

Overcoming Wind Siting Challenges III: Public Acceptance and Land Use June 17, 2015

Coordinator: Welcome and thank you for standing by. All participants are in listen-only for the duration of today's conference. This call is being recorded. If you have any objections you may disconnect at this time.

I would like to now turn the call over to Mr. Patrick Gilman. Sir, you may begin.

Patrick Gilman: Thank you very much. Hello everyone and welcome to this month's WINDEXchange Webinar. This is the third in a series of Webinars that we're doing on siting challenges associated with the deployment of wind energy and I think before we get into the meat of the introduction it's important for us to talk a little bit about why siting is important.

Many of the folks on this call will know that DOE recently released an update to the 2008 *20 percent by 2030 report* entitled The Wind Vision that looks at a scenario of possible future for wind energy in which wind generates 20 percent of the nation's electricity by 2030 and 35 percent by 2050. And as you run through that scenario and Suzanne Tegen will be talking a little bit about this later find that one of the significant challenges that has to be overcome in order to realize that scenario is finding places for wind energy to go in a way that minimizes its impact on other resources in those areas.

So that includes wildlife other human uses and missions such as air traffic control and national defense radar systems. And we've done Webinars on both of those topics which you can find at the WINDEXchange Web site at wind.energy.gov/windexchange.

Next slide please. Today we'll be looking at a third component in siting which is public involvement engagement and land use. Obviously wind energy like any kind of human user development has to get along well with its neighbors. And so we have three speakers today who are going to talk about that and some details. First we're going to have a presentation from Suzanne Tegen from the National Renewable Energy Lab who's going to be talking broadly about the importance of public acceptance and land use issues for wind deployment.

Second we're going to have a talk by Ben Hoen from Lawrence Berkeley National Lab he's going to be talking with us about his work associated with the impacts of wind energy and property values. And finally we'll have a presentation by Beth O'Brien from Pattern Energy Development talking about the best practices that she and other developers use when they're engaging the public around the development of their projects.

We are going to have a Question and Answer session at the - after these presentations and you can ask those questions at any time. And note at the top of your screen in the Webinar view there's a Q and A tab. If you click on that and enter your question there and click Ask that'll send the question to us and we will be moderating that at the end. So you don't need to wait you can type those in at any time and we'll be taking those - we'll be running through those in the end after we have collected all of them.

Next slide please. Just a reminder that this is part of an ongoing series of WINDEXchange Webinars that we do the third Wednesday of every other month at 3 pm Eastern. Our next Webinar is actually next month we're kind of going off a little bit off schedule at this time. We'll be doing a Webinar dedicated to the wind vision on July 15, 2015 and later on this fall look out for Webinars talking about topics and distributed and offshore wind.

One more note before we get started. We're trying something a little different. We know that in the past folks have had technical issues with our Webinar platform so we're making the presentations that the folks will be running through today on the phone available right now for you to download if you're having trouble with the Webinar.

And you can find those on our WINDEXchange Web site again that's wind.energy.gov/windexchange under the Information Resources tab on that site look for Webinars and then click on the link for this Webinar and the presentation should be down at the bottom of your screen.

Slide please. Finally to contact folks associated with our WINDEXchange program there's some contact information up on the screen. (Bree Vancleve) from our team at DOE. I'm sorry to say this will be her last Webinar with us she is going on to bigger and better things but you can reach out to me Patrick Gilman patrick.gilman@ee.doe.gov or Ian Baring-Gould or Suzanne Tegen at the email addresses listed on the presentation. And as always visit us on our Web site at wind.energy.gov/windexchange.

So without further ado let's turn it over to Suzanne. Suzanne has been with NREL since 2004 and researches issues such as radar wildlife grade integration and public engagement and their effects on wind deployment. She also conducts research on the wind and water power and domestic workforces

as well as the estimation of economic impacts of development of those resources using NREL's jobs and economic development impact tools. She did her undergraduate work at the University of Wisconsin Madison and got her Ph.D. in Energy Policy at the University of Colorado.

Happy to say that she's a close colleague of mine and that she's here today to talk to us about these issues. So without further ado Suzanne.

Suzanne Tegen: Great thanks Patrick. Hi everyone. Let's see. So my slides will serve to kind of set the stage a bit as well as update folks on some NREL work that we've been working on here and setting the stage means just for this particular Webinar. For those of you who tuned into our first Webinar in this siting series you might remember that we at NREL are working on one of the - some of the work that Patrick was describing some co-existing uses of land and air like wildlife and radar like Patrick said.

