

Wind Permitting Toolkit and Model Zoning Ordinance

March 16, 2016

MAGGIE YANCEY: Good afternoon and welcome to the WINDEXchange webinar.

My name is Maggie Yancey, and I am the Manager of the WINDEXchange Program for the U.S. Department of Energy. I'm going to moderate today's webinar. And for WINDEXchange webinars, we bring together a set of speakers on topics important to wind energy technology, deployment, policy and more.

Our webinars are recorded and posted to the WINDEXchange website one to two weeks following the live broadcast. You can find recordings, transcripts, and presentations from previously-held webinars at: www.wind.energy.gov/windexchange under Information Resources and then Webinars.

In today's webinar on the Wind Permitting Toolkit and Model Ordinance, we will hear from across the country a variety of perspectives on wind permitting at the local level. The permitting process can vary greatly between counties offering unique challenges and inefficiencies. And today, you'll be hearing from a former county official who implemented a wind ordinance while in office, a distributive wind installer, and a representative from the NGO who has supported the development of wind-focused ordinances. These three will share firsthand information on wind permitting and zoning, as well as the tools that can help ease the process.

First you'll hear from Mia Devine, Project Manager at Northwest SEED. Mia will share the new Wind Permitting Toolkit she's developed by drawing from successful examples in the Pacific Northwest while incorporating industry-best practices and input from regional stakeholders.

Next you'll hear from Dana Peck, Executive Director at the Greater Goldendale Chamber of Commerce. Dana will share his experience with renewable energy permitting while he served as Economic Development Director for Klickitat County, Washington.

Finally, you'll hear from Padma Kasthurirangan, Vice President of Niagara Wind and Solar. Padma will share two case studies that explain how certain tools have positively impacted the permitting process in New York State.

We will hold a Q&A Session during the last 15 minutes of the webinar. Please note that you are in listen-only mode and unable to speak. Please enter your questions in the Q&A box within your Control Bar on your screen and click Send. You're welcome to submit questions at any time during the webinar.

Additionally, if you experience technical difficulties, you can use the Q&A box to communicate with our webinar organizer.

And with that, I would like to introduce our first speaker, Mia Devine. Mia has had over 15 years of experience working in the renewable energy industry. At Northwest SEED, she oversees the management of the rural renewables program for Oregon and Washington States and the facilitation of the Northwest Wind Center's Distributed Wind Work Group. Mia also co-founded a national group encouraging the participation and advancement of women in wind energy. And when not at work, you can find Mia tending her farm near Bellingham, Washington.

Thank you, Mia, for your time and participation on this. We are thrilled to hear from you today.

MIA DEVINE: Great, thank you for having me.

And thank you, everyone, for attending.

Northwest SEED is a nonprofit based in Seattle with a mission to create communities powered by locally-controlled clean energies. We do this by identifying local barriers to clean energy development and then creating solutions to those barriers.

The work that I'll present today is on wind energy permitting, and it is an example of one of those barriers that we're trying to tackle. And this work is being completed in partnership with the Northwest Wind Resources and Action Center.

First, it's important to distinguish between the different sizes and applications of wind turbines. Here I'm showing three different size categories. The first typically consists of the single, small wind turbine located at a home, farm, or small business and provides electricity directly to that home or business.

The second size category consists of one or several medium- or large-scale wind turbines that might be installed at an industrial facility, wastewater treatment plant, or on a farm or ranch. This category also includes small community wind projects that are connected at the distribution level of the electric grid and provide electricity directly to a nearby load or to local community members.

And then the third category represents utility-scale windfarms, consisting of hundreds of individual wind turbines designed to export electricity via transmission lines. Permitting of these large windfarms often involves different state and federal agencies and is beyond the scope of this presentation. Instead, I'll be focusing on the smaller two size categories, where the permitting tends to be regulated at the county level.

The level of effort required to get a permit for a small wind turbine, like the one shown in this picture, is often disproportionate to the size and scale of these projects. It can often take more person hours to go through the permitting process than it takes to manufacture, deliver and install the actual equipment.

For example, I recently heard from a rancher in Oregon who wanted to install a small wind turbine on his ranch in order to be more energy independent. And his county required his project to go through the Conditional Use Permit Process, which includes public hearing. And since the community was not familiar with wind energy, they had a lot of concerns that they raised. And the rancher was required to pay a consultant to complete numerous studies in order to answer all the questions. And after a year of studies, the rancher was ultimately granted a permit but had spent years, \$40,000 in legal fees and (inaudible). And the cost of the wind turbine installation itself was only \$40,000. So the permitting process delayed his process for a year and doubled the cost.

