

WIND ENERGY ORDINANCES WEBINAR

November 17, 2010

Coordinator: Welcome and thank you for standing by. At this time all participants are in a listen-only mode. Today's conference is being recorded. If you do have any objections, you may disconnect at this time.

I'd now like to turn the call over to your host for today, Mr. Ian Baring-Gould from NREL Wind Powering America. Sir you may begin.

Ian Baring-Gould: Great. Thank you so much and thank you to everybody who's joined in the conference call. Good afternoon I guess to - except for those people who are in I guess Alaska and Hawaii and some of the territories where it might still be morning. But thank you for joining in on another one of the Wind Powering America webinar calls.

Today we are focusing primarily on questions with wind energy ordinances. And we've got three excellent speakers today, all of them with great experience in the issues of ordinances for wind technologies. And so I'm very excited to be able to present this to all of you but also to also hear what Tom, Erica, and Dave have to say based on their experiences.

Because we're in a webinar type environment, the way that we're going to work with questions is if you have questions, you'll see right at the top of your webinar screen the (Web meeting) window. You'll see a little Q&A. Hit that and that gives you the opportunity to type in questions.

We are going to do questions at the end of each of the presentations and that's because a couple of our presenters have specific other things that they need to get off to. So Tom for instance won't be able to stay for the whole time. We'll

also have a little bit of time at the end of the three presentations for more general questions and stuff that we haven't gotten to.

Also before we move on to the heart of the matter, I also want to let people know that the webinar series - the WPA webinar series is continuing and we're holding these webinars on the third Wednesday of each month at 3 o'clock Eastern.

So the one for December 15 we are planning on focusing on marketing acceptance activities. As most of you know, the Department of Energy did a solicitation about a year and a half ago looking for different entities to tackle into specific market acceptance activities and we'll get a couple of reports from people on the results so far of those activities.

Please keep your ear tuned to the WPA email newsletter because we'll have more details about each one of these webinars. And then on January 19 we're going to be focusing on workforce deployment and wind technologies. Again, focusing on DOE grants, as well as, other activities that DOE is doing in the workforce area.

So without further ado, I would like to introduce Tom Tuffy who is the Director of PennFuture Center for Energy Enterprise Environment based in Philadelphia. Tom is fabulous with a very long expertise, very long career spanning over 35 years in the area primarily focused in Philadelphia but across the nation providing strong clean energy advocacy leadership and then also a lot of work in the entrepreneurial realm looking at energy solutions.

He has been a member of the Pennsylvania Energy Advisory Council; has been appointed by the Governor of Pennsylvania to work in organizations such as the Solar Wind Working Group and as the Chairman of the

Agriculture Renewable Energy Finance and Economic Development Committee. So Tom has tons of experience in this area working across the Eastern seaboard and across the nation. So without further adieu, Tom.

Tom Tuffy: Thank you Ian and hello to everybody and we'll jump right into it. Let me attempt to put the slides into context because I think they'll be more meaningful to you in that fashion. And the story then begins in 2004 when with the blink of an eye our legislature in Pennsylvania passed a portfolio standard and the Governor signed it rapidly into law and that sets the context.

In Pennsylvania we do not have a power plant siting law like for instance Maryland does. We do have four agencies that deal with environmental and wildlife issues. But the real land use land control issues are at township level. In Pennsylvania most of the development is (forced at Ridgeline) and these are rural township. And I can assure that a \$100 million wind farm is the biggest deal that has walked in the door in a long, long period of time.

So the applicability to what you're looking at here is going to be for similar situations. Our objective was to produce a model ordinance that came through a consensus process. Everybody could gripe and complain about it to the same degree but they all had a chance to gripe and complain about it. We wanted something out there that would have some significant standing and people couldn't shoot at it as something they never had a chance to participate in.

So the process occurred in 2005, which means at this stage of the game we've got a good five years worth of operating experience here. We actually stopped counting the number of townships that had adopted either this ordinance or some modifications to suit their tastes really 18, 24 months ago.

And at that point we had about 30 townships that we knew. But the objective was to have something that people could use at local level and it really addressed their concerns and we'll get into some of those concerns.

That process and I think you want to have a process like this at times there'd be 30 some people in the room. We had representatives from each of the five local government organizations in Pennsylvania. That's the township supervisors, county commissioners, league of cities, boroughs. We had the regulatory agencies.

We also have the Office of Revenue in the Governor's office and then we had about a dozen of the leading wind energy companies that were operating in these (unintelligible) at that time essentially all the major players.

We PennFuture played a role to facilitate this process. And it was our attorneys that would meet with the parties and draft up the iterations and I've lost track of the number. It's a good, you know, seven, eight, nine iterations.

However it's important to note that it was not a PennFuture model ordinance, it wasn't tagged or branded with anyone. It was model ordinance that at the end of the day PASTS, Pennsylvania Township Supervisor's Association endorsed and the state environmental agency endorsed.

We created three different versions of it so that the initial link would fit with whatever kind of local zoning or lack of zoning a township had. At this stage again it's five years. It must be up to 40 or more townships. I personally presented this to several hundred township supervisors. So we've got a pretty good handle on how this works or doesn't work. And I recommend it to you.

