lot of different reasons why you would be using it, especially consumer

advocates, government organizations. I used to work with - in economic development up in northern Colorado, and I know that economic development groups very frequently use economic impact tools, including JEDI, and international analysts, we've had a lot of international interest about adapting JEDI to work in other countries.

And there's just a tremendous amount of diversity in people who use these models. The approach that JEDI takes is to gather a lot of these cost data, these inputs that I mentioned earlier, from industry experts, from people who are working in the field, from projects. It takes these and puts it - basically runs it through an input-output model. Input-output models are models that look at interactions between entities in an economy, so it looks at how - what basically it asks two things: what do businesses need to produce, and how do people spend money?

So if you're causing a business to produce something, you're buying something from a business, that business has to go out and buy inputs. It has to buy labor and things like that, and when people work for a business and they get paid money, they go out and spend money locally, and so in the input-output model, takes this information and then translates that into a set of impacts, and those three impacts you can see in bullet points in this slide are the project development and onsite labor impacts, the local revenue turbine and supply chain impacts and the induced impacts.

And I'm going to go over these in a lot more detail in just a second, but those are the three most broad areas that input-output models look at. Those metrics, as I mentioned - well, I haven't mentioned the metrics yet. Within those categories there are three basic metrics. The number one and the one that people are most interested in is jobs, and JEDI expresses jobs in terms of full-

time equivalents. A full-time equivalent job is just a person who's working full time year round.

So two people who work 20 hours a week count as one full-time equivalent. Four people who work for one quarter counts as one full-time equivalent. The compensation that's reported by JEDI, that could be wage and salary income plus benefits, or it could be proprietor income from work. It's just any kind of income from work, and it extends beyond wages and salary, so it's what people are actually paid to be doing a job. The third metric reported by JEDI is gross output.

Gross output is revenue plus expenditures on inputs, which may be kind of confusing so let me give you an example. If I walk down the street and go to a sandwich shop and buy a sandwich, it's 12:30 here in Colorado so I'm thinking about sandwiches, if I go down the street and go to a sandwich shop and buy a sandwich and that's a $10 sandwich, and the sandwich shop paid $5 for stuff that goes into that sandwich, the gross output from that is $15, so I paid $10, the sandwich shop paid $5, so that's $15 of overall economic activity that's going on.

This is not the same thing as GDP, so I know that sometimes people tend to confuse the two, and so I want to emphasize that gross output is not the same thing as GDP, and all of these metrics as reported by JEDI are gross. They're not net, and that is - that means that JEDI isn't factoring in outside changes when reporting these metrics, things like jobs that might be lost as a result of electricity rate increases or transferring from one technology to another. Before I move on, does anybody have any questions about - specifically about these metrics and what they mean?

Okay, I'll move on. And I said I would talk more in detail about the JEDI categories, and I'll go into a lot more detail about that right now. There are three basic categories in which the three metrics that I just mentioned are reported. The first is project development and onsite labor, which is really the boots on the ground impacts. These are the impacts that directly arise as a result of project expenditures, so if I'm going to erect a wind tower, and I'm paying out a certain amount of money to do that, the project development and onsite labor impacts are going to be the people who are actually on the ground putting that tower up.

And I'll go into even more detail about these in just a minute, because I know that a lot of times these can be kind of confusing. The second category are the local revenue turbine and supply chain. These are the impacts that supply those onsite - that onsite - those onsite companies. And then the third is induced impacts, and those arise as a result of local expenditures. So as I mentioned, project development and onsite, the - this is the actual erecting of the tower, everything that's going on that is directly involved, that directly arises as a result of an expenditure for a project.

So that could include people who drive the equipment there. It could be the crane operators, the construction companies, any kind of drilling, things like that. The local revenue turbine and supply chain, this is a lot of the manufacturing jobs that actually supply products to the onsite companies. It could also include contractors, so for example if a small wind company contracts out its accounting services, so another local company keeps their books, that accounting services, those will show up in local revenue, turbine, and supply chain impacts or legal services, things like that show up in the supply chain.

And this also could include financial services, banking, things like that, so the third category is induced impacts, and induced impacts are local expenditure effects, so the people who are working onsite, those workers are going out and spending money in an economy. The people who are in the supply chain and induced effects - supply chain and local revenue effects, they're going out and spending money in an economy, so think about someone who's working at a manufacturing company and they're working all day, and they get off work and then they go bowling with their friends.