This particular county in Oregon has since updated their zoning ordinance so that similar projects can go through a more standard, simplified and less expensive process. However, this is just one jurisdiction; and there are over 25,000 jurisdictions across the United States. And if a rancher in each of this jurisdictions had to go through what the Oregon rancher did in order to change that county's ordinance, it would take more than one million person hours and cost more than \$250 billion.

But the good news is that there are already jurisdictions that have gone through this process that we can learn from. And so we've learned that the ideal permitting solution should meet the following criteria.

First, the permitting process should be transparent so that developers and project owners know ahead of time what is expected of them. The decision-making process should be consistent, fair and objective so that developers know that as long as they follow the clearly-defined rules, they will receive their permit. And the permitting process should follow a reasonable and predictable timeline so that developers can adequately plan their construction schedule.

The permit fees should also be reasonable and predictable so that project owners are not surprised by hidden costs. And the permitting solution should be able to meet all of these criteria while at the same time ensuring that these systems are installed in a safe manner.

So in order to help jurisdictions adopt regulations that meet these criteria, I have created a Wind Permitting Toolkit. Now I'll show you a few sample pages from that toolkit, and then I'll provide a link at the end of my presentation where you can download the toolkit.

The toolkit includes an overview on why jurisdictions might want to consider updating their regulations regarding wind energy. For example, this page shows different wind maps based on different wind technology innovations that have allowed wind turbines to capture energy at lower wind speeds, which could potentially open up more land for development. So even if a county has not yet experienced any wind energy development because it was thought that it wasn't windy enough in that county, it might still be a good idea to start preparing for that possibility as the wind turbine technology changes so that a permitting process is in place before projects are proposed.

The toolkit also includes information on how to incorporate renewable energy goals into comprehensive plans. It's often useful for a community to define overall goals and priorities related to the community's energy resources before working through your details of what the permitting process for these projects will be. This Fact Sheet includes example text that has already been adopted by some counties in their comprehensive plans.

Finally, the Permit Toolkit includes a model zoning ordinance. On the left side is the example ordinance language, and then on the right side is commentary explaining each position. This model ordinance makes up the bulk of the toolkit, so I'm going to focus the rest of my presentation on talking about some of the details of this ordinance.

The model ordinance was based on a lot of prior work that has already been completed around the country, some of which is listed here. What I've basically done is boiled down these hundreds of pages of information down into a single five-page document that is easy to read, easy to understand, and hopefully easy for jurisdictions to implement.

In reviewing all of these best practices and model ordinances around the country, I found that there were some areas where the ordinances were inconsistent in their recommendations or were based on old technologies. So I identified those questionable areas and then held a number of workgroup meetings, both with industry representatives and also with jurisdictions, to figure out reasonable recommendations for this model ordinance. I'll highlight a few examples of the ordinance provisions that are included.

First, the ordinance defines the three size categories for wind turbine technology that I explained earlier. And each category is treated slightly differently in the ordinance.

The smallest size category is permitted outright in all zones, subject to certain conditions. The Size II category is permitted outright in some zones, like commercial or industrial zones, also subject to certain conditions. And then the Size III projects must either go through a conditional use or special use process; or a jurisdiction could create an energy overlay zone, which you'll hear about a little bit more from our next presenter.

The idea here is that the potential impact on public health and safety of a small turbine is less than from a large windfarm. So the permitting requirements should reflect that reduced risk. Just like getting a building permit for a small shed and it is much easier than getting a building permit for a multi-story condominium, the permitting process should be scaled appropriately to the project. So the model ordinance treats each of these size categories differently.

And I mentioned that the Size I and Size II categories are permitted in certain zones under certain conditions. I'll give you a few examples of what those conditions are.

First, the setback requirements from property lines. There are some counties, mostly in rural and sparsely populated areas, where wind turbines are treated like any other structure, where no part of the structure may be closer than five feet from the property line. However, we decided to be a little bit more conservative.

So this model building ordinance states that each wind turbine must satisfy a minimum setback distance equal to one-times the maximum blade tip height from the property line. So the taller the wind turbine, the farther it needs to be from adjacent properties. And the reason for this is that in the rare event of a wind turbine failure or collapse, the risks to adjacent properties would be minimized.

Next is height restrictions. Some ordinances limit the height of wind turbines to the maximum height of any building within the zone, which oftentimes is 35 feet. However, industry best practice is to place a wind turbine on a tower that is at least 30 feet taller than any nearby obstructions, which would mean a minimum tower height of at least 65 feet.

Now we know that the wind resource improves with height above ground. So in order to capture the most amount of wind power, wind turbines should be installed on the tallest towers that are economically viable. It used to be that 100-foot tall towers were the most economically viable and most commonly installed for small wind turbines. Many ordinances created at that time set the tower height limit at 100 feet. Now taller towers are becoming more economically viable, but development is limited in those counties that had already set a 100-foot height restriction.