What we did in terms of the product and I'm going to rapidly go through the slides. You will have all the slides. They're on the NREL site and the full ordinance is also on the NREL site. But basically we produced something that was very similar to a building permit because local township supervisors and planning zoning commissions are used to that.

So it had a permitting process associated with it such that if you supplied the given amount of required information and that information was judged to be adequate, you then set off a timeline and if everything was in compliance or out of compliance, you had an expectation of getting a permit or not getting a permit.

Once you had the permit if you fell out of compliance with that permit, it also provided the local township with the means of saying whoa you're out of compliance. You know, we're going to yank. So it provided some teeth to the process.

Within it are design standards, setback standards. Now on setback we'll go through it rapidly but you'll see that there's two kinds of setback we were concerned about. One is safety oriented. And for safety setback we made sure that we were 1.1 times the highest point the blade would touch. These are electrical generating facilities. There have been accidents. We wanted to make sure that nothing came crashing down on someone.

We also then had aesthetic setbacks. They were larger setbacks and they dealt with issues like noise. We also provided limits and means to address what I would describe as the nuisance factors that was noise, flicker, interference with signal. We provided a means to have waivers so that if you were a participating leaseholder and you said well I don't care if I'm a little bit closer

than Joe public in terms of noise, it was a means to have a waiver and have that recorded with the deed.

We provided requirements for insurance. We provided decommissioning language. And I...

Ian Barring-Gould: Tom? Tom can I break in here?

Tom Tuffy: Yes.

Ian Barring-Gould: Your slides aren't seeming to advance.

Tom Tuffy: I'm not - I'm not...

((Crosstalk))

Ian Barring-Gould: Okay. Okay. Just wanted to make sure. Okay. Thank you.

Tom Tuffy: Yes. I shall shortly. The commissioning language and then lastly we provided a means to address complaints and remedies. So with that, now I will begin to go through slides but we will go through these fairly fast and then open to questions.

So again, we pretty much covered these matters. We did not attempt to address any impacts on wildlife or environmental factors. We had - in all this period of time; I've yet to have a township supervisor complain that we did not - they did not feel that they were equipped to address these issues. We have however had others who have complained that we didn't incorporate environmental wildlife factors but I think that's a good decision.

Again, this isn't for small systems. This is for utility scale systems. And it applies for any significant modification to a system once the project goes in. And again, it works like a building permit. Required information, description, property owner agreements, setback, decommissioning documents; there's a long list and of course every individual community can adjust this as they see fit.

Action lines we spoke about so that there's predictability. It's a big deal to have business process certainty for both sides. That's what we're trying to create. And then design standards; you can glance at these later. They even went to the extent of saying we don't want to have advertising. We started to have advertising coming out of Asia. So design standard setbacks and its public health and safety and then the nuisance factors.

Setbacks apply to buildings, property lines, roads, farm buildings and they're all specified in the document. The public safety number is 1.1 and then at five times of height for nuisance factors. A given community could adjust those as they see fit.

We defined what occupied buildings are, what property lines are. The noise number we used and we had a lot of groping around for the right noise level. We ended up using EPA's noise level. I have seen noise levels that range in a number of different directions. I've also seen some punitive ordinances that have noise levels that nobody could achieve. That's when you start getting a signal that somebody's using this incorrectly.

Waivers -- again if you are a participating landowner you're probably going to want to have the ability to have a waiver that stands with the property. Signal interference liability, a number of communities have gone to higher levels of liability than this.

Decommissioning -- let me explain -- and Pennsylvania in the area of wind has some of the rust belt connotation from the old coal days. What we did is we set up a decommissioning provision that said the facility had to be brought back to the condition that it was in before the wind farm came in. The first obligation to do that was the wind farm owner.

If the wind farm owner did not, there is a notice and remedy period. And if at the end of that notice and remedy period they have not removed the equipment, then it goes to the landowner.

If in a given period of time specified in the document the landowner has not done it, then it goes to the township and the township can do it. There is an escrow provision such that funds are escrowed so that given the landowner or the local community can use those funds.

The escrow is revisited every five years through an independent engineering study. And then it is that estimate minus the estimate of salvage value and then we put a not to go below in there. So that's the decommissioning funds.

We put in a provision for complaints and where complaints would go in a remedy period. And again, at the end of this process if a facility is out of compliance, the township has the ability to yank the permit. Pretty much those who we have tracked. And then (Courtney) would be glad to help and I'll be glad to help. My email is Tuffy@pennfuture.org. And with that, I'm glad to take questions.

Ian Baring-Gould: Great. Thank you so much Tom. A very quick overview, we need to do this in an hour or something of that nature. We have two questions that we'll pose to you.

The first one is if you have seen at this point - this comes from (Deborah Jacobsen) and folks can see the questions if they again go to the Q&A tab. Type in a question or see what other questions other people are asking. So I'd again encourage people to do so.

Has the new Fish and Wildlife Service guidelines on avoiding and minimizing wildlife impacts of wind turbines had a positive affect in wind turbine sighting processes and if not, why not? Have you seen any experience with that Tom or is it not quick enough?