Well, that person who's working at the bowling alley, they're supporting that person with their local expenditures, so that's an example of an induced impact, so it can include the sandwich shops, child care workers, retail sales, also a lot of professional workers like doctors, dentists, things like that. So does anyone have any questions about the types of impacts that are reported by JEDI or the metrics themselves?

Okay, when you use the JEDI model or in really economic development, economic impacts reporting in general, there can be a lot of variability in the impacts that are reported, even for similar projects. The factors that really influence that variability most heavily are how much of that project is local and the size and cost of the project, so bigger projects are going to typically require more material to construct. They're going to require more people working on those projects, so the size of it will tend to have big impacts on what's reported for the economic impact estimates.

How much of that activity is local also has a big impact, so for example if someone goes out and builds a wind farm in Colorado, and they use all Vestas equipment that's manufactured here in Colorado, that economic impact is going to be significantly larger here in Colorado than if they built a project

here in Colorado and buy equipment from China, so that has a big impact, and the developer preferences have - play a role in that as well.

If someone - going back to that example of building a wind farm here in Colorado, if the developer wants to use Vestas equipment, when - you might say that it has a really big impact here in Colorado because that's purchased locally, but maybe that developer doesn't want to buy Vestas equipment. The developer wants to buy Siemen's equipment or something, and so the developer preference is going to play a big role in that as well.

And then the magnitude and allocation of project revenues makes an impact, so if a project is owned by a local resident or a group of local residents, that's different than a project that's owned by an investor that's out of state or overseas, because the investor is getting returns from that investment, and spending that money locally, and so that impact may be realized locally if it's owned locally, or not if it's not owned locally.

The way that we go about developing the models is really in line with how the models work. We start out looking at expenditure data. We try to get that data from real projects. If a real project isn't available, for example we have marine hydrokinetic and offshore wind JEDI models, if that's not available in the United States, we have to rely on theoretical projects or how a project might translate to the United States, but we really try to base everything that we do in reality.

We usually collect the data internally, but sometimes we'll hire consultants, sometimes other national labs will collect it, but we do have a rigorous process for collecting and embedding information. Once we get that information and build the model, we'll send it out to peers for review, and then update it periodically to make sure that it's timely. We always try to go

out and verify that information and vet it with developers, owners, counties, even after a model is developed.

We still try to keep looking at real projects that are developed, maybe from press releases, or maybe we get that information from someone and just - we keep an eye on them to make sure that they're both accurate and relevant, as accurate as possible anyway. We also go through quite a bit of model testing internally, and we'll send them out for peer review.

Once we have the model put together within, we've been trying to issue user guides with new models to help people understand what they are and understand how to use them, and answer questions that people have, and then we'll publish the model online and manage and maintain the models, and that includes both updating the data and some level of support for the model so people will inevitably have questions and email us, and so we try to field those and get back to people when they arise.

So does anybody have any questions about any of the information that I've covered so far before I get into examples about how to use JEDI?

Karin Sinclair: So this is Karin. I wanted you to take a step back and community wind projects are important to some of our members here, so when you were talking about the impacts of how they're calculated, could you just clarify the difference between a locally owned community wind project where the investors are local versus an investor-owned community wind project where the investors are not local?

David Keyser: Certainly. There are always going to be returns to a project over time, and it doesn't matter - you know, you can think about investing, I don't know, I think most people - a lot of people own a house. If you buy a house with

money that you borrowed locally, I spend a large portion of my mortgage payment on interest each month, and that money is going to - I don't even know where it's going, but if I borrowed that money from somebody in Denver where I live, that money would be going in Denver and staying in Denver.

And it's the same thing with the wind project. When you finance a project, that money, those return on that loan could be going out of state, or in the case of community wind, it could be staying locally. Does that...?

Karin Sinclair: Yes, I just wanted to make sure that we understood the difference between if the investors are local and they're investing in the community wind project, then the money will more likely stay local versus an investor of a community wind project who is an outside the community and investing and they take the money outside the community.

David Keyser: Right.

Karin Sinclair: So I just wanted to make sure we understood the difference between those two scenarios, which are very important, powerful implications for JEDI.

David Keyser: Absolutely, and I said that in the case of a loan, it doesn't even have to be a loan. You know, you could pay for it outright and then just be saving money on electricity in the future, and in that case the money saved is basically the same thing. You're saving money, and so you have more money to be able to spend locally as opposed to you know, receiving interest payments or something like that.

Suzanne Tegen: And - this is Suzanne. I just have one thing to add, and that's that there are - there's a paper that's done at NREL. I think Eric Lantz is the lead author on

the paper, and so people can get to it from our NREL publications database on the Internet and look up Lantz, which is L-A-N-T-Z, and that talks about the community versus investor owned wind projects, so if you are interested in that, that's a great resource.