So imposing an arbitrary height restriction in a zoning ordinance limits the power production and economic viability of a system. Height limits, if any, should only reflect safety concerns. And in this case, the safety concern has already been addressed with the setback requirements that I just described. Therefore, in this model zoning ordinance, we do not impose any height restrictions on wind turbines except for height limits that are required by the FAA or another local airport authority. And FAA usually requires notification for any object exceeding 200 feet above ground level.

Sound is another common public concern that is often raised. Some ordinances set certain decibel levels below which wind turbines must operate, such as 50 to 60 decibels. However, if a wind turbine is placed in a commercial or industrial district, the background sound level that already exists might exceed this threshold. So this model ordinance treats wind turbines the same as any other source of sound in the community and states that during normal operation, wind turbines must satisfy the sound limits of the zone where it is located. And then an exception is given for short-term storm events.

Aesthetics can be a difficult topic to incorporate into a zoning ordinance since different people have different perceptions of what is visually pleasing or not. So in selecting language for this model ordinance, we wanted the requirements to be clear and objective so that they are not open to interpretation. And we wanted to treat wind turbines as closely as possible to other objects in the landscape, such as cell phone towers. Therefore, the requirements in this ordinance are that the wind turbine be painted a neutral, non-reflective color or the manufacturer's default color; that the tower not include any lighting, except as required by FAA; and that the turbine not include advertisements.

Some communities might have a scenic viewpoint that they would like to protect. So in this situation, it's best to use standard aesthetics criteria. One example might be those used by the Department of Transportation to protect scenic highways.

Finally, there were some provisions that were recommended by the wind energy industry that we ultimately did not include in this model zoning ordinance, which are listed here. Although these are industry-best practices and will help ensure optimum energy production, they do not necessarily deal directly with public health and safety. And verifying compliance with these provisions would add an administrative burden to the permitting process, which we didn't want to do.

So instead of mandating consumer best practices in a zoning ordinance, we created this educational Consumer Guide Checklist, which we recommend that jurisdictions provide to their constituents before they begin the permitting process to help with the consumer concerns that they will be getting the value that they expect out of the wind energy project.

Both the Wind Permitting Toolkit and the Consumer Guide Checklist can be downloaded from the Northwest Wind Center's website, which is listed at the top here. And I'd like you to know that although this toolkit was created with a lot of stakeholder input and is based on ordinances that have been proven to be successful in some parts of the country, it's probably not perfect. And there are probably parts of the ordinance that are not applicable to all jurisdictions across the country.

So we've made our template files available to download in Microsoft Word, and that's the link at the very bottom, so that jurisdictions can easily copy or modify the zoning ordinance language to meet their needs. As jurisdictions start to use this toolkit, I'd appreciate any feedback that you have on what is working or what is not so we can continue to improve these resources for others in the future.

That's all I have for today. Thanks again for joining, and I'll look forward to questions at the end of the webinar.

MAGGIE YANCEY: Thank you very much, Mia.

Now let me introduce Dana Peck.

Dana Peck has served at the Greater Goldendale Chamber of Commerce as the Executive Director since last August. He was previously with EDF Renewable Energy as a Senior Developer for the Northwest Region. From 1997 to 2005, he served as the Economic Development Director for the Klickitat County in Washington State, where he oversaw creation of the county's renewable energy overlay zone; the Dallesport Wastewater System; the funding for unincorporated community projects. He's held many other positions within the energy industry in government and lives in Goldendale Washington.

Thank you, Dana, for being here today and sharing your experience with us on this topic.

DANA PECK: I appreciate the opportunity, and thanks to everybody for being on the call.

What I'm going to be talking about is sort of a subset of what Mia has been doing in way of applying the really excellent toolkit that she's put together. And the context of my remarks, just to sum them up in an opening statement, is really figuring out ways to put the community ahead of the developer.

I've been on both sides of that desk, as a developer who comes into areas and kind of prospects for sites for large wind turbine projects; and I've also been a County employee. And I think that there's a way to merge those two roles in a way that really benefits local interests, not just the people who are going to get turbines and receive royalty payments, but people who are going to be neighbors without those sorts of economic benefits as well.

And by the way, let me compliment Maggie for getting Klickitat right. It takes years to figure out how to pronounce that name.

And you got it on the first try, way to go.

But the main thing that it's really easy to forget in all of this and it's probably something that people have more than internalized but it's always good to remember it, is that basically we're dealing with energy sources that are really dispersed; and we're consolidating them and turning them into electricity. And that's why we're dealing with these large areas, whether it's people's rooftops or people's farms. And it's an inescapable fact of renewable energy that we're always going to be having impacts on neighbors as well as larger communities, in the case of large wind and solar facilities.