And we also looked at the proximity to people when we were thinking about public acceptance and public engagement issues. And so this slide shows you some of our research questions and what we have been doing and we will have a publication out on this later this summer. But we worked really hard to do in depth interviews with developers and consulting firms that has put in the majority of the projects in the US. So that was really exciting and then we run a bunch of models and we'll be happy to show you our results in the publication this summer.

I am also going to talk a little bit about wind vision here just a couple of slides on that. This is a summary of the costs benefits and impacts and for today we'll be talking about the ones in the lower right band use and public acceptance. And these issues of course will become bigger issues if we do have a scenario like the wind vision scenario which projects with us which is

just a scenario projects that we will get to 20 percent winds by 2030 and 35 percent winds for our electricity in the US by 2050.

Of course if we do get there we will have bigger issues with these - with land use with public acceptance the closer we get to people the closer we get to wildlife, you know, the more careful we'll have to be. And this doesn't look like I think this isn't an updated slide. I think you might be looking at two different slides here.

The folks who have downloaded their own copy have actually a map from the wind vision of the deployed land area that's taken off and the folks who were looking at the Webinar slide that I'm - that we're showing here don't have that yet. So we'll be sure to change that on the WINDEXchange page. But the point is that when we ask that question how much space do wind farms occupy? The answer is it really depends so there is construction access there are permanent access roads that lead to the projects that will remain there.

The construction access those roads can go away for the most part. There's environmental monitoring the actual turbine foundations those will take up space obviously that can't be used by something else. But the entire site parameter is still available for farming and grazing or whatever you are using it for before except for, you know, those permanent access roads and the turbine foundation. So in the wind business scenario this comes out to be about 0.4 percent of the contiguous US land in 2050.

So for 35 percent electricity we would have to use 0.4 percent of the land in the contiguous US if we wanted to get to 35 percent by 2050. And that is just for the turbines and those permanent access roads. If you're looking at the whole site it would be about 1.5 percent. And now let's see. So I wanted to kind of talk about why public engagement and public acceptance matter and

you guys probably know this because you're on the - you're interested in this Webinar but my next slides I'll kind of go into a little bit.

And the - one of the things I wanted to talk about is the difference between public engagement and acceptance and it's pretty obvious but engagement is just what it says the interaction and engagement of the public and local communities where wind is installed. So you'll hear from Beth later how developers work with the local communities to really engage them about the project. And then acceptance is what we would like to get to it doesn't always happen.

But in the local community we would be happy if of course if people do - are happy with the wind projects or at least they're okay with the wind projects existing. And I'm wondering if we may have - okay. So locally the misunderstandings can stop projects because even if the projects seems perfect technologically and economically if the people in that community are protesting and they really don't want it it can stop the project. This happens to be a protest sign from Eastern Oregon. And we'll hear more about local misunderstandings in the next presentations.

But I just wanted to introduce that why is it important because it can stop a wind project. And then nationally - so that was locally and nationally probably most of you are familiar with this slide showing the expected the production tax credit. But in the bigger picture the opinions and the acceptance from our decision makers and political leaders help shape the actual wind power deployment in this country as you can see on this slide.

So when does public engagement matter? This is a flow chart of the wind power deployment process and the answer of course is the public engagement and acceptance are important throughout the process. And you can look at the

prospecting phase there and in that phase in the Blue there the developers will do desktop review and then they'll start deciding okay maybe we should go and look at this site and in early development they'll go out and talk to people in the local communities. And again Beth will probably talk about this.

But this is where you start to see who the local leaders are and, you know, what their opinions are and maybe they have some misinformation about wind maybe they've read something on a blog or on the Internet somewhere else but it might be full of information that's not really true. So then I think we'll cover some of this too about what people's opinions are even before wind gets there.

And so here I want to talk about where the wind is in relation to people in the US and this is a super high level big picture. And so you can see the map on the upper left there the wind speed that is the 80 meter hub height. So a lot of our current technology and kind of 2008 until now technology is at 80 meters in the US. And the darker Blues are where we have the best wind resource. So you can kind of picture that block in the middle that's where the wind is the best.

And then you look over here on the right I think we've talked about on these Webinars before that we've released new wind map. So this is kind of current and near future wind potential capacity at 110 meter hub heights on the right there. You can see that the winds resource potential is expanded. There's more wind out there. So if we go up a little bit higher we can actually develop in more places which is very exciting.

And then our future potential this is at the 140 meter hub height in Orange there it's kind of where the new areas that are opened up for wind development where we maybe thought in the past there's not a lot of wind

development possible. Well now there is we can develop if we have this 140 meter hub height we could develop there. How, you know, this doesn't - this is not showing any exclusions or anything like that this is just showing the wind resource.