Tom Tuffy: Well a whole separate activity that we've had ongoing is the wind and wildlife collaborative that has been operating for three years. That's where we have dealt with wildlife issues rather than here in the local ordinance provision. So we have not seen it relative to this local ordinance.

Ian Baring-Gould: Okay. Great. And then what role did manufacturers have in the development of the ordinance?

Tom Tuffy: They did not. It was essentially wind development companies. However, some of those were, well (unintelligible) as a for instance owns a piece of (unintelligible). So from that standpoint but no, manufacturers did not participate.

Ian Baring-Gould: And have you gotten feedback from manufacturers on their feel for the ordinance? Are they generally supportive of it or are they complaining as well?

Tom Tuffy: No we have not heard from manufacturers.

Ian Baring-Gould: Okay. Very good. All right. Any other questions for Tom? Again, he's going to have to leave us pretty soon. So he's not going to be here at the end for the more general Q&A session.

Let's see. So, a question from (Eric Underwood) -- normally in Illinois we see county-based ordinances. Townships normally are a smaller than the size of the projects and the projects cover multiple townships. How do you think this would be addressed?

Tom Tuffy: Well it depends on the jurisdiction that you're operating in. If you're in Pennsylvania, the actions at townships and if you have projects that cross different townships, you simply have to include those townships. For the most part counties in Pennsylvania are just advisory. Again, it depends on the jurisdiction. I know states where counties have a lot of clout.

Ian Baring-Gould: Great. And then from (Jim Augrom), can you give some examples of what a 55 decibel noise would be? Kind of what would that be equivalent to in normal terms?

Tom Tuffy: Well, if I come back to the - there's a slide that I went through pretty quickly that gave - so 55 would be - well, you can see the - you can see the slide.

Ian Baring-Gould: Yes. And so the question from (Jim) is other kind of things that we would see commonly in - for wind or commonly in the environment that would be equivalent to wind turbine so that...

Tom Tuffy: We tend to liken it to a refrigerator.

Ian Baring-Gould: So a refrigerator in a quiet room or something of that nature?

Tom Tuffy: Now I can tell you I've taken countless people out on wind farm tours and I normally will take them about 1000 feet away from a turbine and our setbacks are greater than 1000 feet. And there's people that are surprised at how little sound there is but I leave that to everyone to judge.

Ian Baring-Gould: And then another question. What is the technical reasoning that supports the 55 decibel?

Tom Tuffy: I don't know. We use the EPA standard.

Ian Baring-Gould: Yes. Okay. Great. All right. Any other questions for Tom before we move on? A good question that we'll hit and we'll take this as the last one. But what kind of standards do you use to measure whatever it is, whether people set 55 decibels or something of that nature? What kind of standards do you look for for the actual measurement of the noise? And the questioner says that the EPA standard really isn't sufficient. Do you have a sense for that or what would you recommend?

Tom Tuffy: Well as I think I commented, we struggled with what was the right standard. This is done in 2005. At that point, we chose the EPA standard. I can tell you that people have done a lot more work here and in some cases they've also specific measurement protocols. But this model that we put together we based on EPA document from 2005.

Ian Baring-Gould: Great. Well thank you so much Tom and sorry you can't stay for the whole thing. Tom's information will be included in the presentation so I'd certainly encourage people to contact him if you have any questions. He has a wealth of information.

Tom Tuffy: Thanks so much folks.

Ian Baring-Gould: Certainly. Next I'd like to move on to Erica Heller with Clarion Associates.

Erica is a certified land use planner with many years of experience in planning and zoning over a very wide range of issues but certainly includes wind technologies in the urban and rural space.

She has lot's of experience in sustainable zoning, airport land use compatibility, urban renewable development and zoning for renewable energy technologies and has spoken and published quite heavily in these areas. So a very good resource to us and without further ado, Erica.

Erica Heller: Thanks Ian. Thanks to all who are listening out there today. As Ian mentioned, you know, as a professional I'm a land use planner. And, you know, I come to alternative energy it's a personal passion really. Something I feel very - a lot of conviction about. And I sort of found a way to bring it into my profession and try to bring it to others in my profession in local land use.

As a private consultant, I've had the opportunity to work with a number of different local communities and assist them with writing land use regulations for particularly for small wind and more so than large but a little bit of large as well. And so it's exciting to talk to you guys today about sort of who are planners and what do they think about.

From what I understand the audience here today is not primarily land use planners or local planners. And so what I find sometimes is helpful is to kind of explain who we are and how we think because when the wind folks have to deal with us and sometimes it can be good to understand a little bit of background of how that works from our side of the (unintelligible).

So I want to talk about first briefly about a project that I'm involved with with the American Planning Association as the lead. It's a Department of Energy funded project (about) community strategies for success, oops - community strategies for successful wind energy implementation.

And as I say, APA is the lead partner and NREL is the other - is another. I am actually am still doing this through my former firm Clarion Associates. I've been announced a couple of times here as still being with them and actually I'm no longer an employee there but I'm still doing this project through them because we started it together. So that's just a housekeeping note.

That project is currently in progress. It's expected to be completed in 2011. The audience for that project is municipal county and regional planners. And the purpose of the project is to provide needed information and analysis and tools to help local planners integrate wind energy development into the community planning process.