The thing that had concerned me the most as a project developer is that when you're prospecting a site, there's a prescribed sequence of events if your local area hasn't already thought through the permitting process. And that sequence of events quite simply is you show up; you use your technical people to assess sites; you sign leases; you do some very preliminary environmental screening to make sure that you haven't inadvertently picked a site that shouldn't be developed.

And at that point, it becomes more of a publically-driven process as you usually go to the local county planning department and initiate what is called a conditional use permit, as Mia alluded to. And the limit that I always found with that is that if the local community hasn't been allowed to think through the process, they hear about the siting decisions made by the project developer, typically a private company, before they've had time to really absorb the concept.

And the other thing that traditionally creates friction that can be minimized, if not eliminated, is that the environmental studies that go into permitting a large project are almost without exception called a project environmental impact statement; and the tab is picked up by the developer. And it's just inescapable that folks always think the results are suspect. And again, that's the kind of thing that creates a lot of friction that I think there are ways around.

When you're looking at the residential, which I'm just going to just address very briefly because I don't think Mia could have covered it any more thoroughly if she tried, is there are lot of preexisting tools for the local permitting of small facilities. The solar world has been working on those sorts of things since the '70s -- the wind world, similar amounts of time. There are ways that you can incorporate both into what I'm about to describe for larger projects. But the main thing to know is that you don't have to start from scratch, as Mia has demonstrated.

For areas that have large-scale project development potential -- and in the solar world, that's turned into hundreds of acres to sections at this point, if you've been to certain parts of California that have been involved in developing a couple of those larger solar projects, not real visible from the ground but nonetheless take up a lot of acres.

For wind projects, the visibility factor of course is much higher. Both of them normally go through, as I said, a project environmental impact statement; and the alternative is what I'd like to talk about a little bit right now.

If you know you're in an area, or if you anticipate that you're in an area, where large-scale project development is going to take place, there's a provision in NEPA which has been embodied by most states called a programmatic environmental impact statement, where the local permitting entity -- again, typically a county planning department or sometimes county commission if it's a smaller rural county -- initiates this process of a programmatic environmental impact statement that from the very start incorporates the public in deciding decisions long before the developer is there.

And what that allows is a publically-funded environmental studies process, typically a publically-funded resource study process that's not as thorough as a private developer would do, but it gives a sense to the planning entity, whatever it may be -- let's just called it the planning department as that tends to be the name -- of where developers are likely to go and what the environmental impacts are likely to be in those areas.

And in the course of doing that in advance of development, the local community -- again, which is part of the EIS process both through the scoping that occurs at the beginning, the review of the draft environmental and the final environmental impact statements at the end, the subsequent proposed changes to comprehensive plans and zoning, all with public hearings. The public can quite literally see what's coming, identify areas where they're comfortable with development, identify areas where they think there might be more environmental study that has to be done or just prescribe areas from development.

And in the course of the county that I developed this overlay process for, there is one-third of the county that's excluded, mostly on the wind and environmental impact areas. In this particular county, there are some very windy areas that are in forest land that just doesn't lend itself to wind project development. And there's also one part of the county that has a lesser opportunity for development, but the local residents were quite concerned about having any large wind projects in their neighborhood. And they asked that the county planning process exclude them, and a good 50-mile-square area was excluded from the facilitated development.

If you look at the slide that's there now, it lets the developers make initial siting decisions with public input. It avoids the problems of problem EISs that are cited there, both that the scoping comes after a lot of decisions have been made and the somewhat subtle version of project EISs that are also resolved by the programmatic environmental impact statement is that there's been a lot of case law that a developer doing an EIS only has to look at what's called the project footprint. And that's a relatively narrow area, where if you're doing one of these things on a county basis, you can expand that comprehensive impacts analysis to include the whole county or whatever you want to include, all of which can be informed by the public in advance.

If you look at the energy overlays on process from the public side, you've got these hearings that have taken place all through it. The information has been made available to the public in advance of development. And the advantage to the developer is really very straight forward. It can walk into an area that's been prescreened on the environmental side, but to a lesser extent has been prescreened on the resource side whether it's solar or wind. And most important of all, it's been prescreened by heavy public involvement before you show up. So there's no, you know, you guys snuck in, in the dead of night and picked out this site without any public input.

And I just feel that it's a process that avoids a lot of the things that over the years I've been most sensitive to, both as a developer and as an economic development person for a rural county. The upshot of all that in Klickitat County is that a relatively small population of 19,000 people on 1,800 square miles currently have about 1,200 megawatts of wind projects, at least at the local property tax base by \$1.5 billion which, in the case of Klickitat County, literally doubled the tax base.

For the areas where there are wind projects, that's a huge boon to everything from school and fire districts to the landowners, who actually get the projects and receive royalty payments that I think especially in the case of ranching and farming families really stabilizes their income for generations.