So, you know, we'd have to look at radar considerations wildlife and of course public acceptance as well. So this is just the wind resource potential. And where are the people? And so what we did here for this map is this is not a map of populations this is a map of where there are three or more residences and what's in fifteen hundred feet of those three residences or 2,000 and it goes out to 2,000 so the Gray is within fifteen hundred feet and then the Red there is out to 2,000 that was just kind of a little buffer zone between fifteen hundred and 2,000.

And we used this in our analysis just to get a sense of scale kind of a sense of magnitude. So if we look again at where the wind is at say 80 meters or 110 you can kind of look at that and then look at where the people are. So this looked at, you know, if we installed a wind turbine near a residence or it would be actually near three residences. And then what if somebody wanted to do to have a fifteen hundred meter setback or what if somebody wanted to have a 2,000 meter setback?

And that is not - that's not at all a recommendation we were just looking at that again for the sense of scale. We also have not with a smaller land area that are distance to what the - where the turbines would be and larger. But we just were kind of looking at this to see what it would look like. And there are recommendations for things like setbacks from a lot of different authors and I'll show you that in one second.

I also thought I - this was interesting. So this is the wind resource the colorful part there the wind resource at 80 meters and then here we have our federal lands. So there's a lot of opportunities for development with good wind resource on federal lands and there are a lot of overlapping spaces there as you can see. And if you can picture this is the 80 meter wind resource but if you can picture the other one too with the broader slots there. There's a lot of opportunity there if we can figure out how to develop on federal lands.

It's something that we did talk to developers about and it's hard to do because well for a lot of different reasons and I'm not sure if Beth will talk about that at all. But it does take longer to do development on federal lands and the permitting processes are more complicated. Here are some of those public acceptance siting resources I talked about. We have an OpenEI one on the NREL Web site. And then the middle one is - was done by Tom Stanton and people I know on Ben Hoen and others worked on that one too and that's for the National Association of Regulatory Commissioners.

They have recommended guidance practices there for setbacks for wind turbines just, you know, recommendations and we're not endorsing any of these but these are references out there if you guys are interested in reading about this. And then the American Wind Energy Association also has a siting handbook out as well. And I wanted to kind of finish up by telling you some of the conclusions that will be in the paper that we're publishing this summer. There is a cost to not doing anything.

So if we kind of just let things go the way they're going now it will be much harder to get a significant amount of wind deployed and we might have less public acceptance and not as positive public engagement as we could.

So in the short term developers have told us that deployment is getting harder due to uncertainty and they're hesitant to develop on federal lands because of what I was saying before where the complex process of siting and then environmental monitoring and that kind of thing which we all agree is a good thing to do environmental monitoring but I think the complications of the process are - could still maybe be smoothed out a little bit.

Secondly the model results show us that the US wind resource is vast and wind vision deployment is possible even with these competing uses. So even when we have the public expectant issues we've got the wildlife issues the radar issues even when we have grid issues we can do this we can get to 35 percent by 2050 and this was shown in the modeled results that we looked at the wind vision model results and also from interviews that we conducted with the wind industry combined competing uses for some of the issues that we've been talking about here we'll add costs just like public acceptance will add costs.

It costs money to run radio ads and cost to people at the local coffee shops and that kind of thing. It doesn't add a lot of cost usually unless they're being protests but it does add costs but it's still possible. Then in the longer term wind power looks like a cost effective resource this could mean that more wind is deployed because it's cost competitive with other electricity surface and so then projects will be closer to these codes existing uses and they will take more time to deal with and of course more money.

The last one here is that co-existence is significant to local communities we can't minimize this. They have been living somewhere for a lot of years and looked out at the same view. So we want to make sure that we take that seriously and there are places where we shouldn't put wind turbines and

hopefully, you know, we all know that and need to be able to say yes, you know, wind doesn't go here it could go over there instead.

So these issues the public acceptance issues should be included and as you're planning and that's part of the research conclusion about being across in action. So we need to act on this and we need to make sure that these things are included and as you're planning both for the short and for the long term. These resources on here I've been talking about the wind vision a little bit and also there is a new paper by DOE that was out last month called *Enabling Wind's Power and Nationwide* and that one is the slide that I showed with the Orange and Blue on it in the US that map is from that publication.

So feel free to check out both of those hopefully they'll be informative and I guess I'm happy to take questions at the end or however you want to do it Patrick. Thank you.

Patrick Gilman: Great thank you Suzanne. Just to underline this is sort of a shameless plug but the report that Suzanne mentioned on her last slide, their *Enabling Wind Power Nationwide* is something that we recently put out at the American Wind Energy Association's Wind Power conference and really looks at given the technology changes that we've seen over the past few years and the technology changes that we see on the horizon over the next few years that we really do think that over, you know, in the near future wind energy is going to be viable resource in all 50 states.