And the end result of this project when it comes out will be free to all APA members, all American Planning Association members, and it will be a great guide and resource for local planners. So keep your eyes peeled for that early on next year and we're looking forward to that.

So now I'm going to turn away from that project briefly. I want to be clear that from here on out we just aren't further enough along in that project that I can give you results from that project today.

So, from here on out, I'm just speaking from my perspective and from professional experience and not representing that project, so I'll give you starting from here a little bit of background on local land use regulations and how these planners do think about stuff.

It's important to understand that the local land use authority is granted by states. And - but, you know, it really begins with the idea that a private property owner can pretty much do whatever he wants on his land. And any restrictions that government makes on that owner really has to justify that as having a legitimate public purpose.

Over time (unintelligible) has defined what legitimate purposes are. And this is a small list but things like safety, avoiding nuisance impacts on others and protecting property values have all been accepted as appropriate purposes of land use regulations -- applying this idea to wind energy regulations. So when local planners think about wind, we think about it in all these context. And what we need to do is local planners need to seek a balance between one owner's ability to install the turbine and the effect it would have on others

Of course if (unintelligible) should endanger or cause harm to a neighbors health but, you know, there's also things like - there's a legal concept called the quiet enjoyment of property which gets into this question about what noise is acceptable.

So the idea is you should - you'd really be able to sit in your backyard and do the (unintelligible) that somebody would do on whatever kind of property you have whether it's a commercial or a residential property and not be interrupted or not be, you know, unable to do that by something that's happening next door.

So local wind regulations really need to find that balance and, you know, in terms of (noise) levels typically what I talked to with folks is whatever the local nuisance noise level is if you have defined one, that's probably the best one to use. I know a lot of communities use 65 decibels. But in more rural

communities sometimes that is quite a bit lower because the ambient noise is lower.

So the local wind regulations in addition to sort of balancing the sort of one property owners with the neighbor's property owner's interests and rights, they also need to respect community wide values and goals that have been established through a legitimate public process.

And so that might include things like protection of specific cherished views or maintaining agricultural land and lifestyles or the environment or air quality. But all of those things really need to be part of the way that planners think about how to set the local regulations.

And I think it's worth pointing out that there are a variety of tools. We mostly think about zoning but there's lot's of tools that we can use at the local level with permitting, fees and (exactions) and development agreements.

As some examples I actually know a county that is - does not have zoning and they've done a really great job at using the (traditional) use permit with a development agreement to really detail out how the wind development will take place. And so even without zoning, there's a lot of tools that can be used.

I think when we think about local ordinances and regulations it's also really a very important point is that small wind and large wind are very different animals. And unfortunately I see a number of communities pick up a model ordinance and particularly one for large wind and then try to apply it to small wind.

And it's just they're very, very different. And, you know, of course the large turbines that, you know, they have large slow moving blades and they create a

lot more impact in terms of things (unintelligible) with (a shadow) certainly acoustic vibration. Those are things that the small light - the small turbines just typically those impacts are not there. So when you start writing those into a small ordinance, it just doesn't make sense.

Another, you know, on the flip side, large wind farms are always located in fairly rural areas that are a distance from community centers. And small wind on the other hand can fit into more settings such as neighborhoods. And it's exciting but it also means we have to think really carefully about how to enact standards for small wind.

And so, you know, the differences of impacts and scale for large and small just really have - result in very different ordinances. And it's really important to understand that particularly for small wind which, you know, when you start adding onto its requirements, you know, I sometimes see like - and engineer (unintelligible) installations which just aren't really appropriate and drive up the costs of installation so much that, you know, the owner really has to abandon the project.

So this is one of the things I try to make really clear to local land use planners. It's, you know, again I've seen it happen where one is modeled after the other and it just doesn't work.

All right. So I'm going to point you to a couple resources. Tom took us through such a great example of a model ordinance I didn't want to do the same thing with my time with you. So I'm just going to point you to a couple of resources here.

One is a zoning practice article that I wrote about permitting and zoning standards for small wind. And it was published by the American Planning

Associating on 2008. That's the one that's pictured there with a large seven on it.

And then the other is a small wind model ordinance that is found on the American Wind Energy Association, Small Wind Sighting and Permitting Guide. That's available on their Web site, which is listed there. That ordinance was a joint effort and it was published by AWEA. But while they were writing it, they had advice from a number of people.

So of course they're an industry group so they're one perspective. But they also worked with Jim Green of the National Renewable Energy Lab, the Wind Technology Center and (Nick Segrio) who's a small wind installer and advocate and then myself as sort of a land use and regulatory side of things.

So, you know, I think this offers a fairly balanced perspective in terms of that. There's a couple of resources for you. Now here's - the key point of this slide is that the small wind - I want to make another distinction about small wind that small wind really is appropriate as a by right accessory use and almost all zoning districts where it's going to be allowed.

Of course we need to enact appropriate protective standards for the nearby neighbors. But zoning, you know - an accessory use means that it's secondary to another use on the property and that is how small wind works. It's, you know, there to serve the purpose of providing energy for a home or a business.