The cost of the project, getting the energy overlays on studies done, was about \$500,000 – not easy to justify to your local public entity. But to the extent that it helps facilitate project development, the first project will pay for the cost of it. So it can be characterized on the one hand as a public input process in advance of development; but on the other hand, it typically has very strong economic development benefits because developers will be attracted to an area that's had the permitting risk largely extracted from it.

And that's my presentation.

MAGGIE YANCEY: Thank you very much, Dana.

Now let me introduce Padma Kasthurirangan, who is an Engineer and partner at Niagara Wind and Solar, Inc., based in Niagara Falls, New York. Niagara Wind and Solar is a distributed generation installation firm that provides turnkey renewable energy solutions for their rural customers in Western New York. Their customer has the highest rate of success at the USDA REAP grants for distributed wind in the state of New York.

As the lead installer in NW&S's project, she is heavily involved in the permitting and design stages of projects. She has been instrumental in developing the model zoning ordinances and companion documents in developing documents for small wind counties throughout New York.

Thank you, Padma, for joining us today and sharing your knowledge on wind permitting in New York State.

We'll give you one more second, Padma, so we can hear you.

Padma, we're able to see your screen; but you might need to take yourself off mute.

PADMA KASTHURIRANGAN: Hi, can you hear me now?

MAGGIE YANCEY: Yes, we can; thank you, Padma.

PADMA KASTHURIRANGAN: Hi, sorry about that.

Like Maggie just described, I am Padma Kasthurirangan. I am speaking now from Niagara Falls, our offices. I am an Electrical Engineer and a partner at Niagara Wind & Solar.

We are a small wind and solar installation company. We do turnkey projects for both wind and solar, meaning we handle all aspects of the project, right from sales all the way to the final commissioning. We install turbines starting from 5 kilowatts all the way up to 2 megawatts. And these are all distributed generation projects. And our primary customer base is farms and rural residential customers.

On the wind side, we also do a lot of school and municipal projects. But predominantly, they're also located on rural land through remote net metering.

We have two NYSERDA eligible installers on staff. For those who are not aware, NYSERDA is the New York State Energy, Research and Development Authority. They fund and monitor several energy-related projects, both renewable energy and energy efficiency in various technologies.

On the small end side, they fund up to 50% of a qualified small wind project. To be funded by NYSERDA, we have to use turbines that are on their eligible turbine list. And this list is in line with the industry certification requirements, and the customers also have to go through an eligible installer. What this does for us in terms of permitting is it affords us a lot of credibility to show the local jurisdictions that we are installing quality turbines that meet industry standards.

We also write USDA REAP grants. Like all Federal projects, USDA REAP grants require a lot of permitting, both from other Federal and state agencies, including DEC and FAA and everything else.

When we talk about permitting, permitting generally involves a lot of things – like the utility, the environment, and the local jurisdiction. But local jurisdiction is unique among these, which is why we're talking about it, because most times when we're dealing with the utility or environmental agencies, we're dealing with people who do this for a living. They are familiar with what they're doing, and they've been doing it for several years.

Local permitting, on the other hand, is mostly done by local planning boards and zoning boards, which are almost always volunteer members who meet once a month, who are not always engineers and scientists. And there is a need to make the process simpler so they don't have to learn everything about distributed wind projects every time one comes in front of them.

Typically in New York, we are interested in two things from the local jurisdiction. It is the permit itself. Depending on the town, it could be a building permit or a site plan review process or a special use permit. And in New York, we deal with the C.F.R., which is similar to the EIS that Dana was describing.

Pretty much every project that is funded by a state or a Federal agency needs to have an environmental statement. Depending on the agency and the impact of the project, this can be anywhere from a 4-page short form to a 28-page environmental assessment which requires us to hire an environmental firm to do it. It requires the agency of usually the town to declare themselves as the lead agency and determine whether or not there is an impact caused by a project.

In New York, we're dealing with several different agencies when we talk about authority having jurisdiction. We have 932 towns that are under 62 counties. At the local level, the agent could be the building inspector or planning officer; a planning board; a zoning board of appeals; or a town board. Depending on how (inaudible) the ordinance is in a town, we could be dealing with either one or all of the

boards here. And most times, the building inspector is a part-time position; and all of these boards meet only once a month or as needed.

A lot of the towns also refer to the county to expand the process. And we deal with the County Planning Board and the Building Inspection Department.

So what exactly do we do with permitting? We first start at the town's zoning office. Most times, we start a project right when we develop the first proposal to a customer because that determines whether or not we're going to have a project.

Once we sign the contract with the customer, we make a formal inquiry to the town to determine whether or not they have an ordinance. If they don't have an ordinance, we enter an infinite loop, which could last anywhere from four months to a year-and-a-half, until we come to a point where they do have an ordinance. If they do have an ordinance, we have to determine who has the authority of the town, which could be any of the four that were mentioned in the earlier slide.