And of course what that means among other things is that we need to be more vigilant about working on these issues. So thanks again Suzanne. Next up we have Ben Hoen. Ben conducts research and analysis on renewable energy at the Lawrence Berkeley National Labs including renewable energy policy analysis cost benefit and market analysis and analysis of public acceptance

and deployment barriers. His research on public acceptance has been published in a number of prominent journals.

Ben has a Bachelor's degree in Finance and Business from the University of Maryland and a Master of Science in environmental policy from Bard College. And he's going to talk to us today about his work with respect to wind energy and property values. So go ahead Ben.

Ben Hoen: Thank you Patrick. I hope it's not a surprise that I'm actually going to be focusing on the ongoing work looking at the survey of residents living or existing in US facilities not the property values work that we have conducted in the past.

Patrick Gilman: Apologies for that sorry.

Ben Hoen: No problem. So if not I have to change all the slides but I'm glad to talk about that too that is work that we continue to do outreach on and some of the (unintelligible) so if that is a subject of your interest please feel free to reach out to me. So today though I'm going to be talking about ongoing work that has not published that DOE is supporting that we are leading looking at surveying individuals and living near a large scale wind energy facilities. And what is the public acceptance of wind power to use the definition that Suzanne has given earlier?

And so I think it's reasonable to start with this fundamental question which is something that Suzanne also brought up which is why is this important? Why study public acceptance? And some of the issues that have previously been discussed by not only Patrick but Suzanne I'm bringing up here so I won't repeat. But I just wanted to kind of lay it out maybe a little differently or maybe just the way I think about it is simpler.

Development in the past which has occurred and we have 66 gigawatts of wind installed in the US and we have a lot of support for wind energy and big wind plays from big companies like Dow or Walmart and Google. Obviously we've been doing lots of things right but that development in the past doesn't necessarily mean that it's going to be the same as the development in the future and this is echoed by what Suzanne and Patrick said before.

We're going to see a different type of development as we developed different sites with higher hub heights potentially in areas where we had previously not developed. And so that's a good reason to start thinking about public acceptance as other folks have mentioned. The other thing to note and this is also something that Suzanne had mentioned is that we know that federal and state policies are big drivers for deployment transmission capacity availability as another big driver.

But we also know that public acceptance and support and opposition for proposed wind facilities can be a driver too. So we've seen delays and derailments at both facilities. Now we might now argue that that is the number one reason for facilities to not go forward. We saw in the slide that Suzanne presented that the PTC is an enormous driver but it is clearly one of them. And so as we sort of perfect development as we go forward or just try to improve it we're obviously going to be having to think about these issues more and more.

And there's some other reasons why I think public acceptance is important. To be able to understand public acceptance in general we have to be able to have done a really good job of measuring it and that is something that to date has not happened across our country and we have some studies that have occurred at local levels. Those generally are not transferrable to a broader

population they weren't set up to do that and so we can't necessarily draw conclusions as to how we're doing in total.

And so that's one of the aspects of the work that we will be conducting. The other one to mention is that's, you know, our - the thunder of this work is the Department of Energy. We hope that the work will allow the Department of Energy as they go forward to further refine their understanding of perceived impact and then potentially invest in future projects that will allow some of these issues to be dealt with in a more informed manner. So those are some of the reasons why we think this work is important.

And so let's dive into the project itself. When we think about acceptance in general it can be thought of in this sort of simple triangle formation one is community acceptance one is social political acceptance and one is market acceptance. Social political acceptance might be the acceptance of the lawmakers and so therefore we have issues with the PTC potentially. Market acceptance might be acceptance in terms of developing transmission capacity it might be the building of capacity in our manufacturing base in the US that sort of thing.

And those are obviously incredibly important if we want to see deployment happen but our work really focuses on these community acceptance. So I just wanted to kind of frame the work that way to think about it focusing in on that particular subgroup. See if I can advance the slide here. We know that a large majority of respondents around the country have been surveyed are in support or at least are just neutral towards wind and that includes facilities that are built in their areas.

So we know that we get if we survey individuals around existing wind facilities in general we get higher levels of support or if you aggregate the

neutral folks with them and we do opposition. But that doesn't preclude the fact that there's a significant portion of the population that are not supported and that can range from the various studies shown in the slide on the left from 7 to 34. If you're interested in those studies I'm glad to send you the citations separately.

So we've seen that this particular set of studies that have been focused on a particular geographies have shown that there is a cohort of individuals that are not supportive of the wind facility that has been built in their area. We just don't know exactly why that is in a great detail specifically around US wind facilities and to be able to transfer those results to a broader population. So that's really the focus of the work to understand the differences between those two cohorts and what might be some of the influences to their determinations.