And I really believe that small wind can be done as a by right use. The flip side of that, you know, is that, you know, there are a few places where it would need to be a conditional use for sure. But it's important to understand that public hearings require a lot of city resources. They're slow and expensive

for the property owner and we just really don't want to create a public hearing every time somebody wants to install a small turbine.

Occasionally they do need to be of prohibited use in districts where they're really incompatible with a special character of the district. But generally I like to see that be limited and then owners can decide whether the wind resource is adequate to put them in.

Here's two more points I really like to make about writing wind turbines - writing ordinances. It's really understanding the difference between the nuisance impact and a non-nuisance impact because there's really - one of the big fears that people have is that a neighbor's wind turbine or wind farm is going to reduce their property value.

And the reality is there's a fair amount of research on this and when there's a nuisance impact and Tom described those. Those are often things like sound limits - well noise or flicker shadow and with small wind of course vibration and flicker are not really significant. But nuisances can include those with large wind.

So sound safety, vibration flicker, those are nuisance impacts and if you have those sorts of impacts from a wind farm on your property or from a neighbor's turbine, you can actually see a reduction in property values. And so I advise local governments to really be careful with those. To really work hard to make sure that the standards of the ordinance address those very, very thoroughly.

Now the flip side of that is that the visual impacts which are the things that locals often spend the most time and energy and there's a lot of concern about. Those visual impacts have actually - they're not a nuisance and the studies that

have been done show that there's really no evidence to suggest that they actually reduce property values.

So I advise local planners and what local planners need to know about that is that that's the case so that they can understand that while we do need to worry about aesthetics, we need to minimize the just the overall impact in terms of, you know, what color they are or whether or not there used as a sign and that they should probably be taken down once there no longer used.

That from that point forward we really need to be careful about concerns about aesthetics that would actually reduce and limit the function of wind turbines. Planners need to understand and we need to help them understand that when you restrict wind turbines from some of the most visible places, we're also taking them out of the places that have the best wind.

So to - there's just - that they can't be, you know, removed from bluffs and ridgelines and so forth or they can't be screened and still function. And that's one of those things that I think the industry - the wind industry really needs to make clear to locals who are trying to do this.

You know, I talk to folks and say, you know, look if you're going to write a several page ordinance that's really wonderful and has great standards and then at the very end of it or somewhere in there you're going to say, you know, but the height needs to be limited to 35 feet or, you know, in the case of large wind to, you know, 150 feet.

What you've really done is written a very long and lovely document that adds up to no. And so I feel like those three points are some of the most important points about wind when we're writing local ordinances and when we're working with local planners.

A couple more points about working with planners, who we are and what we think about. Our biggest fear is breaking the public trust. Our biggest fear is that we would fail to protect our citizens from some kind of harm. So by nature we're going to be somewhat wary about how we enact standards and we're going to want to always go the extra mile.

But to counter that, we really need unbiased sources of information. We need to know that we're getting good information. And I think the wind industry folks sometimes get frustrated because they, you know, they give us data and we really want to see it from somebody else. But that's a great role I think for the state wind working groups is to help planners find the kind of information that they need.

I think the last point on here sometimes wind developers and advocates say to me, you know, I keep explaining how great wind energy is for the environment and for the planet but that planner just doesn't care. You know, that person must really not care about climate change. And I try to explain to them that that's not the issue when working about with planners.

But the issue is that the ethics of or profession is that planners really have to respect the community's majority opinion even if we personally love wind energy and I obviously do, we're bound ethically to adopt regulations and decide development applications based the community's values and not our personal preferences.

And so you need to understand that about planners so that you can work with them to help them talk to the community and not get frustrated. Because I think the truth is that planners can be allies in working with installing wind and getting wind energy out there.

And, you know, planners really have the pulse of their community. They interact with the community a lot. They can often help you understand how to approach community leaders and landowners to increase acceptance of wind energy. And planners often have policy documents that establish local goals and values that could support wind energy development even when they don't know it.

So for example, if the local (comp) plan emphasizes that keeping the localized cultural character and wind experts and working groups can provide data on how wind leases keep family farms solvent, then planners can really help to explain that to citizens and decision makers and help them see how that's actually going to reach - how wind is actually going to reach their community held goals.

And then finally to (unintelligible) planners, they need help finding the unbiased quality information about regulating wind energy and about how to counter people's fears and concerns. You know, every issue is going to get raised and planners need to be able to respond and respond quickly with the best information to help keep those fears from just, you know, expanding and taking over the discussion about wind energy.

I think again that the state working group seem like they're in a great position to help make that sort of information readily available to local planners. So I encourage you to help do that.

Thanks very much. Here is my contact information. And I believe Ian is this correct that we're going to hold further questions until after Dave's presentation?

Ian Baring-Gould: Why don't we - there's one that I think kind of fits in well with what you've been talking about...

Erica Heller: Great.

Ian Baring-Gould: ...and let's hit that one and then let's move onto Dave and then we'll do some more after Dave's presentation. And the question is in regards to different decibel levels versus rural and urban locations.

Erica Heller: Oh great. Yes. Well one of the things that I often advise people to write into their ordinances is that they might want to set a decibel level but have it also be flexible related to the environment. So a level that might say the maximum noise level at property line is 55 decibels or 10 decibels above the ambient noise level.