The Zoning Officer is directly authorized to issue both the permit and the C.F.R. That makes the process very simple. We submit all of the required documents to the Zoning Officer; and if everything is compliant, he can go ahead and issue the permit and execute the C.F.R.

A lot of times, a Zoning Officer might be authorized to issue the permit but not go through the C.F.R. process. So in that case, he refers it to the Planning Board. The Planning Board reviews the project; and sometimes they could not be authorized to issue the C.F.R. either. In any case, if they are authorized, then it goes back to the Zoning Officer to issue the permit, provided the Planning Board is in agreement and supports the project.

If any of it is not met, it goes to the Zoning Board of Appeals. The Zoning Board exists in cases where a project is not compliant. So they go through their process to determine whether or not they should consider what it is. And if they are considering, they have to schedule a Public Hearing. And they also refer to the County Planning Board for review.

The county process in most towns is only a guideline; it's only a recommendation. Whatever the county decides is not binding upon the town. The town can either choose to go with the county or do what they feel is right for their town. If at the end of it there is no further opposition and the Board is in agreement with the project, we get the permit. If not, we just take the denial and go home.

On an agricultural project though, there is recourse. Agriculture is the largest industry in New York. So the Department of Agriculture and Markets was established to protect the rights of the farmers.

A turbine located in a state-certified, county-run ag district that meets the definition of a farm under Article 25-AA, Section 305 of the New York State laws, has certain rights for pretty much any project that happens in a farm district. And they have specific guidelines, particularly for small wind and solar projects, that if a small wind or solar project covers at least 110% of the farm's requirements, they are considered a farm structure or equipment, and they cannot be denied a permit for any of the reasons listed here.

The Ag and Markets like to work with the town, and they do allow the town to go through their process. But if it is unreasonably restrictive, we can file a request that Ag and Markets do a complete review of the town's ordinance; and they will do that. And if they find that it is unreasonably restrictive, they can direct the town to issue the permit; and the decision of the Ag and Market Department is binding.

So what causes us to have issues with the zoning? Most times, like Mia said, it's a height restriction. The height restriction in most towns is 35 feet or 50 feet, which has no real reason other than 30 years ago that was the standard requirement by fire departments. And a lot of times we have unreasonable setback requirements; a lot of town ordinances just say 1,500 feet, similar to a large-wind project.

Sound is another concern in a lot of towns. They don't define a process. A lot of towns just say the turbine cannot make more than 45 decibels. But the existing noise conditions in the towns may be much higher than that. And a lot of ordinances require us to comply with codes that are not really existent; like in New York State, a lot of the towns say that the towers have to be designed in accordance with the New York State Building Codes. But the New York State Building Code actually exempts wind towers, so that leaves us with no code.

And a lot of times, the process is also very confusing. Most towns don't know which board is authorized, and it's not properly defined in the ordinance; so it causes a lot of delays. And again, there are towns with no zoning at all.

So we came up with the ideal zoning kit. This is actually the ordinance of one of the towns that we work with, where we can walk in and the building inspector can just issue us a permit if the project is in compliance with these four rules. Ideally, we would like all of our towns to have this; but it doesn't quite fly all the time. So working with the Permitting and Zoning Committee under DWEA was very helpful in understanding all the ins and outs of why certain rules exist and what we could do to make it easier.

So we've developed our own zoning toolkit in Niagara Wind, which included the market zoning ordinance and the companion document. The companion document does a really good job of explaining the model ordinance, so it tells the towns why we are asking for a certain ordinance. If the zoning ordinance says that the height of it should be 190 feet or as tall as we can go; the companion document tells why the tower needs to be taller. So that is very helpful for the authorities.

And we created our own model zoning ordinance for New York conditions that included the Ag and Market Guidelines and the Zoning Guidelines that are set by the Ag and Market, and it included information (inaudible).

And DWEA released a bunch of one-pagers on sound, tower height, sandbags, and all the things that jurisdictions usually have questions about. And we include all of that in our package. And we also use NYSERDA small wind siting guidelines. NYSERDA is part of the funding program. It has guidelines for turbine selection, siting and everything; and we show that to the towns. And we also give them sample ordinances from neighboring towns that make sense, and we talk to them about what should be in their ordinances and what should not be.

We do this as a part of any application process, along with our building permit application and all the specifications, whether or not the town has an ordinance.

So we've written ordinances for several towns in Western New York. This was a town in New York with very high wind conditions, which was slated for a couple of large wind projects that haven't really (inaudible). So we approached the town with three projects, two for farms and one for a resident. The town was very excited about our project because they knew they had excellent wind conditions. And they were happy that they could provide something that the residents could make use of.