And maybe obviously how one can improve the level of acceptance and decrease the level of opposition. So in terms of the project timeline where we are right now this is a three year project and we have conducted literature of you after assembling an advisory panel. We begin to construct the data set of wind neighbors actually Suzanne something well maybe we should talk about it. We actually have a data set of every parcel in every county where there's at least one turbine in the US.

So we'll be going through those parcels and we know a little bit about what's been built on those parcels and so we will be able to identify where people live around existing wind facilities and when they moved in and what's that kind of house it is that sort of thing. And that will allow us to identify the folks that we want to survey. In June of this year just this month we should be able to finish the final draft of research questions. We've already been doing a lot of work in this area and ultimately develop a survey instrument by the end of this fiscal year.

Data collection ultimately and then summarizing of this data will happen the next fiscal year and that will take a long time to do so we're giving ourselves that full year and then the following fiscal year we'll be doing most of the outreach and disseminations but we do expect to be able to check in with you guys on this call and potentially others with some summary statistics some preliminary results prior to that period.

So in terms of the actual research questions we've identified a number of gaps in the US literature that we hope our work can fill. One of the things I've mentioned on a number of occasions is we don't at this point have a representative sample of individuals that can be transferred to the population the efforts weren't done with the intent of having a fully random sample that can be representative of that population and that's going to be really important contribution we hope of our work.

Some of the other things that are interesting to us are looking at differences across geographies or land forms. We know that development occurs in really different places and people have different reactions potentially in those places and so want to try to pull some of that out. We think it's also important to counter our results within other energy sources and other amenities and disamenities things that for instance annoy folks from in general such as the allowed road might be - it might be interesting to know that as we also ask them about their annoyance of turbines.

And so how do we fit the annoyance for instance from turbines in with these other things. So those - this compare and contrast will probably and (initiating) aspects of the work. And then we also want to know what are the correlates to acceptance and opposition? What are the things that maybe are driving that? And so we've proposed a few here and we have actually a much

longer list than this but we think that public participation and collaboration and the planning process is going to be really important so we want to understand that and how that might shape acceptance and opposition.

We want to understand there are levels and types of compensation and maybe investment opportunities they had for facilities which aren't many often for most individuals living near wind facilities and how that might shape acceptance and opposition. We also want to think about distance from the facilities and views of the facilities. Distances of course matters and we're thinking about setback but we also care about kind of when affects fade and understanding if there is a distance component to level of support and opposition and annoyance.

And of course whether views of turbines are a drive too. Well you want to think about accumulative affects. So our larger numbers of turbines affecting individuals different than smaller numbers of turbines. And then one of the interesting aspects is whether there are different results for individuals that have moved into the area after construction occurred.

It might be that overtime we actually can see sorting that happens as people move into the area that might be more supportive of wind facilities which should give more information to facilities that are being proposed as to what might happen over time. So these are just some of the research questions we hope to answer so this work and we'll be obviously dealing with other kinds of questions are we go forward but this gives you a feel for it.

And in terms of the survey instrument we can give you some information about that although of course we haven't developed the final survey instrument yet. We expect to do a multi modal approach which is both phone

and some written aspects it might be a mail survey or it might be an Internet or both.

The idea there is to cover two different cohorts of the population often folks that have listed phone numbers might not be particularly interested in doing Internet surveys or we might not be able to reach them but we want to reach them so we might find that we can get them through either a mail or Internet survey.

We expect the survey to be 15 to 20 minutes that's really the appropriate amount of time to get people to stay focused on the issue but based on our initial discussion we believe that this will be interesting to individuals living near wind facilities so they should stay involved and be - we have a decent response rate. We expect a sample maybe between 1,000 and 2,000 individuals which will allow us to break the groups into multiple cohorts allowing us to have a variety of ways to compare and contrast results.

And then we expect just as a round number to pick maybe ten facilities to focus on it might be more than that because we aren't going to sample every facility around the country but we're going to try to make sure we have a representative sample of projects but also a decent number of individuals near that single project so that we can compare and contrast those. So that's the goal at this point this will be continuing to evolve over time as we conduct the data collection next year and really probably likely in the beginning of 2016.

And that's it. I'm the project lead for the work but we draw heavily on lots of other very talented individuals (Ryan) and Joe Rand are two that are at the lab but also Eric Lantz is involved and you guys might know and then a number of other folks that you might have heard of Jeremy Firestone for instance and (Gwendola Hoopner) who is from Germany has done a lot of great work there.

So we have a great team as a collaborative effort and we look forward to talking to you more about results as they are available.