That can be especially great in a community that has a variety of settings. So you might have some very quiet neighborhoods. But you also might have some neighborhoods that are right next to, you know, a major roadway that's got quite a bit of noise.

Another thing that that decibel level does is also that kind of flexible ambient noise level reference is that it can account for like a storm or some other kind of a condition that's temporary. So a lot of times wind turbines will make the most noise in very, very windy conditions. But during that time you'll also have a lot of ambient noise from wind in the trees and it's just not a time when people are generally out barbequing if it's really, really windy.

So I think there's a lot of ways to address that sort of what is the ambient noise level without having to go out and measure ambient noise in every piece of

your community and set something very complicated. Instead you can really just talk about a relationship to the sort of base ambient level.

Ian Baring-Gould: Great. Thank you very much. So we have a few more questions but let's get David on the line and then we'll go from there.

So, as an introduction to David; David Loomis is a Professor of Economics at Illinois State University where he's been teaching master's degree programs in a number of energy and telecommunications areas. Dr. Loomis is also the Director for the Center of Renewable Energy and the Executive Director of the Institute for Regulatory Policy Studies again with Illinois.

He leads the Illinois Wind Working Group and has also worked with a number of professors to develop an undergraduate curriculum renewable energy again for Illinois State. Before joining the faculty David worked at Bell Atlantic now commonly known for as Verizon where you spent quite a few years. And then David is also very well published in many different areas economics, education, policy but clearly with a strong focus in energy, generally in wind. So David.

David Loomis: Thank you so much Ian. I appreciate the opportunity to talk with everybody today. I'm going to talk from a state perspective in what's happening here in Illinois. And as Ian said, I help run the Illinois Wind Working Group and see there are objectives or purposes. But really it is as was said before to communicate those wind opportunities honestly and objectively, work with all the different stakeholders and to promote economic development.

We did receive a grant under Wind Powering America and our conference is coming up. We have a citing, zoning, taxation conference and that's focused

for Illinois county board. So in Illinois the county board needs to approve a special use permit for a wind farm.

And this conference is designed particularly for them in mind. For a county board that might not be familiar with a wind farm, we want to give basic information about wind energy and what it is and what are the issues that they need to look for.

We also go out and talk with county boards as they try and develop their wind ordinances to give them some information. And then we also talk with - we have a landowner forum to talk with landowners and often times the landowners are also serving on the county board so those serve a dual purpose.

Just my little advertisement for our Center for Renewable Energy; our center, as Ian said, supports our renewable energy major at Illinois State University. It's one of the first of its kind to be a Bachelor's of Science in Renewable Energy. It's a cross-disciplinary major between the Departments of Agriculture, Economics and Technology. We do public outreach. And then I'll talk a little bit later about our - the research that we've done as part of the center.

So just to set the stage, in terms of the large wind farms in Illinois, we started with about 50 megawatts in 2003. But as of June of this year, we were ranked sixth in the U.S. We were responsible for well over half of the generating capacity in the first quarter of 2010.

So we're continuing to build projects. We have projects that are under construction still. And as I've looked in those numbers, it's possible that

Illinois could be the fourth largest wind state and jump ahead of Oregon and Washington in terms of wind energy.

So we continue to move forward in that case. But that's not to say that we haven't had our challenges in Illinois. We have three counties that have imposed wind farm moratoriums, Ogle County, Lee County and just last week Iroquois County that imposed at least a six-month moratorium on new wind farm development. And so even though we've continued to grow and prosper, we're not taking that for granted as we look forward.

The map that you can see has the existing wind farms and the size of the dot indicates the installed capacity of that wind farm and also looking at the color then is the average wind speed. So not surprisingly we are seeing most of the wind farm development in kind of this North central corridor outside of the Chicago which is in the Northeast corner; and very little development in the Southern part of Illinois because that has the lowest wind resource for Illinois.

And so there are a number of counties that have seen quite a bit of activity as far as wind farm sighting and lots of counties that haven't. If we look at the wind farms by county again, the one that has the largest number of megawatts is McLean County.

That's by virtue of a single wind farm, Twin Groves wind farm by Horizon Wind Energy is 240 turbines, 1.65 megawatt vestas machines. And there is another 150 megawatts under construction in McLean County at the very opposite corner of the county. But you can see that we have is it four different counties that have active projects under construction.

Now if we look at those counties that already have permitted projects but the projects have not started construction yet, you can see that there's some

counties such as Henry County that if I just flip back you'll notice that Henry County isn't anywhere on the list. And so Henry County has the number one of permitted projects that haven't started construction and they haven't had even their first.

Livingston County has already had activity. And McLean County has already activity. Iroquois County I mentioned has permitted projects but they have a moratorium that they just imposed and a number of other counties there to a lesser degree already permitted.

And so really they - if they could line up their financing and have a PPA, all the permits have been granted for them to move forward on that project. So very quickly we could see a doubling or more of wind capacity being built in Illinois that have already been through the permitting process.

If we look at proposed projects, I'll mention proposed projects that haven't been permitted, there are quite a number, you know, of those projects still in the queue that are awaiting and moving through the permitting process.