When we presented our toolkit, they reviewed all the agricultural aspects of it. Ninety percent of this town is farming. So they conferred with Ag and Market, and then they found that they could go ahead and issue the permit. They immediately allowed the agricultural project, but they could not do the same thing with the rest. So they spent about a year or so writing the ordinance with the help of our Zoning Toolkit and developed a process that the whole town could use. And now we ended up with a two-month process at the most.

This was another town where we tried the Zoning Toolkit. When we first approached, it was for a 5 kilowatt turbine on a 100-foot tower; and the town had no ordinance. We spent about four months trying to figure out which Board we had to approach. We went back to the Planning Board, sent it to the Town Board and back to the Planning Board. And eventually, they said we couldn't do it; they had to [narrow] their ordinance.

So we worked with them. We presented our toolkit, and they chose to ignore most of it. We worked with them for several months; and the ordinance that they ended up with, our project could meet their requirements but overall, it's a very restrictive project, which makes it very difficult for future projects in the town. But the one good thing was that they exempted farms from having to go through all of this work.

A lesson that we learned from all of our experiences over time is that permit time is in direct proportion to applicants' patience. The applicant in most cases is us, the installer. But by the time it comes to us, there is not much room for patience because we cannot approach a town -- unless we have a project in front of us, we cannot go to the town board; and by that time, we are under time constraints in terms of grants and a lot of other restrictions. So we usually tend to work with what we have, and that's not the best time to begin the application process or write a new ordinance; but we do it because we have to.

But once we get through the first one, the process gets a lot simpler. The town understands what the project really is; it's not against large wind turbines. And the future projects become a lot easier. It also helps to have a lot of industry documents rather than coming from an individual installer.

In New York State, the solar industry came up with a unified solar permit. What this does is it does not take away anything from the local jurisdictions. Two of the Cleaner, Greener Communities Programs developed a unified solar permit process and encouraged towns to get it. Just like installers cannot go to a town and ask them for an ordinance without having a project, the towns don't have the need to write a wind ordinance unless somebody asks them for it. So what this does is encourage towns to create a process before they absolutely have to so they can do the research and create a good ordinance.

That's pretty much all I have. Thank you.

MAGGIE YANCEY: Thank you, Padma, and all our speakers for your wonderful and informative presentations.

Now it's time for our Q&A period. Please continue to submit your questions through the Q&A box, and we will do our best to address them as they pertain to the topic of today's webinar.

Now I'm going to go to the top of the list of questions. They are coming in as we speak.

"Located here in the Southeast," says one attendee, "we've had a few proposed wind projects get banned by regulation. Local ordinances are passed that make it impossible to develop a windfarm because the decimal levels and setbacks are so extreme. How do we, as advocates, help to avoid this and promote reasonable regulations?"

I think, Dana and Ian Baring-Gould from our National Renewable Energy Lab have a response to that question.

DANA PECK: Hi, this is Dana. Do you want me to go first?

MAGGIE YANCEY: Yes.

DANA PECK: Sorry, Ian; I can probably say some stuff that you can't.

In essence, this is a recurring theme; and it's one of the reasons for doing this preplanning if you can budget it with your local planners.

The real beneficiaries of these projects are the folks that are also the best advocates for pushing back on restrictive zoning and plans. Most taxing districts, and by that I mean the schools and the fire districts and even cemetery districts, once they're made aware of what the tax benefits of these projects are, they're pretty quick to become allies. And the same can be said of the landowners because especially in the wind business, you can easily, easily make anywhere from \$8,000 to \$10,000 to \$12,000 a year off of a single turbine's royalty payments pretty much anywhere in the country at this point.

And the dilemma, I think, that most of us on the renewable energy side – a mistake we've been making for a really long time is we tend to show up and make some variation of an environmental argument, ranging from climate change and greenhouse gas to, well, pick your era when it comes to that. And that doesn't play to your most effective local constituency.

If you show up at a planning hearing with a bunch of farmers and ranchers, a couple of school superintendents and the local fire chief, all of whom would like to see this happen, you'll be surprised at how fast things turn around for you -- non-traditional constituencies for those of us that do this kind of work, but also the most effective ones out there.

IAN BARING-GOULD: This is Ian Baring-Gould from NREL. The only thing I would add to this is one of the reasons that the implementation of ordinances like we've talked about here today is so important – or one of the main reasons why they're important -- is it allows a pathway to implement a sound policy and regulations prior to the implementation or the desire to implement specific projects.

And all of us know that you go can out on the Web and get lots of information without knowing how much of it is true or valid or has scientific backing. And so as soon as a project is proposed and a county organization or whatever goes through the regulations and tries to look at the permitting of this project, it's already in a charged environment, whether it's a big windfarm, community-based, or just a private landowner wanting to put up a small turbine. And then it becomes kind of a political fight for the people who want it and don't want it -- I mean, regardless of party or anything of that nature. And people bring in whatever information they feel defends their story, whether it's valid or invalid information.