David Keyser: Thanks again. Any more questions before I move on? Okay. The JEDI model is pretty easy to get to. Just go to our website, www.nrel.gov/analysis/jedi, and you'll see this screen that I have right here. You just go ahead and click on the download JEDI link, and...

Woman: Are you a member?

David Keyser: And you just need to enter in some information and then you can download the model. I'm giving an example here using the utility-scale land-based wind model, because the small wind model really isn't in production quite yet, but this is what it looks like when you start up. You see the welcome screen, and if you go to the project data tab, this is what you'll see. These are the user inputs that you can put in.

And you'll see this default cost data that I was talking about earlier. The most basic information that you can put in is in the project descriptive data, that basically really you just need to put in a location for the project, which is usually a state, and then the project size, and then usually some kind of name plate capacity for the turbines, and I'll talk a little bit about how this is going to change for small wind in a little bit here, but that's the most basic information that people can put in.

They have the option to use the default data that's in the model, or you could use your own data, and that's the drop down box next to utilize project cost data default values. The cost data looks like what's on the screen right now,

and it's - this is for the construction phase of the project, but you can see how it's - generally speaking it's broken out into capital costs for things like turbines. It's broken out by materials and services, and labor is split out as well, and so those are the most broad categories that those are broken out into.

And you can update that a little bit, or you can update it a lot, or you can just use the default values to come up with off the cuff economic impact estimates. The impact results screen, this is what's on the screen right now, JEDI estimates results in two phases. There's the construction period phase and the operating period phase. The construction period impacts that you see here are for the equivalent of one year, so you can see on the impacts the total impacts, the total number of jobs, that are estimated to be supported by this project.

There's 500 jobs, so what that's saying is that approximately 500 jobs would be supported by this if it took one year to construct. If it took two years to construct, that would be an average of 250 jobs a year, so the construction period is the equivalent of one year. The operating years, however, this is an annual estimate that's basically for the life of the project, so the total impacts being reported in this screen are 20 jobs, so that's saying approximately 20 jobs annually would be supported by this scenario. Are there any questions about using the model or the screens that I just went through?

Okay, we are developing this for small wind right now, and it's a little bit different from the other wind models because, well, small wind is a little bit different. We have instead of people entering in turbine sizes and then being able to scale from there as we do with the offshore wind and land-based wind models, for small wind we'll have four distinct, discreet sized categories, so 0 to 2.4 kilowatts, 2 ½ to 10 kilowatts, 10 to 50 kilowatts, and then 50 kilowatts to 100 kilowatts, and the reason why we do that is that the scenarios that are associated with installing turbines of these different sizes is sufficiently

different that we have to split them apart because the scenarios are going to be a lot different.

And I'll show you some sample results in the next slide, I believe. And right now we're working on a lot of gathering information about supply chain, manufacturing jobs. Those can vary quite a bit by turbine size and by state, and that's another reason why we have those split out into those different size categories. And the default inputs that we have right now are from recent projects and interviews with industry developers, so here's a sample of some of the information or some of the inputs that we've come up with to date.

You can see that there is quite a bit of variability installed to capital costs from the projects we have now, range from anywhere between $5,000 per kilowatt up to $6,400 per kilowatt, just depending on the size of the turbine installed, and then O&M costs can vary quite a bit too, anywhere between $10 a kilowatt to up to $50 a kilowatt, and we still need data on this, and that's probably a part of some of the variability that we have here, is just we need more information to really complete this model and come up with a really robust data set.

Preliminary runs of this model though indicate that small wind supports more jobs per megawatt than large utility scale land-based wind, anywhere between 60 jobs per 100 megawatts to construct, up to - I mean, large scale utility scale land-based wind supports anywhere between 60 and 70 jobs per 100 megawatts, and small wind is up to 550 jobs per 100 megawatts, so that's a significant difference, and the same is true for O&M. Land-based utility is 6 to 7 jobs, whereas small wind is anywhere between 8 and 25 that we've seen so far.

And so there are some big differences there. You can help us quite a bit with this, if you're willing. It would be very helpful if you're interested and you're willing to send us any information that you have about this. We're not going to release company project specific data, and if we don't get enough data points for something, we're not going to release it, so we definitely really obfuscate everything that comes into small so that no one can really identify any one company or project through the small.