I want to talk a little bit about our ordinances here in Illinois and I'm going to draw on information that was done by the Illinois Institute for Rural Affairs, which is my counterpart at Western Illinois University. So I want to acknowledge and thank them for the great work that they've done in surveying the different counties.

Forty-seven of the 102 Illinois counties have some form of wind zoning or ordinances. Each year new counties decide that, you know, we really need to put in - to place a wind zoning ordinance. We do have five counties that have no zoning. So there is no zoning process. And there was some question about whether - what they do because they don't have countywide zoning. How do

they create an ordinance? And they've overcome that and created a wind ordinance while not putting in a full set of zoning in their county.

This is just a map. Again, you can see those counties. If we looked at the wind map, these are the counties that have the largest wind potential and would be most likely to see development. Although, as we move out, we're seeing more and more of those fringe counties that are white that may adopt a wind ordinance in the future.

Some of the components, typical components, are things that have already been talked about on the call. And so I'm just going to take a look so that from the survey you can take a look at some of the graphs in terms of set backs from primary structures. The majority actually do not specify setbacks from our survey. But those that did had 1000 foot followed by 1.1 times the height of the turbine as their setback.

If we look at setbacks from roads, again, the most popular choice among the counties surveyed was 1.1 times the total height. And then setbacks from incorporated areas, again most of the time was not specified although just a handful - a few did have those specified. And then the most talked about choice is 1.1 times the total height in terms of setbacks from the property line.

Now when we talk about taxes, taxes also play a large part in - we're somewhat controversial because prior to 2007 each county decided for itself how to assess the value of a wind turbine for property taxes. And there is a difference of between how those are treated.

And there was no standardization across the counties. And so for a developer, they were not sure how much they were going to have to pay in taxes because

it's only after they would be built that an assessor's office would then make a determination for that.

So in 2007 the legislature put together a public act there that standardizes the valuation. A 360,000-megawatt - per megawatt as the assessed value and that will be adjusted annually for depreciation - for inflation. And then of course there's a depreciation as well. And just an example in terms of the math of how that would play out in terms of the fair cash value given inflation, you know, inflation factor and a depreciation allowance.

I'd be happy to answer questions but I do want to leave time for the Q&A. My contact information is there. And if I - we don't get a change to answer your questions, I would be happy to answer any questions by email or a phone call.

Ian Baring-Gould: Great. Thank you Dave. Very nice overview with these three different speakers taking different approaches, which was definitely fabulous. A question for you David. Did Illinois have a model wind ordinance? And if so, was it helpful in gaining support?

David Loomis: We didn't have a model wind ordinance as such across the state. There were early counties that other counties borrowed from and used in a sense as a model wind ordinance. And so I know I was part of passing those along to say well what does this county have and what did that county have and so we passed those along.

And very early on the Environmental Law and Policy Center had one and Wes Slaymaker when he was associated with the wind industry, (Windistry) had a model ordinance that was used oftentimes for some of these counties.

Ian Baring-Gould: Great. Another question in regards to the counties that have enacted the moratoriums; what have been the arguments that they have used for those moratoriums?

David Loomis: I think oftentimes they've wanted to take a look again at their wind ordinance and see whether it's still appropriate for them to do. And we are going to talk about that at our conference coming up in February. And I'm hoping to have a panel of those counties to tell us more in terms of their thinking.

But those are the things that I've read just from newspaper accounts that they do - they want to re-look at their zoning ordinance and see whether it's still appropriate for their county. So I don't think there's intent to have a moratorium forever. It's just kind of a timeout to look at things again.

Ian Baring-Gould: Great. A question for Erica. Can you talk a little bit more about the height and setback requirements for small wind in urban and suburban areas? And then what kind of setbacks would you suggest for temp buildings?

Erica Heller: Okay. Sure. Yes. Height and setback in the less rural areas and, you know, when I say urban, it doesn't necessarily have to be a bit city to - you know, a lot of times we talk about neighborhoods in communities that they're just, you know, but we're talking about things that are less than, you know, two acre lots or something like that.

So height I generally like to just leave height as a function of the setback. I like to - you know, there seems to be a fair amount of agreement from most parties that a setback of 1.1 times the turbine height is reasonable, you know, for the outside chance that the structure would actually fail.

Now, you know, I do have some installers debate that because they say look, you know, there's no setback for - required setback for trees and they're a lot more likely to fall over than a small turbine. And I think that's true. But that being said, I think most people can agree that a 1.1 setback is reasonable and makes people fairly comfortable. It also makes it fairly easy to meet the noise requirements and the noise level at property line most of the time. So that's part of the why I like to go with that.

And then so when you think about that, if you've got, you know, a 60 foot turbine or an 80 foot turbine, you're starting to really - you've got to get it far enough back from property line. You really start to get to a point where you can't put anything larger than about a 65-foot turbine on a one-acre lot even if you can get that turbine right in the middle of the lot. Just by the dimensions of the lot, how far it has to be fed in, that's just going to dictate that.

And I find that that's actually a very good way to limit the height because instead of this arbitrarily setting the height based on something visual, you're setting the height based on that safety issue of the setback. It's, you know, a lot of communities just don't feel comfortable leaving an open ended height so for small wind.