Patrick Gilman: All right thank you so much Ben. You know, we're really excited to be part of that work and to see what Ben and his team are going to come up with there. So next step we have Beth O'Brien who's an External Affairs Manager with Pattern Energy Development. Her role with Pattern covers a wide range of activities under the umbrella of External Affairs including designing and implementing stakeholder engagement plans and programs for the communities for pattern development and develops into projects.

She has more than a decade of experience collaborating with the public and governmental entities to influence positive change. Beth holds a Bachelors of Arts degree in Economics from the University of Texas with concentrations in environmental space and business. Go ahead Beth.

Beth O'Brien: Thank you Patrick. And thank you for joining us today. First I'd like to give a brief overview of Pattern development. We are a renewable energy company that constructs transmission assets and wind and solar projects in North America Chile and Japan and we also do the entire development process. Our development team has brought more than 4,000 megawatts of wind power to market with expertise in all project stages our affiliate public companies had an energy owns and operates 16 wind power projects in North America and Chile.

And one of our core values at Pattern is the commitment to community engagement and giving (comparing) all project stages. We strive to build local relationships and explore options to expand the project's local benefits while avoiding minimizing and litigating unfavorable impacts. And we work to

incorporate community feedback into our engagement program and gives back to the project areas and donations and sponsorships.

And so today I'm here to talk about the best practices for engaging communities and increasing public assessment of wind energy projects and the steps for earning public support. So it's important to plan early and to be proactive when you're going into a community and want to earn public assessment and support. And the first step is to create a community assessment that will then implement your engagement plan. And your engagement plan will consist of messages and communication material development project branding engagement activities and then also community giving.

A community's assessment is a social economic and geographic overview of the area. It helps you build an understanding of the local area the research that will help make your introductory (unintelligible) in the community more productive. And it will also help you select the most appropriate outreach and communication tools for that committee. And your understanding will evolve as you meet with members of the community but it's best to learn (what you can) before going into that first meeting.

So this slide includes questions to consider whenever you're doing your research into the community before having those introductory meetings and then also questions that you can ask during those introductory meetings to get a better understanding of the community that you're going to be working in such as what economic demographic and political training has been in the area over the past years and where there are opportunities for engagement and understanding the project's benefits. And also where do you anticipate challenges.

An example of a challenge is that you find out there's been a previous developer in the community and they didn't spend enough time on community engagement and there's been mistrust or missed perceptions about wind energy that you're going to have to overcome in your communications and engagement activities to (unintelligible) of an opportunity would be identifying local events where you can have a project booth to meet with members of the community and also local groups and community leaders that you can meet with or give presentations to.

It's important during the community assessment to identify the key stakeholders. I'm having some problems with this slide here. There you go. Identifying project stakeholders and key audiences. This slide contains a list of different type of people that you should identify in the community and it's important to meet with local government officials and community and is very early on.

You only have one chance to make a good first impression and it's important they meet with you to hear about the projects directly from you before reading about it in the local papers or hearing about it through the grapevine. And then your community assessment will help you to develop your community engagement plan. An engagement plan is a framework that will involve the community in the project planning.

It should build trust and collaboration with local stakeholders and be responsive to the community's needs and the project concerns and will also align with your development price line - or timeline and support the public computation requirements (unintelligible) process. This can include during what commentaries during the permitting process you go out and get more presentations about the project in order to encourage people to submit their

comments about it and also give them the proper information about the project that leads to the questions.

It will include a wide range of activities geared to creating a routine opportunities to a communication and dialogue with project stakeholders and it will also have a schedule for action items and development milestones and a budget associated with that.

So it's important and while you're developing your engagement plan that you put a lot of thought into project messaging and organize the facts about the project and then you can use those facts to develop your key messages and your talking points that you share with your project team so that your team is clear and consistent when they are doing their outreach to whether land owners or planning officials in the community.

You can also produce fact based answers to common misconceptions and questions that you anticipate hearing to share that with your project team since its different members of the project team aren't used to hearing the questions that you might hear when you're out in the field. So it's good that everyone knows what you're hearing and how to answer that. You also use this messaging in all of your projects and communication materials.

And then you want to develop a brand identity for the project and that will be used throughout the life of the project and includes the project name logo and all of your communication materials and collateral that you'll create. If you have time it's great to involve the community in choosing this name especially when you do your introductory meetings with local officials and leaders you can get feedback on the names that you've been thinking of and see if that would resonate with the local communities.

You want to use this project brand to generate pride and excitement with the project and get the land owners and community members excited that this project is going to be in your communities. You'll also create promotional items like tee shirts and hats and (reusable) back and water bottles that people can use to help to spread that brand. And (unintelligible) that we sponsor community events and causes.