But really what we're trying to do right now is get more data to help people come up with estimates that are a lot more in line with actual projects, so anything that you have about any installations with turbines between 100 and 1 kilowatts would be wonderful, even if it's just, you know, what the turbines cost, capital costs, anything would be helpful. And if you're not comfortable with giving us specific numbers, if you can give us a range, that's helpful too. Local share information is extremely helpful.

As I mentioned earlier, that could have a lot of - that can have a big impact on results that we - that come out of the JEDI model, so anything that you have that could help this model along would certainly be helpful. If you are interested, two people you can contact, the best people to contact here at NREL about getting us this information is Suzanne Tegen, suzanne.tegen@nrel.gov, and her phone number is 303-384-6939, or myself, David Keyser, david.keyser@nrel.gov, 303-275-3201.

Either of those, either of us, would be extremely grateful if you have anything to share with us, or if you just have questions about the model later on, and we can help you, you know, answer questions about that or impact modeling in general. We're certainly very happy to help out. I do have another small wind resource to announce at NREL. The Department of Energy actually is releasing the U.S. Small Wind Consumer Guide, and it's an OpenEI, which is

the Department of Energy's wiki platform, and I have the Web link here in this presentation, and just like Wikipedia, people can go in and look up information in there, and people who have something to add can go in there and add information.

And we certainly welcome contributions from the small wind community, because really you're the experts, but it's also a resource if there's something that you want to look up or share with customers or really anyone interested in the industry that is now available.

Karin Sinclair: That's it.

David Keyser: So thank you for listening and watching this webinar. I'd like to open any - open the floor for any kind of questions that anybody has right now. Does anyone have any questions about anything, like in general, sandwiches?

Karin Sinclair: Well, this is Karin. While people are formulating their thoughts and figuring out where their mute button is so they can unmute, so in the big picture of how JEDI works, the modules, the models are developed, and with input of data that then results in a default data in the background of the model, and so someone can use the model with the default data, but they're going to be far more informative if they can input more realistic data from the project or projects that they're considering.

So the reason that we're looking for input from projects in this 0 to - or up to 100 kilowatts size range is because we don't have enough data to adequately represent those various categories that you mentioned, and so therefore the default data that's in there is not going to be robust enough for running analysis right now, so that's why we're looking for more data, but the reality

is that somebody who wants to use this will be - will have better results if they can use more realistic data.

David Keyser: Right, and it's also to obfuscate the contributors, the people who have contributed so far, so the more contributors we have, the harder it is to identify any one specific source, and so yes, it serves two purposes, better information and more anonymity.

Suzanne Tegen: And this is Suzanne. I wanted to add too with the three categories that David talked about, just to emphasize, and David said this already, but there's - the first category is onsite labor, and so those are the jobs that everybody thinks of when they think of labor for installing a small wind installation or a big wind plant or whatever that is, those are the people who are doing the installing, and that's - that category is just labor.

And then the second category, the biggest category, and that's all the equipment and then people in the supply chain, and David showed some good pictures of jobs there and listed some jobs. And then that third category of induced impacts where the sandwich shops come in, that can be broken out, and so I'm a proponent for using those, because that's real money that really does happen, and you - we only count the sandwiches and the sandwich shop workers that come from the money that's spent by the people that work in the wind plant.

And so there - are in the supply chain, so from the first two categories. And so it's not like we're counting all sandwich shop jobs within the city where the wind plant is put up or something. These are really project specific induced impacts, and you can take that out of your calculations. If you're showing this to a local official saying, you know, my - this project is going to support this many jobs, you can say this is how many, you know, jobs it's going to create,

and then you can say, this is without those induced jobs or this is with the induced jobs, but you can - you know, you can take that out if you'd like to. Some people like to remove that category, and I just wanted to let people know that you can easily do that because JEDI breaks it out for you really nicely.

David Keyser: Thanks, Suzanne. Any other questions or comments? Do you want to...?

Karin Sinclair: Yes, so okay, well, I guess if we - if you don't have any more questions, I'd really like to thank David for putting this presentation together, and I hope that it was useful to those of you on the phone. We as I mentioned try to schedule a bimonthly webinar, and we have one scheduled for March 7th. (Russell Smith) will be talking about the Texas Renewable Energy Industries Association, so we look forward to you joining us on that, and again if you have any other suggestions for topics, please send those to me, Karin Sinclair at NREL. If there are no other questions I guess we will adjourn this webinar.

David Keyser: All right, thanks, everybody.

Trudy: I have a question.

David Keyser: Okay.