And the problem is that the county official has to weed through all of that. And as we've talked about, they do not have the time, the budget, to be able to really delve into that. So to a degree to answer the question, once the policy is already put in place, once the regulations are already put in place, there's probably not a lot that can be done, at least in the near term, to address those because if there were very extreme regulations put in place, that means that the people who did it have already decided what the answer is regardless of any of the dialog. And trying to change that mind is probably not going to be overly effective.

Going into communities that do not have regulation in place and working to ensure that the regulation put in place is based by science and community interest and community desires is where I'd focus my time.

MAGGIE YANCEY: And this next question was asked during Padma's presentation. The attendee asked: "If this is a large scale wind project, how does the tie line from the project site to the substation impact permitting?"

PADMA KASTHURIRANGAN: It depends on the permit; it depends on the town's ordinance. And if it's in a farm field, New York State Ag and Market also has regulations on what must be done to mitigate the impact on farmland. And it would be up to the utility to decide the process for interconnection itself.

Does that answer your question?

IAN BARING-GOULD: This is Ian. I would probably expand a little bit on that to say that in a lot of cases, it's going to depend on where that line goes. So if the line is purely on private property, then certain permitting requirements will take place. If it has to cross roads or public land or other people's lands to be able to interconnect to the turbine, then there are probably more building and zoning permits in addition to the interconnection requirements that would have to be addressed on a community-by-community basis.

DANA PECK: This is Dana. If I could just build on what Ian and Padma just said, it's possible to build these sorts of things into the permit in advance, calling the – the term is usually auxiliary structures – which incorporates them into the permit from the start. And then the sorts of things like Ian was just talking about, like getting right-of-ways if you're going across somebody's property, that's really up to the

developer. But the actual line itself, if you get ahead of it, can be incorporated into the permit from the start.

MAGGIE YANCEY: All right, and one last question: "Much of the controversy about turbine sound is at the lower frequency, which typical noise regulations do not adequately address. To what extent did development of the model regulation take this into account, or is the lower frequency sound only associated with the larger size turbines?"

IAN BARING-GOULD: This is Ian. Why don't we start with Mia to have her address the root of the question, which is: Is infrasound and things of this nature addressed in her permitting tool? And then we can address the question of infrasound as well.

MIA DEVINE: A simple answer is, no. And I haven't seen any of the ordinances actually address infrasound. They usually just talk about background sound level in terms of decibels and don't measure the infrasound.

IAN BARING-GOULD: So in regard to infrasound itself, there have been numerous assessments and studies done by typically departments of health -- Australia, Canada, the UK, several states -- all of which do not find medical basis for the claim of infrasound.

Now, there are many reported cases of people who are suffering impacts that they claim are impacted by the turbine or caused by the turbine. And they claim that it is infrasound that is causing this. I don't think anybody is disputing the fact that people are feeling the impact of something. But all of the studies that have been done to date have not been able to draw a medical linkage between infrasound, or the claim of infrasound, and the medical conditions that the people are seeing and the actual installation of turbines.

And so that is something that is still -- I wouldn't say open to debate, but in the sense that quite a few panels in numerous countries have looked into this issue and cannot make that linkage. To my knowledge, no one has claimed infrasound for smaller turbines. And so it is, at least at this point, something that people have claimed for the installation of larger turbines and, in most cases, installations of multiple larger turbines in close proximity to the people who are experiencing a condition that they equate to infrasound.

But I want to make it really clear that all of the studies that have been done to date that tried to look systematically at this issue have not been able to make that connection. And the research out there is quite extensive.

I was going to ask if Dana had additional thoughts on that, but we would open it up to all of the panelists.

DANA PECK: You completely covered it. The research on impactful sound has led some states to have decibel limits that typically change at dusk. There hasn't been any health impacts demonstrated from infrasound.

PADMA KASTHURIRANGAN: We get asked this in a lot of towns, a lot of ordinances that don't consider small wind or distributed wind separately or require us to show that there is no impact. But most times, we've been able to convince town boards and the authority having jurisdiction that there are no proven studies. We refer to several studies, as the other panelists described; and we haven't had any actual reports of any impact from any of our installations so far. But we do get asked those questions.

MAGGIE YANCEY: Mia, do you have anything to add?

MIA DEVINE: No, I think we've pretty well covered it.

MAGGIE YANCEY: Great, I know this is past the top of the hour; and it is time to bring our webinar to a close.

If your question was not addressed, you can contact our webinar organizer or one of our contacts listed here on the screen.

And thank you again to our presenters –Mia, Dana and Padma – for your great presentations.

And thank you to the audience for your attention and participation today. We look forward to seeing you on our next WINDEXchange webinar.