So here's an example the communication materials and methods and include a project fact sheet or brochure at the very beginning of the project it's important to have a fact sheet together even if you don't have a lot of the details of the project developed yet and include information about your companies and they know your history and your background. And then that can evolve to a brochure once you have more facts about the project to share as you develop the layout.

Also having an introductory presentation to communicate about your company and the project and information about wind energy and a Web site is very helpful so you can direct people to that as well. Then you can (ways) get this information out is to hold a project booth at local communities or information boards during public (unintelligible) and issue newsletters to your contact list that you'll develop while you're doing the community engagement.

You want to use the teaching materials and all of your engagement activities and it's very important to involve the local community at the early stage so that you're sharing a clear understanding as your intention and an open dialogue based on the facts. It's important to be proactive so that everyone has information that they need to make important decisions about your project and if, you know, questions that go unanswered because we turned human curiosity into negativity and opposition.

So you want to get out there early and make sure that the people in the community know how to reach the project team at different methods of each unit project team email address the local phone number you have a local office or a toll free number. If not then also a contact form on your Web site. Do community events like we had mentioned and informational open houses or other engagement activities community liaison committees are really helpful.

You can do an open invitation to the community to join a liaison committee and select 10 16 20 people whatever you feel that will work best in an area from different backgrounds that can help to inform your development decisions. It will also help to give you feedback on what they're hearing in the community so that you can take that into consideration in your engagement activities. It's important to record all the questions and concerns that you're hearing and your responses so you can keep track of that.

And also to keep a database of the stakeholders so that you can send them the electronic newsletters or to know about the public engagements or information open houses that you have. Secondly an informational open house is part of a permitting process and it's useful to do even if it's not part of your permitting process but it's not required because then you can have information boards for that different aspects of the project around the room and have third party experts and attendants that can help to answer questions about the projects as well.

Sometimes when people in the community are skeptical it helps to provide a third party expert in an area to talk with them rather than just having someone from the project team. Community giving is also very important to improve in your engagement planning and activities in the local area and it helps to

increase public acceptance and people know that the project is going to be divvied back to the community and you can see the type of things that you're going to be doing for the life the project.

At Pattern we like to focus on five areas of giving which are community initiatives health and wellness environmental youth and education and also cultural awareness. These are some pictures from examples of projects and communities we funded such as providing a van for Meals on Wheels and it could expand your service area and carry hot and cold meals further than what they do in the volunteer's cars as supporting community (splash pads) and also local (media).

And so if you do these things and you have a community engagement program and community giving the goal is that it will increase public support and acceptance of your project and increasing public support means that you then have support from local government officials and you can have project success. You can reach those milestones and get your project built.

And it also helps to create community pride this picture in the middle of this slide it's from a local community that all along their Main Street they have these banners that say Wind for Change and their community is surrounded by wind farms that have been able to do really great things for the area. And here are more examples of having public support and acceptance you have the benefits of increased jobs more revenue for schools and for local governments and for community causes increased workforce development and diversity and also cleaner air and cleaner water from two surveys (fossil fields).

And lastly just do a summary of what I just discussed that the best practice is that earning public support and make sure you plan early and you be proactive

and that you develop an understanding of the area and identify opportunities and challenges to your community assessment.

And also build trust and collaboration and your engagement plan with factual consistent and clear messages. Generate pride and excitement for your project branding and produce accurate current and assessable communication materials and do your engagement activities that will reach out to the diversity of the community in different key audiences and stakeholders and engagement early and often. And also in corporate community giving by giving adjusting the community in donations and sponsorship.

And that concludes my presentation I'm happy to go into any more detail or answer any of your questions during the Q and A period.

Patrick Gilman: Great thank you Beth. I remember a meeting once with a wind developer who works up in Michigan named (Rich Vanderveen) in which he was asked how he generates public support for projects and he said 50 cups of coffee with community members for every megawatt he wants to build. So really great to have that industry perspective. So now we have about - we have a little bit more than five minutes for questions. Keep them coming. We may be able to stay a minute or two after the hour if folks the presenters are amenable to that but we'll try to keep close to it.

So first up for Suzanne. "What are the biggest challenges, you know, related to the work you did talking with developers going forward?" And Beth you may have something to say about this too. What do you see is the biggest challenges related to public acceptance of wind energy into the future?

Suzanne Tegen: Okay and it sounds like Ben is going to have some answers on that too when his research is a little bit further along. I think that was one of the things that

he said that they were looking at. The biggest public acceptance challenges in the future. I think that probably the challenge is the misinformation that's out there I think that's a really big one.