Trudy: I'm so sorry to be catching you at the tail end. Are you seeing any data from what I would call distributed wind turbines, meaning a little bit larger turbines that are installed in (unintelligible)? Are you getting any of those? This is - I should introduce myself. This is Trudy.

Suzanne Tegen: Thanks for the question, Trudy. Do you mean mid-size, so above 100 kilowatts?

Trudy: Right. Are you getting data in that space?

Suzanne Tegen: We're not collecting data for the project that we're doing right now. We're just really looking for 100 kilowatts and under, but at NREL, there are people who are looking at the levelized cost of energy for mid-size, and there are other projects too going on about mid-size wind projects, and so (Tony Jimenez) and (Rick Tambiani) are working on those issues and collecting data for that, and I think (Tony Jimenez) would be the person, if people do have information on that, or you could send it to us and we can easily pass that along to (Tony).

Trudy: The other question that I have, and I apologize because I can't see the webinar slides itself, so I've just been listening - with your JEDI results, are you seeing trends based on size of machines?

Suzanne Tegen: Yes. I mean, we don't - you know, I don't know if we can say that - I mean I guess there - yes, in - just to be - the reason that we broke out the categories that we did is because we're seeing that the costs there are similar, so that's - that was the reason for the cost breakdowns. There are of course ranges in all of them, but sure, there are - I mean, there are ranges. I don't know - I wouldn't say we have enough information in each category to show, you know, exact trends right now, but yes. I mean, there are similar costs in each category, I guess, is how I get to that.

Trudy: Sure. Fair enough. Well, you know, the balance cessation costs (unintelligible) very dramatically, and at some point do you expect to see some trends based on turbine size as well as regional installations, but the balance cessation costs are so huge and the error guards are so wide, I think it's really hard to put

things around it, but that way you get more data and there'll be some really interesting results in that way.

Suzanne Tegen: That's been the biggest challenge with trying to figure out which categories to use, is because you know, for some of these smaller ones, it takes one person, you know, and they can just tilt up the tower, but with these larger ones it takes three people and a crane, so it's like you said. The balance cessation and the installation costs vary so widely within the group, so that's - you know, that's kind of why we're trying to break out the groups we're trying to break out, and we are not only looking for data, but we will be looking for testers of the model in the small wind world. So you know, if you're willing to participate in testing the JEDI model eventually when we're done with that, you can let us know, or if you have friends that'd be willing to do that, you can have them contact us as well.

Trudy: Yes, I'm happy to test it and I'm happy to help advertise it to others that you think should test it, and you know, I don't know if I should directly to a lot of data, but I'm happy to lend my influence to anybody whose data you're trying to get.

Suzanne Tegen: Thank you.

Trudy: We can talk about that offline. I think it's going to be a great and powerful tool, and it really - among some other things, this tool really is a global tool, and how you capture that I don't know, but more and more of the small wind market is outside of the U.S., and at some point that'll be really interesting to see, and globally nobody else has a job type of model for small wind, so go guys!

David Keyser: Yes, that is actually one limitation of JEDI, in that it is really a regional tool, so we can't at this point in time really capture economic activity that's happening around the world, but we can certainly capture what's going on in the United States.

Karen Sinclair: Is that because it's based on implant, or...?

David Keyser: Well, it's based on - every - all of the - the input/output portion of that is based on the U.S. economy, and the data that we use for it comes from (End) Plan, which is a common input/output tool, and it's all United States and state level data that we have in there right now, so we don't have the capacity to actually go international with it at this point.

Trudy: Right, but you know, manufacturers, used manufacturers are selling more of their machines outside of the United States than inside right now.

David Keyser: Yes.

Trudy: So there's going to be some bump on the manufacturing jobs (unintelligible) the installation and balance cessation where I think there's huge costs and huge opportunities to reduce costs over time, and you know, we'll see concerted effort, but also you - in the world space in small wind, lots of people copy what's happening in the U.S., and sometimes they're ahead of us, and sometimes they're behind us, and so my point was really that nobody else in the world has a model, an economic model, for small wind jobs, and it'll be interesting because I think that at some point there will be an interest for one particularly really strong market to have few (unintelligible).

David Keyser: Yes, certainly. Well thank you.

Trudy: Okay, thank you.

Karen Sinclair: Are there any other questions or comments?

David Keyser: All right, then.

Karen Sinclair: Okay, then I guess we'll wrap this up, and thanks, everybody, for calling in today. Thank you.

Coordinator: This concludes today's conference call. You may disconnect at this time.

Karen Sinclair: Okay, thank you, bye-bye.

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