Most of the manufacturers are making things that aren't higher than 120 foot height - hub height. And so I think that is a pretty good maximum height to set. You know, the reality is that we need to get these things up and a way (unintelligible) structures and obstructions.

The other obstructions create turbulence in the air. That turbulence reduces the function, reduces the output and makes the turbines not cost effective. So they really need to be 25 to 35 feet above any surrounding structure that's within 300 feet in any direction in order to work well.

So if your maximum building height is 50 feet, you really need to let them be at least 85 feet above the maximum building height. So I just - urban communities that really would like to have them at the same height as all the other structures - and unfortunately again, as I said, that's just a pretty long and complicated way of saying no.

Ian Baring-Gould: Okay. Great. A question for both of you. From a legal perspective, how successful have lawsuits been at opposing new ordinances? Do either of you have an answer or a response for that?

Erica Heller: Sure. Yes. Well on the small wind side, I'll start with that. On the small wind side, I'm really not aware of many legal challenges to small wind ordinances. So that's good news.

On the larger wind side, you know, I think most of them have had to be founded in, you know, particular if there are damages such as endangered species of migrating bats, other kinds of impacts on - tangible impacts.

I have heard of one case out of Texas where a proposed wind farm was denied because of anticipated impacts on a range of things such as views and concern about property values. Again, you know, I don't really like to cite that particular case because I don't think it's based on good science. And so I don't think its good precedence.

But there are cases - you know, there are other - and there are other legal challenges like it that have been turned down. Certainly more have been turned down than - to just a theoretical wind farm than have been accepted.

But, you know, it's kind of a roll of the dice. It's possible to see that succeed in the court. So, sometimes folks are willing to do that. But I think more often than not, it really - there really has to be some kind of a tangible negative impact that can be measured after the fact in order for a lawsuit to be successful.

Ian Baring-Gould: Great. Thank you. David, do you have comments for that or.

David Loomis: Yes. And I'll preface this by saying I'm an economist and not a lawyer. But from what I've read here in Illinois, most of the challenges as far as large wind are concerned, I have been due to the process that the county followed. Did they follow their own rules in - when they approved this wind farm? Rather than attacking the ordinance, as long as the ordinance was done in a proper way, I'm not aware but there might be some that have attacked the provisions within an ordinance.

But as long as they instituted that according to the rules of the county, they're fine. But it's been attacked mostly due to process. Did they follow the right rules? Did they do it the right way?

Ian Baring-Gould: Great. Thank you. Another question for David. Are there any counties in Illinois with height restrictions that you know of? From (Chris Brooks).

David Loomis: There has been a talk among the counties of having a maximum height for turbines. But I'm not aware of any counties that have instituted a maximum height for a large wind turbine. But there has been discussion of how big is too big and what would that look like.

Ian Baring-Gould: Okay. Great.

Erica Heller: Ian, can I correct myself briefly?

Ian Baring-Gould: Yes.

Erica Heller: The legal case out of Texas actually rejected the nuisance claim. It's one out of West Virginia, which is - for those that are interested Burch versus Nedpower Mount Storm that was successful in making a nuisance claim against a proposed farm.

Ian Baring-Gould: Great. Thank you for the clarification there. Do either of you know of kind of additional studies that have looked at the property value impacts of wind?

David Loomis: Yes. We - one of my graduate students, Jennifer Hinman, did a property value study on the looking at one - a particular wind farm, was the Twin Groves Wind Farm here in McLean County that I mentioned was the largest one that we have.

And that study is out on the renewable energy Web site. And it's 150 pages. It's a technical economics piece. But it was done in the methodology that (Ben Howen) and the folks from Lawrence Berkeley Labs did. And in fact (Ben Howen) was very generous with his time in helping me and my student work on that project.

And so the results are there for everybody to look as an exhaustive literature review that (Ben) helped with. But the bottom line was that we didn't find any property value declines in McLean County surrounding the wind farm - the Twin Groves Wind Farm.

Ian Baring-Gould: Great. Erica, do you know of other studies that have gone out there other than those two?

Erica Heller: There are several. But I don't have the citations here at my fingertips. So if that person would like to email me, the email provided, I will get those citations.

Ian Baring-Gould: Great. Thank you. We're approaching ten minutes past the hour. So I'm going to thank everybody. Two items here that you see on your screen; certainly the Wind Powering America Web site and then also the model ordinance that Tom talked about is a link there to the Web site.

We will have all of these presentations up on our Web site. It takes us about a week to do that in addition to the audio kind of movie version of this. So if there's someone that you have interested in sharing this with who couldn't make it to the presentation, please forward to that - forward it to - the link to them. Tell them to go to the Wind Powering America Web site and it will be there for them to view.

Lastly, I just want to again thank Tom, Erica and David for taking the time and providing us with this information in regards to ordinances for small and large wind.

So thank you all. Again, a month from now we'll be doing the next one again looking at market acceptance research that's going on through the Department of Energy.

Erica and Dave, any last words?

David Loomis: No.

Erica Heller: Thank you very much. Appreciate the opportunity to...

David Loomis: Yes. Thank you.

Erica Heller: ...participate today.

Ian Baring-Gould: Great. Thank you all and we'll talk to you all soon. Bye bye.

David Loomis: Bye bye.

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