I think getting people educated even if it's just a little bit connecting people who are worried about a wind project and their coming to their community connecting people with others who are in the same situation in a different community where there have been wind projects up and they can maybe read Ben's report and see what people think of them. Or, you know, or actually talking to them. There's nothing like being able to talk to someone in your same situation somewhere has already been through it.

So I think getting information out there to the public and educating them is a really big challenge. I also think that there are big questions on environmental issues and we need to step back and look at the bigger picture and people are concerned about their local favorite bird which is great I love birds too and I understand. I also think that in the longer term birds are going to be healthier no matter which bird it is they're going to be healthier if we have cleaner air and cleaner water like Beth was just talking about.

So wind power is good in the long term and the big picture for the species that we're talking about. And sometimes we lose sight of that when we think of one particular (unintelligible) strike to a bird or a bat or something like that we're not looking at the greater eco system. So I think those two challenges are pretty big. And then there are technological challenges like dealing with the sound issues. And there are people here at NREL and I know the other national labs also as well as within industry.

I know companies - private companies are working on manufacturing blades that will be, you know, have less sound so not bother people are near them as

much and then also there's a lot being done on the bird and bat detection and deterrents. So I'll stop there. I think I have a long list but those are kind of the top ones for me.

Patrick Gilman: Great thanks Suzanne. Anything to add from Ben or Beth on that topic?

Beth O'Brien: I think she covered it.

Ben Hoen: Yes and obviously Beth's work deals with a lot of these issues and bringing the community in and having them be part of the decision making process and feel like it's their project and not somebody else's are all really important drivers. And obviously the contrary is true if they're not present then they can be effective breaks.

Patrick Gilman: Great. Thank you Ben. And a couple of questions for you. First is, "Does your sample your database of neighbors include those of small and distributed wind turbines and are you going to be looking at those in your studies and acceptance of those versus utility scale wind farms?"

Ben Hoen: Our work will be focused on utility scale turbines so we're not looking at turbines that are probably less than a megawatt so I think that rules out most of the ones that you're - that the questioner is including. It could be that we include turbines that are of that size that are behind the meter so that might be a slightly different cohort as opposed to utility scale that's in front of the meter and feeding into a distribution grid this would be behind the meter and obviously dealing be privately owned.

So we haven't precluded that we would choose one over the other we're really just starting to assemble that dataset. And we don't have data on the much smaller turbine set.

Patrick Gilman: Another question for you about something you said in your presentation. You said a chart looking at study results for various perception of project neighbors and question is, “Does that include project participants that is to say land owners who might be receiving lease payments or does that only include neighbors who are not engaged?”

Ben Hoen: Yes that’s a great question and that’s one we can’t answer. So I think we don’t know is the answer to that question. And in some cases they have collected information about whether they are receiving compensation or others in their family or friends that are receiving compensation. I know there’s definitely one study in Pennsylvania that asked that in other studies that was not included. That is a very important question. We believe and so we are going to be asking it.

And so you can be a host land owner with a turbine on your property. You could be a neighbor that is compensated in some way or you could be a neighbor that’s not compensated. And so we think those three cohorts are really different and want to see kind of how their levels of support and opposition differ.

Patrick Gilman: Thanks. And this one’s for the panel and the question they ask , “In Massachusetts they’ve experienced public concern over shadow flick on a number of projects is there a way to build this concern into public into community engagement or is that more just a siting issue where you do and do not put turbines?” And that’s for the panel as a whole. Maybe Beth we’ll start with you.

Beth O’Brien: Sure you can account for shadow flicker during the development process. We can do an analysis that shows worst case scenario and where that show flicker

might occur and what period of the year. And you can adjust the siting of that wind turbine if it's going to be an excessive amount of shadow flicker for the year which there are some standards that are out there that are if it's more than 30 hours over the entire year then they need to be mitigated.

But you can also there aren't - there's new technology coming out where you can - the turbine will see the program if you know that shadow flicker is going to occur where it won't be running during that time period or the operator can turn it off during that time that the person calls the control room and says that they're having a shadow flicker issue because shadow flickering usually only lasts for a brief period of time as the sun setting during that time of the year that it's in alignment of where it would create shadow flicker.

So there are mitigation measures to be able to avoid that. I'm sure every developer handles it differently but that's how we can do it.

Patrick Gilman: Great thank you so much. So we're at the top of the hour so I think we'll stop there. I know there were a few other sort of more methodological questions for Ben. I'd encourage you to reach out to him directly his - we can get you his email address after this if you want to reach out to us. Otherwise I want to give one more round of thank you's to our panels Suzanne Ben and Beth really informative presentations and we look forward to speaking with you all again on the next WINDEXchange Webinar. Thank you so much and have a good day.

Coordinator: This concludes today's conference thank you for your attendance. You may disconnect your line.

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